A TRANS-BORDER AFRICAN CRYPTO ASSET LICENCE TO PROMOTE ECONOMIC GROWTH AND DEEPEN FINANCIAL INCLUSION

by

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SUMMARY

Financial technology (Fintech) is a rapidly growing industry, both locally and globally. In various ways, Fintech is undeniably transforming financial services and products in every possible part of the financial sector by changing how people access and use financial services. By using innovative technologies, such as distributed ledger technology and cloud technology, and combining large data sets, including alternative data sets, better products can be provided that can be hyper-personalised for market segments and improve access and participation in respect of financial services. Fintech is solving issues that touch the consumer, through a bottom-up approach, considering the retail consumer as a starting point, in contrast to the common traditional finance evolution from the institutional investors to the retail consumer in a top-to-bottom approach. What is exciting about what Fintech can do for Africa, is that it can move inefficiencies in services and product life cycles to become efficiencies and move the frontiers for already efficient products and services. Fintech, therefore, provides an opportunity to improve the archaic and pave the way for the future.

This study focuses mainly on crypto assets to limit its scope. It first examines the Fintech landscape in Africa, more specifically, the activity level in each selected comparative country, namely Mauritius, Kenya, Zambia, Namibia and South Africa, and how the activity benefits or can potentially benefit the economy in the host country and lead to the deepening of financial inclusion. It further examines the regulatory frameworks in those countries.

The study examines the regulatory approach taken and the local activity, exploring some of the risks identified in each country, and considers the requirements that regulators chose to implement to mitigate these risks, as well as the current state of regulatory frameworks. Consideration is given as to whether similarities in both the risks and the mitigation requirements exist and how this can be aligned across jurisdictions. Recently, international standard-setting bodies have increased their focus on ensuring the

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alignment and cooperation of regulatory approaches globally. In light of the call for alignment and increased collaboration through policy recommendations and guidance, and or regulators to provide comprehensive and effective regulatory approaches without stifling innovation, this study considers the theoretical possibility of allowing certain Fintech companies, specifically crypto asset service providers (subject to specified conditions) to operate across jurisdictions with a trans-border licence. This study examines Europe's Markets in Crypto Assets Regulation, as it was the first of its kind continental-wide framework for crypto assets, offering numerous lessons to be learned from this framework. The Commonwealth Model Law on Virtual Assets is also considered, as it is intended to assist member countries in implementing Virtual Asset and Virtual Asset Service Provider regimes in their respective jurisdictions, as they deem appropriate.

Lastly, the study will explore what a theoretical trans-border regulatory framework containing prudential and market conduct requirements could look like and what embedded supervision tools, for instance, through forensic nodes or zero-knowledge proofs, could be utilised to ensure that all the regulators participating as part of a licencing panel receive real-time data and have a full view of the level of compliance with the requirements imposed by the joint framework and can proactively and intrusively act, when needed. The proposed trans-border regulatory framework aims to support crypto asset service providers with multi-jurisdictional strategies in Africa in scaling their operations, with a focus on building Africa as a global Fintech hub. The proposed framework aims to achieve this through a harmonised regulatory framework that simplifies compliance, increases efficiencies, enhances innovation, allows for scalability, and better risk management. In addition to the goal of positioning Africa as a globally recognised Fintech hub, the harmonised framework aims to realise the purported benefits of the technologies utilised by crypto asset service providers, thereby deepening financial inclusion and promoting inclusive economic growth through increased access and participation, as well as lower costs.

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KEYWORDS AND PHRASES

Cooperation - financial inclusion – blockchain - crypto assets -

Regulatory bodies - Fintech – embedded supervision

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Lastly, I wish to express my profound gratitude to my senior manager at the Financial Sector Conduct Authority, Lezanne Botha. Always supported me and always allowed me to take the time needed to complete my studies. Thank you for your words of encouragement during my studies, advice, and unfettered support.

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LIST OF ABBREVIATIONS

A list of the main abbreviations used in this thesis is set out below in alphabetical order:

Words in Full	**Abbreviation**
Anti-Money Laundering	AML
Automated market makers	AMMs
Automated Teller	ATM
Binance USD	BUSD
BIS	Bank of International Settlements
Byzantine Fault Tolerance	pBFT

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Words in Full	**Abbreviation**
Canadian Securities Administrators	CSA
Central Bank Digital Currency	CBDC
Central Processing Unit	CPU
Collective Investment Schemes Control Act 45 of 2002	CISCA
Competence and Continuous Professional Development	CPD
Crypto Asset Regulatory Working Group	CARWG
Crypto Asset services providers	CASP's
Crypto Asset Trading Platforms	CTP
Decentralised Applications	dApps
Decentralised Finance	DeFi
Delegated PoS	DpoS
Delivery versus Payment	DvP
Digital Asset Market Structure	DAMS
Digital Assets and Registered Exchanges	DARE
Ethereum	Ether
European Banking Authority	EBA
European Securities and Markets Authority	ESMA
Federated BFT	fBFT
Financial Action Task Force	FATF

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Words in Full	**Abbreviation**
Financial Advisory and Intermediary Services Act 37 of 2002	FAIS Act
Financial Intelligence Centre	FIC
Financial Stability Board	FSB
Financial Services Commission	FSC
Financial Services Provider	FSP
Financial Services Regulatory Authority	FSRA
Financial Technology Company	Fintech
Global Stablecoin Arrangements	GSC
Gross domestic product	GDP
Intergovernmental Fintech Working Group	IFWG
International Monetary Fund	IMF
International Organization of Securities Commissions	IOSCO
Istanbul BFT	iBFT
Know Your Consumer	KYC
Markets in Crypto Assets Regulation	MiCA
Markets in Financial Instruments Directive	MiFID
Markets in Financial Instruments Regulation	MiFIR
Micro-, small, and medium-sized enterprises	MSME

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Words in Full	**Abbreviation**
National Association of Securities Dealers Automated Quotations	NASDAQ
National Payment Systems Department	NPSD
Not in Education, Employment, or Training	NEET
Non-Fungible Token	NFT
Over the Counter	OTC
Probability Density Function	PDF
Proof-of-Stake	PoS
Proof-of-Work	PoW
Quick Response	QR
Random Access Memory	RAM
Science, technology, engineering, and mathematics	STEM
Simplified Payment Verification	SPV
Small and Medium Enterprises	SMEs
Society for Worldwide Interbank Financial Telecommunications),	SWIFT
Swiss Financial Market Supervisory Authority	FINMA
Traditional Finance	TradFi
Treating Consumers Fairly	TCF
USDC	USD Circle

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Words in Full	**Abbreviation**
USDT	USD Tether

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CHAPTER 1

INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 Introduction and contextual foundation of the problem statement

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1.3 Problem statement and research objectives

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1.5 Potential of different types of crypto assets to deepen financial inclusion

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1.1 Introduction and contextual foundation of the problem statement

> "The ongoing digitization of financial services and money creates opportunities to build more inclusive and efficient financial services and promote economic development. Fintech is transforming the financial sector landscape rapidly and is blurring the boundaries of both financial firms and the financial sector".[1]

Africa is the world's poorest continent, with the highest extreme poverty rates globally, and significant challenges exist.[2] The solution is multifaceted, but there is *hope*.[3] One possible tool to work toward the progress and improvement of the financial and socio-economic challenges faced by many African countries is promoting financial inclusion, specifically digital financial inclusion, and fostering sustainable economic growth through the use of crypto assets and the underlying blockchain technology[4], as explained in more detail below. It is estimated that 400 million people in Africa, for instance, remain unbanked. Access to, and the cost of, banking services remain significant obstacles to financial inclusion and economic growth.[5]

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1 Feyen, Erik H.B.; Natarajan, Harish; Saal, Matthew. "Fintech and the Future of Finance: Market and Policy Implications"(2023)available online at http://documents.worldbank.org/curated/en/099450005162250110/P17300600228b70070914b0b5edf26e2f9f (last accessed on 02 July 2023).

2 Anupam Basu, Evangelos A. Calamitsis, Dhaneshwar Ghura, International Monetary Fund, "Promoting Growth in Sub-Saharan Africa Learning What Works", (2000), available online at https://www.imf.org/external/pubs/ft/issues/issues23/index.htm (last accessed on 05 October 2024).

3 Anupam Basu, Evangelos A. Calamitsis, Dhaneshwar Ghura "Promoting Growth in Sub-Saharan Africa"(2000) available online at https://www.imf.org/external/pubs/ft/issues/issues23/index.htm (last accessed on 27 May 2023).

4 Blockchain is a digital distributed ledger that stores data in the form of blocks that are linked together using a cryptographic function. See Gautami Tripathi, Mohd Abdul Ahad, Gabriella Casalino, "A comprehensive review of blockchain technology: Underlying principles and historical background with future challenges", *Decision Analytics Journal*, Volume 9, 2023, 100344, ISSN 2772-6622, https://doi.org/10.1016/j.dajour.2023.100344, available online at https://www.sciencedirect.com/science/article/pii/S2772662223001844 (last accessed on 16 April 2025).

5 Mazamesso Assih" Why Africa needs to make financial inclusion its 2022 priority" (2022) available

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Financial inclusion can be defined as having universal access to sensibly priced financial services provided by sound and sustainable institutions.[6] The World Bank Group[7] recognises the importance of financial inclusion as a major enabler in the fight against extreme poverty and the promotion of shared prosperity.[8] The concept of financial inclusion includes saving, investing, borrowing, and insurance.[9] Financial inclusion policy and regulatory frameworks related thereto can be seen as important initiatives to lessen poverty and promote economic growth in tandem with other strategies, for instance, social security protection and efforts to reduce unemployment.[10] Additionally, the objective of financial inclusion targets vulnerable communities, including low-income groups, to be financially included while having accessible financial services. Financial services include credit, insurance, and other forms of equity.[11]

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online at https://africanarguments.org/2022/01/why-africa-needs-to-make-financial-inclusion-its- 2022-priority/(last accessed on 02 July 2023).

6 Tao Sun, Chapter 2, "Balancing Innovation and Risks in Digital Financial Inclusion—Experiences of Ant Financial Services Group", Editor(s): David Lee Kuo Chuen, Robert Deng, *Handbook of Blockchain, Digital Finance, and Inclusion*, Volume 2, Academic Press, (2018), Pages 37-43, ISBN 9780128122822, available online at https://doi.org/10.1016/B978-0-12-812282-2.00002-4 (last accessed on 05 October 2024).

7 The World Bank is an international financial institution that provides loans and grants to the governments of low- and middle-income countries for the purposes of economic development. With 189 member countries, the World Bank Group is a unique global partnership fighting poverty worldwide through sustainable solutions. See World Bank, "World Bank Group – Who we are", available online at https://www.worldbank.org/ext/en/home (last accessed on 25 April 2025).

8 World Bank (2022). IBM, what is blockchain technology? Available At: https://www.ibm.com/za-en/topics/what-is-blockchain (last accessed on 30 January 2024)

9 David Lee Kuo Chuen and Robert Deng, *Handbook of Blockchain, Digital Finance, and Inclusion*, Volume 2 ISBN: 9780128122822 (2017).

10 Tuba, M. D., & Schulze, W. (2024). „The Inclusion-Stability, Integrity and Protection (I-SIP) Methodology and the Legal Framework to Promote Financial Inclusion in South Africa". *Potchefstroom Electronic Law Journal*, 27, (Published on 1 August 2024) pp 1-58. (last accessed on 01 December 2024).

11 R.G. Rajan, The credit crisis and cycle-proof regulation, Fed. Reserv. Bank St. Louis Rev. 91 (5) (2009) 397–402.

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Digital financial services significantly impact financial inclusion levels in African countries.[12] In comparison to financial inclusion, digital financial inclusion places more importance on technology to expand the availability of formal financial services. Several developing countries, including Brazil, India, Nigeria, and other African countries, such as Kenya and Zimbabwe, have implemented digital technology to battle the issue of financial exclusion.[13] As pointed out by Feghali *et al*, everyone should be part of the economy where financial services are customised to specific needs and demands at a reasonable cost.[14] Delving into one of the elements of what digital financial inclusion captures, blockchain technology and crypto assets, it is evident that blockchain technology has great potential to improve people's lives in the coming decades.[15] This could be one facet of the solution to addressing Africa's poverty problem. Comparing financial inclusion in Sub-Saharan Africa[16] in 2011, the levels stood at just over 23%. Looking forward to the statistics for 2017, the increase was significant, reaching 43%, with a substantial portion of this growth stemming from digital financial services.[17] Only considering digital money through mobile applications,

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12 Lee-Ying Tay, Hen-Toong Tai, Gek-Siang Tan, Digital financial inclusion: A gateway to sustainable development, Heliyon, Volume 8, Issue 6, 2022, e09766, ISSN 2405-8440, https://doi.org/10.1016/j.heliyon.2022.e09766 (last accessed on 01 January 2025).

13 M.A. Bayero, Effects of cashless economy policy on financial inclusion in Nigeria: an exploratory study, Procedia-Social and Behavioural Sciences 172 (2015) 49–56. (last accessed on 30 January 2024).

14 K. Feghali, N. Mora, P. Nassif, Financial inclusion, bank market structure, and financial stability: international evidence, Q. Rev. Econ. Finance 80 (2021) 236–257. (last accessed on 30 January 2024).

15 Abdulhakeem, S. A., and Hu, Q. (2021). Powered by blockchain technology, DeFi (decentralized finance) strives to increase financial inclusion of the unbanked by reshaping the world financial system. *Mod. Econ.* 12 (01), 1–16. doi:10.4236/me.2021.121001 (last accessed on 29 January 2024).

16 Sub-Saharan Africa is geographically the area of the African continent that lies south of the Sahara Desert. It includes 48 countries of which 23 are low-income, 18 are lower middle-income, six are upper middle-income, and one is high-income, and excludes only the North African countries of Algeria, Egypt, Libya, Djibouti, Morocco, and Tunisia. See ISS/African futures," Sub-Saharan Africa", available online at https://futures.issafrica.org/geographic/regions/sub-saharan-africa/ (last accessed on 25 April 2025).

17 Ann Miles "Looking to the Future of Financial Inclusion in Africa" (2023) available online at

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according to Findex[18], the number of individuals with a mobile money account almost doubled to 21 per cent in 2017.[19] More recent statistics from the Global Findex 2021 indicate that 33% of people in this region have a mobile money account, while 55% have an account with a financial institution or a mobile money account, which is substantially lower than in developed countries.[20] Digital financial inclusion[21] can thus be a doorway to sustainable development and growth in Africa. Within the broader digital financial inclusion theme, crypto assets enable access to alternative financial services, such as loans (including peer-to-peer lending), savings, or insurance. Manyika *et al* indicate that it is projected that the usage of digital finance alone might benefit billions of people by promoting inclusive growth that increases emerging economies' Gross Domestic Product (GDP)[22] by $3.7 trillion over the next ten years.[23]

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https://mastercardfdn.org/looking-to-the-future-of-financial-inclusion-in-africa/ (last accessed on 02 July 2023).

18 The Global Findex Database provides almost 300 indicators on topics such as account ownership, payments, saving, credit, and financial resilience. See WorldBankGroup," Global Findex Database",2024, available online at https://prosperitydata360.worldbank.org/en/dataset/WB+FINDEX (last accessed on 13 September 2024).

19 Centre for Financial Inclusion " New Global Findex: 69 Percent of Global Population Is Banked",2018 available online at https://www.centerforfinancialinclusion.org/new-global-findex-sixty-nine-percent-of-global-population-is-banked (last accessed on 12 January 2024).

20 CGAP FinDev Gateway,"Financial Inclusion in Sub-Saharan Africa", available online at https://www.findevgateway.org/region/financial-inclusion-sub-saharan-africa (last accessed on 02 December 2024).

21 Digital financial inclusion involves the deployment of the cost-saving digital means to reach currently financially excluded and underserved populations with a range of formal financial services suited to their needs that are responsibly delivered at a cost affordable to consumers and sustainable for providers. See K Lauer, T Lyman, "Digital Financial Inclusion, 2015 available online at https://www.cgap.org/research/publication/digital-financial-inclusion (last accessed on 13 September 2024).

22 GDP refers to the market price of products and services produced within a country at a certain period, often a year. See Adla, Lilia. (2023). The Oil Abundance in Algeria Remedial Models against the Resource Curse (last accessed on 25 April 2025).

23 Manyika, J. S., Singer, M., White, O., and Berry, C. (2016). How digital finance could boost growth in emerging economies. Available At: https://www.mckinsey.com/featured-insights/employment-and-growth/how-digital-finance-could-boost-growth-in-emerging-economies (last accessed on 30 January 2024).

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Considering the nature of Fintech, as explained in more detail below, it is submitted that if African countries can increase their attractiveness as a Fintech hub, this could have a material impact on making progress towards deepening financial inclusion and improving economic growth. In that case, there can be various benefits, including increasing financial inclusion in those countries and providing ease of financial services to the citizens. Developing the Fintech sector in these countries can substantially increase economic growth through increasing GDP created in the finance sector. Furthermore, the Fintech industry is benefiting growing economies in different ways. Firstly, it is submitted that including underserved or previously excluded communities in the formal financial sector activities allows for increased participation, for instance, access to loans by informal businesses.

Also, Fintech can help make financial services more efficient and affordable, which may assist third-world countries with high fees for financial services. Lastly, regarding economic growth, it is submitted that Fintech can assist in creating new employment opportunities and novel businesses. Job creation opportunities come from the so-called "missing middle," small to medium enterprises that often cannot access the loans needed to grow, and traditional banks cannot provide the solution alone.[24] A growing Fintech industry has the potential to create jobs, skills, opportunities, and wealth across the continent.[25] An International Finance Corporation[26] study, titled "*Digital Skills in Sub-Saharan Africa Spotlight on Ghana, International Finance Corporation*", estimates that over 230 million jobs in sub-Saharan Africa will require digital skills by 2030,

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[24] International Finance Corporation – World Bank Group," The unseen sector a report on the MSME opportunity in South Africa",(2018), available online at https://www.ifc.org/content/dam/ifc/doc/mgrt/2019-01-msme-opportunity-south-africa.pdf (last accessed on 02 December 2024).

[25] Fintech in Africa: The end of the beginning | McKinsey, (2022) available online at https://www.mckinsey.com/za/our-insights/Fintech-in-africa-the-end-of-the-beginning (last accessed on 30 January 2024).

[26] The International Finance Corporation is an international financial institution that offers investment, advisory, and asset-management services to encourage private-sector development in less developed countries. See IFC, "IFC at a glance", available online at https://www.ifc.org/en/home (last accessed on 05 October 2024).

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creating opportunities in adjacent industries as well, notably training.[27] Increased tax revenue is an ancillary benefit to the relevant governments because Fintechs can grow the economy and generate more taxable income.[28]

A Fintech hub is the focal point for Fintech activity within a region or a network.[29] To be considered a Fintech hub, certain conditions need to be generative to attract Fintech players to the countries and provide a market where they can position themselves over the long term and grow their businesses. To give an example of the impact and scale that can be borne from being considered a Fintech hub and attractive to Fintech companies, we can reflect on a small town called Zug in Switzerland and also the broader Switzerland as a whole. Zug has a population of roughly 133,723 people, with an annual population change of 0.82%.[30] Zug is where Ethereum was created, and it's known as a "crypto valley". Ethereum and another well-known Fintech, Lykke[31], still have their head offices in Zug. Ethereum is a decentralised blockchain with smart contract functionality. Ether is the platform's native crypto asset. Among crypto assets,

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27 IFC, "Digital Skills in Sub-Saharan Africa Spotlight on Ghana, International Finance Corporation" (2019) available online at https://www.ifc.org/content/dam/ifc/doc/mgrt/digital-skills-final-web-5-7-19.pdf (last accessed on 17 July 2024).

28 Vincent, Olusegun & Evans, Olaniyi. (2024). Fintech and tax revenues: does political institution matter? "Fintech and tax revenues: does political institution matter?". *Asia-Pacific Journal of Accounting & Economics*. 10.1080/16081625.2024.2356106. Available online at https://www.researchgate.net/publication/380743842_Fintech_and_tax_revenues_does_political_institution_matter_Fintech_and_tax_revenues_does_political_institution_matter (last accessed on 02 December 2024).

29 Deloitte " What makes a successful Fintech hub in the global Fintech race?"(2023) available online at https://www2.deloitte.com/uk/en/pages/financial-services/articles/what-makes-successful-Fintech-hub-in-global-Fintech-race.html (last accessed at 03 July 2023).

30 City Population, (2024), available online at https://www.citypopulation.de/en/switzerland/admin/zug/B0900__zug/ (last accessed on 25 April 2025).

31 Lykke is a Fintech company that runs Lykke Wallet crypto exchange with no fees. Unique conditions: free crypto trading and free fiat deposits & withdrawals. Lykke Wallet crypto exchange is an all-in-one cryptocurrency app where you can securely buy, sell, and store Bitcoin and other cryptocurrencies. See https://www.lykke.com/ (last accessed on 13 September 2024).

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ether is second only to bitcoin in market capitalisation. Ethereum has a current (2025) market cap of $ 229.08B.[32]

According to CoinDesk[33], Zug is the number one global crypto hub, followed by Singapore, London, Seoul, Dubai, and Abu Dhabi. One of the significant drivers for Zug as a Fintech or crypto hub is the regulatory certainty that prevails, as well as the fact that regulators have taken multiple steps to facilitate Fintech operations. Zug has managed to put Switzerland on the Fintech global map.[34] Some figures to highlight the effect of Fintech within Switzerland include sustainable investments, which showed steep growth, their volume growing by 31 percent in 2023 to over 1.5 trillion Swiss francs, according to a market study[35] conducted by Swiss Sustainable Finance.[36]

Switzerland's Crypto Valley, encompassing Zug, Zurich, Lugano, and Geneva, has cultivated a thriving ecosystem for digital assets, hosting over 1,000 companies, including nine unicorns,[37] and boasting a combined valuation of approximately $185

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32 YCharts "Ethereum Market Cap" available online at https://ycharts.com/indicators/ethereum_market_cap (last accessed on 03 April 2025).

33 CoinDesk, "Crypto Hubs 2023), (2023), available online at https://www.coindesk.com/focus/best-crypto-hubs-2023 (last accessed on 24 June 2025).

34 Varun Mittel, "Switzerland Fintech Landscape" (2019) available online at https://www.researchgate.net/publication/330701721_Switzerland_Fintech_Landscape/link/5c4fe826299bf12be3eb414c/download (last accessed on 17 August 2023).

35 Swiss Sustainable Finance, Market Study,(2023), available online at https://www.abti.ch/sito/wp-content/uploads/SSF_2023_MarketStudy.pdf (last accessed on 24 June 2025).

36 Swiss Sustainable Finance (SSF) is the leading Swiss association in the field of sustainable finance. Founded in 2014, SSF has over 200 members and network partners including banks, asset managers, institutional asset owners, service providers, research and education providers and other organisations. See Swiss Sustainable Finance, "Who we are", 2024 available online at https://www.sustainablefinance.ch/en/about-ssf/who-we-are.html (last accessed on 13 September 2024).

37 A company that has been valued at more than one billion dollars by venture capitalists. See Montevirgen, Karl. "*How to spot and invest in a unicorn company.*" Encyclopedia Britannica, 7 Feb. 2024, available online at https://www.britannica.com/money/what-is-a-unicorn-startup (last accessed 15 September 2024).

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billion.[38] Considering why Switzerland attracted these large Fintech players, certain elements and approaches that support the broader Fintech ecosystem can be identified.[39] Firstly, Switzerland has a very liberal and business-oriented approach towards regulatory policy for Fintech products and services and is supportive of innovation. Switzerland has adopted an approach that enables the Fintech industry to grow, develop, and sustainably implement its products and services. Swiss regulators have also recognised that some of the existing legislation resulted in only big financial institutions realistically meeting the requirements and that the start-ups could not meet these requirements due to their more minor financial standing (net asset requirements, etc.) For instance, in 2015, the Swiss regulator, the Financial Market Supervisory Authority (FINMA), which is the government body responsible for financial regulation, started putting in place initiatives to kickstart the Fintech ecosystem by helping create better conditions for Fintech companies.[40] Furthermore, Essebier and Muhlemann indicate that Switzerland has also set up an attractive taxation model for start-ups and provides ample financing opportunities for innovative companies.[41] Therefore, Fintech innovators in Switzerland have a suitable and supportive environment for the implementation of their business model.[42]

From the writer's viewpoint, a critical aspect that can be clearly seen from the example of Switzerland is that a friendly and easy regulatory environment that is amicable towards innovation, makes it much easier for Fintech companies to set up, operate,

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38 Chorus One " Switzerland's digital asset renaissance" (2023) available online at https://chorus.one/articles/switzerlands-digital-asset-renaissance-exploring-the-alpine-countrys-magnetic-pull-for-digital-asset-innovators (last accessed on 17 August 2023).

39 The term Fintech here covers not only financial services activities but also enabling technologies, such as digital identification, cloud, API, artificial intelligence, and distributed ledger technology (DLT)/blockchain.

40 Andreas Iten,2023 "Fintech in Switzerland: Everything you need to know" available online at https://www.tenity.com/blog/Fintech-switzerland (last accessed on 28 November 2024).

41 Dr Jana Essebier, Elias Mühlemann, 2023" Focus on: Fintech in Switzerland" available online at https://www.legal500.com/doing-business-in/Fintech-in-switzerland/ (last accessed on 28 November 2023).

42 Dr Jana Essebier, Elias Mühlemann, 2023" Focus on: Fintech in Switzerland" available online at https://www.legal500.com/doing-business-in/Fintech-in-switzerland/ (last accessed on 28 November 2023).

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and experiment with these new and innovative technologies. An example of how the regulators in Switzerland approached the regulatory framework is that in 2015, FINMA[43] developed the "Fintech licence", a licence that allows Fintech companies to operate like banks but without having to meet the same requirements. With a Fintech licence, the company does not need to adhere to strict banking capital requirements[44], equity ratios, or liquidity requirements. They can also accept deposits of up to 100 million Swiss Francs from the public without requiring a commercial banking licence as provided for in Article 1b of the *Swiss Banking Act,1934* as amended.[45]

In the view of the writer of this thesis, there are four fundamental building blocks to evolve into a Fintech hub. These building blocks consist, firstly, of the ability to attract, develop, and retain talent in the finance, technology, and entrepreneurial spheres. The second of the building blocks is access to capital, which is seen as a key driver for Fintech activity, regardless of whether this access comes from private investors e.g., angel investors[46] or venture capitalists[47], or government or corporate initiatives. The third building block is the adequate level of demand that needs to be present, either in the form of consumer demand (business-to-consumers), business demand (business-

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43 Finma is the Swiss Financial Market Supervisory Authority and is the Swiss government body responsible for financial regulation. This includes the supervision of banks, insurance companies, stock exchanges and securities dealers, as well as other financial intermediaries in Switzerland. See Finma, "FINMA - an independent supervisory authority" available online at https://www.finma.ch/en/finma/finma-an-overview/ (last accessed on 27 September 2024).

44 Capital requirements generally specify regulatory minimums for certain capital ratios. See David P. Stowell, 16 - Overview of Private Equity, Editor(s): David P. Stowell, An Introduction to Investment Banks, Hedge Funds, and Private Equity, Academic Press, 2010, Pages 283-306, ISBN 9780123745033, https://doi.org/10.1016/B978-0-12-374503-3.00023-8 (last accessed on 17 March 2025).

45 Swiss Banking Act, 1934, available online at https://www.fedlex.admin.ch/eli/cc/51/117_121_129/de (last accessed on 03 April 2025).

46 An angel investor provides initial seed money for startup businesses, usually in exchange for ownership equity in the company. See Verified Metrics, "What is an Angel Investor?" available online at https://www.verifiedmetrics.com/blog/angel-investors (last accessed on 27 September 2024).

47 Venture capitalists act as limited partners, providing help to build successful companies in a market they have deemed has potential. See River University, "What's the Difference? Venture Capitalist vs. Angel Investor", 2024, available online at https://www.rivier.edu/academics/blog-posts/whats-the-difference-venture-capitalist-vs-angel-investor/ (last accessed on 27 September 2024).

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to-business), or both. The last of the essential building blocks is the focus point of this research. This is a policy and regulatory approach that is progressive and supportive, promoting innovation while still providing effective protection for investors and financial consumers. It entails a delicate balance, and considering the African regulatory landscape and the stage of its development, it is an opportune time to consider how to provide for implementing this building block across Africa. One of the challenges that Fintechs face when operating across African markets is the complexity and variability of regulations, which include licencing processes. In some African countries, there may not yet be a regulatory framework in place for crypto asset services providers, and this absence of regulatory certainty creates further challenges. The challenges arise, for example, from the rate of evolution or progress between different African countries, preventing Fintechs from scaling across the African markets and fully bringing the potential benefits to Africa as a whole.[48]

Globally, regulators are facing challenges with financial technology in terms of addressing novel risks or similar risks that manifest in new ways through regulatory frameworks.[49] Applying existing frameworks may not be appropriate for various reasons, and it is submitted that developing bespoke frameworks can be just as challenging. For example, regulators are struggling to acquire talent and learn the skills required to keep up with the pace of the evolving landscape. For instance, a host of new actors may not be captured under the current reporting and disclosure requirements of the existing regulatory frameworks.[50] With these challenges, the regulators need to find new and unique ways to address the issues posed by this technology, without overburdening new players unnecessarily, which may stifle innovation. It is submitted that more than ever, regulators need to be agile, flexible,

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48 FT Partners Research - Fintech in Africa 2024"A thriving opportunity" (2024) available online at https://ftpartners.docsend.com/view/atryhgcchgfh5iyn (last accessed on 10 April 2024).

49 Antonio Garcia Pascual, Fabio Natalucci, IMF Blog, "Fast-Moving Fintech Poses Challenge for Regulators", (2022), available online https://www.imf.org/en/Blogs/Articles/2022/04/13/blog041322-sm2022-gfsr-ch3 (last accessed on 05 October 2024).

50 Aditya Narain, Marina Moretti "The right rules could provide a safe space for innovation" (2022) available online at https://www.imf.org/en/Publications/fandd/issues/2022/09/Regulating-crypto-Narain-Moretti (last accessed on 03 July 2023).

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proactive, and innovative in their approach to regulating and supervising the Fintech ecosystem and its participants.

It is clear that the benefits mentioned so far in this section can only be unlocked if the Fintechs themselves are not overly burdened by barriers to entry, such as costs. For example, this includes duplication of similar compliance costs across each jurisdiction to meet varying requirements and the reproduction of reporting or licencing requirements. It is submitted that there is a need for cooperation between different African regulators in various jurisdictions to allow for a more level playing field, to avoid duplicated measures and costs, and to make it easier for financial consumers to understand the legislative framework, also as a measure to enable their own protection when dealing with crypto assets. This cooperation and reduced regulatory barriers will also allow for more innovation in this space.

Currently, as explained in more detail hereinafter, the African country's regulatory frameworks that are discussed in this study are at different stages of development, most not having comprehensive frameworks yet, which brings an opportunity to align and harmonise at this juncture. Harmonising regulatory frameworks across the different African countries within the African continent can help to bring Africa to the forefront of being a globally recognised Fintech hub in many ways. For instance, through the harmonisation of regulatory requirements, the complexity and the burden of compliance are drastically reduced, making it easier for these crypto asset service providers to operate across different jurisdictions within the African continent. Secondly, it can lead to increased efficiencies because harmonised regulatory requirements aid crypto-asset service providers in streamlining their operations, thereby reducing costs, and optimising efficiencies. Doing this can also bolster innovation because the crypto asset services providers do not have to navigate a diverse and complex regulatory framework within each jurisdiction, and they can utilise the developed products in multiple jurisdictions.

The harmonised regulatory frameworks can also improve investor confidence and attract new investors because the African continent has a clear and consistent

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regulatory framework. It is further submitted that scalability can be bolstered since the crypto asset services providers might be better able to easily expand their reach and impact on the African continent. From a consumer perspective, it is submitted that the harmonised frameworks can enhance the overall consumer experience since the services offered by the crypto asset services providers can be seamless and consistent across different countries. It also fosters global competitiveness by increasing the attractiveness to global Fintech companies, thereby supporting a reputation for clear and streamlined frameworks that assist crypto asset services providers.

1.2 Conceptualisation

Against the foregoing and before embarking on the study, it is imperative that the key concepts used are adequately defined and explained.

1.2.1 Financial technology and financial technology companies

Financial technology encompasses a new wave of businesses, altering the way people pay, send money, borrow, lend, and invest. The birth and rise of Fintech are deeply rooted in the 2008 Global Financial Crisis[51] and the erosion of trust it has caused.[52] In light of the Global Financial Crisis and the lessons learned, it becomes crucial that the regulatory frameworks be considered specifically with respect to Fintech to avoid revisiting the Global Financial Crisis, which saw the failure of financial regulatory frameworks because the necessary adaptations were not provided for timeously.[53] "Financial technology" is a "catch-all" term referring to software, mobile applications,

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51 The 2008 Global Financial Crisis was an international financial crisis that was the worst financial crisis since the 1929 Wall Street Crash that triggered the great depression in 1930. See Michie, J. (2022). The coming financial crisis. International Review of Applied Economics, 36(3), 291–301. https://doi.org/10.1080/02692171.2022.2112858 (last accessed on 13 December 2024)

52 Susanne Chishti, Janos Barberis, *The FINTECH Book: The Financial Technology Handbook for Investors, Entrepreneurs and Visionaries* (2016) ISBN, 111921887X, 9781119218876.

53 V, Lawack, *Fintech Law and Regulation: An African Perspective*. Available from: VitalSource Bookshelf, Juta Law, 2023. (last accessed on 08 December 2024).

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and other technologies created to improve and automate traditional forms of finance for businesses and consumers alike.[54] "Fintech" is a portmanteau for "financial technology" and can include everything from straightforward mobile payment apps to complex blockchain networks housing encrypted transactions.[55] Financial technology is, therefore, a disruptive technology in that it modifies old-style ways of doing business, including traditional financial services. The term "Fintech company" describes any business that uses technology in an innovative or modern way to modify, enhance, or automate financial services for businesses or consumers.[56] It is submitted that one can define financial technology as new technological advances made in designing and delivering financial products and services within the financial industry that augment, streamline, digitise, or disrupt traditional financial services. These financial technologies can also be applied to developing and trading crypto assets (e.g., Bitcoin, Dogecoin, Ether).

Examining the evolution of Fintech, the early credit cards developed in the 1950s can be argued to be among the first Fintech products available to the public, eliminating the need for financial consumers to carry physical currency in their day-to-day activities. Further to this, the Zigurat Global Institute of Technology indicates that one can broadly identify five key periods, all of which have their key events that marked this period.[57]

The first identifiable period on the timeline was between 1886 and 1967, which mainly dealt with infrastructure development that led to financial globalisation.[58] One of the

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54 Columbia Engineering "What is Financial Technology (Fintech)? A Beginner's Guide" (2023) available online at https://bootcamp.cvn.columbia.edu/blog/what-is-Fintech/ (last accessed on 04 July 2023).

55 Columbia Engineering "What is Financial Technology (Fintech)? A Beginner's Guide" (2023) available online at https://bootcamp.cvn.columbia.edu/blog/what-is-Fintech/ (last accessed on 04 July 2023).

56 Columbia Engineering 2023 Page 3.

57 Zigurat Global Institute of Technology "Evolution of Fintech: The 5 Key Eras" (2022) available online at https://www.e-zigurat.com/en/blog/evolution-of-Fintech/ (last accessed on 04 July 2023).

58 Rising cross-border financial flows leading to financial markets of various countries of the globe to be integrated. See Eswar S. Prasad, Kenneth Rogoff, Shang-Jin Wei, and M. Ayan Kose, 2003, "Effects of Financial Globalization on Developing Countries - Some Empirical Evidence" available online at

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infrastructure technologies that were developed during this time was the telegraph[59], railroads, and steamships. One may ask, how do you link these infrastructure developments to the financial sector? The answer is that these developments facilitated the start of rapid transmissions of financial information across borders. Another key event in this period was the development of Fedwire[60] in the United States of America, which was used as an electronic fund transfer system using technologies such as Morse code[61] and telegraph.

The second key period marks the developments within the banking sector from 1967 until 2007/8, the time of the Global Financial Crisis.[62] The changes in this sector were driven by traditional financial institutions, bringing about a change from analog to digital. This period included the installation of the first Automated Teller Machine (ATM) by Barclays Bank on June 27, 1967, in Enfield, London, signalling the modern period of Fintech. During this period, the National Association of Securities Dealers Automated Quotations (NASDAQ), which was the first digital stock exchange, was established in New York. It was also the invention of SWIFT (Society for Worldwide Interbank Financial Telecommunications), a communication protocol being used between

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https://www.imf.org/external/pubs/nft/op/220/index.htm (last accessed on 14 September 2024).

59 The first telegraph, which was not electric but optic, was created in 1794 by the Frenchman Claude Chappe. Ericsson, "Truimph of the telegraph" available online at https://www.ericsson.com/en/about-us/history/communication/early-developments/the-triumph-of-the-telegraph (last accessed on 12 January 2024).

60 The Fedwire Funds Service is a real-time, gross settlement system. See Federal reserve, "Fedwire Funds Services," available online at https://www.federalreserve.gov/paymentsystems/fedfunds_about.htm (last accessed on 14 September 2024).

61 The term Morse Code refers to either of two systems for representing letters of the alphabet, numerals, and punctuation marks by an arrangement of dots, dashes, and spaces. The codes are transmitted as electrical pulses of varied lengths or analogous mechanical or visual signals, such as flashing lights. See Britannica, "What is Morse code?", available online at https://www.britannica.com/topic/Morse-Code (last accessed on 25 April 2025).

62 A severe worldwide economic crisis during 2007-2008. See Wenjie Chen, Mico Mrkaic, and Malhar Nabar,2019, "IMF Working Paper : Research Department - The Global Economic Recovery 10 Years After the 2008 Financial Crisis" available online at https://www.imf.org/-/media/Files/Publications/WP/2019/WPIEA2019083.ashx (last accessed on 14 September 2024).

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financial institutions to conduct large volumes of cross-border payments.[63] At the beginning of the 21st century, the host of internal and consumer interactions moved to digitised form.

The third period of importance was the explosion of Fintech start-ups during the period between 2008 and 2014. Following the Global Financial Crisis, consumers underwent a significant shift in mindset, distrusting traditional banking systems and questioning the need and role of intermediation. This distrust, combined with the invention of smartphone capabilities, ushered in a new era for new players and types of disintermediated digitisation, such as Bitcoin, created by Satoshi Nakamoto.[64]

The fourth period discussed here is the expansion of digital banking worldwide between 2014 and 2017. This period focused on how consumers use the internet and their behaviour. A host of new entrants were present during this period. During this period, it was found that digitalisation increased financial inclusion between 2014 and 2017, driven by both access and usage dimensions, even as financial inclusion through traditional banking services declined.[65] In Sub-Saharan Africa, 338 million registered mobile money accounts in 2017, as reflected in the statistics, and a significant boost in penetration from 12 per cent to 21 per cent between 2014 and 2017 was experienced, according to available statistics.[66] ErikSson von Allmen and Khera indicate that in most

63 Swift, "About Us", available online at https://www.swift.com/about-us (last accessed on 05 October 2024).

64 Satoshi Nakamoto is a programmer or group of programmers who published the Bitcoin Whitepaper in October 2008 under the Japanese-sounding pseudonym. See Skrill," What is Bitcoin", available online at https://www.skrill.com/en/crypto/the-skrill-crypto-academy/beginner/what-is-bitcoin/ (last accessed on 02 December 2024).

65 Ulric Eriksson von Allmen, Purva Khera, Sumiko Ogawa, Ratna Sahay, "Digital Financial Inclusion in the Times of COVID-19 (2020) available online at https://www.imf.org/en/Blogs/Articles/2020/07/01/blog-digital-financial-inclusion-in-the-times-of-covid-19 (last accessed on 15 November 2023).

66 African Financial Inclusion Policy Initiative,"Digital Transformation of Microfinance and Digitization of Microfinance Services to Deepen Financial Inclusion In Africa",(2018) available online at https://www.afi-global.org/sites/default/files/publications/2018-08/AFI_AfPI_Special%20Report_AW_digital.pdf (last accessed on 02 December 2024).

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countries, digital payment services are changing into digital lending as companies accumulate users' data and foster new ways to use it for creditworthiness assessment. Marketplace lending, which uses digital platforms to link lenders to borrowers directly, doubled in value from 2015 to 2017.[67] According to Statista, the transaction value in marketplace lending worldwide is expected to show an annual growth rate (CAGR 2024-2028) of 1.55%, resulting in a projected total amount of US$35.42bn by 2028.[68]

The last period discussed here, which provides detail on what financial technology is and how it has developed and impacted the financial sector, is the current period, in which we see a host of disruptive technologies. The future of financial services is seen in the use of blockchain technologies and the adoption of Open Banking[69] and Open Finance[70] regimes by governments and regulators. NeoBanks, for instance, challenge traditional banks with large physical footprints and the need to fund these expensive infrastructure costs. Without the high overhead costs that come with legacy, these NeoBanks offer low-to-no-fee structures and digital exclusive banking.[71]

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67 Ulric Eriksson von Allmen & Purva Khera 2020,Page 6.

68 Statista, "Marketplace Lending (Consumer) – Worldwide", available online at https://www.statista.com/outlook/dmo/Fintech/digital-capital-raising/marketplace-lending-consumer/worldwide#:~:text=Marketplace%20Lending%20(Consumer)%20%2D%20Worldwide&text=Transaction%20value%20is%20expected%20to,US%248.63m%20in%202024 (last accessed on 02 December 2024).

69 Open Banking is the practice of providing access to financial services, like for example your bank account information and payments, to other providers than your bank. See Nordea, "What is Open Banking",(2023), available online https://www.nordea.com/en/news/what-is-open-banking#:~:text=Open%20Banking%20is%20the%20practice,other%20providers%20than%20your%20bank (last accessed on 02 December 2024).

70 Open Finance is a framework to allow consumers and enterprises to access and share their financial data with third party. See FSCA,"Open-Finance – Policy Position Paper",2024 available online at https://www.fsca.co.za/Regulatory%20Frameworks/FintechDocuments/2024%20Open%20FinanceFSCA%20Position%20Paper.pdf (last accessed on 13 September 2024).

71 Zigurat Institute of Technology, "Digital Banking and Neobanks: The Future of Financial Services",(2024) available online at https://www.e-zigurat.com/en/blog/digital-banking-and-neobanks/ (last accessed on 04 December 2024).

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Modern financial technology today is mainly driven by Artificial Intelligence[72], Machine Learning[73], Big Data[74], and Blockchain technology.[75] Financial technology has substantially shaped and impacted the financial sector over the years, continues to evolve, and currently suggests the possibility of a total reform of services and products within this sector.

Financial Technology Companies describe any business that uses technology to modify, enhance, or automate financial services for businesses or consumers.[76] These companies are defined by the financial technology they use in their architecture and the financial services and products they provide. There are many types of Fintech companies, and some of the common types include those that empower mobile payments, such as QR code payments[77] or touch-free payments.[78] Some examples of these companies include Apple Pay[79] and Venmo.[80] Another common type is

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72 Artificial intelligence (AI) is the simulation of human intelligence processes by machines, especially computer systems. See TechTarget available online at https://www.techtarget.com/searchenterpriseai/definition/AI-Artificial-Intelligence (last accessed on 04 December 2024).

73 Machine learning is a branch of AI focused on building computer systems that learn from data. See TechTarget https://www.techtarget.com/searchenterpriseai/definition/machine-learning-ML (last accessed on 04 December 2024).

74 Big data is a combination of structured, semi-structured and unstructured data that organizations collect, analyze and mine for information and insights. See TechTarget available online at https://www.techtarget.com/searchdatamanagement/definition/big-data (last accessed on 04 December 2024).

75 Columbia Engineering "What is Financial Technology (Fintech)? A Beginner's Guide" (2023) available online at https://bootcamp.cvn.columbia.edu/blog/what-is-Fintech/ (last accessed on 06 July 2023).

76 Columbia Engineering "What is Financial Technology (Fintech)? A Beginner's Guide" (2023) available online at https://bootcamp.cvn.columbia.edu/blog/what-is-Fintech/ (last accessed on 06 July 2023).

77 A QR code, or quick response code, is a type of barcode used in the digital transaction space to facilitate the rapid and seamless exchange of information. See Stripe available online at https://stripe.com/resources/more/qr-code-payments (last accessed on 04 December 2024).

78 Touch-free payments allow you to accept transactions without coming into any physical contact with another person. See SumUp available online at https://www.sumup.com/en-us/business-guide/touch-free-payments-benefits/ (last accessed on 04 December 2024).

79 Apple Pay allows you to make easy, secure and private transactions in shops, in apps and on the

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Insuretech, where insurance companies take advantage of evolving technologies that fundamentally change some aspects of the product lifecycle. Some familiar uses include telematics and the use of robo-advice models.[81]

Blockchain and crypto assets Fintech companies are another common type. They are briefly touched on here to provide context since this research will focus on how attracting these types of Fintech companies to Africa can deepen financial inclusion and improve economic growth. The service of these Fintech's markets itself as a safe and convenient way to purchase, store, trade, and sell crypto (bitcoin, dogecoin, litecoin, ether etc.). Here, users (both beginners and experts) can build a portfolio, keep up with the latest crypto news, and navigate the market easily many times by using user-friendly applications.[82] In the next section, blockchain and crypto assets will be unpacked in more detail as essential concepts in this research.

1.2.2 Web2 or Web 2.0

The web is defined as follows by Telematics and Informatics, 2017[83]:

> "A wide array of electronic applications (e.g., social networks, review websites, blogs, interactive websites and photo- and video-sharing platforms), which facilitate interactions

web. See AppleSupport available online at https://support.apple.com/en-za/101554 (last accessed on 04 December 2024).

80 Venmo is a popular payment app that allows users to send and receive money with ease, using Teen Accounts, a debit/credit card, and PayPal integration. See PayPal, "What is Venmo and how does it work?", available online at https://www.paypal.com/us/cshelp/article/what-is-venmo-and-how-does-it-work-help231 (last accessed on 05 October 2024).

81 Bank of International Settlements, "Fintech developments in the insurance industry – Executive Summary", (2019), available online at https://www.bis.org/fsi/fsisummaries/fintech.pdf (last accessed on 25 April 2025).

82 Hanna Milovidova "Types of Fintech Companies" (2021) available online at https://ein-des-ein.com/blog/types-of-Fintech-companies/(last accessed on 06 July 2023).

83 Dandison C Ukpabi, Heikki Karjaluoto, Telematics and Informatics, Volume 34, Issue 5, August 2017, Pages 618-644 "Consumers' acceptance of information and communications technology in tourism: A review" (last accessed on 10 April 2024).

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among individuals and among companies and users."

The term "Web 2.0", refers to the second generation of the Web, wherein interoperable, user-centered web applications and services promote social connectedness, media and information sharing, user-created content, and foster collaboration among both individuals and organisations.[84] Some of the Web 2.0 technologies include so-called "Mashups"[85], which refer to bringing together or amalgamating two or more web services or applications, for example, PadMapper.com[86] or Flickr Maps.[87] Another Web 2.0 technology is in the form of information-sharing sites whose primary purpose is the sharing of information or media, from videos to photos to articles to bookmarks/links. A well-known example of this is YouTube.com.[88] Web 2.0 technologies also come in the form of online social networks that help users keep in contact and receive updates from their friends, family, and colleagues, for instance, Facebook.com.[89] Also part of Web 2.0 is "Syndications"[90], which comprises a service that tracks updates to various sites on the Web, aggregating the various "feeds" for later consumption, for example,

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84 Wilson, David & Lin, Xiaolin & Longstreet, Phil & Sarker, Saonee. (2011). Web 2.0: A Definition, Literature Review, and Directions for Future Research (last accessed on 10 April 2024)

85 Sutter, J. (2009) Tutorial: *Introduction to Web 2.0, Communications of the Association for Information Systems*, 2009, 25, 511-517.

86 PadMapper is a location-based apartment rental search engine with real-time filtering. See Y Combinator, available online at https://www.ycombinator.com/companies/padmapper (last accessed on 05 October 2024).

87 Flickr Maps is simple and easy Flickr photos search application. See Flickr available online at https://www.flickr.com/places/ (last accessed on 05 October 2024).

88 YouTube is a website designed for sharing video. Millions of users around the world have created accounts on the site that allow them to upload videos that anyone can watch. See Digital Unite available online at https://www.digitalunite.com/technology-guides/tv-video/youtube/what-youtube (last accessed on 02 December 2024).

89 Facebook is a social networking site that makes it easy for you to connect and share with family and friends online. See GCF Global available online at https://edu.gcfglobal.org/en/facebook101/what-is-facebook/1/ (last accessed on 02 December 2024).

90 Syndication refers to both, the websites providing information and the websites that display it. See PropData available online at https://knowledge.propdata.net/benefits-and-possible-drawbacks-of-web-syndication (last accessed on 02 December 2024).

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Really Simple Syndication.[91] The last two technologies that will be mentioned for the purposes of this conceptualisation section are "Weblogs"[92], which consist of personal web pages or diaries that are easily updated and generally displayed in a reverse chronological order like HuffingtonPost.com[93], and "Wiki's"[94] which is a website that anyone can edit or can contribute towards the content, for example, Wikipedia.org or, Wikihow.com.[95] The technologies of Web 2.0 have the following core characteristics: It allows users to not only retrieve information while engaging with the technologies, but also to interact actively with the content as creators themselves. It allows users the ability to execute applications from their web browsers, with the further ability to own or control the data. It also allows users with the functionality to add value to the content that they are accessing, thereby building an increasing knowledge store. It uses light touch, easy-to-understand, and easy-to-use interfaces for optimal usability. It is also decentralised in the way it functions compared to conventional data systems, it is transparent and uses open technology standards[96], and the technologies are also emergent and do not rely on fully predefined application structures.[97]

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91 Sun, Y., He, S., and Leu, J. Y. (2007) Syndicating web services: A QoS and user-driven approach, Decision Support Systems, 43, 1, 243-255(last accessed on 10 April 2024).

92 A weblog is a web site or page that is the product. of (generally) an individual or non-commercial. See Bradley, Phil. (2004). "What are weblogs?". Serials: *The Journal for the Serials Community*. 17. 83-86. 10.1629/1783 (last accessed on 02 December 2024).

93 Ip, R., and Wagner, C. (2008) *Weblogging: A study of social computing and its impact on organizations*, Decision Support Systems, 45, 2, 242-250(last accessed on 10 April 2024).

94 A wiki is a web-based collaborative platform that enables users to store, create and modify content in an organized manner. See TechTarget https://www.techtarget.com/whatis/definition/wiki (last accessed on 02 December 2024).

95 Kane, G., and Fichman, R. (2009) *The shoemaker's children: Using wikis for information systems teaching, research, and publication*, MIS Quarterly, 33, 1, 1-17(last accessed on 10 April 2024).

96 Open Standards are standards made available to the general public and are developed (or approved) and maintained via a collaborative and consensus driven process. See ITU available online at https://www.itu.int/en/ITU-T/ipr/Pages/open.aspx#:~:text=%22Open%20Standards%22%20are%20standards%20made,are%20intended%20for%20widespread%20adoption (last accessed on 02 December 2024).

97 Musser John and Tim O'Reilly. 2007. *Web 2.0: Principles and Best Practices*. Sebastopol CA: O'Reilly Media (last accessed on 10 April 2024).

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As pointed out by Anderson, Web 1.0 was based on restrictive one-way communication, whereas Web 2.0 technologies allow and encourage the participation of users/consumers, negating time and spatial boundaries. Thus, one of the central drives of the Web 2.0 paradigm is facilitating collaboration, coordination, and two-way communication.[98] This provides additional functionality to users, who can now both contribute to and consume the information on the websites they use.

It is necessary to cover Web 2.0 in this conceptualisation section about Fintech and crypto assets because of the evolution that happened from Web 2.0 to Web3 with respect to the digitisation of data into assets. Web3 facilitates the move from data to assets through blockchain technology. Through the uniqueness of blockchain technology, data now possesses uniqueness, immutability, and transparency, enabling us to convert it into digital representations of value for users, which can take the form of a variety of types of crypto assets. A move from Web 2.0 to Web3 means a change from centralised and more traditional internet platforms to a more decentralised and blockchain-based ecosystem, which can provide enhanced security, privacy, and autonomy to its users.[99]

1.2.3 Web3

At its core, Web3 or Web 3.0 describes a wide range of developing internet applications for blockchain technology, which, as explained above[100] consists of

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98 P. Anderson, *"What is Web 2.0? Ideas, Technologies and Implications for Education," JISC Technical Report*, 2007. http://www.jisc.ac.uk/media/documents/techwatch/tsw0701b.pdf (last accessed on 10 April 2024).

99 Partha Pratim Ray, Web3: *A comprehensive review on background, technologies, applications, zero-trust architectures, challenges and future directions, Internet of Things and Cyber-Physical Systems*, Volume 3,2023, Pages 213-248, ISSN 2667-3452, https://doi.org/10.1016/j.iotcps.2023.05.003 (last accessed on 10 April 2024).

100 See par 1,2,2 above.

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decentralised, public databases that allow information to be securely recorded on a network of computers rather than verified and controlled by centralised entities.[101] Core to this progression to Web 3.0 are the following blockchain-enabled applications: fungible tokens[102] (sometimes referred to as crypto currencies), non-fungible tokens[103], decentralised autonomous organisations[104] , and lastly, the Metaverse.[105] Web 1.0 is the first generation of the web, also known as the informational web. Users are limited and can only read and share information over web pages. Web 2.0 is a read-write networking platform, where the users can communicate with each other.[106] Web 3.0 could be defined as semantic web personalization, similar to Yahoo, iGoogle, etc. It changes the web into a language that can be read and categorised by the computer system rather than humans. Web 3.0 is built on the kinds of applications and services that have made it so popular in the past few years. In current times, search engines are able to produce much more

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101 Alex Murray, Dennie Kim, Jordan Combs*, The promise of a decentralized internet: What is Web3 and how can firms prepare?*, Business Horizons, Volume 66, Issue 2,2023, Pages 191-202, ISSN 0007-6813

102 Fungible tokens are digital assets that are interchangeable and possess equal value. See TrustWallet available online at https://trustwallet.com/blog/fungible-vs-non-fungible-tokens-explained (last accessed on 02 December 2024).

103 Non-fungible tokens, often referred to as NFTs, are blockchain-based tokens that each represent a unique asset like a piece of art, digital content, or media. See Amazon Web Services available online at https://aws.amazon.com/web3/nfts-explained/#:~:text=Non%2Dfungible%20tokens%2C%20often%20referred,asset%2C%20whether%20digital%20or%20physical (last accessed on 02 December 2024).

104 A decentralized autonomous organization (DAO) is a management structure that uses blockchain technology to automate some aspects of voting and transaction processing. See TechTarget, G Lawton,available online at https://www.techtarget.com/searchcio/definition/decentralized-autonomous-organization-DAO (last accessed on 02 December 2024).

105 The metaverse is a loosely defined term referring to three-dimensional virtual worlds in which users represented by avatars interact. See Corocan B, "The Metaverse in 2024: A Brave New World or a Tomorrow that Never Arrives?",2024 available online at https://metaversereality.ieee.org/publications/newsletter/the-metaverse-in-2024-a-brave-new-world-or-a-tomorrow-that-never-arrives (last accessed on 14 September 2024).

106 Kinza Yasar, TechTarget, "What is Web3?", available online at https://www.techtarget.com/whatis/definition/Web-20-or-Web-2#:~:text=Web%202.0%20introduced%20writable%20data,interaction%2C%20content%20sharing%20and%20collaboration (last accessed on 05 October 2024).

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complete and targeted information, users are even more tightly connected with friends and businesses via social media applications, and the greater ability to record and store the information makes Web 3.0 more precise and helpful for web users. In this section, some of the key elements are presented that might become the building blocks of the next generation of the web.[107] Web 3.0, commonly known as Web3, allows developers to create applications without needing to rely on, or trust, a third party. Web3 can further be explained as a decentralised, blockchain-based internet ecosystem where this ecosystem allows users also to be the owners and run the ecosystem to provide a fairer and better internet.[108]

With respect to the timeline of evolution, the following provides a brief history and timeline. Tim Berners-Lee[109] created the decentralised protocols for the World Wide Web in 1989 at CERN[110] in Geneva, enabling the sharing of knowledge from any location.[111] From 1990 until 2004, the initial development of Web 1.0 took place, which primarily consisted of static HTML[112] websites controlled by businesses, and user involvement or interaction was minimal. The introduction of social media platforms in 2004 marked the beginning of the Web 2.0 era. The web evolved from

[107] K. Nath, S. Dhar and S. Basishtha, "Web 1.0 to Web 3.0 - Evolution of the Web and its various challenges," 2014 International Conference on Reliability Optimization and Information Technology (ICROIT), Faridabad, India, 2014, pp. 86-89, doi: 10.1109/ICROIT.2014.6798297.

[108] Guan, C., Ding, D., Guo, J. and Teng, Y. (2023), "An ecosystem approach to Web3.0: a systematic review and research agenda", *Journal of Electronic Business & Digital Economics*, Vol. 2 No. 1, pp. 139-156.

[109] Sir Timothy John Berners-Lee OM KBE FRS FREng FRSA DFBCS RDI, also known as TimBL, is an English computer scientist best known as the inventor of the World Wide Web, the HTML markup language, the URL system, and HTTP. See DBPedia," About: Tim Berners-Lee" available online at https://dbpedia.org/page/Tim_Berners-Lee (last accessed on 14 September 2024)

[110] CERN, the European Organization for Nuclear Research, is one of the world's largest and most respected centres for scientific research. See Cern," About us" available online at https://home.cern/ (last accessed on 14 September 2024)

[111] Berners-Lee, T., Hendler, J., & Lassila, O. (2001), "The semantic web: a new form of web content that is meaningful to computers will unleash a revolution of new possibilities", Scientific American, Vol. 284 No. 5, pp. 34-43.

[112] HTML is the standard markup language for creating Web pages. See Lutkevich B, TechTarget – The ServerSide "HTML (Hypertext Markup Language)" available online at https://www.theserverside.com/definition/HTML-Hypertext-Markup-Language (last accessed on 14 September 2024).

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a read-only medium to a read-write (the two-way platform). Web 2.0 also created the advertising-based business model.[113] Web 3 was provided for read-write-own process from 2021 onwards. The decentralisation and blockchain technology in the developing Web 3.0 provide an improved data ownership and payment model compared to Web 1.0 and 2.0.[114]

The use of cryptographic assets in Web 3.0 is made possible by the secure and decentralised blockchain network, which provides a tamper-proof, environment for transactions.[115] In addition to token financing, blockchain has also enabled new possibilities in economic activity, such as allowing firms to raise capital via initial coin offerings. These blockchain based activities will be analysed in more detail further in this thesis.

1.2.4 Blockchain and crypto assets

Blockchain is a type of database or decentralised digital ledger that securely records transaction data in an immutable way. When discussing crypto assets, the blockchain serves as the backbone and is instrumental in fostering transparency, security, and trust within the ecosystem.[116] The ledger is maintained by various nodes or computers distributed worldwide, and anyone can view transactions. Each transaction that is

[113] Monteiro, F. A. A. J. D. S. A. J. A. (2013). "E-commerce business models in the context of web 3.0 paradigm". *International Journal of Advanced Information Technology*, 3(6), 1–12. doi: 10.48550/ arXiv.1401.6102.

[114] Wang, S., Ding, W., Li, J., Yuan, Y., Ouyang, L., & Wang, F. Y. (2019). Decentralized autonomous organizations: Concept, model, and applications. IEEE Transactions on Computational Social Systems, 6(5), 870–878. doi: 10.1109/TCSS.2019.2938190.

[115] Belk, R., Humayun, M., & Brouard, M. (2022). "Money, possessions, and ownership in the metaverse: NFTs, cryptocurrencies, Web3 and wild markets". *Journal of Business Research*, 153, 198–205. doi: 10.1016/j.jbusres.2022.08.031.

[116] Binance Academy "What Is Blockchain and How Does It Work? " (2023) https://academy.binance.com/en/articles/what-is-blockchain-and-how-does-it-work (last accessed on 06 July 2023).

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executed is recorded and is both open and visible while also being encrypted.[117] In this sense, blockchain is altering the role that banks, governments, and companies play by making it possible for monetary transactions to be carried out in a manner that is, more secure, less expensive, and more efficient than the traditional alternatives.[118]

The technology is not brand new and was first created as far back as the 1990s. Stuart Haber, a computer scientist, and W. Scott Stornetta, a physicist, developed it. They employed cryptographic techniques, in other words, the process of hiding or coding information to secure it in the format of a chain of blocks. The purpose they used this for, was to secure digital documents against tampering. The decentralised part of this ledger refers to the absence of control or decision-making power within a centralised entity, whether a corporation or government. Instead, the power to control or make decisions is distributed among users on the network.[119]

Without intermediaries or centralised control, nodes or computers verify the transactions to maintain the integrity of the network. A vital further aspect to explain here is that of "hashing." This type of cryptographic method is usually collision-resistant and consists of a process whereby input is converted into a fixed-size string of characters. This helps uphold a secure, transparent, and tamper-resistant transaction record. Another cryptographic method being used to secure and verify transactions between financial consumers is public-key or asymmetric cryptography.[120]

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[117] Mohd Javaid, Abid Haleem, Ravi Pratap Singh, Rajiv Suman, Shahbaz Khan, "A review of Blockchain Technology applications for financial services",BenchCouncil Transactions on Benchmarks, Standards and Evaluations,
Volume 2, Issue 3, (2022),100073, ISSN 2772-4859, available online at https://doi.org/10.1016/j.tbench.2022.100073 (last accessed on 05 October 2024).

[118] Pilkington, M. (2016). "Blockchain technology: Principles and applications," in Research handbook on digital transformations (Cheltenham, United Kingdom: Edward Elgar Publishing).

[119] Shikha Mathur, Anshuman Kalla, Gürkan Gür, Manoj Kumar Bohra, Madhusanka Liyanage, *A Survey on Role of Blockchain for IoT: Applications and Technical Aspects*, Computer Networks, Volume 227, 2023, 109726, ISSN 1389-1286, available online at https://doi.org/10.1016/j.comnet.2023.109726 (last accessed on 02 December 2024).

[120] TechTarget, Brush K, Cobb M," Asymmetric cryptography" available online at https://www.techtarget.com/searchsecurity/definition/asymmetric-cryptography (last accessed on 02

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Any modification to the software program running on a blockchain must first go through a consensus procedure, which is external to the control of any single authority. Because all transactions are recorded on a public ledger, that is, kept online and accessible to the public, this system adheres to the principle of transparency.[121] Therefore, the technology uses consensus mechanisms, which can consist of several different types. Consensus mechanisms underpin the effective operation of blockchains and ensure a single, consistent, and honest ledger. They warrant that a state, value, or piece of information is accurate and settled on by most nodes.[122] The preferred consensus mechanism may differ due to efficiencies depending on the private or public network. When one considers financial services on public networks, the most used consensus methods are Proof-of-Work (PoW)[123], Proof-of-Stake (PoS)[124], and Delegated PoS (DpoS).[125] In contrast, when it comes to private

December 2024).

121 Mhlanga, D. (2023). Blockchain technology for digital financial inclusion in the industry 4.0, towards sustainable development? Frontiers in Blockchain, 6, 1035405. https://doi.org/10.3389/fbloc.2023.1035405

122 Parma Bains " Blockchain Consensus Mechanisms: A Primer for Supervisors " (2022) available online at https://www.imf.org/-/media/Files/Publications/FTN063/2022/English/FTNEA2022003.ashx (last accessed on 06 July 2023).

123 Proof of Work involves "nodes" solving complicated, asymmetrical mathematical puzzles to produce new blocks in a process known as "mining"—thereby showing proof of work. See Page 13, Parma Bains " Blockchain Consensus Mechanisms: A Primer for Supervisors " (2022) available online at https://www.imf.org/-/media/Files/Publications/FTN063/2022/English/FTNEA2022003.ashx (last accessed on 02 December 2024).

124 In a PoS consensus mechanism, an algorithm randomly selects validators for block creation based on the amount that token holders stake from their crypto-asset ownership. See Page 15, Parma Bains " Blockchain Consensus Mechanisms: A Primer for Supervisors " (2022) available online at https://www.imf.org/-/media/Files/Publications/FTN063/2022/English/FTNEA2022003.ashx (last accessed on 02 December 2024).

125 DPoS adds a democratic element to the PoS consensus mechanism by outsourcing the validation process. As with PoS, block validation is randomized, and individuals or entities (stakeholders) who stake the greatest amount of a particular crypto asset are more likely to win the opportunity to validate a block and generate a reward. See Page 17, Parma Bains " Blockchain Consensus Mechanisms: A Primer for Supervisors " (2022) available online at https://www.imf.org/-/media/Files/Publications/FTN063/2022/English/FTNEA2022003.ashx (last accessed on 02 December 2024).

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networks, Byzantine Fault Tolerance (pBFT)[126], Istanbul BFT (iBFT)[127], and federated BFT (fBFT)[128] are used in these private blockchains.

Blockchain is not merely a technology that underpins cryptocurrencies and other decentralized applications. Instead, blockchains form complex socio-economic systems, allowing for the creation and exchange of digital values in a decentralised fashion. In the last few years, a wide variety of these systems have emerged.[129] Depending on the blockchain type, there are different ways to implement its architecture. However, most blockchain structures typically include six layers.[130] The first of these is the application layer, which hosts applications that interact with the blockchain. The components in this layer are smart contracts, the user interface, and decentralised applications. The second layer is the services and optional components layer, which enhances the functionality of the blockchain with additional services. The

[126] It can be considered a Proof-of-Authority (PoA) type of mechanism where nodes stake their identity and reputation, as opposed to a financial or computational stake such as PoW and PoS. This means identities are known, and therefore, networks are likely to be centralized. See Page 19, Parma Bains " Blockchain Consensus Mechanisms: A Primer for Supervisors " (2022) available online at https://www.imf.org/-/media/Files/Publications/FTN063/2022/English/FTNEA2022003.ashx (last accessed on 02 December 2024).

[127] iBFT can be thought of as a type of pBFT consensus mechanism with some modifications. Rather than using leaders and backup nodes, iBFT employs "proposers" who play a role like leaders and validators who play roles like backup nodes, in that they can validate blocks but play no role in the consensus protocol. See Page 18, Parma Bains " Blockchain Consensus Mechanisms: A Primer for Supervisors " (2022) available online at https://www.imf.org/-/media/Files/Publications/FTN063/2022/English/FTNEA2022003.ashx (last accessed on 02 December 2024).

[128] fBFT is a Byzantine Fault Tolerant consensus mechanism that aims to solve issues of centralization with greater scalability. See Page 19, Parma Bains " Blockchain Consensus Mechanisms: A Primer for Supervisors " (2022) available online at https://www.imf.org/-/media/Files/Publications/FTN063/2022/English/FTNEA2022003.ashx (last accessed on 02 December 2024).

[129] Spychiger, F., Tasca, P., and Tessone, C. J. (2021). Unveiling the importance and evolution of design components through the "tree of blockchain". Front. Blockchain 3, 60. doi:10.3389/fbloc.2020.613476.

[130] Arya, Jaswant & Kumar, Arun & Singh, Akhilendra & Mishra, Tapas & Chong, P.H.J.. (2021). BLOCKCHAIN: BASICS, APPLICATIONS, CHALLENGES AND OPPORTUNITIES. 10.13140/RG.2.2.33899.16160. (last accessed on 02 December 2024).

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components of this layer consist of governance, DAOs[131], Oracles[132], Wallets, and Blockchain Monitor.[133] The third layer, which was mentioned in the previous paragraph, is the protocol/consensus layer, which defines and regulates how nodes in a blockchain come into agreement. The components of this are consensus, sidechains, permissioned and permissionless, propagation protocol, and virtual machines. The next layer is the network layer that facilitates effective discovery and interaction among nodes. The further layer that can be identified is the data layer, which caters to the creation, management, and encryption of data.[134] The components here are digital signatures, Hash, Merkle Tree[135], Data Blocks, asymmetric encryption[136], and storage.

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131 A decentralized autonomous organization, sometimes called a decentralized autonomous corporation, is an organization managed in whole or in part by decentralized computer program, with voting and finances handled through a blockchain. See Augustin, N., Eckhardt, A. & de Jong, A.W. Understanding decentralized autonomous organizations from the inside. Electron Markets 33, 38 (2023) available online at https://doi.org/10.1007/s12525-023-00659-y (last accessed on 29 September 2024).

132 Blockchain oracles are entities that connect blockchains to external systems, thereby enabling smart contracts to execute based upon inputs and outputs from the real world. See Ammar Hassan, Imran Makhdoom, Waseem Iqbal, Awais Ahmad, Asad Raza, "From trust to truth: Advancements in mitigating the Blockchain Oracle problem", *Journal of Network and Computer Applications*, Volume 217, 2023, 103672, ISSN 1084-8045, available online at https://doi.org/10.1016/j.jnca.2023.103672 (last accessed on 29 September 2024).

133 Blockchain monitors, classifies, and investigates blockchain addresses and transaction data. This information is used to manage financial risk, combat financial crimes, and to comply with regulations associated with cryptocurrency assets. See Merkle Science, "How Blockchain Analytics Aids LEA's in Tracing Crypto Assets to Off-Ramps" available online at https://www.merklescience.com/how-blockchain-analytics-aids-leas-in-tracing-crypto assets-to-off-ramps#:~:text=Blockchain%20analysis%20software%20monitors%2C%20classifies,regulations%20associated%20with%20cryptocurrency%20assets (last accessed on 29 September 2024).

134 Arya, Jaswant & Kumar, Arun & Singh, Akhilendra & Mishra, Tapas & Chong, P.H.J.. (2021). Blockchain: Basics, Applications, Challenges and Opportunities. 10.13140/RG.2.2.33899.16160. (last accessed on 02 December 2024).

135 Merkle tree is a data structure used to encrypt transactions efficiently and securely. It's made up of the hashes of various data blocks of transactions. See Koo, Dongyoung & Shin, Youngjoo & Yun, Joobeom & Hur, Junbeom. (2018). Improving Security and Reliability in Merkle Tree-Based Online Data Authentication with Leakage Resilience. Applied Sciences. 8. 2532. 10.3390/app8122532 available online at https://www.researchgate.net/publication/329533830_Improving_Security_and_Reliability_in_Merkle_Tree-Based_Online_Data_Authentication_with_Leakage_Resilience (last accessed on 14

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The last of the layers is the hardware or infrastructure layer that provides the physical resources needed to host a blockchain.[137] The components here are mining[138], nodes, tokens, and the servers. A blockchain is an eventual product of different compartments and layers. These layers provide it with various factors it needs to function properly.[139]

Looking at the different roles and responsibilities of the blockchain ecosystem, the participants usually consist of leaders who are typically the originators or primary benefactors of the projects, or the core group who crystalises the operational activities and manages the ecosystem, or members or active participants of the ecosystem that contribute to governance, data, and workflow or the users that derive the benefits of the network which accesses their own data but do not have responsibilities in respect of actively managing the network. Lastly, the participants consist of third-party service providers offering their services to the network, which may include infrastructure, applications, IT support services, and other services for the payment of a fee. Participants in the blockchain ecosystem need to take at least one of the roles, but in practice, they usually assume more than one role. The participants can have different levels of permissions granted on the blockchain network. The permission can only consist of a "read-only" permission that allows access to and viewing of transactions. The permission can also enable "write" which allows for the generation of transactions

September 2024).

136 Asymmetric encryption is a form of cryptography that allows anyone to verify the integrity of their digital transactions and protect their funds. See Cryptopedia, 2021, "What Is Asymmetric Encryption?" available online at https://www.gemini.com/cryptopedia/symmetric-vs-asymmetric-encryption (last accessed on 14 September 2024).

137 Arya, Jaswant & Kumar, Arun & Singh, Akhilendra & Mishra, Tapas & Chong, P.H.J.. (2021). BLOCKCHAIN: BASICS, APPLICATIONS, CHALLENGES AND OPPORTUNITIES. 10.13140/RG.2.2.33899.16160. (last accessed on 02 December 2024).

138 Mining is the process that Bitcoin and several other cryptocurrencies use to generate new coins and verify new transactions. See CoinBase,"What is mining?", available online at https://www.coinbase.com/learn/crypto-basics/what-is-mining (last accessed on 25 February 2025).

139 Fáwọlé John and, Malanii, Oleh and Ciattaglia Luciano" Blockchain Architecture Layers: A Comprehensive Guide", May 17, 2023 Updated: November 6, 2023 available online at https://hacken.io/discover/blockchain-architecture-layers/ (last accessed on 11 January 2024).

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and the ability to send the transactions to the network. Lastly, the permission level can allow for the "Commit" permission that allows the participant to update the ledger.[140]

These roles can also be classified into data users who have permission to read; data providers who can write and commit data to the network; and validators who are responsible for verifying transactions within a blockchain. The naming of these roles varies. In Hyperledger Fabric[141], one will find the following naming conventions that are briefly discussed. Peer nodes: The blockchain network is comprised primarily of a set of peer nodes (or, simply, peers). Peers are a fundamental element of the network, form the basis for a blockchain network, and host ledgers and smart contracts. Peers maintain the state of the network and a copy of the ledger. Consumers: Consumers are applications that act on behalf of a person to propose transactions on the network. Orderers: The mechanism by which applications and peers interact with each other to ensure that every peer's ledger is kept consistent with each other is mediated by special nodes called orderers. The ordering service accepts endorsed transactions, orders them into a block, and delivers the blocks to the committing peers.[142]

In terms of crypto assets, this research will draw from the South African regulatory framework for definitional purposes. In South Africa, the *Financial Advisory and Intermediary Services Act,2002 (Act No. 37 of 2002) (FAIS Act)*[143] regulates financial

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[140] OECD," Blockchain Primer" available online at https://cdn.gihub.org/umbraco/media/2431/oecd-blockchain-primer.pdf (last accessed on 02 December 2024).

[141] Hyperledger Fabric is an open-source platform for building distributed ledger solutions, with a modular architecture that delivers high degrees of confidentiality, flexibility, resiliency, and scalability. See GeeksforGeeks,(2023) available online at https://www.geeksforgeeks.org/hyperledger-fabric-in-blockchain/ (last accessed on 02 December 2024).

[142] World Economic Forum, "Ecosystem"(2023) available online at https://widgets.weforum.org/blockchain-toolkit/ecosystem/index.html#typical-roles-in-a-blockchain-ecosystem (last accessed on 11 January 2024).

[143] The purpose of the FAIS Act is to protect consumers of financial services by regulating the rendering of certain financial advisory and intermediary services to clients and to professionalize the financial services industry. See Financial Advisory and Intermediary Services Act 37 of 2002 (FAIS), available online at https://discover.sabinet.co.za/document/1167125 (last accessed on 11 January 2024).

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services provided with respect to crypto assets. The Declaration[144] of crypto assets as a financial product under paragraph (h) of section 1 of the *FAIS Act* defines crypto assets to mean:

> "A digital representation of value that – (a) is not issued by a central bank, but is capable of being traded, transferred or stored electronically by natural and legal persons for the purpose of payment, investment and other forms of utility; (b) applies cryptographic techniques; and (c) uses distributed ledger technology."

The key elements in this definition delineate crypto assets from other digital representations. For instance, digital reward programs apply cryptography and require distributed ledger technology.[145] A crypto asset is, therefore, any digital store of value or medium of exchange stored on a blockchain.[146] Crypto assets can be used for payments, investments, and various other utility uses, like exclusive options in games or software applications that work with your token.[147]

Crypto assets are an "umbrella term" encompassing various types of crypto assets. For the purposes of this research, the following crypto asset type classification is used,

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144 General Notice 1350 of 2022.

145 Distributed Ledger is a technology for storing data of decentralized transactions and allows data to be shared, synchronized, and replicated over the network where numerous nodes are available. See Shekh S. Uddin, Rahul Joysoyal, Subrata K. Sarker, S.M. Muyeen, Md. Firoj Ali, Md. Mehedi Hasan, Sarafat Hussain Abhi, Md. Robiul Islam, Md. Hafiz Ahamed, Md. Manirul Islam, Sajal K. Das, Md. Faisal R. Badal, Prangon Das, Zinat Tasneem, Next-generation blockchain enabled smart grid: Conceptual framework, key technologies and industry practices review, Energy and AI, Volume 12, 2023, 100228, ISSN 2666-5468, https://doi.org/10.1016/j.egyai.2022.100228. (last accessed on 08 April 2025).

146 PWC "Demystifying cryptocurrency and digital assets" (2022) available online at https://www.pwc.com/us/en/tech-effect/emerging-tech/understanding-cryptocurrency-digital-assets.html (last accessed on 07 July 2023).

147 A representation of an asset or interest that has been tokenised on an existing cryptoasset's blockchain. See Xavier Lavayssière," Tokenization of financial assets: What opportunities does asset tokenization present? As this Fintech innovation gains traction, discover how it works, key trends, and remaining challenges", 2024 available online at https://n26.com/en-eu/blog/tokenization-of-financial-assets (last accessed on 07 July 2023).

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consisting of three types. The first type is an “exchange or payment token”, which is designed and used as a means of exchange or payment for buying goods and services. The second type is classified as a “security token”, as it provides rights such as ownership, the repayment of a specific sum of money, or entitlement to a share in future profits. These types of tokens are closely related to traditional securities in their construct, and national regulators usually bring these into their financial markets’ legislation frameworks. The third type is a “utility token”[148], which can be redeemed for access to a specific product or service that is typically provided using a distributed ledger platform.[149]

A fully constructed architecture for these crypto assets comprises multiple structural layers. Each layer in the blockchain system plays a critical role in ensuring transaction security, transparency, and efficiency.[150] The five layers of blockchain technology architecture in crypto assets will be briefly touched on to set the technical foundation for the details and discussions in later chapters of this research. The five layers are: the hardware or infrastructure layer, the data layer, the network layer, the consensus layer, and the application and presentation layer.[151]

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148 Utility tokens are digital currencies that serve as the only accepted means of payment for services and products provided through a blockchain-based platform. They finance the development of their product or service, reward and incentivize early adopters and network promoters, align economic incentives between supply, demand, and the marketplace, and enhance network effects among all participants. See Benedetti, Hugo E and Abarzúa, Luis and Caceres Fuentes, Christian, Utility Tokens (December 15, 2021). Available at SSRN: https://ssrn.com/abstract=4088568 or http://dx.doi.org/10.2139/ssrn.4088568 (last accessed on 20 March 2025).

149 Intergovernmental Working Group “Position Paper on crypto Assets”(2021) available online at https://www.treasury.gov.za/comm_media/press/2021/IFWG_CAR%20WG_Position%20paper%20on%20crypto%20assets_Final.pdf (last accessed on 07 July 2023).

150 Rahul Mantri “What Are Blockchain Layers and How Do They Work” (2023)https://coinstats.app/blog/what-are-blockchain-layers-and-how-do-they work/#:~:text=Hardware%20Layer%3A%20This%20layer%20includes,add%20them%20to%20the%20blockchain (last accessed on 08 July 2023).

151 Coin Telegraph “A beginner's guide to understanding the layers of blockchain technology”(2023) available online at https://cointelegraph.com/learn/a-beginners-guide-to-understanding-the-layers-of-blockchain-technology(last accessed on 08 July 2023).

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The hardware layer consists of the infrastructure needed in the form of nodes and servers that support the underlying blockchain network for crypto assets. In proof-of-work consensus models, this layer includes the mining equipment[152] used to validate transactions before adding these transactions to the blockchain. The data layer includes the transaction ledger used for all the transactions being processed and stores the current state of the blockchain. The transaction data is stored in the transaction ledger in a secure and immutable way. In terms of the network layer, this operates as a conduit connecting the nodes, broadcasting transactions, and distributing data across the network. This layer includes the physical computers and nodes[153] that communicate, forming the blockchain network.

The consensus layer relies on a consensus mechanism to validate transactions and add them to the blockchain network. In other words, a consensus layer or mechanism is used to bring about agreement, trust, and security within the blockchain architecture while maintaining a decentralised network. The outer layer is referred to as the application and presentation layer. This layer runs on top of the blockchain.[154] The software that is employed in this layer can include smart contracts, decentralised applications (dApps)[155], and chain code. The end-users of this technology use this layer to establish blockchain network communication.[156]

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152 Consists typically has several GPUs (Graphics Processing Units) connected to its motherboard to solve mathematical problems. See Markets.com, Danesh Ramuthi,2024, “Bitcoin Mining explained” available online at https://www.markets.com/education-centre/understanding-bitcoin-mining/#:~:text=A%20mining%20rig%20refers%20to,(ASICs)%20optimised%20for%20mining (last accessed on 08 July 2023).

153 A node can be a computer, printer, switch, or router. See Solarwinds,” What Is a Network Node?” available online at https://www.solarwinds.com/resources/it-glossary/network-node (last accessed on 14 September 2024).

154 Blockchain Council, “Layers of Blockchain Technology”,(2024), available online at https://www.blockchain-council.org/blockchain/layers-of-blockchain-technology/ (last accessed on 05 October 2024).

155 A DApp, or decentralized application, is software that runs on a peer-to-peer network, not a single server, and is often built on blockchain technology, offering increased security, transparency, and user control. See Ananya Banerjee, Chapter 10 - A systematic study on the development of decentralized application (dApp), Editor(s): Rajiv Pandey, Sam Goundar, Shahnaz Fatima,

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To conclude this explanation of what crypto assets mean, it is helpful to mention some of the most used/invested in crypto assets globally out of the approximately 22,932 crypto assets, according to CoinMarketCap.[157] The following provides a brief description of the most utilised crypto assets and the utility for which it is used in the market:

(a) Bitcoin

Bitcoin's current market cap is $1.9 Trillion, which implies that the asset is highly valued by the market.[158] Bitcoin is the first crypto asset and served as a breakthrough in cryptography and innovation with respect to blockchain. It was conceptualised to create digital money that allows for secure peer-to-peer transactions on the Internet.[159] Bitcoins have three qualities that are useful in a currency, according to The Economist in January 2015: they are "hard to earn, limited in supply[160] and easy to verify".[161]

Distributed Computing to Blockchain, Academic Press, 2023, Pages 173-188, ISBN 9780323961462, https://doi.org/10.1016/B978-0-323-96146-2.00009-7.

156 Blockchain Council, "Layers of Blockchain Technology"(2024) available online at https://www.blockchain-council.org/blockchain/layers-of-blockchain-technology/ (last accessed on 02 December 2024).

157 CoinMarketCap,(2025), "Today's Cryptocurrency Prices by Market Cap", available online at https://coinmarketcap.com/ (last accessed on 04 April 2025).

158 CoinMarketCap, "Bitcoin price today", (2024) available online at https://coinmarketcap.com/currencies/bitcoin/ (last accessed on 02 December 2024).

159 Coin Base " About Bitcoin"(2023) available online at https://www.coinbase.com/price/bitcoin#:~:text=The%20current%20market%20cap%20of,highly%20valued%20by%20the%20market (last accessed on 31 October 2023).

160 Bitcoin has a maximum supply of 21 million coins, and as of March 2023, more than 19 million have been mined. There are approximately 2 million bitcoins left to be mined. See Amber Smith, BlockChainCouncil," How Many Bitcoins are there and How many are Left to Mine?",2024 available online at https://www.blockchain-council.org/cryptocurrency/how-many-bitcoins-are-left/ (last accessed on 31 October 2023).

161 The Economist. "The magic of mining"(2015) available online at https://www.economist.com/business/2015/01/08/the-magic-of-mining (last accessed on 31 October 2023).

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Bitcoin was created by Satoshi Nakamoto, a pseudonymous person or team, who outlined the technology in a 2008 White Paper[162]. In terms of software implementation, "Bitcoin Core" is free and open-source software that serves as a Bitcoin node (the set that forms the Bitcoin network) and provides a Bitcoin wallet that thoroughly verifies payments. It is considered to be Bitcoin's reference implementation.[163] Some of the key features of Bitcoin are that it has no central authority, it is peer-to-peer, it has no central storage, and the ledger is public, meaning anyone can store it on their computer.[164] Bitcoin also uses "proof of work" as the consensus mechanism to add new blocks; before the rest of the network accepts the latest addition, it must contain proof of work. This requires miners[165] to find a number called a *nonce* (a number used just once), such that when the block content is hashed along with the nonce, the result is numerically smaller than the network's *difficulty target*. This PoW is easy for any node in the network to verify, but extremely time-consuming to generate.[166]

(b) Ethereum

The market cap of Ethereum (ETH) sits at $218B.[167] In 2013, Ethereum was first described in Vitalik Buterin's[168] White Paper with the goal of developing decentralised

[162] A white paper is a document that provides information on a given topic, issue, or product. See Osborne Clarke," What are the EU's white paper requirements in MiCAR and do they apply to Bitcoin?",2023 available online at https://www.osborneclarke.com/insights/what-are-eus-white-paper-requirements-micar-and-do-they-apply-bitcoin (last accessed on 15 September 2024).

[163] Andreas Antonopoulos (2017) "Mastering Bitcoin: Programming the Open Blockchain (2nd ed.). O'Reilly Media" ISBN 978-1491954386 .

[164] Alexander S. Gillis, TechTarget," What is Bitcoin? Bitcoin is a digital currency -- also called cryptocurrency -- that can be traded for goods or...", available online at https://www.techtarget.com/whatis/definition/Bitcoin (last accessed on 05 October 2024).

[165] Just as miners expend resources to extract gold, cryptocurrency miners use computational power and electricity to validate transactions. See Coinbase, "How do cryptocurrency miners work?", available online at https://www.coinbase.com/learn/crypto-basics/how-do-cryptocurrency-miners-work (last accessed on 17 March 2025).

[166] Andreas Antonopoulos (2017) "Mastering Bitcoin: Programming the Open Blockchain (2nd ed.). O'Reilly Media" ISBN 978-1491954386.

[167] James Royal, Brian Baker " 12 most popular types of crypto currency" (2023) available online at https://www.bankrate.com/investing/types-of-cryptocurrency/ (last accessed on 31 October 2023).

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applications. The system allows one to use Ether (the currency) to perform a number of functions, but the smart contract aspect of Ethereum helps make it a popular currency. Unlike Bitcoin, Ethereum is a network that can be applied to various other sectors. The consensus mechanism used in Ethereum is Proof of Stake (PoS), which is more energy efficient than that used in the Bitcoin network, which is Proof of Work (PoW). PoS depends on the amount of stake a node holds.[169] Some of the uses of Ethereum are, for instance, voting systems using Ethereum. The results of polls are available publicly, ensuring a transparent, fair system, thus eliminating voting malpractices. Another use is for agreements between parties. This is because with Ethereum smart contracts, agreements, and contracts can be maintained and executed without any alteration.[170] Ethereum can be used to create smart contracts and digitally record transactions based on them. Another real-world application is within banking systems. Banks are using Ethereum as a channel for making payments because its decentralised nature makes it hard for hackers to gain unauthorised access to the network. In terms of banking, the decentralised open-source blockchain of Ethereum with smart-contract functionality holds enormous promise for the financial services industry.[171]

(c) Tether

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168 Vitalik Buterin is the co-creator of Ethereum, a blockchain platform for decentralized financial applications. See Forbes," Profile - Vitalik Buterin", available online at https://www.forbes.com/profile/vitalik-buterin/ (last accessed on 24 February 2025).

169 GeeksforGeeks "What is Ethereum" (2023) available online at https://www.geeksforgeeks.org/what-is-ethereum/ (last accessed on 31 October 2023).

170 Stuart D. Levi and Alex B. Lipton, Skadden, Arps, Slate, Meagher & Flom LLP,"An Introduction to Smart Contracts and Their Potential and Inherent Limitations",(2018), available online at https://corpgov.law.harvard.edu/2018/05/26/an-introduction-to-smart-contracts-and-their-potential-and-inherent-limitations/ (last accessed on 31 October 2023).

171 David Robinson, "Banks drawn to possibilities on the Ethereum blockchain"(2022) available online at https://www.thebanker.com/Banks-drawn-to-possibilities-on-the-Ethereum-blockchain-1634917585#:~:text=%E2%80%9C%5BThe%20Ethereum%20blockchain%5D%20has,%2Dyour%2Dconsumer%20validity%20information (last accessed on 31 October 2023).

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Tether (USDT) has a market cap of $84.4B.[172] It was created in 2014. Tether is a Stablecoin, as discussed in more detail below, meaning that it is backed by fiat currencies, e.g., the US dollar and Euro, and because of this link to these fiat currencies, it hypothetically keeps its value in line with these denominations. Tether tokens are built on multiple blockchains, offering easy integration and adoption. Supported blockchains are Algorand[173], Avalanche[174], Bitcoin, Ethereum, EOS[175], Kava[176], Polka[177], Polygon[178], Solana[179], TRON[180], and Tezos.[181] Tether tokens are

[172] Kat Tretina, Patrick McGimpsey(2023) "Top 10 Cryptocurrencies Of October 2023" available online at https://www.forbes.com/advisor/au/investing/cryptocurrency/top-10-cryptocurrencies/ (last accessed on 31 October 2023).

[173] Algorand is a cryptocurrency protocol providing proof-of-stake on a blockchain. Algorand's native cryptocurrency is called ALGO. See CryptoPedia," Algorand (ALGO): A Blockchain Breakthrough in Speed and Efficiency",2023 available online at https://www.gemini.com/cryptopedia/what-is-algorand-cryptocurrency-blockchain (last accessed on 31 October 2023).

[174] Avalanche is a decentralized, open-source proof of-stake blockchain with smart contract functionality, with AVAX as the native cryptocurrency of this blockchain. See Kriptomat," What is cryptocurrency Avalanche (AVAX) and how does it work?" available online at https://kriptomat.io/cryptocurrency-prices/avalanche-avax-price/what-is/ (last accepted on 31 October 2023).

[175] EOS is an open-source blockchain platform, founded on tech that prioritizes high performance, flexibility, security, and developer freedom. See Paskelbta, Naujinta, Binance Academy, "What Is EOS?", (2024), available online at https://academy.binance.com/lt/articles/what-is-eos (last accessed on 05 October 2024).

[176] Kava is a Layer-1 blockchain that combines the speed and interoperability of Cosmos with the developer power of Ethereum. See KavaDocs, "Intro to the Kava Network", available online at https://docs.kava.io/docs/intro/ (last accessed on 31 October 2023).

[177] Polkadot is a next-generation blockchain network and, more generally, an ecosystem providing blockspace for all kinds of Web3 projects. See Polkadot Lightpaper, "An Introduction to Polkadot", available online at https://assets.polkadot.network/Polkadot-lightpaper.pdf (last accessed on 31 October 2023).

[178] Polygon is a blockchain platform that aims to create a multi-chain blockchain system compatible with Ethereum. See Kriptomat, "What is cryptocurrency Polygon (MATIC) and how does it work?", available online at https://kriptomat.io/cryptocurrency-prices/polygon-matic-price/what-is/ (last accessed on 31 October 2023).

[179] Solana is a blockchain platform which uses a proof-of-stake mechanism to provide smart contract functionality, its native token is SOL. See TransFi, "Demystifying Solana: What is Solana and How It Works", (2024), available online at https://www.transfi.com/blog/what-is-solana (last accessed on 05 October 2024).

[180] TRON is a decentralized, blockchain-based operating system with smart contract functionality, proof-

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among the most traded tokens in terms of daily volume, offering unequaled liquidity.[182] The main special feature of USDT that differentiates it from Bitcoin and Ethereum is that it introduces the stability of fiat currency into the blockchain. Because of the theoretical stability, it makes USDT useful for storing or transferring value, as it is always worth the same price, and its owner does not have to worry about losing purchasing power. Bitcoin, Ethereum, and other popular cryptocurrencies fluctuate in value based on market supply and demand.[183]

1.2.5 Stablecoins

Stablecoins are explained separately here, although crypto assets were broadly explained above, as Stablecoins are particularly important in potentially deepening financial inclusion. As mentioned, Stablecoins are a type of crypto asset whose value is pegged to another asset class, such as a fiat currency or gold, to stabilise its price.[184] The issuers of the Stablecoins, therefore, promise that they can maintain parity relative to a referenced asset and be redeemed upon request. Since coming to the forefront, they have captivated the imagination of proponents of a better payment system with

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of-stake principles as its consensus algorithm and a cryptocurrency native to the system, known as Tronix. See Binance, available online at https://www.binance.com/en-NG/square/post/9097165572450 (last accessed on 05 October 2024).

181 Tezos is an open-source blockchain that can execute peer-to-peer transactions and serve as a platform for deploying smart contracts. See B9 Lab, "A New Way of Distributed Networks-From the origins to Tezos as a P2P network", available online at https://tezos.b9lab.com/blockchain-fundamentals/introduction-1 (last accessed on 05 October 2024).

182 Thether "Why use Tether"(2023) available online at https://tether.to/en/why-tether/#:~:text=Tether%20tokens%20are%20built%20on,%2C%20Solana%2C%20TRON%20and%20Tezos.&text=Tether%20tokens%20are%20among%20the,daily%20volume%2C%20offering%20unequalled%20liquidity (last accessed on 31 October 2023).

183 Eric Rosenberg, "Tether (USD) explained" (2022) available online at https://www.thebalancemoney.com/tether-usdt-explained-5193888 (last accessed on 31 October 2023).

184 Antonio Díaz, Carlos Esparcia, Diego Huélamo, "Stablecoins as a tool to mitigate the downside risk of cryptocurrency portfolios", *The North American Journal of Economics and Finance*, Volume 64, 2023, 101838, ISSN 1062-9408, available online at https://doi.org/10.1016/j.najef.2022.101838 (last accessed on 10 April 2024).

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their purported benefits. They have now started to enter the mainstream of finance more and more through their use by large traditional financial institutions as a wholesale or retail digital settlement asset (e.g., JP Morgan[185] and Société Générale[186], respectively, as well as leading payment service providers exploring integrating them into their networks (e.g., Visa) or launching new ones (e.g., PayPal).[187] The most common categorization of Stablecoins is based on the type of collateral involved. This classification yields four distinct types of Stablecoins: fiat-collateralised, cryptocurrency-collateralised, commodity-backed, and non-collateralised (or algorithmic).[188] The increasing demand for Stablecoins has led to a surge in the number of Stablecoins available, and the market cap for Stablecoins has risen to over $180 billion in just a few years.[189]

Apendino *et al* points out that Stablecoins play a pivotal role in advancing financial inclusion by offering unbanked and underbanked populations access to digital financial services, fostering economic growth.[190] Stablecoins promote financial inclusion in

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185 J.P. Morgan, or more accurately JPMorgan Chase & Co., is a global financial services firm that provides services to a wide range of clients, including consumers, small businesses, large corporations, governments, and other institutions, operating in over 100 countries. See J.P. Morgan, “About us”, available online at https://www.jpmorgan.com/about-us (last accessed on 04 April 2025).

186 Société Générale is a leading European financial services group with a diversified and integrated banking model, offering a wide range of advisory services and financial solutions to individual clients, businesses, and institutional investors worldwide. See Societe Generale Group, available online at https://www.societegenerale.com/en (last accessed on 04 April 2025).

187 Aldasoro, I, P Mehrling and D Neilson (2023): "On par: a money view of Stablecoins", BIS Working Papers, no 1146, November (last accessed on 10 April 2024).

188 Bank for International Settlements “Investigating the impact of global Stablecoins.” G7 Working Groups on Stablecoins available online at https://www.bis.org/cpmi/publ/d187.pdf (last accessed on 03 November 2023)

189 Duan, K., Urquhart, A. “The instability of Stablecoins.” Finance Research Letters 52 103573 (2023)available online at https://www.sciencedirect.com/science/article/pii/S1544612322007498?via%3Dihub (Last accessed on 03 November 2023).

190 Appendino, M., O. Bespalova, R. Bhattacharya, JF. Clevy, N. Geng, T. Komatsuzaki, J. Lesniak, W. Lian, S. Marcelino, M. Villafuerte, Y. Yakhshilikov (2023), Crypto Assets and CBDCs in Latin America and the Caribbean: Opportunities and Risks”, IMF Working Paper 23/37, available online at https://www.imf.org/en/Publications/WP/Issues/2023/02/17/Crypto assets-and-CBDCs-in-Latin-

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emerging and developing economies, especially in regions with limited financial infrastructure.[191] They empower Small and Medium Enterprises (SMEs) in emerging markets by providing access to stable, globally recognised currencies, facilitating international trade, and reducing currency risks.[192] Some of the use cases of Stablecoins are firstly to serve as a secure entry point to Decentralised Finance (DeFi)platforms, as described in more detail below, avoiding crypto volatility.[193] They support DeFi services like lending, borrowing, and trading, offering affordable financial options, especially where traditional systems lack access to credit.[194] Secondly, Stablecoins are used in remittances and cross-border payments. In fact, Stablecoins are revolutionising cross-border remittances.[195] Stablecoins have the potential to make cross-border remittances more affordable and efficient. They are used in countries with high inflation or limited banking access for payments and remittances, addressing the financial needs of individuals in developing countries.[196] Another use case of

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America-and-the-Caribbean-Opportunities-and-Risks-529717 (last accessed on 03 November 2023).

191 Bank for International Settlements Consultative Group of Directors of Financial Stability (2023), Financial stability risks from crypto assets in emerging market economies, BIS Papers no 138, available online at https://www.bis.org/publ/bppdf/bispap138.pdf (last accessed on 03 November 2023).

192 United Nations Conference on Trade and Development (2023), crypto assets and central bank digital currencies potential implications for developing countries, available online at https://unctad.org/system/files/official-document/gds2023d1_en.pdf (last accessed on 03 November 2023).

193 Bank for International Settlements Consultative Group of Directors of Financial Stability (2023), Financial stability risks from crypto assets in emerging market economies, BIS Papers no 138, available online at https://www.bis.org/publ/bppdf/bispap138.pdf (last accessed on 03 November 2023).

194 He, Dong, Annamaria Kokenyne Ivanics, Xavier Lavayssière, Inutu Lukonga, Nadine Schwarz, Nobuyasu Sugimoto, and Jeanne Verrier (2022), Capital flow management measures in the digital age: challenges of crypto assets, IMF Fintech notes, available online at https://www.imf.org/en/Publications/Fintech-notes/Issues/2022/05/09/Capital-Flow-Management-Measures-in-the-Digital-Age-516671 (last accessed on 03 November 2023).

195 United Nations Conference on Trade and Development (2023), crypto assets and central bank digital currencies potential implications for developing countries, available online at https://unctad.org/system/files/official-document/gds2023d1_en.pdf (last accessed on 03 November 2023).

196 United Nations Conference on Trade and Development (2022), The cost of doing too little too late: how cryptocurrencies can undermine domestic resource mobilization in developing countries, Policy

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Stablecoins is payments; in terms of this use case, Stablecoins replace cash transactions, promoting cashless payments and transparency. They offer convenient payment methods in regions with unstable currencies, boosting e-commerce and reducing business costs.[197]

1.2.6 Decentralised finance

It is essential to unpack decentralised finance (DeFi) as a concept in this section. The reason is that crypto assets, the subject matter of this research, form the backbone of all DeFi activities.[198] The term DeFi describes many services in crypto-asset markets that are similar to those found in the traditional finance (TradFi) landscape. The financial services offered through DeFi technologies include lending, investing in crypto assets, insurance, asset management, and exchanging crypto assets without intermediaries intervening between the products or services and the provider.[199] Instead of intermediaries, the logic of conventional financial operations is encoded into smart contracts.

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brief no. 102, available at https://unctad.org/system/files/official-document/presspb2022d10_en.pdf (last accessed on 03 November 2023).

197 Proskalovich, Roman, Christopher Jack, Alex Zarifis, Diego Montes Serralde, Polina Vershinina, Santhiran Naidoo, Damaris Njoki, Ingolf Pernice, Diego Herrera and Jaime Sarmiento (2023), Cryptoasset ecosystem in Latin America and the Caribbean, Cambridge Centre for Alternative Finance, available online at https://www.jbs.cam.ac.uk/faculty-research/centres/alternative-finance/publications/crypotasset-ecosystem-in-latin-america-and-the-caribbean/ (last accessed on 03 November 2023).

198 Maria Demertzis, Catarina Martins “Decentralised finance: good technology, bad finance” (2023) available online at https://www.bruegel.org/policy-brief/decentralised-finance-good-technology-bad-finance#:~:text=We%20identify%20the%20economic%20value,distress%20episodes%20seen%20in%202022 (last accessed on 08 July 2023).

199 Denise Garcia Ocampo, Nicola Branzoli and Luca Cusmano, Bank of International Settlements, FSI Insights on policy implementation No 49“Crypto, tokens and DeFi: navigating the regulatory landscape” available online at https://www.bis.org/fsi/publ/insights49.pdf (last accessed on 05 October 2024).

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"Smart contracts" are computer code that automatically executes all or parts of an agreement and is stored on a blockchain-based platform.[200] The code contained in the smart contracts is either the sole manifestation of the financial transaction or used to complement other, more traditional agreements. These smart contracts are deployed on distributed ledgers that support these contracts, such as the Ethereum blockchain[201] or Tron.

The remainder of this section will briefly address other technical fundamentals of DeFi in relation to crypto assets. In the DeFi world, crypto assets both represent and transfer value in a distributed ledger. The spectrum of crypto assets can be divided into the conceptual design of the settlement layer. The settlement layer design can be either Bitcoin's Unspent Transaction Output (UTXO)[202] model or Ethereum's account model, both using native tokens. In addition, Ethereum's account model allows non-native tokens to be issued. These tokens serve multiple purposes, such as representing ownership or access to certain utilities.

Two sets of tokens can be distinguished solely by their technical design, considering the specific standard they use, which defines a predefined minimum set of functions that must be implemented by the smart contract controlling the token.[203] The two primary standards are ERC-20[204] and ERC-721[205]. Various types of tokens make use

200 Stuart D. Levi, Alex B. Lipton "An Introduction to Smart Contracts and Their Potential and Inherent Limitations" (2018) available online at https://corpgov.law.harvard.edu/2018/05/26/an-introduction-to-smart-contracts-and-their-potential-and-inherent-limitations/ (last accessed on 10 July 2023).

201 Gavin Wood et al. Ethereum: "A secure decentralised generalised transaction ledger."(2014) Ethereum project yellow paper, 151(2014):1–32, 2014.

202 A UTXO represents a certain amount of cryptocurrency that has been authorised by a sender and is available to be spent by a recipient. See Damilola Atobatela, DeFi Planet," Unspent Transaction Output (UTXO) in Crypto Explained," 2023, available online at https://defi-planet.com/2023/08/unspent-transaction-output-utxo-in-crypto-explained/ (last accessed on 08 July 2023).

203 Raphael Auer, Bernhard Haslhofer, Stefan Kitzler, Pietro Saggese and Friedhelm Victor " The Technology of Decentralized Finance (DeFi)" (2023) available online at https://www.bis.org/publ/work1066.pdf (last accessed on 08 July 2023).

204 ERC-20 is a standard for creating a token used in the Ethereum blockchain and virtual machine. See Yokesh Sankar, "A Comprehensive Guide to the ERC20 Token Standard" available online at

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of these standards for instance, USDC is a USD-backed Stablecoin as an ERC20 token. The ERC20 specification is a blueprint for creating fungible tokens on the Ethereum network. It also serves as a common interface to develop non-fungible tokens (NFTs)[206]. Tokenisation is an essential feature of DeFi. By implementing a contract referencing such tokens, an issuer of these tokens can represent any type of off-chain asset.[207]

The previous section explained crypto assets as this ecosystem's core stack layer component. The next technical element to be considered is building higher-level financial services.[208] These are the ''DeFi protocols, which could be categorised broadly into three main categories. They are: decentralised exchanges, lending-type protocols, and derivative-type protocols facilitating the trading of synthetic positions.

Within the decentralised exchange protocols, two distinct models are implemented. The one is an order book DEXs such as 0x[209] and EtherDelta[210], which exploit the

https://www.blockchainx.tech/what-is-erc20/ (last accessed on 10 July 2023).

205 Ethereum Request for Comments (ERC) 721 is a data standard for creating non-fungible tokens, meaning each token is unique and cannot be divided or directly exchanged for another ERC-721 token. Yokesh Sankar, "A Comprehensive Guide to the ERC20 Token Standard" available online at https://www.blockchainx.tech/what-is-erc20/ (last accessed on 10 July 2023).

206 Non-fungible tokens, often referred to as NFTs, are blockchain-based tokens that each represent a unique asset like a piece of art, digital content, or media. See Amazon Web Services, "What is NFT? - Non-Fungible Tokens Explained", available online at https://aws.amazon.com/web3/nfts-explained/ (last accessed on 25 February 2025).

207 Financial Stability Board, "The Financial Stability Implications of Tokenisation",(2024) available online at https://www.fsb.org/uploads/P221024-2.pdf (last accessed on 02 December 2024).

208 Raphael Auer, Bernhard Haslhofer, Stefan Kitzler, Pietro Saggese and Friedhelm Victor "The Technology of Decentralized Finance (DeFi)" (2023) available online at https://www.bis.org/publ/work1066.pdf (last accessed on 08 July 2023).

209 Will Warren and Amir Bandeali. "0x: An open protocol for decentralized exchange on the ethereum blockchain."(2023) Technical report, 2017. Available online at: https://github.com/0xProject/whitepaper/blob/master/0x White paper.pdf (last accessed 10 July 2023)

210 Etherdelta. Etherdelta protocol, (2022). Available online at https://etherdelta.com/ (last accessed on 10 July 2023).

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matching model deployed in centralised crypto asset trading platforms[211], and DEXs with Automated Market Makers[212] (AMMs).[213] Lending protocols bring automation to the lending and borrowing of crypto assets through peer-to-pool interactions, thereby facilitating the efficient allocation of capital within the DeFi ecosystem. A distinguishing feature of this automation, compared to traditional lending and borrowing, is that interest rate parameters and determinants are set automatically.[214]

Derivative protocols in the DeFi ecosystem are crypto assets that track the underlying price of another underlying asset, which may also be a crypto asset or a basket of crypto assets. The spectrum of derivatives protocols ranges from call and put options over futures, forward contracts, and perpetual swaps.[215]

1.2.7 Embedded supervision

[211] Crypto asset trading platform is defined as a facility or system that brings together multiple buyers and sellers of crypto-assets for the purpose of completing transactions, or trades. See IOSCO," Issues, Risks and Regulatory Considerations Relating to Crypto-Asset Trading Platforms-Final Report",(2020) available online at https://www.iosco.org/library/pubdocs/pdf/IOSCOPD649.pdf (last accessed on 23 April 2025).

[212] An automated market maker (AMM) is an autonomous protocol that decentralized crypto exchanges (DEXs) use to facilitate crypto trades on a blockchain. Instead of trading with a counterparty, AMMs allow users to trade their digital assets against liquidity stored in smart contracts, called liquidity pools. See MoonPay available online at https://www.moonpay.com/learn/defi/what-is-an-automated-market-maker-amm#:~:text=An%20automated%20market%20maker%20(AMM)%20is%20an%20autonomous%20protocol%20that,smart%20contracts%2C%20called%20liquidity%20pools (last accessed on 02 December 2024).

[213] Jiahua Xu, Krzysztof Paruch, Simon Cousaert, and Yebo Feng. Sok: "Decentralized exchanges (dex) with automated market maker (amm) protocols." (2022) (last accessed on 10 July 2023).

[214] Jiahua Xu and Nikhil Vadgama. "From banks to defi: the evolution of the lending market. In Enabling the Internet of Value", pages 53–66. Springer, 2022 (last accessed on 10 July 2022).

[215] Kyle Soska, Jin-Dong Dong, Alex Khodaverdian, Ariel Zetlin-Jones, Bryan Routledge, and Nicolas Christin. Towards understanding cryptocurrency derivatives: A case study of bitmex. In Proceedings of the Web Conference 2021 (WWW '21), 4 2021. (last accessed on 10 July 2022).

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Considerations by regulators regarding the use of embedded supervision[216] emerge due to the lightly regulated *shadow crypto financial system*[217], which is high on the agenda points of regulators who grapple with finding a manner to apply technology-neutral regulation, thereby following the principle of "same risks same regulation".[218] The concept of embedded supervision is explained here as this is one of the unique aspects of the proposal contained in this research. The research proposes a single-entry licencing regime for Fintechs, specifically crypto asset service providers, to operate across several African countries and a modern way for the regulators to supervise these entities collectively. The need for manual reporting and submissions disappears through embedded supervision, and the regulators can proactively identify issues, for instance, market abuse[219] and contraventions of imposed requirements on the blockchain. Through regulatory clarity and modernisation of approaches, some of the challenges that DeFi brings for supervision can be solved. Embedded supervision is a supervisory framework that provides for compliance in decentralised markets, which is automatically monitored by reading the market's ledger.[220] Some of the following principles of using embedded supervisory techniques have been proposed as requirements for viable use by regulators of this supervision technique. The first of

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216 Embedded supervision refers to a regulatory framework where compliance checks and reporting mechanisms are directly integrated into the technology foundation of a financial platform, enabling real-time, automated monitoring of compliance through the platform's ledger. See Raphael A. Auer, 2022. "Embedded Supervision: How to Build Regulation into Decentralised Finance," CESifo Working Paper Series 9771, CESifo. (last accessed on 24 March 2025).

217 Refers to the alternative crypto asset financial system that remains less regulated in many instances compared to activities in the traditional financial services, which have stringent requirements. See BIS – "Banking in the shadow of Bitcoin? The institutional adoption of cryptocurrencies" available online at https://www.bis.org/publ/work1013.pdf (last accessed on 03 December 2024).

218 Auer, Raphael, Embedded Supervision: "How to Build Regulation into Decentralised Finance" (2022). CESifo Working Paper No. 9771, Available online at SSRN: https://ssrn.com/abstract=4127658 or http://dx.doi.org/10.2139/ssrn.4127658 (last accessed on 12 July 2023).

219 General term referring to both market manipulation practices as well as insider trading. See Chitimira, Howard. (2014). "Overview of the Available Remedies for Market Abuse Victims under the Financial Markets Act 19 of 2012". *Mediterranean Journal of Social Sciences*. 5. 10.5901/mjss.2014.v5n8p124 (last accessed on 19 March 2025).

220 Raphael Auer, Bernhard Haslhofer, Stefan Kitzler, Pietro Saggese and Friedhelm "The Technology of Decentralized Finance (DeFi)"(2023) available online at Victor https://www.bis.org/publ/work811.pdf (last accessed on 12 July 2023).

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these principles is that embedded supervision can only function if it is part of an overall effective regulatory framework backed up by an adequate legal system and the institutions that support it.[221] The second one is that decentralised markets must achieve economic finality where embedded supervision is applied. This means that due to the absence of centralised intermediaries guaranteeing the transfer of crypto assets to the point of irrevocability, an economical solution needs to be applied. It thus means that a transfer or transaction can be considered final once it is certain that, from a specific moment, it will never be profitable to undo.[222]

The third proposed principle is that any proposed embedded supervision technique must be designed within the context of economic market consensus. This includes making provisions for how the crypto asset market will react to being automatically supervised. The result sought is that the market's economic consensus is so strong that attempts to deceive regulators in any way are unprofitable for participants.[223]

The last of the principles discussed here, briefly to provide an understanding of the concept of embedded supervision, is that employing these techniques should result in low-cost compliance and a level playing field for small and large financial institutions or financial services providers being supervised.[224] An additional key element to embedded supervision is a strong and coordinated Anti-Money Laundering (AML) and "Know Your Consumer" identity framework that keeps illicit activity out of this novel ecosystem where embedded supervision is being conducted.[225] It is submitted, that for the concept of a trans-border regulatory licence to succeed, the monitoring and enforcement of the rules and requirements imposed by the panel of regulators has to be dynamic and adaptable. Embedded supervision is a method to enhance the quality

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221 Auer, Raphael, Embedded Supervision, Page 6.

222 Auer, Raphael, Embedded Supervision, Page 6.

223 Auer, Raphael, Embedded Supervision, Page 3.

224 Auer, Raphael, Embedded Supervision: "How to Build Regulation into Decentralised Finance" (2022). CESifo Working Paper No. 9771, Available online at SSRN: https://ssrn.com/abstract=4127658 or http://dx.doi.org/10.2139/ssrn.4127658 (last accessed on 12 July 2023).

225 Auer, Raphael, Embedded Supervision, Page 7.

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of data available to the panel of regulators while reducing the need for crypto asset service providers to actively collect, verify, and report data to the panel of regulators. Embedded supervision can verify compliance with regulations by reading the distributed ledgers, allowing the panel of regulators to access all transaction-level data.[226] Alternatively, the use of smart contracts, Merkle trees[227], homomorphic encryption[228] and other cryptographic tools might give supervisors verifiable access just to selected parts of such micro data, or relevant consolidated positions such as institution-to-institution or sectoral exposures. Crypto asset service providers would only need to define the relevant access rights, obviating the need for them to collect, compile, and report data.[229] If the panel of regulators can use embedded supervision techniques instead of traditional supervisory methods, this can lead to enhancing their capability, efficiency, and effectiveness in terms of data collection and analysis. In particular by enabling the automation of routine tasks, the development of new analytical techniques, and the provision of better insights, negating low data quality and time-consuming manual procedures.[230] Because conduct supervision relies on the analysis of large amounts of granular, time-sensitive, and unstructured data from disparate sources, embedded supervision techniques specifically where such tools as artificial intelligence can produce efficiencies. What is evident from available data is

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226 Auer, Raphael, Embedded Supervision, Page 11.

227 In cryptography and computer science, a hash tree or Merkle tree is a tree in which every "leaf" node is labelled with the cryptographic hash of a data block, and every node that is not a leaf is labelled with the cryptographic hash of the labels of its child nodes. See Matteo Loporchio, Anna Bernasconi, Damiano Di Francesco Maesa, Laura Ricci, A survey of set accumulators for blockchain systems, Computer Science Review, Volume 49, 2023, 100570, ISSN 1574-0137, available online at https://doi.org/10.1016/j.cosrev.2023.100570 (last accessed on 09 May 2024).

228 Homomorphic encryption is the conversion of data into ciphertext that can be analyzed and worked with as if it were still in its original form. See Monique Ogburna*, Claude Turnerb, Pushkar Dahalc, Homomorphic Encryption, Procedia Computer Science 20 (2013) 502 – 509 available online at https://www.sciencedirect.com/science/article/pii/S1877050913011101/pdf?md5=bbc4f868f80eb745bb4d5ee7b5c135e5&pid=1-s2.0-S1877050913011101-main.pdf (last accessed on 09 May 2024).

229 Auer, R — (2019b): Embedded supervision: how to build regulation into blockchain finance", BIS Working Papers, no 811 available online at https://www.bis.org/publ/work811.pdf (last accessed on 09 May 2024).

230 Dias, D. and S. Staschen (2017), Data Collection by Supervisors of Digital Financial Services, available online at https://www.cgap.org/sites/default/files/researches/documents/Working-Paper-Data-Collection-by-Supervisors-of-DFS-Dec-2017.pdf (last accessed on 09 May 2024).

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that regulators are using advanced analytics capabilities such as machine learning, natural language processing, text mining[231], and network analysis to enhance their capacity to regulate and supervise. This is especially true with respect to detecting networks of related transactions, identifying anomalies and unusual behaviours, and drawing insights from extensive amounts of structured and unstructured data.[232]

Some examples of the use of embedded supervision can provide the reader with a better understanding of how this technique can be used and lay the foundation for the deployment of embedded supervision in the proposed regulatory framework in Chapter Six. One such example, in terms of AML is Mexico's National Banking and Securities Commission[233], which developed a prototype[234] for a natural language processing[235] application to detect what a suspicious AML/Combatting the Finance of Terrorism

[231] Text mining refers to the process of applying data mining techniques to analyze and extract valuable information from plain text. See Jarrod West, Maumita Bhattacharya, Intelligent financial fraud detection: A comprehensive review, Computers & Security, Volume 57,2016, Pages 47-66, ISSN 0167-4048, https://doi.org/10.1016/j.cose.2015.09.005 (last accessed on 02 December 2024).

[232] Coelho, R., M. De Simoni and J. Prenio (2019), "Suptech applications for anti-money laundering", Vol. FSI Insights on policy implementation, no 18, August available online at https://www.bis.org/fsi/publ/insights18.htm (last accessed on 09 May 2024).

[233] The National Banking and Securities Commission, Comision Nacional Bancaria y de Valores (CNBV), is charged with the oversight and regulation of the banking and brokerage sectors of the Mexican financial services industry. See GlobalEDGE, "Mexico: National Banking and Securities Commission (CNBV)", available online at https://globaledge.msu.edu/global-resources/resource/10699 (last accessed on 04 April 2025).

[234] Prototype developed and tested as an AML SupTech Solution for the Mexican National Banking and Securities Commission (CNBV) under the R2A Project Retrospective and Lessons Learned. See Castri, Simone & Grasser, Matt & Kulenkampff, Arend. (2018). "An AML SupTech Solution for the Mexican National Banking and Securities Commission (CNBV) - R2A Project Retrospective and Lessons Learned". *SSRN Electronic Journal*. 10.2139/ssrn.3592564 (last accessed on 02 December 2024).

[235] Natural language processing combines computational linguistics—rule-based modeling of human language—with statistical and machine learning models to enable computers and digital devices to recognize, understand and generate text and speech. See Kryzanowski A,Nucci R,Sevilla D,2024 "What is Natural Language Processing? NLP Demystified" available online at https://www.getguru.com/reference/what-is-natural-language-processing-definition#:~:text=Natural%20Language%20Processing%2C%20or%20NLP,such%20as%20sentiment%20and%20intent. (last accessed on 14 September 2024).

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(CFT) network is "talking about", thus facilitating the detection of unusual transactions, relationships, and network events to identify potential money laundering issues that cannot be identified by persons.[236]

Another example is the Central Bank of Brazil[237], which also uses supervisory technology in the form of Natural Language Processing[238] applications with the aim of incorporating artificial intelligence applications for document processing based on Natural Language Processing techniques into supervision processes.[239] A very notable case study is the work that is being done in Abu Dhabi Global Markets in terms of using technology to supervise and monitor activity on the blockchain, thereby more effectively supervising crypto asset service providers. In 2018, the Financial Services Regulatory Authority[240] in Abu Dhabi introduced a bespoke and comprehensive regulatory framework[241] for the regulation of virtual asset activities. The Financial

[236] CNBV/R2A (2018), An AML Suptech Solution for the Mexican National Banking and Securities Commission (CNBV): R2A Project Retrospective and Lessons Learned available online at https://doi.org/10.2139/ssrn.3592564 (last accessed on 09 May 2024).

[237] In 1964, the Banking Law (No. 4,595) created the National Monetary Council (CMN) — as the highest macroeconomic and financial regulatory authority — and the Banco Central do Brasil (BCB). Under this institutional framework, BCB performs its functions as monetary, regulatory and supervisory authority in accordance with guidelines issued by the CMN. See Banco Central Do Brasil – About Us available online at https://www.bcb.gov.br/en/about (last accessed on 03 December 2024).

[238] Natural language processing (NLP) is the ability of a computer program to understand human language as it's spoken and written. See TechTarget "What is Natural Language Processing (NLP)?" available online at https://www.techtarget.com/searchenterpriseai/definition/natural-language-processing-NLP (last accessed on 02 December 2024).

[239] WorldBank, Discussion Note"From Spreadsheets to Suptech Technology Solutions for Market Conduct Supervision," (2018), available online at https://documents1.worldbank.org/curated/ru/612021529953613035/pdf/127577-REVISED-Suptech-Technology-Solutions-for-Market-Conduct-Supervision.pdf (last accessed on 05 October 2024).

[240] Financial Services Regulatory Authority was established to advocate a progressive financial services environment and uphold the integrity of the whole international financial centre by managing any potential risk exposure and undesirable impacts. See ADGM – About Us available online at https://www.adgm.com/financial-services-regulatory-authority (last accessed on 03 December 2024).

[241] ADGM Guidance – Regulation of Crypto Asset Activities in ADGM, 25 June 2018 available online at https://www.iosco.org/library/ico-statements/Abu%20Dhabi%20-%20FSRA%20-%20Guidance%20-%20Regulation%20of%20Crypto%20Asset%20Activities%20in%20ADGM.pdf (last accessed on 04

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Services Regulatory Authority leverages technology to enhance its capabilities in detecting and mitigating potential new risks arising from novel solutions. What the Financial Services Regulatory Authority stipulates in their *Regtech Report*[242] is that although digital supervision requires much time and effort to implement, at the end of the day, it is evident that digital problems require digital solutions and that the speed and complexity of some tech-centric firms' operations mean that traditional means of supervision may only be sufficient to take reactive action, instead of being able to identify and pre-emptively address potential risk situations.[243] The *RegTech Report* will be discussed further in Chapter Six. One of the projects that is being progressed is the monitoring of third-party provider services in real-time through integration. This project involves stepping away from a periodic reporting regime to one where the entities ensure their infrastructure can allow for "at-will" reporting. In simple terms, this means that instead of firms pushing data to the Financial Services Regulatory Authority, they will need to develop the appropriate infrastructure to allow the Financial Services Regulatory Authority to pull data from the firm whenever it is required. From a more technical perspective, it means that an application programming interface specification is developed for third-party providers to implement for regulatory reporting. This specification is written in conformance with the OpenAPI 3.0[244] specification, creating a machine readable[245] way to describe the required functionality that third-party providers

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December 2024).

242 ADGM FSRA RegTech Report, "Powering the future of the future",(2024) available online at https://www.adgm.com/documents/publications/en/adgm-regtech-report.pdf (last accessed on 10 May 2024).

243 ADGM, "Powering The Future Of Regulation"(2024) available online at https://www.adgm.com/documents/publications/en/adgm-regtech-report.pdf (last accessed on 10 May 2024).

244 The OpenAPI 3.0 Specification (OAS) defines a standard, language-agnostic interface to RESTful APIs, which allows both humans and computers to discover and understand the capabilities of the service without access to source code, documentation, or through network traffic inspection. See Swagger, "OpenAPI Specification", available online at https://swagger.io/specification/v3/#:~:text=Introduction,or%20through%20network%20traffic%20inspection (last accessed on 05 October 2024).

245 Data in a data format that can be automatically read and processed by a computer. See Audrey Ariss, "Machine-readable open data: how it's applicable to developing countries", (2027), available online at https://blogs.worldbank.org/en/opendata/machine-readable-open-data-how-it-s-applicable-developing-

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are expected to implement.[246] This will enable the Financial Services Regulatory Authority, to view the state and health of all TPPs on a real-time basis through a dashboard on the Digital Lab.[247]

Some of the securities regulators have also started to leverage these technologies to transform large datasets into usable patterns for detecting potential insider trading and market manipulation[248], thereby leveraging big data architectures to perform real-time market surveillance. These technology systems called "trade surveillance systems", have been developed to monitor crypto trading activity and detect potential market abuse. These types of solutions can help companies or regulators detect and prevent market manipulation, fraud, and other forms of unethical behavior. With the increasing popularity and adoption of crypto assets, trade surveillance has become a crucial piece of the crypto asset industry and an essential tool for regulators. These trade surveillance systems use advanced algorithms and data analytics to analyse large amounts of trading information in real-time.[249] They can identify patterns and anomalies that could indicate potential market manipulation, and trigger alerts to investigate further.

Because this research culminates in two sets of proposed frameworks, one being in respect of crypto assets generally, and the other specifically in respect of

countries#:~:text=%5B1%5D%20Data%20in%20a%20data,digital%20nature%20not%20machine%2Dreadable (last accessed on 05 October 2024).

246 ADGM - Powering the Future of Regulation, Page 33.

247 The ADGM Digital Lab is a virtual environment with access to resources such as data, APIs, system images and reference architectures. See ADGM, "The ADGM Digital Lab" available online at https://www.adgm.com/setting-up/Fintech/digital-lab (last accessed on 05 October 2024).

248 Market manipulation in the context of crypto assets refers to the intentional actions taken to inflate or deflate the price of a crypto asset artificially, distorting the natural price discovery process and potentially harming investors. See Eigelshoven, F., Ullrich, A., & Parry, D. (2021). Cryptocurrency Market Manipulation: A Systematic Literature Review. In 42nd International Conference on Information Systems, ICIS 2021 TREOs: "Building Sustainability and Resilience with IS: A Call for Action" Association for Information Systems. (last accessed on 08 April 2025).

249 A-Team Insight, "Crypto Trade Surveillance: An Essential Tool for Regulatory Compliance", (2023), available online at https://a-teaminsight.com/blog/crypto-trade-surveillance-an-essential-tool-for-regulatory-compliance/?brand=tti (last accessed on 05 October 2024).

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Stablecoins[250], it was considered prudent for the sake of completion to also, in this subsection on embedded supervision, set out some specific matters relating to embedded supervision in respect of Stablecoins. To this end, this research will now unpack Project Pyxtrial: monitoring the backing of Stablecoins.[251] Pyxtrial focused on demonstrating that the balance sheets of asset-backed Stablecoins can be supervised. Even if Pyxtrial was limited to asset backed Stablecoins in the project scope, the technology has the potential to monitor other tokenised products that are backed by real-world assets. The technology is a first step towards a tool that could support supervisors and regulators in proactively detecting issues in Stablecoin backing and aid the development of policy frameworks based on integrated data.[252] The focus of project Pyxtrial is to consider how technology solutions can enable the monitoring of asset-backed Stablecoins' balance sheets, allowing a regulator to monitor at all times whether the backing assets exceed their liabilities.[253] Exploring this could prove particularly helpful in relation to the proposed framework in this thesis, as reserve assets, which serve as an important protection mechanism for consumers, are of utmost importance.

The project was undertaken as a joint initiative by the Bank for International Settlements Innovation Hub[254] and the Bank of England[255], as the UK' central bank. The prototype that was developed in this project is a data analytic pipeline, which includes data collection, storage elements, and analytics. The motivation for focusing on this element of Stablecoins, the reserve asset, is that it is critical in maintaining

250 See Chapter 1,1.25.

251 Bank of International Settlements,2024," Project Pyxtrial: monitoring the backing of Stablecoins," available online at https://www.bis.org/about/bisih/topics/Suptech_regtech/pyxtrial.htm (last accessed on 12 August 2024).

252 BIS, Project Pyxtrial, Page 1.

253 BIS, Project Pyxtrial, Page 4.

254 The BIS Innovation Hub develops public goods in the technology space to support central banks and improve the functioning of the financial system. We have centres around the world and a global network of central bank experts on innovation. See Bank of International Settlements - About Us available online at https://www.bis.org/about/bisih/about.htm (last accessed on 04 December 2024).

255 The Bank of England was founded as a private bank in 1694 to act as banker to the Government. See Bank of England - About Us available online at https://www.bankofengland.co.uk/about/history (last accessed on 04 December 2024).

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stable value with respect to the underlying assets, and losing this stability has potentially dire consequences. For instance, should a mismatch[256] occur between a Stablecoin issuer's liabilities (the coins in circulation) and the assets backing that Stablecoin, this could undermine confidence in the ability of the issuer to offer redemption at par and prompt a "run," i.e., a sudden loss of belief in the Stablecoin's value.[257] Furthermore, this mismatch could also lead to financial stability issues under certain conditions, for instance, if the Stablecoin or its issuer is of systemic importance, or if the loss of confidence becomes contagious and affects the ability to make payments or the traditional financial system more broadly.[258]

When examining the architectural elements of Pyxtrial, there are three distinct elements; the database, the data model itself (which serves as the foundation), and the application program interface. On the front end, the data model uses a dashboard to make it user-friendly, for the data model itself defines how the data is structured, which data consists of both on-chain[259] and off-chain data[260] on the assets and liabilities of the issuer of the Stablecoin.[261] In terms of the Application Programming Interface (API's) component, this data transmission mechanism allows Pyxtrial to monitor

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256 For Stablecoins, a liquidity mismatch between Stablecoins and the assets that maintain their peg is another source of liquidity risk. See Cameron MacDonald and Laura Zhao, Bank of Canada, Staff Discussion Paper/Document d'analyse du personnel—2022-20," Stablecoins and Their Risks to Financial Stability","(2022), available online at https://www.bankofcanada.ca/wp-content/uploads/2022/11/sdp2022-20.pdf (last accessed on 02 October 2024).

257 BIS, Project Pyxtrial, Page 4.

258 BIS, Project Pyxtrial, Page 4.

259 On-chain data refers to all the information that is recorded on a blockchain. This data includes transaction details, wallet addresses, block information, and other metrics connected to network activity. See James Hunt, The Block, "What is on-chain analysis in crypto?",(2024), available online at https://www.theblock.co/learn/295075/what-is-on-chain-analysis-in-crypto (last accessed on 02 October 2024).

260 In blockchain-based cryptocurrencies, off-chain transactions refer to those that occur outside of the blockchain itself. Off-chain transactions can work by swapping private keys to an existing wallet instead of transferring funds or by using a third-party or coupon-based interlocutor. See Emily Ekshian, Crypto Council for Innovation," On-Chain vs. Off-Chain Transactions",(2024), available online at https://cryptoforinnovation.org/on-chain-vs-off-chain-transactions/ (last accessed on 02 October 2024).

261 BIS, Project Pyxtrial, Page 6.

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Stablecoin issuers' assets and liabilities by integrating them into their systems without the need to connect directly to the blockchain network.[262] An important aspect to note from the writer's perspective is that this project did not include assessing the quality of the reserve assets or backing assets, which is a crucial element for supervisors. In that case, if some of this project forms part of the proposal for embedded supervision of Stablecoins in this thesis, it is of utmost importance that there are standardised regulatory obligations across the participating countries regarding the type and quality of reserve assets that are considered appropriate.

How the tracking in effect works in this project is that the project team used an algorithm to match the reporting frequency of the assets to the real-time availability of the liabilities-side data. This algorithm then analysed the declared assets' opening and closing balances, then allocated the change in asset values suitably.[263] One of the main positives for the writer in light of this research topic is the fact that Pyxtrial is fundamentally flexible in its design, using modular components, making it adaptable when used by different regulators. The further benefit of this flexible and modular design approach is that it can be built into existing systems and can then also be enhanced and adapted to the regulator's current and future needs. Additionally, regulators and supervisors also have the ability to adjust Pyxtrial to account for a higher frequency of attestation reporting in order to meet regulatory needs for more frequent reporting by Stablecoin issuers, or to implement APIs, allowing them to pull data from regulated entities' systems when needed.[264] This type of supervisory technology (Suptech)[265] tool could help regulators allow a trans-border licence as envisaged in this thesis to actively manage two main risks emanating from Stablecoins. One is that a loss of confidence among holders that they would be able to redeem the

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[262] APIs enable regulators to interact programmatically (via software instead of a human interface) with Stablecoin issuers. See Bank of International Settlements,2024," Project Pyxtrial: monitoring the backing of Stablecoins," available online at https://www.bis.org/about/bisih/topics/Suptech_regtech/pyxtrial.htm (last accessed on 12 August 2024).

[263] BIS, Project Pyxtrial, Page 6.

[264] BIS, Project Pyxtrial, Page 7, paragraph 1.2.

[265] Refers to technologies used by supervisory agencies themselves. See BIS FSI Insights available online at https://www.bis.org/fsi/publ/insights9.pdf (last accessed on 03 December 2024).

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Stablecoin at par value could see its market value drop sharply and culminate in a run on Stablecoins, which could lead to rising pressure on the ability of the issuer to maintain the stated value of the Stablecoin. This is what happened when USDT and USDC temporarily depegged from the US dollar in May 2022 and March 2023, respectively.[266]

What is further interesting about this project, and what sets it apart, is that it applies a prudential policy perspective to Stablecoins. It applies this to assess the impact of financial stability.[267] Examining the design and its underlying design decisions for this project reveals five primary assumptions that form the foundation of the design. The first assumption is in regard to enforcement authority, in this respect users of the tool can request data on Stablecoin assets and liabilities at required intervals, either by submitting data to supervisors, publishing it publicly, or integrating APIs for data access. Pyxtrial is designed for regulated issuers only. The second of the assumptions is the placeholder data model. Due to the lack of regulatory finality, a placeholder data model was created based on existing Stablecoin reporting templates and supervisory requirements for money market funds. The latter is viewed as being like Stablecoins in many respects, which makes those supervisory templates relevant.[268]

The third assumption is data granularity. Users of Pyxtrial do not need transaction-level data, which simplifies the tool's design and reduces the number of data pipelines.[269] The fourth assumption is assets-side data assumption. While liabilities-side data is

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266 C Ventricelli, "USDC's depeg laid bare the risks traditional finance poses to Stablecoins", CoinDesk, 2 April 2023, available online at www.coindesk.com/consensusmagazine/2023/04/02/usdcs-depeglaid-bare-the-risks-traditional-financeposes-to-Stablecoins/ (last accessed on 13 August 2024).

267 BIS, Project Pyxtrial, Page 17.

268 Anadu, Kenechukwu and Azar, Pablo D and Cipriani, Marco and Eisenbach, Thomas M. and Huang, Catherine and Landoni, Mattia and La Spada, Gabriele and Macchiavelli, Marco and Malfroy-Camine, Antoine and Wang, J. Christina, Runs and Flights to Safety: Are Stablecoins the New Money Market Funds? (September 1, 2023). FRB of New York Staff Report No. 1073, Rev. April 2024, https://doi.org/10.59576/sr.1073, Available at SSRN: https://ssrn.com/abstract=4580392 (last accessed on 14 August 2024).

269 BIS, Project Pyxtrial, Page 19.

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gathered hourly from blockchains, assets-side data is part-simulated and based on issuer-published information, which varies in frequency.[270] The fifth key assumption relates to the number of Stablecoin projects Pyxtrial assesses and the number of blockchains from which it gathers liabilities-side data. As a proof of concept, Pyxtrial did not select all Stablecoins or all blockchains, nor were any Stablecoin issuers or infrastructure providers invited to work with the project. It was rather approached by using five of the largest Stablecoins, which are USD Tether (USDT)[271], USD Circle (USDC)[272], Binance USD (BUSD)[273], Pax Dollar[274] (USDP), and TrueUSD[275] (TUSD), tracking their liabilities data on five blockchains consisting of Ethereum, Binance Smart Chain[276] (BSC), Avalanche[277], TRON[278] and Solana.[279]

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[270] BIS, Project Pyxtrial, Page 19.

[271] Tether is a crypto asset Stablecoin, launched by the company Tether Limited Inc. in 2014. See Tether, "FAQ's" available online at https://tether.to/en/ (last accessed on 14 September 2024)

[272] USDC is a Stablecoin created by Coinbase and Circle. Also called USD Coin, it attempts to maintain a constant value relative to the US dollar, though it has occasionally suffered from de-pegging. USDC operates as an ERC-20 token, meaning it runs on the Ethereum blockchain. See Coindesk, "How Does USDC Work?", (2022), available online at https://www.coindesk.com/learn/how-does-usdc-work/ (last accessed on 05 October 2024).

[273] Binance USD (BUSD) is a Stablecoin, pegged to and backed by the U.S. dollar.It is supported by major cryptocurrency exchange Binance. See Binance Square, "Stablecoins: What are they, and how do they work?", available online at https://www.binance.com/en-NG/square/post/11348856290658 (last accessed on 05 October 2024).

[274] PAX Dollar is a crypto asset developed by Paxos Trust Company. USDP is a regulated Stablecoin collateralized 1:1 by United States Dollars held in US bank accounts belonging to the company. See Messari, "Pax Dollar", available online at https://messari.io/project/pax-dollar/profile (last accessed on 05 October 2024).

[275] TrueUSD (TUSD) is a Stablecoin pegged to the value of the US dollar, offering users a reliable and transparent digital asset for trading, investing, and transacting in the cryptocurrency market. See CoinMarketCap, "Everything You Need To Know About TrueUSD (TUSD)", available online at https://coinmarketcap.com/academy/article/everything-you-need-to-know-about-trueusdtusd (last accessed on 05 October 2024).

[276] Binance Smart Chain (BSC) is a blockchain network launched by Binance in September 2020. It is designed to be a high-performance blockchain that is compatible with the Ethereum Virtual Machine (EVM) and supports smart contracts. See BNB Chain, "BNB Smart Chain - High Performance DeFi Hub", available online at https://docs.bnbchain.org/bnb-smart-chain/overview/ (last accessed on 05 October 2024).

[277] Avalanche is a decentralized, open-source proof of stake blockchain with smart contract functionality. AVAX is the native cryptocurrency of the platform. See AVAX, "Avalanche: Create

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Regarding end delivery on this project, several key points can be highlighted, such as how liabilities are considered in this project, how assets are dealt with, and what is provided to the end user. In terms of liabilities, Pyxtrial collects on-chain data hourly using a blockchain scanner's[280] API. It also uses what is known as a Digital Token Identifier code[281] to identify Stablecoin tokens across different blockchains. Consequently, the integration layer can pull liability data from both on-chain sources and Stablecoin issuers' systems or off-chain data, thereby allowing supervisors and regulators to verify the reported liabilities.

With respect to the asset side, Pyxtrial's API receives off-chain data on assets via a REST API[282] endpoint structured according to Pyxtrial's format. A separate connector

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Without Limits | dApp Platform", available online at https://www.avax.network/ (last accessed on 05 October 2024).

278 TRON is a decentralized, blockchain-based operating system with smart contract functionality, proof-of-stake principles as its consensus algorithm and a cryptocurrency native to the system, known as Tronix. See Binance Square, available online at https://www.binance.com/en-NG/square/post/9097165572450 (last accessed on 05 October 2024).

279 Solana is a blockchain platform which uses a proof-of-stake mechanism to provide smart contract functionality. Its native cryptocurrency is SOL. See Transfi, "Demystifying Solana: What is Solana and How It Works" available online at https://www.transfi.com/blog/what-is-solana (last accessed on 05 October 2024).

280 Blockchain scanners use several API protocols to interact with blockchains to feed live data as they happen. These explorers help find transaction information using the transaction/hash ID and wallet addresses of the sender/receiver.See Hazem Alhalabi,B2B in Pay,2023," Top Blockchain Explorers And How To Use Them" available online at https://b2binpay.com/en/top-blockchain-explorers-and-how-to-use-them/#:~:text=Blockchain%20scanners%20use%20several%20API,addresses%20of%20the%20sender%2Freceiver (last accessed on 20 July 2024).

281 Comprising a unique nine-character alphanumeric code arranged randomly, a digital token identifier is assigned to a digital token. This code is intricately linked to a set of data associated with the token, known as reference data, housed within the DTI Registry. See International Organization for Standardization, "ISO 24165-1:2021 - Digital token identifier (DTI)," available online at https://www.iso.org/standard/80601.html (last accessed on 05 October 2024).

282 A REST API (also called a RESTful API or RESTful web API) is an application programming interface (API) that conforms to the design principles of the representational state transfer (REST)

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can pull asset data directly from Stablecoin issuers, demonstrating feasibility for future use. Looking at the end-user deliverable, Pyxtrial's API endpoint provides the most recent data on assets and liabilities, allowing supervisors to monitor each Stablecoin effectively.[283] One of the aspects that the project document of Pyxtrial explains is the complications that on-chain and off-chain data bring with respect to Suptech tools and supervision in general. This is worth unpacking with respect to this research since the focus is on blockchain-based asset licencing, regulating, and supervising these across different countries efficiently and effectively. The first complexity that this project uncovered, regarding on-chain and off-chain data, is that an assumption was made that the two sides of the CASP balance sheet would separate into on-chain data (liabilities) and off-chain data (assets). However, in fact, what became clear was that a significant amount of liabilities-related data is also off-chain, for instance, the flags indicating that the issuer currently supports the token and its fungibility.[284]

In essence, it is clear that a truly "on-chain embedded supervision tool" is not possible in this instance since a lot of the required data lives off-chain. This means that where regulators have advanced significantly with off-chain data supervision, it could be supplemented by on-chain capabilities, which can improve the effectiveness of supervision.[285] One of the other challenges that this project encountered in terms of on-chain versus off-chain data is with respect to the frequency at which data can be obtained easily. When it comes to on-chain data, frequency is not a problem, as it can be pulled by regulators or supervisors multiple times, allowing for closer scrutiny of emerging risks and quick response times when issues arise. In contrast, off-chain data reporting frequency is determined by the Stablecoin issuer's frequency of sending the data. When there is a difference between the reporting frequencies of the off-chain data and the pulling of the on-chain data, discrepancies arise when the data sets are compared and analysed.[286] A possible solution that was identified in the project is to utilise thresholds in conjunction with risk indicator levels. When the set thresholds for

architectural style. See IBM, "What is a REST API?" available online at https://www.ibm.com/topics/rest-apis (last accessed on 20 July 2024).

283 BIS, Project Pyxtrial, Page 20.

284 BIS, Project Pyxtrial, Page 26.

285 BIS, Project Pyxtrial, Page 26.

286 BIS, Project Pyxtrial, Page 26.

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the discrepancies are breached, this becomes a risk indicator that is flagged for closer scrutiny by the supervisors. In terms of the more technical workings of Pyxtrial, this Suptech[287] tool is placed between the settlement ledger and the Stablecoin issuer, where information is retrieved from both the Stablecoin issuer and from the blockchain, which is used to compose an oversight report to the supervisors as a tool to monitor and engage on risks that Stablecoins could pose to the financial system.[288]

Initially, the integration layer connects to blockchain layers, pulling the on-chain liability side data from API endpoints[289], while concurrently, a generator provides asset side data. Data is transformed and enriched in the processing layer, which also handles database transactions. The persistence layer provides low-level database interactions, such as storing and retrieving data. Collected data, including raw JSON[290] data fetched by Pyxtrial, is stored in a PostgreSQL[291] database and processed into target tables. The data is then served to consumers via a second API endpoint. Supervisors can pull data on demand for flexibility and use both “push” and “pull” methods to compare public liabilities with those reported by the Stablecoin issuer to the regulator.[292] The last two components that will be considered regarding this project are the dashboard development component and the lessons learned from this project. The latter can be

287 Refers to technologies used by supervisory agencies themselves. See BIS FSI Insights available online at https://www.bis.org/fsi/publ/insights9.pdf (last accessed on 03 December 2024).

288 BIS, Project Pyxtrial, Page 29.

289 An API endpoint is a point at which an application programming interface -- the code that enables two software programs to communicate with each other -- connects with the software program. See TechTarget – What is an API endpoint? Available online at https://www.techtarget.com/searchapparchitecture/definition/API-endpoint#:~:text=An%20API%20endpoint%20is%20a,server%20and%20receiving%20a%20response (last accessed on 03 December 2024).

290 JSON is an open standard file format and data interchange format that uses human-readable text to store and transmit data objects consisting of attribute–value pairs and arrays. See NIST,” FAQ for NICE Framework Data in JSON Format”,2024 available online at https://www.nist.gov/itl/applied-cybersecurity/nice/nice-framework-resource-center/faq-nice-framework-data-json-format (last accessed on 20 July 2024).

291 PostgreSQL, also known as Postgres, is a free and open-source relational database management system emphasizing extensibility and SQL compliance. See Saviyint,” PostgreSQL” available online at https://saviynt.com/exchange/apps/postgresql (last accessed on 20 July 2024).

292 BIS, Project Pyxtrial, Page 29.

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learned from embedded supervision proposals presented in Chapter Six of this thesis, which addresses the proposed regulatory framework and approach to supervision regarding crypto assets, as well as specifically with respect to Stablecoins.

Considering the dashboard development, the front end provides an option for supervisors to interact with the collected data, allowing them to monitor their quality and offer an overview of Stablecoin balance sheets.[293] Pyxtrial's dashboard provides detailed information on assets, liabilities, and their mismatches. It offers the latest data, allows focus on specific time periods, and shows relative changes over time. The dashboard is fully functional but replaceable, enabling regulators to switch it out for versions that better meet their needs. Its modular approach allows for customisation to suit specific requirements.[294]

Supervisory technology tools to enhance supervision capabilities have been touted with much promise for the future supervisor. Some of the research conducted by the Bank of International Settlements, through surveys of supervisors using these technologies, has shown that the clear impact on supervision has been an improvement in efficiencies.[295] The surveys also revealed that the current Suptech uses do not necessarily create new supervisory processes, rather, they have become critical to supervision and support existing processes. The use of Suptech also allows supervisors to focus more on judgment-based activities by driving efficiencies.

Suptech tools have become essential in supervisory processes. Key factors for their successful deployment include a Suptech strategy that guides the Suptech work, covering experimentation and development aspects and deployment-related issues. Having a comprehensive strategy covering development, user training, and integration into supervisory systems is crucial. Continuous investment in upgrading these tools is necessary to meet evolving needs.[296] The second key factor for successful deployment

[293] BIS, Project Pyxtrial, Page 29.

[294] BIS, Project Pyxtrial, Page 29.

[295] BIS, J Prenio, FSI Insights on policy.

[296] BIS, FSI Insights, Page 14m, Implementation No 58 Peering through the hype – assessing Suptech

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is addressing "Pain Points". Suptech tools should naturally fit into supervisory processes and address specific needs, rather than adding unnecessary steps. The third key point is integration into the existing supervisory toolkit. These tools should be seamlessly integrated into existing supervision systems to ensure smooth data and application usage. The next one is using and having quality data. Access to high-quality, granular data is essential for the effective use of Suptech tools. Enhancing data collection practices is a prerequisite. The last of the key factors speaks about enabling supervisors to really use the tools by ensuring user accessibility and confidence. Tools should have user-friendly interfaces and clear objectives to foster user confidence and ease of use.[297]

The use of technology-based supervision can strengthen supervisors' ability to supervise crypto assets effectively and is especially helpful in creating efficiencies in data analytics. For the purpose of this research, it can allow regulators to oversee the trans-border licenced entity in real time and proactively.

1.2.8 Nodes

Nodes[298] are critical components of the blockchain network and refer to network participants and their devices. These devices form the infrastructure of a blockchain by running the protocol software of a decentralised network.[299] On the most fundamental level, a node is basically a device running the software program of a specific

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tools' transition from experimentation to supervision (2024) available online at https://www.bis.org/fsi/publ/insights58.pdf (last accessed on 16 August 2024).

297 BIS, FSI Insights, Page 14 and 15.

298 A blockchain node is one of the computers that collectively run the blockchain's software. See Utimaco available online at https://utimaco.com/service/knowledge-base/blockchain/what-are-the-types-of-nodes-in-blockchain#:~:text=In%20simplified%20terms%2C%20a%20blockchain,that%20the%20network%20remains%20decentralized (last accessed on 03 December 2024).

299 Brooke Becher "What Are Blockchain Nodes and How Do They Work?" (2022) available online at https://builtin.com/blockchain/blockchain-node. (last accessed on 12 July 2023).

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blockchain.[300] From an operational perspective, a node fulfills three main purposes: maintenance, validation, and accessibility. Therefore, these participants in the blockchain ecosystem can be considered the custodians of a blockchain. The more nodes participate in the blockchain, the more decentralised it is.

Nodes maintain consensus by validating, recording, and broadcasting each transaction on the network. The nodes on the blockchain are also responsible for executing each blockchain's consensus mechanism, which is a process that blockchains follow to confirm and validate transactions. The two most common consensus mechanisms are proof-of-work (PoW) and proof-of-stake (PoS).[301] Each blockchain has its own set of consensus rules. In some blockchains, the approval of one validator node is enough to process the transaction. However, some require the approval of the entire committee of nodes to reach a decision.[302]

The nodes maintaining the security and Integrity of the blockchain can be located anywhere in the world, and the blockchain can be stored on a combination of cloud-based and on-premises storage solutions. Different blockchains can have varying technical requirements or registration requirements (centralised ledgers) to allow a node to perform the functions mentioned in the blockchain.[303]

An example of these requirements is the requirements set for nodes operating on the Solana[304] blockchain platform. For instance, the Solana blockchain platform requires

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300 Brooke Becher "What Are Blockchain Nodes and How Do They Work?" (2022) available online at https://builtin.com/blockchain/blockchain-node (last accessed on 12 July 2023).

301 Worldcoin "What's a Blockchain Node?" (2023) available online at https://worldcoin.org/articles/what-is-a-blockchain-node (last accessed on 12 July 2023).

302 Origin Stamp "The 10 Different Types of Blockchain Nodes and How They Work" (2023) available online at https://originstamp.com/blog/the-10-different-types-of-blockchain-nodes-and-how-they-work/ (last accessed on 13 July 2023).

303 Solana is a blockchain platform that uses a proof-of-stake mechanism to provide smart contract functionality. See Transak, "What Is Solana (SOL)?", 2024, available online at https://transak.com/blog/what-is-solana-sol (last accessed on 13 July 2023).

304 Solana is a blockchain platform that uses a proof-of-stake mechanism to provide smart contract

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minimum hardware requirements for validators. This includes a central processing unit (CPU) with a 2.8GHz base clock speed or faster and a minimum of 12 cores / 24 threads or more. Random-access memory (RAM) must be 256 GB at minimum, and a motherboard with 512GB capacity is suggested.[305]

To conclude this section, the different types of nodes will be briefly touched on, including the concept of a supervisory node and a forensic node, since these will be included in the proposed regulatory and supervisory framework later in Chapter Six of this thesis. For the purposes of this discussion, the different blockchain nodes will be classified by considering the functions they perform. The nodes categorised by function include full node; pruned full node; archival full node; authority nodes; mining and staking nodes; master nodes; light nodes; lighting nodes; supervisory nodes; and forensic nodes.[306] Some of the more commonly found nodes and the supervisory and forensic nodes will be explored because they are important for this research. Full nodes, also referred to as "blockchain nodes," store the records of transactions carried out in a blockchain. The consensus mechanisms PoW and PoS involve full nodes to reach consensus and include them in blockchain governance. Full nodes can have two further subcategories, which are pruned full nodes and archival full nodes.[307]

Authority nodes, with respect to public blockchains, download and synchronise the blockchain data with the network. These nodes, therefore, can control and restrict access to the rest of the nodes. When it comes to PoW consensus models, the mining nodes form an integral part of the blockchain. These nodes add blocks to the blockchain by using computing power to solve complex mathematical problems to

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functionality. See Transak, "What Is Solana (SOL)?", 2024, available online at https://transak.com/blog/what-is-solana-sol (last accessed on 13 July 2023).

305 Solana "Validator requirements) (2023) available online at https://docs.solana.com/running-validator/validator-reqs (last accessed on 13 July 2023).

306 Origin Stamp "The 10 Different Types of Blockchain Nodes and How They Work" (2023) available online at https://originstamp.com/blog/the-10-different-types-of-blockchain-nodes-and-how-they-work/ (last accessed on 13 July 2023).

307 Utimaco, " Technologies - What are the Types of Nodes in Blockchain?" available online at https://utimaco.com/service/knowledge-base/blockchain/what-are-the-types-of-nodes-in-blockchain (last accessed on 03 December 2024).

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approve transactions. They perform this task to earn rewards, e.g., newly minted tokens. The incentive structure ensures miners continue to validate and secure the blockchain. If we look at, for instance, the Bitcoin Block Reward, this is made up of two component layers for the miners. The first is newly generated or minted tokens, and the second comprises transaction fees.[308]

Master nodes also validate and record transactions on the blockchain. However, they do not have the ability to add new blocks.[309] They may also perform additional functions and responsibilities for which they have been specified. Light nodes are common on the blockchain and serve to accommodate faster transactions and activities in the blockchain. They are also known as Simplified Payment Verification (SPV) nodes.[310] They do not download the entire blockchain data and only store the necessary information to save time and storage.[311]

Regarding supervisory nodes, these nodes can potentially provide regulators with the ability to control activities on the blockchain from within the chain itself. This is very novel as regulators thus far have only introduced several regulations and requirements regarding the on and off-ramps in this ecosystem, which is outside of the blockchain. Still, these are not within the blockchain itself. Supervisory nodes have the ability to monitor, audit, flag, hold, and even stop transactions. It can be used to introduce

[308] Abdulrahman Hamdy , Michael Bogosian “Explaining The Bitcoin Block Reward”(2023) available online at https://argoblockchain.com/articles/explaining-the-bitcoin-block-reward (last accessed on 13 July 2023).

[309] Utimaco, “What are the Types of Nodes in Blockchain?”, available online at https://utimaco.com/service/knowledge-base/blockchain/what-are-the-types-of-nodes-in-blockchain (last accessed on 05 October 2024).

[310] Lightweight nodes, known as simplified-payment-verification (SPV) clients, access full nodes to fetch transactions for validation. Heo, Jun Wook, Ramachandran, Gowri, & Jurdak, Raja (2023) PPoS: Practical Proof of Storage for Blockchain Full Nodes. In Proceedings of the 5th IEEE International Conference on Blockchain and Cryptocurrency (ICBC). Institute of Electrical and Electronics Engineers Inc., United States of America, pp. 1-9. Available online at https://eprints.qut.edu.au/238319/ (last accessed on 25 March 2025).

[311] Nervos Network,”What is Simplified Payment Verification (SPV)?”,(2024) available online at https://www.nervos.org/knowledge-base/what_is_SPV_(explainCKBot) (last accessed on 02 December 2024).

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validators within the blockchain to require certain actions from the participants in the ecosystem before transactions can be executed. The supervisory node, in this respect, oversees the blockchain network and ensures its integrity. It is submitted that to use a supervisory node, several steps need to be followed. The first step is to deploy a supervisory node, which involves setting up a dedicated node with enhanced capabilities, such as advanced analytics, monitoring tools, and access controls. The next step is to configure the node by defining the node's role. Permissions and responsibilities within the blockchain network. The supervisory node can then monitor and analyse transactions on the blockchain in real-time, thereby detecting potential risks or anomalies occurring.[312]

The supervisory node also has the ability to verify the integrity of blocks and ensure that the network consensus rules are met. Further to this, the regulators can use the supervisory nodes to enforce predefined governance rules, such as regulatory compliance or network policies. In essence, the supervisory node offers a centralised point of control allowing the regulator to take swift action in case of contraventions. It is further submitted that the fact that a supervisor node can be integrated into existing blockchain infrastructures provides the regulator with much-needed flexibility in terms of the use of different blockchain ledgers by providers.[313]

Forensic nodes' role is to store information on runtime behaviour from a real-time transaction or application as an audit trail of live systems.[314] Forensic nodes are,

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312 Federal Reserve Bank of Boston, "Beyond Theory: Getting Practical With Blockchain Fintech - A New Use Case: A Supervisory Node", (2019), available online at https://www.bostonfed.org/publications/Fintech/beyond-theory-getting-practical-with-blockchain/a-new-use-case-a-supervisory-node.aspx (last accessed on 05 October 2024).

313 Federal Reserve Bank of Boston, "Beyond Theory: Getting Practical With Blockchain Fintech - A New Use Case: A Supervisory Node", (2019), available online at https://www.bostonfed.org/publications/Fintech/beyond-theory-getting-practical-with-blockchain/a-new-use-case-a-supervisory-node.aspx (last accessed on 05 October 2024).

314 Smart Technologies "Forensic Nodes for Blockchain Implementation" (2021) available online at https://www.stl.com.mt/forensic-nodes-for-blockchain-implementation/#:~:text=Forensic%20nodes%20form%20part%20of,real%20time%20transaction%20or%20application. (last accessed on 15 July 2023).

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therefore, specialised nodes on the blockchain network designed to support the regulator (for the purpose of this research) in its forensic analysis and investigation of transactions and the network activity. The activities or capabilities of a forensic node are: data collection; data analysis; data visualisation; query; and search function; alerts and notifications; chain analysis; network mapping; and evidence collection smart contract analysis.[315] In terms of data collection, a forensic node collects and stores detailed information about transactions, blocks, and network events, including metadata and contextual data. With respect to data analysis, the forensic node performs advanced data analytics, such as machine learning, graph analysis, and pattern recognition, to identify suspicious activity, violations of rules, and threats to the security of the blockchain. The forensic node can assist supervision teams at regulators by providing interactive visualisations and dashboards, thereby helping to understand complex relationships within the blockchain as well as transaction flows and network behaviour. In terms of query and search functionality, the forensic node can provide supervision teams by enabling the search of data using various parameters, such as transaction addresses, timestamps, and keywords. The supervision teams in the regulator can configure forensic nodes to alert them to contraventions and other pre-defined events in real-time. Another important functionality that can be further unpacked is the forensic node's ability to create detailed maps of the blockchain network, including connections and communication patterns, and then preserve the evidence in the form of transaction records or network logs.[316]

1.3 Problem statement and research objectives

Many African countries and regulators worldwide are grappling with striking a balance between effective regulation and not stifling innovation, while promoting a market that

[315] Ellul, J., Galea, J., Ganado, M. et al. Regulating Blockchain, DLT and Smart Contracts: a technology regulator's perspective. ERA Forum 21, 209–220 (2020) available online at https://doi.org/10.1007/s12027-020-00617-7 (last accessed on 01 May 2024).

[316] Atlam, Hany & Ekuri, Ndifon & Azad, Muhammad & Lallie, Harjinder. (2024). Blockchain Forensics: A Systematic Literature Review of Techniques, Applications, Challenges, and Future Directions. Electronics. 13. 3568. 10.3390/electronics13173568. (last accessed on 03 December 2024).

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allows financial technology companies to thrive sustainably. Globally, there is a call for alignment and cooperation between regulators. Africa is unique due to a combination of factors, including a large unbanked and underbanked population, high mobile phone penetration, and a young, tech-savvy demographic, which creates a fertile ground for innovative financial solutions. Africa could work together to provide a unique solution to the challenges faced in regulating crypto asset services providers within the Fintech asset ecosystem.

Effective utilisation of blockchain technology can solve real-world problems in Africa and serve as a tool for progress. Currently, the development of regulatory frameworks for crypto assets varies from country to country, creating a complex regulatory environment for crypto asset service providers to navigate. This presents a barrier for crypto asset services providers to scale their operations across multiple countries in Africa. The research problem to be investigated is accordingly how the call for alignment from different international bodies and standard setters can be used as a foundation to create a more uniform continental-wide approach to regulating crypto asset services providers. The research undertaken in this thesis is about changing traditional regulatory architecture and approaches to supervision. It aims to push the thinking toward closer coordination across African jurisdictions and the use of embedded supervisory techniques that provide real-time reporting.

The objectives of the research are:

- To provide an overview of the international policy guidance and recommendations from relevant international bodies and standard setters in respect of crypto assets and highlight the common theme of cooperation and collaboration within the steer from these entities.
- To examine the Fintech landscape and the current state of the regulatory framework development within the selected comparative countries within Africa.
- To critically analyse the Markets in Crypto Assets Regulation developed in Europe, exploring the learnings from this continental-wide regulatory framework and how some elements could help inform a local approach.

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- To analyse the Commonwealth *Model Law* on virtual assets and what aspects of this model law can be helpful to provide for a coordinated approach and the development of a trans-border crypto asset licence.
- To set out and propose high-level elements of a trans-border licence for crypto asset service providers and highlight embedded supervision as a proactive way to monitor risks in a continent-wide approach.

1.4 Significance of the thesis

This thesis's contribution lies firstly in that it will be the first comprehensive study analysing similarities of the risks that crypto assets bring across different African countries in an attempt to align regulatory frameworks and advance closer cooperation in respect of market conduct and prudential requirements. Secondly, it will contribute by developing a suggested regulatory framework that provides one framework across several African countries through which Fintechs can operate across jurisdictions with one regulatory licence. Lastly, by way of a deep-dive technical analysis, the thesis will consider the use of agile and future-looking supervisory tools in the form of embedded supervision to supervise the entities that have been approved to operate in multiple African countries through one approved licence.

This proposal to use, for instance, supervisory nodes, forensic nodes, or zero-proof methods is ground-breaking in the African context and still primarily theoretical internationally. Over and above this, the originality is further ameliorated by the proposal to do away with multiple country requirements for capital reserving, but instead using SDR[317], which is an international reserve asset, to avoid the duplication of holding reserves in each country in the country's fiat currency, to comply with various sets of requirements. The thesis is considered an original contribution to the field of study.

317 Special drawing rights.

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1.5 Potential of different types of crypto assets to deepen financial inclusion

Broadly speaking, it is submitted that crypto assets have the potential to deepen financial inclusion through the promises of increased access to remote or underserved areas and the provision of financial products and services to underbanked or unbanked individuals. Further to this, it also promises lower cost than traditional options, thereby creating the allure of more affordable transactions for low-income individuals. It is also submitted that it may allow for more control over the storage and transfer of financial products without relying on traditional institutions or intermediaries, thereby facilitating financial sovereignty. Some of the other purported benefits in respect of financial inclusion are decentralised lending, which can provide easier access to credit for individuals and small businesses, and reduction of costs and complexities of remittances. Crypto assets as a whole do not rely on physical banking infrastructure and thereby have the potential to provide direct access to new forms of finance to the unbanked population. Some of the features of crypto assets that may enable financial inclusion are discussed here, before unpacking individual types of tokens and their features that may unlock the potential to deepen financial inclusion.

The first feature is the permissionless nature of crypto assets. With public blockchains, there are no restrictions on joining, and participation is not controlled by a central administration. The infrastructure requirement here is internet access, but some interesting solutions are being developed that may allow for participation without the need for internet access. An example of this within the African borders is Machankura.[318] Machankura is a text-based tool built by software developer Kgothatso Ngako,[319] which, as of February 2024, provided 3,000 Africans with access to Bitcoin

[318] Andrew Throuvalas, Decrypt " Machankura Boosts African Bitcoin Adoption Without the Internet"2023 available online at https://decrypt.co/123641/machankura-african-bitcoin-adoption-feature-phones-text (last accessed on 02 February 2024).

[319] Kgothatso Ngako is a South African computer science researcher and developer who grew up in Mamelodi and worked for Amazon before developing this application. See Yahoo Finance,"Kgothatso Ngako: How I Brought the Machankura Bitcoin App to Africa"(2024) available online at https://finance.yahoo.com/news/kgothatso-ngako-brought-machankura-bitcoin-212559064.html?guccounter=1&guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2xlLmNvbS8&guce_referrer_sig=AQAAAHSx-

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without the need to access the internet. Machankura combines USSD[320] technology with Bitcoin's Lightning Network[321] – a layer two scaling system that enables cheaper and faster Bitcoin transactions. With Machankura, mobile phone users across a range of African countries can access the app by dialing a specific code, depending on their location and the service they wish to access. Its services include sending or receiving Bitcoin, checking one's balance, or even bartering Bitcoin for goods and services on Bitrefill.[322]

The second feature that may enable financial inclusion is the non-physical nature of crypto assets, which means that crypto assets can be stored and transferred digitally, eliminating the need for physical banking infrastructure. This may help people who live in remote locations in Africa or who, for any other reason, cannot open bank accounts or access banking solutions in traditional ways, the reasons due to their gender, ethnicity, religion, or political views, amongst other things.[323] The third feature is the potential low cost, as they promise to remove many intermediaries in other traditional products and systems, which is especially key for individuals with limited financial resources.

RxYuxQnuoF31N87jR9QWQ8UiwennT7PwgNDws6xsBBg_iFBhjSZOvg5X0TPubIP-_ZiWf0SSOFX_qXQsgEVwoUVO9nY85hpr-Qq8g4kxsCE-CYcxMWN_7PuqLEonC6Vo_AAmcnzK6PsMe0r5l8cE_apWVxWiHrYwxR0xOxd (last accessed on 02 December 2024).

320 Unstructured Supplementary Service Data is a Global System for Mobile Communications (GSM) protocol that is used to send text messages. See Linda Rosencrance, TechTarget, "USSD (Unstructured Supplementary Service Data)" available online at https://www.techtarget.com/searchnetworking/definition/USSD (last accessed on 05 October 2024).

321 Decentralized network using smart contract functionality in the blockchain to enable instant payments across a network of participants. See Developcoins, "What is Lightning Network? A Step-By-Step Guide for Beginners!", available online at https://www.developcoins.com/lightning-network (last accessed on 03 February 2023).

322 Bitrefill is a platform that allows consumers to purchase gift cards for various retailers and mobile refills using Bitcoin and other cryptocurrencies. See Wijdan Khaliq,"Bitrefill Review 2024: Spend Crypto on Everyday Items!", (2024), available online at https://coinbureau.com/review/bitrefill-review/ (last accessed on 05 October 2024).

323 Sygnum " How crypto assets can strengthen financial inclusion"2023, available online at https://www.sygnum.com/future-finance/crypto/how-crypto_assets-can-strengthen-financial-inclusion/ (last accessed on 03 February 2024).

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Broadly speaking, crypto assets as a collective, can support financial inclusion in several potential ways. One is by broadening the scope of available services and products. Besides payments as the obvious use case, digital assets enable access to alternative financial services, such as loans (incl. peer-to-peer lending), savings, or insurance. The increased decentralisation allows for direct peer-to-peer transactions, increasing financial inclusion and decreasing reliance on traditional financial institutions. Self-sovereign identity, or decentralised identity, gives individuals control over their personal data and its access. Similarly, a self-custody wallet offers autonomy with control over its private keys, which are used to access and manage assets held either as tokens on a blockchain or in crypto assets. Combining self-custody and self-sovereign features, these digital wallets provide users with the means to secure their own digital keys (i.e., to sign or access transactions, statements, credentials, documents, or claims). Importantly, individuals retain the right to decide who accesses their personal information and wallets. Identity verification plays a pivotal role in granting access to the financial system. Fifteen per cent of adult U.S. citizens (over 34.5 million people) either do not have a driver's licence or state identification (10%), especially younger adults and adults in lower income groups are more likely to lack identification.[324] Another way that crypto assets could possibly help financial inclusion is through "fractional ownership". This is done through tokenising assets for diverse investment and ownership models, ranging from real estate to financial assets. Fractional ownership involves dividing assets into smaller, more affordable units through a digital representation of real-world assets and shares, enabling a broader range of investors to participate.

[324] J A Rothschild, S B Novey, Center for Democracy and Civic Engagement at the University of Maryland," Who Lacks ID in America Today? An Exploration of Voter ID Access, Barriers, and Knowledge - Analyses Conducted by the Center for Democracy and Civic Engagement at the University of Maryland", (2024) available online at https://cdce.umd.edu/sites/cdce.umd.edu/files/pubs/Voter%20ID%202023%20survey%20Key%20Results%20Jan%202024%20%281%29.pdf (last accessed on 02 December 2024).

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(a) Specific use cases

The first specific use case is "supply chain credit." Tokens that represent ownership of goods in transit or stored in warehouses support supply chains and could be used as collateral for financing, enabling greater access to financing for supply chain participants. The programmability of crypto asset tokens enables specific rules and parameters to be set, enabling new types of financial instruments. One of the example's highlighting programmability is that a tokenised asset representing a physical good in the supply chain could be programmed to automatically be rerouted based on real-time price or demand information. The small- and medium-sized enterprises that power global supply chains have an estimated unmet credit need of $5.2 trillion, according to the World Bank and the International Monetary Fund.[325] Unlocking the value contained within these intermediate goods has the ability to expand access to affordable business credit.[326] A very interesting real-world application of this type of use case is IBM Blockchain World Wire, this application in the supply chain uses both blockchain technologies and Stablecoins to tokenise assets and enable near-instant settlement of transactions between participants in the supply chain. The platform enables businesses to use tokenised invoices, purchase orders, or other financial instruments, which can then be used as collateral for obtaining financing.

As explained, Stablecoins are a particular type of token that has been heavily promoted due to their potential to increase financial inclusion, thanks to their unique features. As a store of value, Stablecoins could expand global access to low-cost, U.S. dollar-based savings. The total market capitalisation of Stablecoins exceeds $130 billion as of June 2023.[327] People in low- and middle-income countries across Latin

[325] World Bank Group," MSME Finance Gap," available online at https://documents1.worldbank.org/curated/en/653831510568517947/pdf/121264-WP-PUBLIC-MSMEReportFINAL.pdf (last accessed on 03 December 2024).

[326] Brevoot, Kenneth, Philip Grimm, and Michelle Kambara. "Data Point: Credit Invisibles." Consumer Financial Protection Bureau, May 2015, https://files.consumerfinance.gov- /f/201505_cfpb_data-point-credit-invisibles.pdf (last accessed on 02 March 2024).

[327] International Monetary Fund (IMF). Currency Exchange Rate Archives. https://beincrypto.com/tether-market-cap-high-major-Stablecoin-supplies-shrink/#:~:text=The%20 total%20%20market%20capitalization%20of,%24186%20billion%20in%20May%202022

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America and Africa, have increasingly turned to USD-pegged or Euro-pegged Stablecoins as a hedge against inflation and therefore, a form of savings. Also, in Turkey, India, Ghana, Nigeria, and Brazil, where there has been significant currency depreciation, losing over half their value in USD terms over the past decade, there has been usage of Stablecoins to benefit from the peg to more "stable" currencies outside of local currency.[328] An example of a very popular Stablecoin is the United States Dollar Coin or USDC issued by Circle, which is backed with dollar-for-dollar reserves.[329]

Another use case for the potential benefits of financial inclusion is real-time and cross-border payments, as well as payroll. The deep penetration of mobile phones in many remote regions of the world may have opened up new avenues for reaching the unbanked population. Some of the traditional payment systems are often deemed to be slower and more costly, relying on multiple intermediaries. Many mobile transfers facilitate the transfer of digital currencies, through intermediaries. For instance, Tencent[330] (via the WeChat, Pay App) or Safaricom (via M-Pesa)[331]but these are all account-based transfers, the more novel technologies employed with Stablecoins remove the need for intermediaries, promising efficiencies.[332] Stablecoins present an

[328] Aspen Institute," How Blockchain and Crypto could impact financial inclusion and build wealth",(2023), available online at https://www.aspeninstitute.org/wp-content/uploads/2023/08/Aspen-Blog-Post-2023-Blockchain-and-Crypto-3.pdf (last accessed on 04 April 2025).

[329] Circle is headquartered in Boston, Massachusetts. USDC, the second largest Stablecoin worldwide, is designed to hold at or near a stable price of $1. See Publis0x, Cryptoray 2023," How USDC Works?" available online at https://www.publish0x.com/cryptospace/how-usdc-works-xwyxejv (last accessed on 14 September 2024).

[330] Tencent Holdings Ltd. is a Chinese multinational technology conglomerate and holding company headquartered in Shenzhen. It is one of the highest grossing multimedia companies in the world based on revenue. See DBPedia, "About Tencent", available online at https://dbpedia.org/page/Tencent (last accessed on 05 October 2024).

[331] M-PESA is a mobile phone-based money transfer service, payments and micro-financing service, launched in 2007 by Vodafone and Safaricom, the largest mobile network operator in Kenya. See Vodafone.Com," How it started", available online at https://www.vodafone.com/about-vodafone/what-we-do/m-pesa (last accessed on 05 October 2024).

[332] Kim, Henry M., Can Stablecoins Actually Improve Financial Inclusion: Exploring the IT Affordances of Token-Based Digital Currencies (April 7, 2023). Available at

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alternative to facilitate instant, or near-instant, settlement and transfer of funds, overcoming geographical distances. With some of the most popular Stablecoins being pegged to the US Dollar (USD), a Stablecoin like tether (USDT) or circle (USDC) proxies the stability of USD and hence is a much better unit of account and medium of exchange than volatile crypto assets. Sending money across borders often means high transaction fees and constitutes 6.24% of the funds sent worldwide, according to a report from Aspen on saving and investing.[333] Remittance fees can be as high as 5% to 10% of the transaction. For some lower-income countries, the funds can account for as much as 10–15% of their annual GDP.[334]

These transactions, when processed across borders, can take days to complete without the use of enabling technology like a distributed ledger. Further to this, traditional cross-border payment systems can also be inaccessible for individuals in underserved regions or without access to a traditional bank account. Whereas Stablecoins operate on blockchain networks, which offer an open and accessible environment to anyone with internet connectivity. The possibility that Stablecoins could unlock in this respect is that workers, especially in lower-income sectors, can receive instant micropayments as they work, rather than waiting for days to receive their wages. This also reduces the need to access "early wage access" solutions that introduce the cost of credit fees and diminishes the wages further. One of the real-world examples of this use case is Western Union,[335] which has been using Bitcoin in

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SSRN: https://ssrn.com/abstract=4412527 or http://dx.doi.org/10.2139/ssrn.4412527 (last accessed on 03 March 2024).

333 "Inclusive Saving and Investing." The Aspen Institute.(2023) available online at https://www.aspeninstitute.org/programs/financial-security-program-2/inclusive-saving-and-investing/ (last accessed on 03 March 2024).

334 Kulkarni, Rajendra and Schintler, Laurie and Koizumi, Naoru and Olds, James and Stough, Roger R., Cryptocurrency, Stablecoins and Blockchain: Exploring Digital Money Solutions for Remittances and Inclusive Economies (December 29, 2019). 66th Annual North American Meetings of the Regional Science Association International (13–16 Nov, 2019) in Pittsburgh, PA, USA. , Available at SSRN: https://ssrn.com/abstract=3511139 or http://dx.doi.org/10.2139/ssrn.3511139 (last accessed on 03 March 2024).

335 Western Union is a money transfer leader and offers money transfer services to every country on Earth except Iran and North Korea. See Western Union, "about us" available online at https://corporate.westernunion.com/#:~:text=Western%20Union%20offers%20money%20transfer,av

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the Philippines but is expected to unveil new crypto products in the near future based on recent patent filings.[336] Another example is Zebec[337] which enables real-time and continuous streams of payments and financial transactions for payroll and other financial transactions. Using Zebec, employees using this protocol can be paid by the second.

Detailed studies concluded by the World Economic Forum[338] have also found that Stablecoins do not present features or capabilities that significantly reduce the specific barriers to financial inclusion in the scenarios studied.[339] However, the paper by the World Economic Forum suggests that blockchain, cryptocurrency, and Stablecoin ecosystems are continually evolving, and certain capacities may emerge in the future that offer more benefits to end-users who are unbanked or unable to access relevant and suitable financial services. These opportunities might relate to open and interoperable distributed ledger technology-based ecosystems, publicly visible payment histories, innovations with decentralised digital identity and compliance, or simply filling gaps where other services do not yet exist.[340]

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eraging%2024%20transactions%20each%20second. (last accessed on 14 September 2024).

336 Coinchange, "Traditional Remittance players experimenting with Blockchain",(2023), available online at https://www.coinchange.io/blog/traditional-remittance-players-experimenting-with-blockchain (last accessed on 03 December 2024).

337 Zebec Protocol is a continuous settlement protocol on the Solana blockchain that enables continuous, real-time money streams. See Lucky Rollins," What is Zebec Protocol",2023 available online at https://medium.com/@bful452/what-is-zebec-protocol-b7c8dc390094 (last accessed on 03 March 2024).

338 The World Economic Forum is the International Organization for Public-Private Cooperation. It provides a global, impartial, and not-for-profit platform for meaningful connection between stakeholders to establish trust and build initiatives for cooperation and progress. See WEF – About Us available online at https://www.weforum.org/about/world-economic-forum/ (last accessed on 03 December 2024).

339 WEF Staff. (2021, November). What is the Value Proposition of Stablecoins for Financial Inclusion? WEF White paper, available online at https://www3.weforum.org/docs/WEF_Value_Proposition_of_Stablecoins_for_Financial_Inclusion_2021.pdf (last accessed on 03 March 2024).

340 World Economic Forum, "Reimagining Digital ID – Insight Report",(2023), available online at https://www3.weforum.org/docs/WEF_Reimagining_Digital_ID_2023.pdf (last accessed on 03 December 2024).

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Non-fungible tokens are also a use case that can provide opportunities to improve financial inclusion. NFTs can help to bring more people into the financial system by providing them with a way to prove ownership of assets. This can make it easier for them to access credit and investment opportunities. NFTs also offer security and transparency to investors as they are based on blockchain technology. Finally, NFTs cannot be duplicated, which ensures that the authenticity of the underlying digital asset can be easily verified. To make it more inclusive, fractionalised NFTs can be used, allowing one to own a small piece of the NFT without having to pay the full purchase amount. This allows many who would be excluded if they had to purchase the full asset, to participate in certain asset investments by purchasing fractions of it. One of the cases for fractionalised non-fungible tokens is enabling the fractionalisation of shares of stock, bonds, and other investment securities into units ("fractionalised securities") that are small enough for virtually any investor to afford. In terms of small businesses, fractionalised NFTs can expand the scope of potential investors, and fractionalised securities can expand the pool of invested funds that businesses can access. This has special significance for SMEs, which comprise 90 per cent of businesses worldwide, representing 50 per cent of worldwide employment, and are critical to economic growth.

Like all businesses, SMEs rely on financing to operate and expand their activities. Because of their relatively small size, SMEs lack the economies of scale to access capital market funding cost-effectively. This leaves them with fewer options to borrow through institutions like banks. That, however, can limit the availability of funding and also increase the cost of financing for the SMEs, creating a large financing gap. Through fractionalisation, SMEs can be empowered and enabled to directly access lower-cost capital-market funding by issuing their own fractionalised securities on the blockchain, creating similar rights and obligations to traditional security counterparts, thereby increasing their available funding and lowering the cost of financing.[341]

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[341] Steven L. Schwarcz and Robert Bourret,2023 "Fractionalizing Investment Securities: Using Fintech to Expand Financial Inclusion" available online at https://clsbluesky.law.columbia.edu/2023/04/05/fractionalizing-investment-securities-using-Fintech-

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More decentralised finance applications (DeFi) could also perhaps be considered a promising solution to achieve deeper levels of financial inclusion globally. This promise is founded on leveraging blockchain technology and smart contracts together, thereby providing individuals, particularly the unbanked and underbanked market segments, with access to a wide range of financial products and services. DeFi infrastructure offers "accounts," savings and loans, payments, and investing in a model that is inherently based on technology and peer-to-peer (P2P), thereby disintermediating traditional institutions.[342] Capital is crowdfunded[343], and community-sourced, financial instruments are software, and the rules of the game are transparent, based on code.

This creates a financial infrastructure that is inherently open, public, transparent, neutral, censorship-resistant, and borderless. And one that is accessible to anyone anywhere in the world with only a smartphone and an internet connection.[344] Notably, it is submitted that DeFi is still very small in South Africa, with very few participants using these applications. Furthermore, on investigation, it can be found that there are some ecosystem participants that remain with control or influence over the protocol, which means that there is some centralised control that remains. In less than five years, decentralised finance has become a billion-dollar industry, with a market valued at an all-time high of more than $180 billion. From January 2020 to the present, the

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to-expand-financial-inclusion/ (last accessed on 06 March 2024).

342 World Economic Forum, "World Economic Forum, "Why decentralized finance is a leapfrog technology for the 1.1 billion people who are unbanked" (2022) available online at https://www.weforum.org/agenda/2022/09/decentralized-finance-a-leapfrog-technology-for-the-unbanked/ (last accessed on 06 March 2024).

343 Crowdfunding is an alternative model for project financing, whereby a large and dispersed audience participates through relatively small financial contributions, in exchange for physical, financial or social rewards. See Alegre, Ines and Moleskis, Melina, Crowdfunding: A Review and Research Agenda (October 7, 2016). Available at SSRN: https://ssrn.com/abstract=2900921 or http://dx.doi.org/10.2139/ssrn.2900921 (last accessed on 04 April 2025).

344 World Economic Forum, Page 4 (last accessed on 06 March 2024).

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number of users on DeFi has increased from approximately 91,000 to nearly five million.[345]

1.6 Methodology and comparative approach

This thesis is a critical theoretical study, primarily based on a review of various sources from international bodies, standard-setting organisations, policymakers, primary and secondary legislation of comparative countries, and publications from reputable sources. The sources in respect of the international bodies will include the International Monetary Fund, the Financial Services Board, the Bank of International Settlements, and the International Organization of Securities Commissions. In addition to these primary sources, academic writings, including books and journal articles, as well as postgraduate research studies in the form of theses and dissertations, and reputable online sources, are consulted.

This study focuses on the existing regulatory frameworks of some African countries, demonstrating the need for collaboration and coordination to capitalise on the benefits of attracting and hosting Fintech companies, deepen financial inclusion, and increase economic growth. Globally, regulators are examining what constitutes an appropriate and effective regulatory framework and how it should be developed.

1.7 Selection of comparative jurisdictions

To address the current shortcomings in various pieces of legislation in African countries and identify possible solutions, foreign law is considered in the form of the EU Markets in Crypto Assets Regulation (MiCA)[346]. From a regional developing

[345] World Economic Forum, "Why decentralized finance is a leapfrog technology for the 1.1 billion people who are unbanked" (2022) available online at https://www.weforum.org/agenda/2022/09/decentralized-finance-a-leapfrog-technology-for-the-unbanked/ (last accessed on 06 March 2024).

[346] Markets in Crypto Asset Regulation established through Regulation (Eu) 2023/1114 of the European

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perspective, a comparative study with Mauritius, Kenya, Namibia, and Zambia is also provided.[347] Comparison will be limited to the regulatory frameworks of the respective countries in terms of conduct and prudential frameworks.

Choosing Mauritius is based not only on its membership in the Financial Stability Board[348] and the International Organization of Securities Commissions[349], which provides recommendations on which members should align, but also on the developed state of its crypto asset regulatory framework. In 2021, Mauritius released its first crypto licencing legislation on the African continent through the *Virtual Asset and Initial Token Offering Services Act*.[350] The *Virtual Asset and Initial Token Offering Services Act* transformed crypto asset laws in Mauritius, instituting a more modern, fair, and secure regulatory system to deal with Africa's digital asset market.

Kenya was chosen since it is also a member of IOSCO[351] through the Capital Markets Authority.[352] The commonality in membership facilitates discussion around alignment, as the membership of these bodies means that all members need to align to the same

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Parliament and of the Council of 31 May 2023, available online at https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32023R1114 (last accessed on 23 March 2025).

347 Members of the Financial Stability Board and subject to their recommendations.

348 The Financial Stability Board (FSB) is an international body that monitors and makes recommendations about the global financial system. See FSB – About Us, available online at https://www.fsb.org/about/ (last accessed on 03 December 2024).

349 IOSCO is the international body that brings together the world's securities regulators and is recognized as the global standard setter for financial markets regulation. See IOSCO – About Us available online at https://www.iosco.org/v2/about/?subsection=about_iosco (last accessed on 03 December 2024).

350 The Virtual Asset and Initial Token Offering Services Act No. 21 of 2021.

351 IOSCO is the international body that brings together the world's securities regulators and is recognized as the global standard setter for financial markets regulation. See IOSCO, “About Us”, available online at https://www.iosco.org/v2/about/?subsection=about_iosco (last accessed on 24 February 2025).

352 The Capital Markets Authority (CMA) is charged with the prime responsibility of both regulating and developing an orderly, fair and efficient capital markets in Kenya with the view to promoting market integrity and investor confidence. See CMA-About Us, available online at https://www.cma.or.ke/ (last accessed on 03 December 2024).

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recommendations. Furthermore, through the Ministry of Information Communication and Technology, Innovation and Youth Affairs (Ministry of ICT), the Government of Kenya has communicated interest in developing the Fintech space in Kenya. This is evidenced by the formation of the Distributed Ledgers and Artificial Intelligence Taskforce (Taskforce) in March 2018, which was tasked with developing a road map for emerging technologies such as blockchain.[353] Kenya, although not a primary member, also participates in the FSB Regional Consultative Group for Sub-Saharan Africa, represented by Dr. Kamau Thugge, who is the Governor of the Central Bank of Kenya.[354]

In this study, Zambia was chosen as one of the comparative countries since its Security and Exchange Commission is part of IOSCO. Furthermore, because Zambia is part of the FSB Regional Consultative Group for Sub-Saharan Africa, which supports alignment with the recommendations of the FSB. The representative of the FSB Regional Consultative Group is Mr. Mukuli Chikuba, who is the Permanent Secretary, of Economic Management and Finance.[355] Other considerations included that Mr. Felix Mutati, Zambian Minister of Technology and Science, indicated that the central financial institutions in Zambia would soon introduce legislation that will regulate crypto assets and stated that:

> "There is a need for a policy framework that supports this revolutionary technology".[356]

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353 Kenyan Wall Street. (2018, February 28). Kenya Govt unveils 11 member Blockchain & AI Taskforce headed by Bitange Ndemo. Available online at https://kenyanwallstreet.com/kenya-govt-unveils-11-member-blockchain-ai-taskforce-headed-by-bitange-ndemo/ (last accessed on 03 December 2024).

354 Financial Stability Board "Members of the FSB Regional Consultative Group for Sub-Saharan Africa" available online at https://www.fsb.org/about/rcgs/list-of-members-of-the-fsb-regional-consultative-group-for-sub-saharan-africa/ (last accessed on 14 November 2023).

355 Financial Stability Board "Members of the FSB Regional Consultative Group for Sub-Saharan Africa" available online at https://www.fsb.org/about/rcgs/list-of-members-of-the-fsb-regional-consultative-group-for-sub-saharan-africa/ (last accessed on 14 November 2023).

356 Ministry of Technology and Science, available online at https://www.mots.gov.zm/?p=2309 (last accessed on 03 December 2024).

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One of the reasons Namibia was chosen is because the Namibia Financial Institution Supervisory Authority is an associate member of IOSCO, and Namibia is a member of the FSB Regional Consultative Group for Sub-Saharan Africa. In terms of the FSB Regional Consultative Group, Namibia is represented by Leonie Elleneeza Dunn, who is the Deputy Governor of the Bank of Namibia.[357] Regarding regulatory frameworks about crypto assets, Namibia passed a *Virtual Assets Bill* in Namibia's lower house of parliament on June 22, 2023.[358] Following the enactment of the *Virtual Assets Act 10 of 2023* on 25 July 2023,the Bank of Namibia, as the regulatory authority has, accordingly, issued various sets of rules in order to facilitate the transfer of virtual assets. These rules relate to, amongst other things, the transfer of virtual assets, cross-border wire transfers, advertising of virtual assets, risk management, and cyber security related matters.[359]

The comparator countries were also selected, considering their membership in the African Union, which may facilitate further cooperation between these member states. Furthermore, the comparator countries were also selected because most are member states of the Southern African Development Community (SADC), save for Nigeria.[360] The mission of SADC encompasses deeper cooperation and integration among its member states. The study will also consider the work of the Committee of Insurance, Securities, and Non-Banking Financial Authorities (CISNA)[361] with respect to the

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357 Financial Stability Board "Members of the FSB Regional Consultative Group for Sub-Saharan Africa" available online at https://www.fsb.org/about/rcgs/list-of-members-of-the-fsb-regional-consultative-group-for-sub-saharan-africa/ (last accessed on 14 November 2023).

358 Amaka Nwaokocha "Namibia passes bill to regulate crypto and digital assets" available online at (2023). https://cointelegraph.com/news/crypto-namibia-passes-bill-to-regulate-crypto-and-virtual-assets (last accessed on 15 July 2023).

359 Bowmans, Herselman A,"Namibia: The Virtual Assets Act 10 of 2023 – What should you know?",(2024), available online at https://bowmanslaw.com/insights/the-virtual-assets-act-10-of-2023-what-should-you-know/ (last accessed on 03 December 2024).

360 The Southern African Development Community (SADC) is an inter-governmental organization headquartered in Gaborone, Botswana, established as SADC on 17 August 1992. See https://www.sadc.int/pages/history-and-treaty (last accessed on 02 December 2024).

361 The Committee of Insurance, Securities and Non-banking Financial Authorities (CISNA) was established in June 1998, pursuant to Article 2 of Annexure 10 of the Protocol on Finance and Investment (FIP) of Southern African Development Community (SADC) as a committee of authorities

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Commonwealth *Model Law* on virtual assets[362]. The work of CISNA is well-positioned to support the research since it also aims to align frameworks across the SADC and could assist in opening foundational discussions as to why duplication of meeting the requirements in the aligned frameworks is truly necessary or whether a trans-border licence could be considered. This discussion could be well-positioned after the countries have aligned their frameworks using the Commonwealth *Model Law* on virtual assets, for instance.

1.8 Delimitation and scope of the study

This study focuses on developing a theoretical regulatory and supervisory framework that can serve as a basis for several African countries, allowing Fintechs that meet specific criteria to access the markets in multiple countries while being regulated and supervised under a single licence, subject to strict entry conditions. For the purposes of this study, the focus is on Fintechs that utilise crypto assets on distributed ledger frameworks in their use cases and can demonstrate that their financial products and services could benefit the economies of the countries with which they intend to do business, and that their products and services could help deepen financial inclusion. The study will reference statistics related to the overall Fintech market in Sub-Saharan Africa or globally, providing the reader with a holistic view of the impact and potential of the broader Fintech market.

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responsible for the supervision of insurance, securities, and non-banking financial institutions (NBFI) in SADC Member States. CISNA is part of the Directorate of Finance, Investment and Customs of the SADC Secretariat and reports to the SADC Committee of Ministers of Finance and Investment through the Committee of Senior Treasury Officials. See https://cisna.net/about-cisna/ (last accessed on 02 December 2024).

362 The model law seeks to harmonise legislation on virtual assets to boost innovation, trade and security throughout the Commonwealth. See The Commonwealth, "New Commonwealth model law to help countries regulate virtual assets",(2024), available online at https://thecommonwealth.org/news/new-commonwealth-model-law-help-countries-regulate-virtual-assets (last accessed on 24 February 2025).

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As mentioned, this study covers five African countries: South Africa, Zambia, Namibia, Kenya, and Mauritius. These countries have memberships with several of the same international bodies, supporting this study's arguments for close cooperation and alignment. The study also covers unique and novel techniques of supervision to ease the burden of reporting on the financial technologies allowed to make use of this trans-border regulatory licence, but also to make it possible for the participating regulators to do desktop supervision but in real-time and be comfortable that they have adequate insight and reporting on compliance levels. This study will not attempt to set out a detailed regulatory framework. Instead, it underscores several key domains that should be addressed within such a theoretical framework to ensure adequate protection while simultaneously leveraging the associated benefits.

One of the challenges of this study is, however, the multitude of different financial technologies that permeate the financial sector. Some of these financial technologies include algorithmic trading, payment and cash transfer applications, peer-to-peer lending applications, robo-advisors, other uses of artificial intelligence and machine learning, and Insuretech[363] or Regtech.[364] Many of these technologies are disrupting the traditional financial sector by using these technologies to provide new products and services or provide them in different ways. It is not possible to consider all these technologies in this study's scope and propose a regulatory and supervisory framework to address all the risks that can emanate from the application of these technologies. Consequently, this study does not cover anything beyond crypto assets, both backed

[363] Insurtech is not only Fintech for insurance: it's gaining its autonomy. Insurtech uses new technologies to revolutionize the traditional insurance business. See Simona Cosma, Giuseppe Rimo, *Redefining insurance through technology: Achievements and perspectives in Insurtech, Research in International Business and Finance*, Volume 70, Part A, 2024,102301, ISSN 0275-5319, https://doi.org/10.1016/j.ribaf.2024.102301. (last accessed on 04 April 2025).

[364] RegTech is a technology that helps firms manage their regulatory and compliance requirements by identifying the impact of regulatory provisions on products and services, business models, controls, and operational procedures, as well as helping to control and manage non-financial and financial regulatory risks, achieve regulatory compliance reporting and enable compliant business systems and data. See Butler, T., & O'Brien, L. (2019). Understanding RegTech for digital regulatory compliance. In Disrupting Finance (pp. 85-102). Palgrave Pivot, Cham.(last accessed on 04 April 2025).

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and unbacked crypto assets[365], and covers the use cases pertaining to these that are most prevalent in the financial sector.

This study is also limited in the international bodies it considers and the publications of these international bodies, considering the amount of research conducted and publications made concerning crypto assets. Therefore, most of the study focuses on the IMF, the FSB, and IOSCO to a large extent. What has also been excluded from this study are financial surveillance frameworks and financial crime frameworks such as money laundering, fraud, tax evasion, terrorist financing activities, and identity theft. Money laundering will only be considered with respect to embedded supervision tools. Therefore, the study is mainly focused on market conduct frameworks and prudential requirements that need to be in place to provide a safe environment for innovation.

In terms of regulatory frameworks, this study will address both prudential requirements and market conduct requirements within its scope of work. As seen during the last two years, some types of crypto assets experienced periods of substantial volatility with large increases and sharp falls in value. There have also been implosions of certain Fintech companies dealing with and issuing crypto assets into bankruptcy, which had a severe outfall for those who invested and contagion to other companies that had linkages to the fallen companies. There is, therefore, a need for adequate and efficient prudential requirements to prevent these threats from spilling over to the traditional financial systems, thereby managing manifestations of systemic risks.[366] One example to substantiate the need for prudential requirements is the collapse of the crypto asset

[365] Unbacked crypto assets are the oldest and most popular type of crypto assets, relying not on any backing asset for value but instead on supply and demand. See International Monetary Fund, P Bains,A Ismail,F Melo,N Sugimoto, "Regulating the Crypto Ecosystem: The Case of Unbacked Crypto Assets",(2022), available online at https://www.imf.org/en/Publications/Fintech-notes/Issues/2022/09/26/Regulating-the-Crypto-Ecosystem-The-Case-of-Unbacked-Crypto-Assets-523715 (last accessed on 08 February 2025).

[366] Animashaun, Sijuade, "Great Crypto Crisis: The Prudential Regulation of Systemically Important Crypto Conglomerates" (December 20, 2022). *Singapore Journal of Legal Studies (2024 Forthcoming)*, University of Hong Kong Faculty of Law Research Paper No. 2022/61, Available online at SSRN: https://ssrn.com/abstract=4307586 or http://dx.doi.org/10.2139/ssrn.4307586 (last accessed on 01 December 2024).

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exchange FTX[367] in November 2022[368], which was the most significant moment in crypto asset history since the introduction of the Bitcoin White Paper in 2008.[369] Many refer to this event as crypto's "Lehman's moment", comparing it to the fall of this global financial firm, the Lehman Brothers Investment Bank, which entered into bankruptcy on 15 September 2008[370], deepening the financial crises of 2008.[371] The prudential requirements should include licencing crypto asset service providers and seeking to ensure adequate capital and liquidity requirements and limits on exposures. They should also require financial institutions to monitor their indirect exposure to crypto assets.

In terms of conduct requirements, this research will focus on requirements that are likely to have a direct impact on end users. Some of these would include: safekeeping, transparency, disclosure, and reporting requirements. Other examples include the administration of wallets to ensure that the end state is secure and clear risk management frameworks. Safekeeping and segregating funds legally and operationally, as well as safeguarding them through measures such as private

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367 FTX was a cryptocurrency exchange for users to buy and sell varied crypto coins. Before its collapse, the exchange was the third-largest by user volume. See Corporate Finance Institute," What Happened to FTX?", available online at https://corporatefinanceinstitute.com/resources/cryptocurrency/what-happened-to-ftx/ (last accessed on 24 February 2025).

368 FTX filed for bankruptcy on November 11, 2022. See The New York Times, "Embattled Crypto Exchange FTX Files for Bankruptcy" available online at https://www.nytimes.com/2022/11/11/business/ftx-bankruptcy.html (last accessed on 24 November 2023).

369 Reiners, Lee and Gazi, Sangita, Wanted: A Prudential Framework for Crypto assets (January 17, 2023). Arkansas Law Review, Forthcoming, Duke Law School Public Law & Legal Theory Series No. 2023-11, University of Hong Kong Faculty of Law Research Paper No. 2023/07, Available online at SSRN: https://ssrn.com/abstract=4327091 or http://dx.doi.org/10.2139/ssrn.4327091 (last accessed on 24 November 2023).

370 Mishkin, Frederic S. 2011. "Over the Cliff: From the Subprime to the Global Financial Crisis." *Journal of Economic Perspectives*, 25 (1): 49–70. DOI: 10.1257/jep.25.1.49 (last accessed on 02 December 2024).

371 See Lehman Brothers Collapse Stuns Global Markets, CNN, available online at https://edition.cnn.com/2008/BUSINESS/09/15/lehman.merrill.stocks.turmoil/index.html (last accessed on 24 November 2023).

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insurance against cyber risks and other threats, can support consumer protection during stressed market periods. Effective wind-down frameworks, where a wallet fails, can help manage risks to end users.[372] This thesis does not aim to cover all the possible elements of a trans-border regulatory framework or cover all the existing embedded supervision tools being used or explored.

1.9 Overview of the chapters

Chapter One serves as the roadmap for the study. It provides the background and rationale for the study, the research problem and objectives, the selection of comparative jurisdictions, the delimitation of the research, and the chapter layout.

Chapter Two will commence by providing insight into the global Fintech landscape and what the future may hold in a global context. The global Fintech landscape insights at the beginning of this chapter will also provide an overview of crypto asset regulatory frameworks globally and separately provide an overview of Stablecoin-related frameworks, since Stablecoins have particular properties that may allow for significant adoption and deepened financial inclusion. This chapter will also provide an overview of the international standard-setting bodies' direction regarding crypto asset regulation. The chapter provides the foundation for the subsequent chapters, as it explains the different recommendations from the standard-setting bodies of which South Africa is a member and some of the African countries that will be considered in this research. The chapter will further illustrate some of the elements proposed to form part of a regulatory framework, providing appropriate measures to manage the risks associated with these assets and related services. Lastly, the chapter highlights the commonality between some of the recommendations, for instance, the call for global coordination and alignment, which forms part of the foundational argument upon which the trans-border regulatory framework is proposed.

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[372] International Monetary Fund (2023) “Elements of Effective Policies for Crypto Assets” available online at https://www.imf.org/en/Publications/Policy-Papers/Issues/2023/02/23/Elements-of-Effective-Policies-for-Crypto assets-530092(last accessed on 27 November 2023).

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Chapter Three will comprehensively assess the regulatory landscape of the African countries chosen as a sample for this research. The sample is determined based on various attributes, including the level of progress made regarding crypto assets, the general appetite for accommodating crypto assets, the approach taken so far, and whether that approach is compatible with the South African approach and sentiment regarding crypto assets. Some of the other factors will include membership in international standard-setting bodies, which necessitate alignment with the recommendations of these international bodies and facilitate coordination between national regulators.

The assessment in this chapter begins by briefly outlining the specific country's financial regulators and their respective mandates. The chapter will then examine the status of progress made to regulate crypto assets in the particular country and proceed to take an in-depth look at the current/proposed regulatory frameworks. This chapter will also, on a high level, present some statistics on financial inclusion in those countries and the level of Fintech activity in those countries. Chapter Three will further scrutinise the similarities between the risks that were identified, and the requirements imposed to manage those risks. This comparison will be drawn between the different countries.

Chapter Four will unpack the Commonwealth *Model Law* on virtual assets[373], which was borne from the Law Ministers who invited the Commonwealth Secretariat to explore the possibility of developing a *Model Law* that practitioners across the Commonwealth could use to achieve compliance with the Financial Action Task Force (FATF)[374] requirements for the regulation of Virtual Asset Providers. The reason why

[373] Office of Civil and Criminal Justice Reform," Commonwealth Model Law on Virtual Assets" available online at https://theCommonwealth.org/publications/model-law-virtual-assets (last accessed on 02 December 2024).

[374] The Financial Action Task Force (FATF) is the global money laundering and terrorist financing watchdog. It sets international standards that aim to prevent these illegal activities and the harm they cause to society. Available online at https://www.fatf-gafi.org/en/home.html (last accessed on 02 December 2024).

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this will be unpacked in this chapter is that it complements the adventurous proposal in this research as a foundational element to step into a trans-border regulatory framework with a single licence across African countries, since it is essential for this approach of the regulators in terms of frameworks and the supervision of the crypto asset services providers are aligned and that similar requirements are considered adequate for the risks that have been identified. The Commonwealth *Model Law* on virtual assets was only published on 08 July 2024, during the finalisation of the research, but it is incorporated in the research as the writer considers this work and the publication of the Commonwealth *Model Law* on virtual assets, as a necessary and welcomed development that could assist with enabling discussions on the possibility of such an African framework.

Chapter Five will examine the approach to developing the *MiCA*, which came into force in the EU IN June 2023. The chapter will undertake a detailed interrogation into the reasoning behind this cross-border legislation and its architecture. Part of the examination will include a closer look into how some of the foundational elements in *MiCA* can be harnessed to provide for a harmonised set of rules for crypto-related activities across the chosen African countries and thereby enhance consumer protection while still ensuring a level playing field with clear transparency for crypto asset service providers. Lastly, this chapter will examine the categorisation that *MiCA* uses for applying different sets of regulatory requirements to each category of crypto assets and whether this is a plausible categorisation for the trans-border regulatory framework in Africa.

Chapter Six starts off by setting out the approach to be taken in the proposed regulatory framework that could be implemented across these African countries and gatekept by a panel of representatives from the different countries that deliberates on the licencing of these Fintechs. The study will proceed to draw from the proposed elements of an effective regulatory framework as provided by international standard-setting bodies and draw from their recommendations to their members. Drawing from the work done with the *MiCA* legislation, this guidance will be used to improve the approach to set out the elements of a proposed framework for African countries. The chapter will comprehensively set out and detail a set of proposed minimum

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requirements that could be made applicable to the Fintechs that wish to operate across several countries in Africa seamlessly, and how this can be achieved. The chapter concludes by providing recommendations with respect to the research conclusions and further work that can be undertaken.

1.10 Conclusion

Access to and use of financial services is crucial for economic growth and development in Africa. Lower barriers of entry can bolster access by facilitating the progress of decentralised and cross-border technologies, such as distributed ledger technology, and through the use of crypto assets in a variety of use cases. Different stakeholders need to cooperate to realise the goal of deepening financial inclusion, bolstering economic growth, and promoting Africa as a globally recognised Fintech hub. Reaching these goals requires governments to align their approaches, eliminate duplication of efforts, and establish a uniform crypto asset regulatory framework that transcends borders. With the right regulatory frameworks and supervision techniques, these Fintechs can play a sizable part in deepening financial inclusion and creating a more equitable financial system. The words from George Gordon, a board member of the Africa Blockchain Association, may be relevant here:

> "Fintech provides what the African economy has wanted all along – greater purchasing power and more money that isn't taken up by fees or other nonsense. Although Fintech and blockchain are seen as highly developed technology that should only be workable in first-world countries, the reality is that they make the most impact in developing countries."[375]

[375] Fundación Innovación Bankinter, "Africa, the continent with the greatest potential for innovation", (2022), available online at https://www.fundacionbankinter.org/en/noticias/africa-the-continent-with-the-greatest-potential-for-innovation/?_adin=02021864894 (last accessed on 29 April 2025).

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What seems impossible is possible. By taking a hands-on approach to this evolving landscape, African regulators can provide a safer environment for financial consumers and ensure a welcoming African market that reaps the benefits of economic growth and access to financial services. The solution to becoming a Fintech hub lies not in the endeavours of each of the regulators and governments in silos but in a concerted effort to share knowledge and collaborative development of regulatory frameworks.

This study aims to demonstrate that cross-border frameworks are feasible on the African continent in relation to crypto assets, due to the same risk and same requirements approach. Africa is stronger together. To conclude with the following African proverb:

> "If you want to go quickly, go alone. If you want to go far, go together."

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CHAPTER 2

AN OVERVIEW OF THE GLOBAL FINTECH LANDSCAPE AND THE STEER FROM INTERNATIONAL BODIES ON THE NEED FOR COORDINATION AND ALIGNMENT GLOBALLY

2.1 Introduction
2.2 Global Fintech Insights
2.2.1 Fintech Market Performance
2.2.2 Global Funding Trends
2.2.3 Sub-Saharan Africa
2.2.4 Global Fintech Regulatory Landscape
2.3 International Monetary Fund
2.4 Financial Stability Board
2.5 IOSCO
2.6 BIS
2.7 G20
2.8 Conclusion

2.1 Introduction

"The discrepancy between what was expected and what has been observed has grown over the years, and we're straining harder and harder to fill the gap."

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The quote above by astrophysicist Dr Jeremiah P. Ostriker[376] was cited by Chairman Rostin Behnam of the Commodity Futures Trading Commission[377] at the Brookings Institution Webcast on *The Future of Crypto Regulation* in his keynote address.[378] Originally, the quote referred to findings that a vast majority of the mass in the universe is not detectable but consists of "dark matter" and was uttered by astrophysicist Dr Jeremiah P. Ostriker.[379] This premise set the scene for Chairman Rostin's explanation that crypto assets have developed and expanded in unexpected ways. Furthermore, Chairman Rostin explained that regulators are under strain to try to fill the gaps in the existing regulatory frameworks.

What started for most jurisdictions initially as a "wait-and-see" approach because there was uncertainty as to the extent to which crypto assets would develop has quickly seen these technologies become part of mainstream portfolios, which requires comprehensive regulation. From the writer's observation, it seems that most regulators would agree that an inflection point has been reached where there is a need for a nimble coordinated response, and this is echoed by the guidance or recommendations coming from international bodies.

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376 William J. Broad, If Theory is Right, Most of Universe is Still "Missing," N.Y. Times, Sept. 11, 1984, at C1, available at IF THEORY IS RIGHT, MOST OF UNIVERSE IS STILL 'MISSING' - The New York Times (nytimes.com) (last accessed on 12 December 2024).

377 The Commodity Futures Trading Commission is an independent agency of the US government created in 1974 that regulates the U.S. derivatives markets, which includes futures, swaps, and certain kinds of options. See Commodity Futures Trading Commission, available online at https://www.cftc.gov/About/AboutTheCommission (last accessed on 10 January 2024).

378 Keynote Address of Chairman Rostin Behnam at the Brookings Institution Webcast on The Future of Crypto Regulation, July 25, 2022 available online at https://www.cftc.gov/PressRoom/SpeechesTestimony/opabehnam24 (last accessed on 11 January 2024).

379 Jeremiah Paul "Jerry" Ostriker is an American astrophysicist and a professor of astronomy at Columbia University and is the Charles A. Young Professor Emeritus at Princeton, where he also continues as a senior research scholar. See Department of Astronomy and Astrophysics – The University of Chicago, "Alumni: Jeremiah P. Ostriker, 1964", available online at https://astro.uchicago.edu/alumni/jeremiah-p-ostriker-1964.php (last accessed on 11 January 2024).

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Various market events seen over the past few years amplify the need for a coordinated and aligned approach. As stated by the International Monetary Fund (IMF) Deputy Managing Director, Bo Li, in the Roundtable on Regulation and Supervision of Crypto Assets on 09 December 2022, speaking on the severe turmoil and disruption in the crypto asset markets:

> "During times of stress, we have seen market failures of Stablecoins, hedge funds, and exchanges, which have raised serious concerns about market practices, consumer protection, and where interlinkages with the core financial system are deepening, for systemic risk oversight and financial stability".[380]

Bo Li further illuminated in his view that many of the concerns regarding the risks materialising with crypto assets can be addressed through stronger financial regulation and by developing global standards that national regulators can implement consistently in different jurisdictions. It is clear that the message from Bo Li is that when it comes to the unique risks that these new technologies can bring, the most appropriate response is a coordinated response, thus moving away from fragmented approaches. One of the reasons why the most suitable approach is a more aligned, coordinated approach is the decentralised and borderless nature of the financial technology used by the Fintech companies' exploitation of blockchain technologies.

The increasing interconnectedness and, therefore, risk of contagion between the traditional financial sector and crypto assets further bolsters the need for an aligned regulatory approach. Hermans *et al* point out that, as crypto assets are a global market and, therefore, a global issue, global coordination of regulatory measures is necessary.[381] The crypto asset market capitalisation is not at its "all-time high" of

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[380] Bo Li, IMF Deputy Director "Some Key Elements of Crypto Regulation"(2022)available online at https://www.imf.org/en/News/Articles/2022/12/16/sp120922-some-key-elements-of-crypto-regulation (last accessed on 15 July 2023).

[381] Lieven Hermans, Annalaura Ianiro, Urszula Kochanska, Veli-Matti Törmälehto, Anton van der Kraaij and Josep M. Vendrell Simón "Decrypting financial stability risks in crypto asset markets" available online at https://www.ecb.europa.eu/pub/financial-stability/fsr/special/html/ecb.fsrart202205_02~1cc6b111b4.en.html (last accessed on 15 July 2023).

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$3Trillion, but it is still very large, and increased financial stability risks are still possible. According to the Forbes Advisor, despite some drop-off, the crypto asset market capitalisation stands as of April 2025 at $2.71 Trillion.[382]

This chapter will first examine the global Fintech landscape, which includes the regulatory landscape, and also provide insights into what the future may hold in terms of crypto asset usage, which provides insights into the growing impact. Then, the chapter will examine the IMF's publications on financial technology and crypto assets, as these publications provide guidance and recommendations to the members of the IMF as a major financial agency of the United Nations. This will include articles and notes published by the IMF on the topic, amongst others, a publication titled "*Some Key Elements of Crypto Regulation"* by Bo Li[383] and a document titled "*IMF Executive Board Discusses Elements of Effective Policies for Crypto Assets"*[384] as well as "*Regulating Crypto by Aditya Narain and Marina Moretti"*.[385]I t will also touch on a Fintech note titled "*Regulating the Crypto Ecosystem: The Case of Unbacked Crypto Assets"* published by the IMF, to set the scene for a proposed regulatory architecture.[386] Apart from the articles published by the IMF on Fintech technologies and crypto assets, the chapter will consider *Policy Paper No. 2023/004 - Elements of*

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382 Forbes," Cryptocurrency prices today by market cap", available online at https://www.forbes.com/digital-assets/crypto-prices/?sh=711fdb024785 (last accessed on 06 April 2025).

383 Bo Li, IMF Deputy Director "Some Key Elements of Crypto Regulation"(2022)available online at https://www.imf.org/en/News/Articles/2022/12/16/sp120922-some-key-elements-of-crypto-regulation (last accessed on 15 July 2023).

384 International Monetary Fund "IMF Executive Board Discusses Elements of Effective Policies for Crypto Assets" (2023) available online at https://www.imf.org/en/News/Articles/2023/02/23/pr2351-imf-executive-board-discusses-elements-of-effective-policies-for-crypto assets (last accessed on 15 July 2023).

385 Aditya Narain, Marina Moretti "Regulating Crypto"(2022) available online at https://www.imf.org/en/Publications/fandd/issues/2022/09/Regulating-crypto-Narain-Moretti(last accessed on 15 July 2023).

386 Parma Bains; Arif Ismail, Fabiana Melo, Nobuyasu Sugimoto" Regulating the Crypto Ecosystem: The Case of Unbacked Crypto Assets"(2022) available online at https://www.imf.org/en/Publications/Fintech-notes/Issues/2022/09/26/Regulating-the-Crypto-Ecosystem-The-Case-of-Unbacked-Crypto assets-523715 (last accessed on 16 July 2023).

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Effective Policies for Crypto Assets[387] *and Fintech Notes No 2019/003 – Regulation of Crypto Assets.*[388] It is submitted that these published documents by the IMF, as a major financial institution, are considered some of the leading publications on these topics and serve as guidance to all the IMF membership.

Then, the chapter will set out the steer from the Financial Stability Board (FSB)[389] by starting with the consultative report issued by the FSB in October 2022 - *Regulation, Supervision, and Oversight of Crypto-Asset Activities and Markets.*[390] Following consideration of this consultative report, the comprehensive set of proposals constituting the *FSB Global Regulatory Framework for Crypto-asset Activities*[391] by the FSB will be considered. These proposals are published as two sets of recommendations, one relating to crypto assets and the other one dealing specifically with Global Stable Coins (GSC), as discussed in more detail below.[392]

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387 International Monetary Fund (2023) "Elements of Effective Policies For Crypto Assets" available online at https://www.imf.org/en/Publications/Policy-Papers/Issues/2023/02/23/Elements-of-Effective-Policies-for-Crypto assets-530092(last accessed on 16 July 2023).

388 Cristina Cuervo, Anastasiia Morozova, Nobuyasu Sugimoto "Regulation of Crypto Assets"(2020) available online at https://www.imf.org/en/Publications/Fintech-notes/Issues/2020/01/09/Regulation-of-Crypto assets-48810(last accessed on 19 July 2023).

389 The Financial Stability Board is an international body that monitors and makes recommendations about the global financial system. See Financial Stability Board, "About the FSB - Financial Stability Board" available online at https://www.fsb.org/about/#:~:text=More%20specifically%2C%20the%20FSB%20was,these%20vulnerabilities%20and%20their%20outcomes. (last accessed on 16 July 2023).

390 Financial Stability Board "Regulation, Supervision and Oversight of Crypto asset Activities and Markets "(2022) available online at https://www.fsb.org/wp-content/uploads/P111022-3.pdf (last accessed on 19 July 2023).

391 Financial Stability Board, "FSB Global Regulatory Framework for Crypto-asset Activities", (2023) available online at https://www.fsb.org/2023/07/fsb-global-regulatory-framework-for-crypto-asset-activities/#:~:text=The%20FSB%20and%20the%20sectoral,commensurate%20to%20the%20risks%20crypto%2D (last accessed on 12 December 2024).

392 Global Stablecoins are those that can build on existing large, cross-border user bases to scale rapidly and achieve substantial (global) volume. See Douglas Arner, Raphael Auer and Jon Frost, BIS Working Papers No 905, "Stablecoins: risks, potential and regulation ", (2020), available online at https://www.bis.org/publ/work905.pdf (last accessed on 19 July 2023).

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The core components are policy proposals for recommendations that promote the consistency and comprehensiveness of regulatory, supervisory, and oversight approaches to crypto-asset activities and markets and strengthen international cooperation; coordination; and information sharing; and revised high-level recommendations for the regulation, supervision, and oversight of "global Stablecoin" arrangements to address associated financial stability risks more effectively.[393] The FSB members will need to implement the finalised recommendations. Following the consideration of the IMF and FSB direction, the chapter will consider the consultation paper issued by the International Organisation of Security Commission[394] titled "*Policy Recommendations for Crypto and Digital Asset Markets*".[395]

This chapter will further consider some publications by the Bank of International Settlements, including the Final Standard published on *The Prudential treatment of crypto asset exposures.*[396] Another publication from the Bank of International Settlement that will be covered in this chapter is the report on the Crypto ecosystem: *key elements and risks.*[397] The chapter will also consider other publications by the Bank of International Settlements, for instance, the *Bulletin on Addressing the Risks in Crypto: laying out the Options*.[398]

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393 Financial Stability Board "FSB proposes a framework for the international regulation of crypto asset activities"(2022) available online at https://www.fsb.org/2022/10/fsb-proposes-framework-for-the-international-regulation-of-crypto asset-activities/ (last accessed on 19 July 2023).

394 See Chapter 1, 1.7.

395 The International Organization of Securities Commissions is an association of organizations that regulate the world's securities and futures markets and was established in 1983. See IOSCO, "About IOSCO", available online at https://www.iosco.org/v2/about/?subsection=about_iosco (last accessed on 19 July 2023).

396 Basel Committee on Banking Supervision, "Prudential treatment of cryptoasset exposures", (2022), available online at https://www.bis.org/bcbs/publ/d545.pdf (last accessed on 19 July 2023).

397 https://www.bis.org/publ/othp72.pdf

398 Matteo Aquilina, Jon Frost and Andreas Schrimpf, BIS Bulletin No. 66," Addressing the risks in crypto: laying out the options" available online at https://www.bis.org/publ/bisbull66.pdf (last accessed on 10 January 2024).

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Lastly, the chapter will outline the direction provided by the G20 regarding the macro implications of crypto assets. The G20 published a note titled "*G20 Note on the Macro Financial Implications of Crypto Assets"*[399] in February 2023.[400] The G20 note argues the purported benefits of crypto assets, the main one being increased financial inclusion, and intends to prompt further discussions on appropriate policy responses from policymakers. The G20 has limited the focus of this note to crypto assets that may have a stark impact on macro-financial stability[401] in the case of the broad adoption and proliferation of unbacked tokens[402] and Stablecoins.[403]

In light of the above, the chapter will conclude by establishing that jurisdictions globally need to develop and refine coordinated regulatory frameworks to support innovation while protecting the consumers of financial products and services. This need for aligned approaches will be crystalised in the local context to position Africa as a Fintech hub.

2.2 Global Fintech Insights and what the future may hold

399 International Monetary Fund, "G20 Note on the Macrofinancial Implications of Crypto Assets",(2023) available online at https://www.imf.org/-/media/Files/Research/imf-and-g20/2023/g20-report-macrofinancial-implications-crypto-assets-february23.ashx (last accessed on 12 December 2024).

400 The G20 or Group of 20 is an intergovernmental forum comprising 19 countries and the European Union. See G20 India, "About G20" available online at https://www.g20.in/en/about-g20/about-g20.html#:~:text=The%20Group%20of%20Twenty%20(G20)%20comprises%2019%20countries%20(Argentina,and%20the%20African%20Union%20(as (last accessed on 10 January 2024).

401 Macrofinancial stability is defined in terms of systemic risk, that is, the risk of disruption to the financial system that can have serious negative consequences for the real economy, and is measured by downside tail risks to future real GDP growth. See IMF, Chapter 2, Page 56, " Macrofinancial Stability amid high global economic uncertainty", available online at https://www.imf.org/-/media/Files/Publications/GFSR/2024/October/English/ch2.ashx (last accessed on 27 April 2025).

402 See Chapter 1, 1.8.1.

403 See Chapter 1,1.25.

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2.2.1 Fintech Market Performance

The global Fintech market size was valued at USD 257.26 billion in 2022. According to Fortune Business Insights[404], the global Fintech market size is projected to reach USD 882.30 billion in 2030, at a compound annual growth rate (CAGR)[405] of 17% during the forecast period, 2023 to 2030. The global Fintech market size is projected to grow from $294.74 billion in 2023 to $882.30 billion by 2030, at a CAGR of 17.0% during the forecast period. The global Fintech market size is projected to grow from $294.74 billion in 2023 to $882.30 billion by 2030, at a CAGR of 17.0% during the forecast period.[406] The Fintech industry continues to demonstrate its strength and continuous growth. However, many long-term doubts remain. The global market indicates that the Fintech industry is expanding its consumer base, demonstrating sustained interest in Fintech services as a whole.[407]

From 2020 to 2022, the industry exhibited consistently strong consumer growth, with an average growth rate of over 50%, highlighting sustained interest in Fintech services. However, there was a slight dip in annual growth rates from 55% to 52% between 2020 to 2021 and 2021 to 2022, potentially reflecting the strong adoption of Fintech services

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404 Fortune Business Insights™ offers expert corporate analysis and accurate data, helping organizations of all sizes make timely decisions. See Fortune Business Insights, "Success Delivered Through Market Insights", available online at https://www.fortunebusinessinsights.com/ (last accessed on 06 April 2025).

405 The compound annual growth rate (CAGR) is the annualized average rate of revenue growth between two given years, assuming growth takes place at an exponentially compounded rate. See Gartner, "Information Technology Glossary" available online at https://www.gartner.com/en/information-technology/glossary/cagr-compound-annual-growth-rate (last accessed on 12 December 2024).

406 Fortune Business Insights, "Market Research Report" (2023) available online at https://www.fortunebusinessinsights.com/Fintech-market-108641 (last accessed on 20 January 2024).

407 World Economic Forum " Insight Report - The Future of Global Fintech: Towards Resilient and Inclusive Growth" (2024) available online at https://www3.weforum.org/docs/WEF_The_Future_of_Global_Fintech_2024.pdf (last accessed on 20 January 2024).

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during the COVID-19[408] period and suggesting a temporary shift in consumer behaviour as the pandemic wound down.[409]

In terms of factors impacting the growth of Fintech, the report from the *World Economic Forum*[410] found that consumer demand is at the forefront of driving Fintech growth, while macroeconomic factors are a concerning headwind.[411] Further material factors were found to be the availability of a skilled workforce and a favourable regulatory environment. In contrast to this, Macroeconomic factors were found in the analysis to be the most significant hindrance to Fintechs' growth and are infrequently cited as a supporting factor. Other major hindrances include an unfavourable regulatory environment and a poor funding environment.[412] From the findings in this analysis, what is very relevant to this research, is that the regulatory environment ranks among the top three major factors for drivers and hindrances, reinforcing how critically appropriate regulation is for Fintech growth. This supports the importance of this research and how accessible African-wide regulation can support the growth of Africa as a Fintech hub.

Payments were the most vital area of global Fintech investment in 2022 at $53.1 billion. Regulatory technology, known as Regtech[413], was the only Fintech sector to trend upward in 2022, with investment in the space rising from $11.8 billion in 2021 to a record $18.6 billion in 2022. Investment in cryptocurrency and blockchain decreased

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408 Coronavirus disease 2019 (COVID-19) pandemic is a global outbreak of coronavirus – an infectious disease caused by the severe acute respiratory syndrome. See World Health Organisation – Europe, "Overview- coronavirus disease 2019 (COVID-19)" available online at https://www.who.int/europe/emergencies/situations/covid-19 (last accessed on 15 September 2024).

409 World Economic Forum Insights Report, Page 9.

410 The World Economic Forum is the International Organization for Public-Private Cooperation. It provides a global, impartial, and not-for-profit platform for meaningful connections between stakeholders to establish trust and build initiatives for cooperation and progress. See World Economic Forum – About Us available online at https://www.weforum.org/about/world-economic-forum/ (last accessed on 13 December 2024).

411 World Economic Forum Insights Report, Page 13.

412 World Economic Forum Insights Report, Page 14.

413 See Chapter 1, 1.8.

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from $30 billion in 2021 to $23.1 billion in 2022. This was still a significant investment activity, comparatively.[414] According to the latest available statistics, the number of crypto asset owners globally increased by 34% in 2023, rising from 432 million in January to 580 million in December of 2023. Looking at two of the largest unbacked crypto assets[415], Bitcoin owners grew by 33%, from 222 million in January to 296 million in December of 2023, accounting for 51% of global owners. Ethereum owners grew by 39%, from 89 million in January to 124 million in December, accounting for 21% of global owners.[416]

2.2.2 Global Funding Trends

Over the last decade and considering available statistics regarding the global innovation economy[417], Fintech has attracted a lot of interest from capital allocators with over $500B invested. Creating a fertile foundation was the 2008 Global Financial Crisis[418], which is considered a substantial driver of growth in the Fintech industry. The crisis exposed the demand for financial services and products that were more accessible, secure, and affordable. This created an ideal environment for the emergence of Fintechs, neo-banks[419], and digital decentralised marketplaces to step in

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414 Benchmark International, "Global Fintech Industry Report"(2023) available online at https://blog.benchmarkcorporate.com/global-Fintech-industry-report (last accessed on 24 January 2024).

415 See Chapter 1, 1.8.1.

416 Crypto.com, " Crypto Market Sizing 2023", available online at https://contenthub-static.crypto.com/wp_media/2024/01/Crypto-Market-Sizing-2023.pdf (last accessed on 23 January 2024).

417 The innovation economy, often characterized by rapid technological advancements and digitalization. See Phil Mckinney, KillerInnovations,"Understanding the Innovation Economy and Its Impact", available online at https://killerinnovations.com/understanding-the-innovation-economy-and-its-impact-on-our-world/#:~:text=The%20innovation%20economy%2C%20often%20characterized,intellectual%20capital%20drive%20economic%20growth. (last accessed on 10 January 2024)

418 See Chapter 1,1.2.1.

419 A neobank is a type of Fintech that offers direct banking services to individuals and organizations, without traditional physical branches. See TechTarget, "What is a NeoBank" available online at https://www.techtarget.com/whatis/definition/neobank (last accessed on 13 December 2024).

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and address the gaps left by traditional financial institutions.[420] The major increases in smartphone and internet adoption and usage helped smaller Fintechs enter the market and build banking and finance applications that individual retail consumers and businesses needed and wanted.

Another big driver with respect to funding was the COVID–19 pandemic[421], which significantly increased e-commerce activity. One of the largest investment rounds was Stripe's[422] $6.9B round in March 2023. Some of the other large funding deals that transpired between 2022 and 2023 include MicroConnect[423] in China, which received funding of $458 million in series C led by Sequoia China[424], and FNZ[425] in the UK, which received $1.4B led by CPP Investments.[426] In terms of venture capital funding,

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420 Daniel Rudis, 2023 "Fintech's Rise: How the Great Financial Crisis Paved the Way" available online at https://www.digipal.ai/post/Fintech-s-rise-how-the-great-financial-crisis-paved-the-way#:~:text=The%20crisis%20exposed%20the%20demand,left%20by%20traditional%20financial%20institutions (last accessed on 22 January 2024).

421 COVID-19 pandemic was caused by the severe acute respiratory syndrome coronavirus, a causative pathogen of the coronavirus disease in 2019, which triggered challenges for healthcare systems globally. See Suhaib JS. Ahmad, Konstantinos Degiannis, Joseph Borucki, Sjaak Pouwels, David Laith Rawaf, Marion Head, Chun Hei Li, Rami Archid, Ahmed R. Ahmed, Anil Lala, Wasif Raza, Katie Mellor, Doerte Wichmann, Aristomenis Exadaktylos, The most influential COVID-19 articles: A systematic review, New Microbes and New Infections, Volume 52, 2023, 101094, ISSN 2052-2975, https://doi.org/10.1016/j.nmni.2023.101094. Also see World Health Organisation available online at https://www.who.int/europe/emergencies/situations/covid-19 (last accessed on 13 December 2024).

422 Stripe is a payment service provider that lets merchants accept credit and debit cards or other payments. See Stripe's" Overview—Unified, global payments to grow your revenue," available online at https://stripe.com/payments (last accessed on 22 January 224).

423 Micro Connect is an exchange group that leverages financial technology to connect global capital with micro and small businesses. See MicroConnect," About Us" available online at https://microconnect.com/about/ (last accessed on 22 January 2024).

424 Sequoia Capital China is a Venture Capitalist firm focused on seed-stage, mid-stage, late-stage, and growth investments in the Fintech sector. See Fintech without borders, "Sequoia Capital China" available online at https://Fintechwithoutborders.org/investor/sequoia-capital-china/ (last accessed on 22 January 2024).

425 FNZ provides a global, end-to-end wealth management platform that integrates modern technology, business, and investment operations. See FNZ, available online at https://www.fnz.com/news/fnz-helping-wealth-management-firms-reinvent-themselves (last accessed on 22 January 2024).

426 The Canada Pension Plan Investment Board, operating as CPP Investments, is a Canadian Crown

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which is crypto asset specific, crypto venture capital funding plummeted by 68% in 2023 to $10.7 billion, compared to the $33.3 billion invested in 2022. Still, total investment in 2023 outpaces prior bear markets,[427] exceeding the $6.4 billion invested in 2019 and 2020.[428] Private equity growth investment also decreased, but less, going from $11 billion in 2021 to $9.7 billion in 2022. Again, this is still significant activity following a record-breaking year in 2021, which points to positive trends for 2023 and the future. Increasing adoption is expected to drive the growth of the global Fintech investment market.[429]

2.2.3 Sub-Saharan Africa

In Sub-Saharan Africa, we have seen that Fintech, in response to the lack of infrastructure in some regions, initially created a digital layer, which serves as the foundation for the remainder of the ecosystem. The levels of maturity vary across regions within Sub-Saharan Africa. Fintechs could leverage existing infrastructure and layer value-added services in the more mature regional markets. As payments is a mature market Fintechs could leverage consumer relationships, and use data to extend existing offerings and provide more personalised services and products as a starting point.[430] Following the digital layer that was created, there is much-unlocked potential

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corporation established by way of the 1997 Canada Pension Plan Investment Board Act to oversee and invest the funds contributed to and held by the Canada Pension Plan. See CPP Investments, "Frequently Asked Questions", available online at https://www.cppinvestments.com/faqs/ (last accessed on 22 January 2024).

427 Bull markets have the characteristics of persistently rising share market prices, whereas in bear markets, the stock prices fall consistently with material percentages, which leads to widespread selling pressure and increased volatility. See Gonzalez, Liliana & Hoang, Philip & Powell, John & Shi, Jing. (2006). "Defining and Dating Bull and Bear Markets: Two Centuries of Evidence". *Multinational Finance Journal*. 10. 10.17578/10-1/2-3. (last accessed on 13 December 2024).

428 Yogita Khatri, "Crypto VC funding took a nosedive in 2023, down 68% compared to the year before"(2023) available online at https://www.theblock.co/post/268972/crypto-vc-funding-2023-recap (last accessed on 22 January 2024).

429 Benchmark International, "Global Fintech Industry Report" (2023), Paragraph 4.

430 Global Ventures, " Fintech in Africa and the Middle East – The next Frontier(s) in Financial Services" (2023) available online at https://globalventures.docsend.com/view/4tfii3649erk3t8r (last accessed on 21 January 2024).

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within Sub-Saharan Africa. The sector still represents less than 2% of annual financial services worldwide, while penetration in Africa sits at 3 to 5%.[431] Considering the aforementioned, it is submitted that there are still considerable opportunities for Fintechs in Sub-Saharan Africa, considering the sizeable market in these emerging economies. Some of the possible unlocked potentials lie within the capital markets and tokenisation of real-world assets. The latter provides several opportunities through the tokenisation of tangible assets, such as fractionalisation[432] and the liquidity created, that may transform investor engagement with assets.[433] The Fintech opportunity in Africa consists of a significant portion of the estimated 2 billion people worldwide who do not have access to banking through traditional banking services, most of whom reside in the African and Middle Eastern regions. Within Africa, Fintech growth rates are higher than global averages. The opportunities that exist because of the large numbers of underserved financial consumers also mean that Fintechs can bypass old legacy systems and the complexities of connecting and integration by building digital-first models of financial services.[434]

2.2.4 Global Fintech Regulatory landscape – overview

This subsection endeavours to provide an overview of the status of crypto asset regulatory frameworks globally and how these frameworks are developing. The overview will not cover all the jurisdictions globally, but will touch on the significant developments in larger jurisdictions as well as emerging and developing markets. This allows the reader to compare the level of development and approaches to global regulation with those in Africa, assisting in understanding the need for the work that

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431 Fintech in Africa and Middle East (2023), Page 3.

432 In the context of crypto assets, fractional ownership or fractionalization, or tokenization, refers to splitting ownership of an asset into smaller, tradable units (tokens) on a blockchain, making them more accessible and liquid for a wider range of investors. See Julia Kreppmeier, Ralf Laschinger, Bertram I. Steininger, Gregor Dorfleitner, "Real estate security token offerings and the secondary market: Driven by crypto hype or fundamentals?",*Journal of Banking & Finance*,Volume 154,2023,106940,ISSN 0378-4266, https://doi.org/10.1016/j.jbankfin.2023.106940. (last accessed on 06 April 2025).

433 Fintech in Africa and Middle East (2023), Page 4.

434 Fintech in Africa and Middle East (2023), Page 16.

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international bodies have been undertaking. This study covers the African regulatory landscape in terms of the selected comparative countries.

(a) Europe

In Europe, the first cross-jurisdictional regulatory and supervisory framework for crypto assets entered into force in July 2023 in the form of the *MiCA*. It replaces a fragmented regulatory framework landscape where gaps exist between each country's national frameworks with a harmonised legal framework that spans twenty-seven member states. The intention is that crypto assets that are not already subject to the existing regulation (such as Markets in Financial Instruments Regulation (MiFIR)[435]/Markets in Financial Instruments Directive II (MiFID II)[436]) will fall under the *MiCA*, which means that this piece of legislation captures asset reference tokens[437], electronic money tokens[438], and other crypto assets (including utility tokens) which are not subject to existing legislation.[439] In terms of the scope of services captured, the scope of the

[435] Markets in financial instruments regulation create a regulatory framework on digital operational resilience. See EUR-Lex," Markets in financial instruments regulation (MiFIR)", available online at https://eur-lex.europa.eu/EN/legal-content/summary/markets-in-financial-instruments-regulation-mifir.html (last accessed on 10 April 2024).

[436] Markets in Financial Instruments Directive 2014, commonly known as MiFID 2, is a legal act of the European Union. See ScienceDirect, David P. Stowell, in Investment Banks, Hedge Funds, and Private Equity (Third Edition), 2018 available online https://www.sciencedirect.com/topics/economics-econometrics-and-finance/eu-financial-markets-law (last accessed on 14 September 2024).

[437] 'asset-referenced token' means a type of crypto-asset that is not an electronic money token and that purports to maintain a stable value by referencing another value or right or a combination thereof, including one or more official currencies. See Article 3, Regulation (EU) 2023/1114 of the European Parliament and of the Council of 31 May 2023 on markets in crypto-assets, and amending Regulations (EU) No 1093/2010 and (EU) No 1095/2010 and Directives 2013/36/EU and (EU) 2019/1937(MiCAR)(last accessed on 14 December 2024).

[438] 'electronic money token' or 'electronic money token' means a type of crypto-asset that purports to maintain a stable value by referencing the value of one official currency. See MiCA Article 3. (last accessed on 14 December 2024).

[439] M Blumenfeld – PWC "Navigating the Global Crypto Landscape with PwC: 2024 Outlook"(December

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MiCA includes services provided with respect to custody and administration, operation of crypto asset trading platforms[440], exchange, execution and transfer activities, advice, and portfolio management.[441] Chapter Four of this research will consider this piece of legislation in detail. For this reason, only a brief mention is made of this legislation in this chapter in order to provide a holistic overview of the regulatory frameworks that exist in other jurisdictions.

(b) United States of America

In the United States of America, cryptocurrency, at the time of writing, specifically the sales of crypto assets, are only regulated if the sale constitutes a sale of a "security"[442] under state or federal law or if the sale is considered a "money transmission"[443] under state law, making the person a "money services business" under Federal law. Further, the Commodity Futures Trading Commission has jurisdiction over market manipulation matters related to crypto assets, considered commodities.[444] Several regulators in the

2023) available online at https://www.pwc.com/gx/en/industries/financial-services/assets/navigating-the-global-crypto-landscape-with-PwC-2024.pdf (last accessed on 10 April 2024).

440 See Chapter 1, 1.2.6.

441 See MiCA, Article 1.

442 Securities encompasses a wide spectrum of instruments, including but not limited to stocks, bonds, derivatives, options, and investment contracts. These instruments are characterized by their role in representing ownership, debt, or participation in various investment endeavors, and they can take on diverse forms. See SecLaw available online at https://seclaw.com/what-is-a-security/#:~:text=It%20encompasses%20a%20wide%20spectrum,can%20take%20on%20diverse%20forms (last accessed on 13 December 2024).

443 A money transmitter is an entity that facilitates funds transfers, often between international borders. See Stripe "What is a money transmitter" (2024), available online at https://stripe.com/resources/more/what-is-a-money-transmitter (last accessed on 13 December 2024).

444 The Commodity Futures Trading Commission regulates derivatives and futures contracts, including those based on cryptocurrencies. This means that trading in crypto futures and options falls under the Commodity Futures Trading Commission's purview. See CFTC," Commodity Futures Trading Commission – Whistleblower program" available online at https://www.whistleblower.gov/aboutcftc (last accessed on 29 September 2024).

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United States have the power to regulate certain aspects of crypto assets or crypto asset activities. The Office of the Comptroller of Currency[445] regulates national banks, and it has issued guidance on how banks can engage in crypto-related activities.[446] The Financial Crimes Enforcement Network[447] is responsible for combating money laundering and terrorist financing, including through the regulation of digital currency exchanges and other entities involved in crypto transactions. The Federal Trade Commission[448] protects consumers from unfair and deceptive practices, including those related to cryptocurrencies.[449] While the regulators mentioned here all play a role, the Securities and Exchange Commission has broad authority that gives it the power to influence judicial precedent and execute outcomes that make it the most consequential financial regulator for cryptocurrencies. In terms of a licencing or registration regime, the United States of America, as of December 2024, lacked a comprehensive and cohesive crypto asset federal licensure and registration process. Much of the guidance on licensure and/or registration is provided by the courts, as litigation is resolved, and judgments are rendered. The current stance is that existing rules are applied, and the Securities and Exchange Commission relies heavily on judicial precedents and legal interpretations of securities laws.[450]

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445 The OCC safeguards a diverse banking system that makes financial services accessible to underserved consumers and communities. See https://www.occ.treas.gov/ (last accessed on 13 December 2024).

446 Office of the Comptroller of Currency - News Release 2021-121 , "OCC Clarifies Bank Authority to Engage in Certain Cryptocurrency Activities and Authority of OCC to Charter National Trust Banks",(2021) available online at https://www.occ.gov/news-issuances/news-releases/2021/nr-occ-2021-121.html (last accessed on 13 December 2024).

447 FinCEN's mission is to safeguard the financial system from illicit activity, counter money laundering and the financing of terrorism, and promote national security through the strategic use of financial authorities and the collection, analysis, and dissemination of financial intelligence. See Financial Crimes Enforcement Network – What We Do available online at https://www.fincen.gov/what-we-do (last accessed on 13 December 2024).

448 The FTC is the only federal agency with both consumer protection and competition jurisdiction in broad sectors of the economy. See About the FTC available online at https://www.ftc.gov/about-ftc (last accessed on 13 December 2024).

449 Federal Trade Commission, "About-ftc", available online at https://www.ftc.gov/about-ftc (last accessed on 05 October 2024).

450 Securities laws refers to Securities Act of 1933, Securities Exchange Act of 1934, Investment Company Act of 1940, Investment Advisers Act of 1940, Sarbanes-Oxley Act of 2002 and Dodd-

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Legislative changes include the *Financial Innovation and Technology for the 21st Century Act*,[451] which aims to provide the industry with clarity with respect to determining if a digital asset should be classified as a "commodity"[452] or "security"[453] and would also serve to clarify the jurisdictions of the Commodity Futures Trading Commission and Security and Exchange Commission[454] in respect to the digital asset

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Frank Wall Street Reform and Consumer Protection Act.

451 Congress.Gov, H.R.4763 - Financial Innovation and Technology for the 21st Century Act, available online at https://www.congress.gov/bill/118th-congress/house-bill/4763/text (last accessed on 10 April 2024).

452 Section 1a of the Commodity Exchange Act, 1936 defines "Commodity" as "means wheat, cotton, rice, corn, oats, barley, rye, flaxseed, grain sorghums, mill feeds, butter, eggs, Solanum tuberosum (Irish potatoes), wool, wool tops, fats and oils (including lard, tallow, cottonseed oil, peanut oil, soybean oil, and all other fats and oils), cottonseed meal, cottonseed, peanuts, soybeans, soybean meal, livestock, livestock products, and frozen concentrated orange juice, and all other goods and articles, except onions (as provided by the first section of Public Law 85–839 (7 U.S.C. 13–1)) and motion picture box office receipts (or any index, measure, value, or data related to such receipts), and all services, rights, and interests (except motion picture box office receipts, or any index, measure, value or data related to such receipts) in which contracts for future delivery are presently or in the future dealt in". See Commodity and Exchange Act, 1936, available online at https://www.govinfo.gov/content/pkg/COMPS-10309/pdf/COMPS-10309.pdf (last accessed on 06 April 2025).

453 Section 2(1) of the Securities Act of 1933 defines "securities" as means any note, stock, treasury stock, security future, security-based swap, bond, debenture, evidence of indebtedness, certificate of interest or participation in any profit-sharing agreement, collateral-trust certificate, preorganization certificate or subscription, transferable share, investment contract, voting-trust certificate, certificate of deposit for a security, fractional undivided interest in oil, gas, or other mineral rights, any put, call, straddle, option, or privilege on any security, certificate of deposit, or group or index of securities (including any interest therein or based on the value thereof), or any put, call, straddle, option, or privilege entered into on a national securities exchange relating to foreign currency, or, in general, any interest or instrument commonly known as a ''security'', or any certificate of interest or participation in, temporary or interim certificate for, receipt for, guarantee of, or warrant or right to subscribe to or purchase, any of the foregoing. See Securities Act of 1933, available online at https://www.govinfo.gov/content/pkg/COMPS-1884/pdf/COMPS-1884.pdf (last accessed on 06 April 2025).

454 The mission of the Commodity Futures Trading Commission is to promote the integrity, resilience, and vibrancy of the U.S. derivatives markets through sound regulation. See About Us CFTC available online at https://www.cftc.gov/About/AboutTheCommission (last accessed on 12 December

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industry regulators. The *Financial Innovation and Technology for the 21st Century Act* grants the Commodity Futures Trading Commission control over digital commodities markets and provides clarity on the classification of tokens, stating that an investment contract alone does not classify a token as a security.[455] Another piece of legislation that will have an impact is the *Lummis-Gillibrand Responsible Financial Innovation Act*. The objective is to clarify the Commodity Futures Trading Commission and Security and Exchange Commission's roles in crypto regulation. It also aims to give greater consumer protection by providing laws to prevent another FTX-type[456] of event from occurring. Digital asset tax treatment clarity is also covered, and the Federal Reserve would be ordered to process bank applications for master accounts[457] from crypto firms on an equitable basis. Yet, another piece of legislation is the *Digital Asset Market Structure Act and Investor Protection Act*[458], also referred to as DAMS. The *Digital Asset Market Structure and Investor Protection Act also* intends to define further the crypto-related roles of the Commodity Futures Trading Commission and the Security and Exchange Commission. The *Digital Asset Market Structure and Investor Protection Act* further sets a framework for regulators to make determinations about whether certain cryptocurrencies are securities or commodities. A definition of "digital asset"[459]

2024).

455 M Blumenfeld, M Scarpa,R Donovan, PWC "Navigating the Global Crypto Landscape with PwC: 2024 Outlook (2023) available online at https://www.pwc.com/gx/en/industries/financial-services/assets/navigating-the-global-crypto-landscape-with-PwC-2024.pdf (last accessed on 10 April 2024).

456 See Chapter 1,1.8.1.

457 A master account is essentially the giant pipeline through which the bank accesses Fed operated payment systems. See Forbes available online at https://www.forbes.com/sites/emilymason/2023/08/10/Fintech-and-crypto-firms-stew-and-sue-as-fed-moves-into-21st-centurywithout-them/ (last accessed on 12 December 2024).

458 Congress.Gov, H.R.4741 - Digital Asset Market Structure and Investor Protection Act, available online at https://www.congress.gov/bill/117th-congress/house-bill/4741/text (last accessed on 10 April 2024).

459 "Digital asset" is defined as an asset—

(i) that is created electronically or digitally through software code;

(ii) that is programmed with rules that—

(I) govern the creation, supply, ownership, use, and transfer of such digital asset; and

(II) are designed to resist modification or tampering by any single person or persons under common control;

(iii) that has a transaction history that—

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is added through an amendment to the definition of "commodity" in section 1a(9) of the *Commodity Exchange Act, 1936*.

Also, crypto exchanges would be able to register with the Securities and Exchange Commission as an alternative trading system, and the regulator would not be able to deny registration because the platform trades digital assets. The last of the legislative developments in the United States that is considered is the *Digital Commodity Exchange Act*.[460] What this Act intends to do is to provide the Commodity Futures Trading Commission with the power to register and also regulate "spot exchanges"[461], which are subject to the same rules as other commodity exchanges. Cryptocurrencies that are not considered securities are labelled "digital commodities" under the Commodity Futures Trading Commission's purview, and the Security and Exchange Commission would police "crypto securities offerings".

(I) is recorded on a—

(aa) distributed digital ledger; or

(bb) digital data structure in which consensus is achieved through a mathematically verifiable process;

(II) is updated as soon as possible in accordance with the digital asset programming rules related to transactions and ownership; and

(III) after consensus is reached, is designed to prevent modification or tampering with the ownership or transaction history by any single person or persons under common control;

(iv) that is capable of being transferred between persons through a decentralized method without an intermediate custodian; and

(B) is a broad term which includes several other terms used to describe digital assets by market participants and regulators such as 'virtual asset', 'virtual currency', and 'convertible virtual currency' among others." See, section 201, The Digital Asset Market Structure and Investor Protection Act, available online at https://www.congress.gov/bill/118th-congress/house-bill/5745/text#toc-H49B304846CB24ACEA495CF40FB628B98 (last accessed on 06 April 2025).

460 Congress.Gov,H.R.7614 - Digital Commodity Exchange Act of 2022, available online at https://www.congress.gov/bill/117th-congress/house-bill/7614/text (last accessed on 11 April 2024).

461 Spot trading in crypto refers to the practice of buying or selling cryptocurrencies at their current market prices for immediate exchange. See Dipen Pradhan, Aashika Jain, Forbes Advisor, "Spot Trading In Crypto: What Are They, And How Do They Work?" available online at https://www.forbes.com/advisor/in/investing/cryptocurrency/what-is-spot-trading-in-crypto/ (last accessed on 11 April 2024).

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Following the change in the Presidency[462] in 2024, when President Donald Trump took office, a new approach to crypto assets emerged that influenced legislative developments. The Executive Order issued by the Trump Administration on January 23, 2025, titled "*Strengthening American Leadership in Digital Financial Technology*,"[463] established a foundational framework aimed at fostering innovation within the digital economy. This directive has subsequently stimulated legislative measures, regulatory reforms, and various federal initiatives.

(c) Australia

Looking at Australia, the government published a consultation paper on crypto assets early in 2023, called "*Token mapping*"[464] as a foundation for the government's plans to introduce appropriate requirements to regulate the ecosystem participants and products in Australia. Token mapping is the process of identifying the key activities and functions of products in the crypto ecosystem and mapping them against existing regulatory frameworks.[465]

The token mapping exercise seeks to build a shared understanding of crypto assets in the Australian financial service's regulatory context. The Australian Government solicited comments on this Consultation Paper from February to March 2023. Ninety submissions were received, including eight confidential submissions.[464] Following this process, a follow-up paper called "*Regulating digital asset platforms*" was published in October 2023. The proposed framework outlined in the aforesaid consultation paper highlights the Australian Government's intention to ensure consistent oversight and

462 After a landslide election victory in 2024, President Donald J. Trump is returning to the White House. See White House, "President Donald J Trump", (2024), available online at https://www.whitehouse.gov/administration/donald-j-trump/ (last accessed on 07 April 2025).

463 The White House, "Strengthening American Leadership in Digital Financial Technology,", (2025), available online at https://www.whitehouse.gov/presidential-actions/2025/01/strengthening-american-leadership-in-digital-financial-technology/ (last accessed on 25 March 2025).

464 Australian Government – The treasury, "Token mapping" available online at https://treasury.gov.au/consultation/c2023-341659 (last accessed on 11 April 2024).

465 The Treasury, Token Mapping Page 10.

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safeguards for consumers by regulating digital asset platforms and other intermediaries within the existing Australian Financial Services Licence regime[466] and introducing a new type of financial product called a "digital asset facility".[467] The next step is the publication of draft legislation containing the proposed framework, following consideration of any comments, which was released for comment 2024 through *Consultation paper 381 - Updates to INFO 225: Digital Assets: Financial Products and Services*[468]. This *Consultation Paper* provide further guidance about our interpretation of how the Corporations Act 2001 applies to crypto- and digital assets, but also sets out the proposals for licencing entities that provide financial services in relation to crypto- and digital assets that are financial products. Further, with respect to this planned legislative development, the Australian Securities and Investments Commission's[469] "*Corporate Plan 2022–26*"[470] sets out crypto assets as one of its core projects and stipulates that ASIC will take action to protect investors from harms posed by crypto-assets that fall within its remit. This Corporate Plan, states that a core project of the Australian Securities and Investment Commission is developing a robust consumer protection and market integrity regulatory framework after the Treasury's consultation.

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466 ASIC, "Consultation paper 381 Updates to INFO 225: Digital Assets: Financial Products and Services",(2024) available online at https://asic.gov.au/about-asic/news-centre/find-a-media-release/2024-releases/24-266mr-asic-invites-feedback-on-proposed-updates-to-digital-asset-guidance/ (last accessed on 12 December 2024).

467 J Wickens, E Bogardi (HK), J Morris (AU), S Lee, T Chan (AU) and N Stammbach, "Australia proposes regulatory framework for crypto exchanges and other digital asset platforms (2023. available online at https://www.regulationtomorrow.com/uncategorized/australia-proposes-regulatory-framework-for-crypto-exchanges-and-other-digital-asset-platforms/ (last accessed on 11 April 2024)

468 ASIC, "Consultation paper 381 Updates to INFO 225: Digital Assets: Financial Products and Services", (2024) available online at https://asic.gov.au/about-asic/news-centre/find-a-media-release/2024-releases/24-266mr-asic-invites-feedback-on-proposed-updates-to-digital-asset-guidance/ (last accessed on 12 December 2024).

469 ASIC's role is to regulate companies and financial services and enforce laws to protect Australian consumers, investors, and creditors. See Australian Securities and Investments Commission," Our role" available online at https://asic.gov.au/about-asic/what-we-do/our-role/ (last accessed on 11 April 2024).

470 Australian Securities and Investment Commission, "ASIC Corporate Plan 2022–26: Focus 2022–26" available online at https://download.asic.gov.au/media/v3vhdqiw/asic-corporate-plan-2022-26-focus-2022-23-published-22-august-2022.pdf (last accessed on 05 October 2024).

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The prudential regulator, the Australian Prudential Regulation Authority[471] will consult on the prudential treatment for crypto assets, which is expected to come into effect in 2025.

In terms of Stablecoin[472] regulatory frameworks, the Council of Financial Regulators[473] in Australia's Twin Peaks Model[474] has decided to prioritise stablecoin regulation due to the potential for these types of arrangements to scale quickly and become widely used as a means of payment and a store of value in the local economy. The Council of Financial Regulators aims to address these risks through a coordinated multi-agency approach. In terms of sales and promotion of crypto assets, there is no specific guidance in place for the sale and promotion of digital assets. The sale of crypto assets is regulated under Australia's existing financial services regulatory regime, including the *Australian Consumer Law* set out in *Schedule 2 to the Competition and Consumer*

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471 The Australian Prudential Regulation Authority is a statutory authority of the Australian Government and the prudential regulator of the Australian financial services industry. See Australian Prudential Regulation Authority, "About APRA", available online at https://www.apra.gov.au/about-apra#:~:text=Settings,-QualityAuto&text=The%20Australian%20Prudential%20Regulation%20Authority,accountable%20to%20the%20Australian%20Parliament (last accessed on 11 April 2024).

472 See Chapter 1,1.25.

473 The Council of Financial Regulators (CFR) is the coordinating body for Australia's main financial regulatory agencies. There are four members: the Australian Prudential Regulation Authority, the Australian Securities and Investments Commission, the Australian Treasury and the Reserve Bank of Australia, which chairs the Council. See Council of Financial Regulators, "About Us," available online at https://www.cfr.gov.au/ (last accessed on 11 April 2024).

474 The 'twin peaks' model – under which the functions for financial regulation are consolidated into two regulators: the Australian Securities and Investments Commission (ASIC), which is responsible for the regulation of companies, market conduct and consumer protection; and the Australian Prudential Regulation Authority (APRA), which is responsible for prudential regulation. Under this model, the central bank, the Reserve Bank of Australia (RBA), remains responsible for monetary policy and financial stability, including ensuring a safe and reliable payments system. See Godwin, Andrew and Ramsay, Ian, Twin Peaks – The Legal and Regulatory Anatomy of Australia's System of Financial Regulation (August 3, 2015). CIFR Paper No. 074/2015, U of Melbourne Legal Studies Research Paper No. 725, Available at SSRN: https://ssrn.com/abstract=2657355 or http://dx.doi.org/10.2139/ssrn.2657355 (last accessed on 29 April 2025).

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Act 2010.[475] With respect to licencing, if a crypto asset is considered a financial product, the product provider must operate under an Australian Financial Services Licence.[476] The licencing regimes state that digital asset platform providers must comply with several general obligations, including financial and disclosure obligations, which include providing the financial service efficiently, honestly, and fairly and managing conflicts of interest, amongst others.[477]

On 10 December 2024, the Australian Securities and Investment Commission (ASIC) reissued *Regulatory Guide 133 Funds management and custodial services: Holding assets (RG 133)*[478] to provide the latest guidance to asset-holding Australian financial services licencees. The *RG 133* is intended for responsible entities of registered managed investment schemes, licenced providers of custodial services, managed discretionary account (MDA) providers accountable for consumer assets under an MDA, and investor-directed portfolio service (IDPS) operators responsible for consumer assets under an IDPS. It outlines the Australian financial services licence obligations applicable to these entities regarding asset holding and establishes the minimum standards required for asset holders.[479] Further developments in respect of crypto assets at the time of writing (January 2025) included ASIC's consultation on updating *Information Sheet 225*[480], which contains ASIC's guidance on how the current financial services framework applies to crypto assets. This consultation closes on 28 February 2025.

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475 Competition and Consumer Act 2010 - Schedule 2 The Australian Consumer Law, available online at https://www.austlii.edu.au/cgi-bin/viewdoc/au/legis/cth/consol_act/caca2010265/sch2.html (last accessed on 12 December 2024).

476 Corporations Act 2001 - Sect 911a.

477 Corporations Act 2001 - Sect 1014G, Sect 1020AC, Sect 961B, Sect 961J.

478 RG 133 Funds management and custodial services: Holding assets, (2024), available online at https://asic.gov.au/regulatory-resources/find-a-document/regulatory-guides/rg-133-funds-management-and-custodial-services-holding-assets/ (last accessed on 07 April 2025).

479 RG 133, Page 4.

480 ASIC, Consultation Paper 381,"Updates to INFO 225: Digital assets: Financial products and services", available online at https://download.asic.gov.au/media/ncfckqeq/cp381-published-4-december-2024.pdf (last accessed on 07 April 2025).

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(d) Bahamas

In the Bahamas, a crypto asset regulatory framework came into being in 2020 with the enactment of the *Digital Asset and Registered Exchanges Act 2020*. The *Digital Asset and Registered Exchanges Act,* 2020 (DARE) regulates the issuance, sale, and trade of digital assets in (or from within) the jurisdiction.[481] The Digital Asset and Registered Exchanges Act, 2020 applies to any organiser, issuer, founder, purchaser, or investor (as defined by DARE) that participates in the formation, promotion, maintenance, organisation, sale, or redemption of an initial token offering[482] as well as any legal entity carrying on a digital asset business, irrespective of any physical location from which the activity is carried out.[483] DARE[484] adds activities considered within the scope of the regulation, emphasises that systems and controls of digital asset exchanges are scaled to the size of the operations, enhances the requirements for entities providing custody/wallet services for digital assets, provides rules for the staking of digital assets, heightens disclosure requirements for issuers of digital assets and Stablecoins[485], restricts certain activities regarding proof of work mining[486], prohibits privacy tokens, and addresses other topics such as NFTs[487], liquidity, and conflicts of interest. Examples of the additional activities or scope of *DARE* include providing advice[488] on,

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481 Digital Asset and Registered Exchanges Act, 2020, Section 3.

482 An Initial Coin Offering (ICO), or token offering, is a fundraising method where a company or project sells digital tokens (or coins) to investors, typically using blockchain technology, to raise capital. See Cristiano Bellavitis, Christian Fisch, Johan Wiklund, "A comprehensive review of the global development of initial coin offerings (ICOs) and their regulation", *Journal of Business Venturing Insights*, Volume 15, 2021,e00213, ISSN 2352-6734, https://doi.org/10.1016/j.jbvi.2020.e00213. (Last accessed on 08 April 2025).

483 A G Allan, SG McWeeny Jr, " GT News and insights" VOL. 3 I ISSUE 1 I JAN 2021 available online at https://grahamthompson.com/wp-content/uploads/2021/01/GT-News-Insights-Vol-3-Issue-1-DARE.pdf (last accessed on 11 April 2024).

484 Digital Assets and Registered Exchanges Bill, available online at https://www.scb.gov.bs/wp-content/uploads/2023/04/DARE-Bill-2023-Consultation-Document.pdf (last accessed on 11 April 2024).

485 See Chapter 1,1.2.5.

486 See Chapter 1,1.2.4.

487 See Chapter 1, 1.2.6.

488 Dare Bill, Section 8(5)

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or the management of digital assets, providing digital assets derivative services[489], providing distributed ledger technology network node services[490], and providing staking services.[491]

In terms of Stablecoins, DARE contains certain amendments that will clearly define and further allow for the registration of existing Stablecoin arrangements.[492] The amendments will also clarify which reserve assets are acceptable, and how reserve assets should be in custody, managed, segregated, reported, and redeemed. Alongside this, the proposed legislation also prohibits the issuance of algorithmic Stablecoins.[493] In terms of sales and promotions, there is a prohibition of any person from carrying on, or being involved in, a digital assets business or offering services as a digital token exchange without being registered.[494] In terms of licencing, any person desirous of engaging in the digital assets business (which includes crypto assets) in, or from within, the Bahamas must register.[495] There is a simplified process[496] of application if a person is already registered but now wishes to engage in the activity with respect to crypto assets.[497] The *DARE Act* was passed on July 31, 2024, officially

489 Dare Bill, Section 6a(15(c)

490 Dare Bill, Section 6(1)(m)

491 Securities Commission of Bahamas " Consultation on the Digital Assets and Registered Exchanges Bill, 2023" available online at https://www.scb.gov.bs/wp-content/uploads/2023/04/DARE-Bill-2023-Consultation-Document.pdf (Last accessed on 11 April 2024).

492 Dare Bill, Section 36a.

493 Algorithmic stablecoins are a type of cryptocurrency that aims to maintain a stable value (often pegged to a fiat currency like the US dollar) through automated supply adjustments using algorithms and smart contracts, rather than traditional collateral. See Krause, David, Algorithmic Stablecoins: Mechanisms, Risks, and Lessons from the Fall of TerraUSD (January 11, 2025). Available at SSRN: https://ssrn.com/abstract=5092827 or http://dx.doi.org/10.2139/ssrn.5092827 (last accessed on 27 April 2025).

494 Dare Bill, Section 3 (1).

495 Dare Bill, Section 8.

496 Dare Bill, Section 15.

497 Securities Commission of Bahamas " The Bahama's approach to regulation of Digital Asset Businesses" available online at https://www.scb.gov.bs/wp-content/uploads/2023/04/The-Bahamas-Approach-to-the-Regulation-of-Digital-Asset-Businesses.pdf "last accessed on 11 April 2024".

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named the *Bahamas Digital Assets and Registered Exchanges Act, 2024*, and builds upon earlier legislation from 2020.[498]

(e) Brazil

The Brazilian Central Bank (Banco Central Do Brasil)[499] is responsible for establishing the conditions and deadlines, for crypto-asset service providers to adapt to the new requirements. The Brazilian Central Bank's responsibilities[500] include authorising the operation and transfer of control of brokers, supervising their operation, cancelling authorisations, and establishing the conditions under which activities will be included in the foreign exchange market or must be subject to the regulation of Brazilian capital abroad and foreign capital in the country.[501]

Both crypto assets and Stablecoins are not specifically regulated in Brazil. In terms of a registration or licencing regime, crypto-asset exchanges applying to be authorised as a payment institution, must register with the Central Bank of Brazil as set out in Brazilian Payments System , *Law 12,865, of October 9, 2013*.[502] The Central Bank of Brazil is

498 Securities Commission of Bahamas, "Press release", available online at https://www.scb.gov.bs/wp-content/uploads/2024/07/Media-Release-The-Bahamas-Introduces-Transformative-Digital-Asset-Legislation-The-DARE-Act-2024.pdf (last accessed on 07 April 2025).

499 In 1964, the Banking Law (No. 4,595) created the National Monetary Council (CMN) — as the highest macroeconomic and financial regulatory authority — and the Banco Central do Brasil (BCB). Under this institutional framework, BCB performs its functions as a monetary, regulatory and supervisory authority in accordance with guidelines issued by the CMN. See Banco Central Do Brasil, "about", available online at https://www.bcb.gov.br/en/about (last accessed on 07 April 2025).

500 Law No. 4,595, Dated December 31, 1964, Chapter 3, Article 10 available online at https://www.bcb.gov.br/content/about/legislation_norms_docs/Law%204.595%2C%20dated%2012_31_1964%20-%20National%20Financial%20System.pdf (last accessed on 15 December 2024).

501 Central Bank of Brazil,"Functions of the Central Bank of Brazil",(2016), available online at https://www.bcb.gov.br/conteudo/home-en/FAQs/FAQ%2011-Central%20Bank%20of%20Brazil%20Functions.pdf (last accessed on 05 October 2024).

502 Law 12,865, of October 9, 2013,"Regulates the payment schemes and payment institutions which hereby become part of the Brazilian Payments System (SPB)",(2013), available online at https://www.bcb.gov.br/content/financialstability/paymentssystem_docs/Laws/Law12865.pdf (last

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expected to provide further regulatory updates, focusing on AML/CFT, as well as authorisation, operation, and conditions for crypto-asset broker-dealers.[503] Notably, the Central Bank of Brazil released its much-anticipated public consultation on crypto asset regulation on 14 December 2023. Following this consultation process and some delays, on November 8, 2024, the Central Bank of Brazil (BCB) published the *Public Consultation Notices No. 109*[504] *and 110*[505], which outline the rules for virtual asset service providers (VASPs) and other institutions licenced by the BCB which aim to carry out virtual asset-based activities. Consultation on *Public Consultation Notices No. 109 and 110* is open until February 2025.

(f) Canada

The regulation of Crypto Assets in Canada is divided among various levels of government and administrative agencies[506], depending on the nature of the activity undertaken.[507] The Canadian Securities Administrators ("CSA")[508] is an umbrella

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accessed on 15 December 2024).

503 R Di Napoli, S M Watanabe, D Messias, "Navigating the Global Crypto Landscape with PwC: 2024 Outlook – Brazil" Available online at https://www.pwc.com/gx/en/industries/financial-services/assets/navigating-the-global-crypto-landscape-with-PwC-2024.pdf (last accessed on 11 April 2024).

504 Public Consultation Notice No.109 available online at https://www3.bcb.gov.br/audpub/DetalharAudienciaPage?2&audienciaId=702 (last accessed on 15 December 2024).

505 Public Consultation Notice No.110 available online at https://www3.bcb.gov.br/audpub/DetalharAudienciaPage?5&audienciaId=703 (last accessed on 15 December 2024).

506 Authorities include Quebec's *Autorité des marchés financiers* (AMF) and the Ontario Securities Commission (OSC), along with other provincial securities regulators.

507 Blockchain & Cryptocurrency Laws & Regulations, Canada, available online at https://www.globallegalinsights.com/practice-areas/blockchain-laws-and-regulations/Canada (last accessed on 11 April 2021).

508 The CSA brings provincial and territorial securities regulators together to share ideas and work at designing policies and regulations that are consistent across the country and ensure the smooth operation of Canada's securities industry. See Who We Are – CSA, available online at https://www.securities-administrators.ca/about/who-we-are/ (last accessed on 15 December 2024).

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organisation of Canada's provincial and territorial securities regulators.[509] While there are no specific rules or regulations for digital assets, the CSA has published guidance in the form of a number of staff notices with respect to crypto assets with a view to addressing rapidly evolving developments in retail crypto markets and adapting the existing regulatory framework to digital assets, for example, *CSA Staff Notice 21-333 :Crypto Asset Trading Platforms: Terms and Conditions for Trading Value-Referenced Crypto Assets with Consumers*.[510] The CSA and the investment industry self-regulatory organisation known as the Canadian Industry Regulatory Organization ("CIRO")[511] set out their framework and proposed approach to regulating this asset class in *Staff Notice 21-329 – Guidance for Crypto-Asset Trading Platforms: Compliance with Regulatory Requirements*.[512] In assessing whether a particular crypto asset will be considered a security subject to Canadian securities laws, the CSA has generally applied a very broad and multi-factored approach to determining whether an investment contract exists and focusing on the substance of the crypto asset over its form.[513] In terms of the main legal question as to whether a specific crypto asset constitutes a "security", the CSA approves a purposive interpretation of the investment

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509 R Leopold, A M Fabbro, "Navigating the Global Crypto Landscape with PwC: 2024 Outlook – Canada"(2023) available online at https://www.pwc.com/gx/en/industries/financial-services/assets/navigating-the-global-crypto-landscape-with-PwC-2024.pdf (last accessed on 11 April 2024).

510 CSA Staff Notice 21-333 Crypto Asset Trading Platforms: Terms and Conditions for Trading Value-Referenced Crypto Assets with Clients, available online at https://www.securities-administrators.ca/news/canadian-securities-regulators-clarify-interim-approach-to-value-referenced-crypto-asset/#N21333 (last accessed on 15 December 2024).

511 Canadian Investment Regulatory Organization website available online at https://www.ciro.ca/ (last accessed on 15 December 2024).

512 Canadian Securities Administrators, Staff Notice 21-329 – Guidance for Crypto asset Trading Platforms: Compliance with Regulatory Requirements (Canadian Securities Administrators, 2021), available online at https://www.osc.ca/en/securities-law/instruments-rules-policies/2/21-329/joint-canadian-securities-administratorsinvestment-industry-regulatory-organization-canada-staff (last accessed on 11 April 2024).

513 Goodman LLP, A Goodman, M Partridge, (2018)," Focus on Substance Over Form - CSA Provides Further Guidance on Token Offerings" available online at https://www.goodmans.ca/insights/article/Focus_on_Substance_Over_Form___CSA_Provides_Further_Guidance_on_Token_Offerings (last accessed on 15 December 2024).

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contract test set out in *Pacific Coast Coin Exchange v Ontario Securities Commission.*[514]

In terms of Stablecoins, in November 2022, the Federal Government announced a legislative review, focused on the digital money and financial sector stability and security. With this, the Government launched a consultation on digital currencies, including Stablecoins.[515] The Canadian Securities Administrators released *CSA Staff Notice 21-333 Crypto Asset Trading Platforms (CTP): Terms and Conditions for Trading Value-referenced Crypto Assets with Consumers*[516] to provide further guidance to crypto asset trading platforms on the CSA's interim approach to value-referenced crypto assets ("VRCAs", commonly referred to as "Stablecoins"). The Staff Notice sets out terms and conditions on which the CSA would consent to a CTP continuing to make certain VRCAs available to its consumers, along with important dates for implementation. In October 2023, the CSA announced that it might allow, subject to terms and conditions, trading of certain value-referenced crypto assets that are referenced to the value of a single fiat currency. The CSA also set out interim terms and conditions that would apply to crypto asset trading platforms and the issuers of fiat-backed crypto assets.[517]

(g) Hong Kong

The Hong Kong Government issued a policy statement on the development of crypto assets in Hong Kong on 31 October 2022 that sets out the Government's policy stance

514 Pacific Coast Coin Exchange v Ontario Securities Commission [1978] 2 SCR 112.

515 Canadian Securities Administrators, "CSA provides an update to crypto trading platforms operating in Canada" (2022) available online at https://www.securities-administrators.ca/news/csa-provides-update-to-crypto-trading-platforms-operating-in-canada/ (last accessed on 11 April 2024).

516 https://www.osc.ca/en/securities-law/instruments-rules-policies/2/21-333/csa-staff-notice-21-333-crypto asset-trading-platforms-terms-and-conditions-trading-value (last accessed on 11 April 2024).

517 Canadian Security Administrators, "Canadian securities regulators clarify interim approach to value-referenced crypto asset" (2023) available online at https://www.securities-administrators.ca/news/canadian-securities-regulators-clarify-interim-approach-to-value-referenced-crypto asset/ (last accessed on 11 April 2024).

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and approach towards developing a vibrant sector and ecosystem for crypto assets in Hong Kong.[518] In the statement, the Hong Kong Government states that, as an international financial centre, Hong Kong is open and inclusive towards the global community of innovators engaging in crypto asset businesses and aims to be a Fintech Hub. Subsequently, in August 2023, the Hong Kong Monetary Authority[519], the Securities and Futures Commission[520], and the Insurance Authority[521] issued a roadmap to promote Fintech adoption in the financial sector called "*A Bridge to the Future: Hong Kong Fintech Promotion Roadmap*".[522] Some of the areas covered in the roadmap are the Fintech facilitation initiatives, which include nurturing talent, bolstering Fintech supporting infrastructure, offering financial support, advice, and network opportunities to Fintech startups, clarifying regulatory requirements, and promoting

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518 Financial Services and the Treasury Bureau," Policy Statement on Development of Virtual Assets in Hong Kong" available online at https://gia.info.gov.hk/general/202210/31/P2022103000454_404805_1_1667173469522.pdf (last accessed on 12 April 2024).

519 The Hong Kong Monetary Authority (HKMA)was established on 1 April 1993 after the Legislative Council passed amendments to the Exchange Fund Ordinance in 1992, empowering the Financial Secretary to appoint a Monetary Authority. The HKMA has four main functions: maintaining currency stability within the framework of the Linked Exchange Rate System; promoting the stability and integrity of the financial system, including the banking system; helping to maintain Hong Kong's status as an international financial centre, including the maintenance and development of Hong Kong's financial infrastructure; and managing the Exchange Fund. See About the HKMA available online at https://www.hkma.gov.hk/media/eng/publication-and-research/annual-report/2017/05c_About_the_HKMA.PDF (last accessed on 15 December 2024).

520 The Securities and Futures Commission (SFC) is an independent statutory body set up in 1989 to regulate Hong Kong's securities and futures markets. The primary responsibilities of the SFC include maintaining and promoting the fairness, efficiency, competitiveness, transparency, and orderliness of the securities and futures industry. See About–the–SFC available online at https://www.sfc.hk/en/About-the-SFC/Our-role (last accessed on 15 December 2024).

521 The Insurance Authority was established under the Insurance Companies (Amendment) Ordinance 2015 on 07 December 2015. The principal function of the Insurance Authority shall be to regulate and supervise the insurance industry for the promotion of the general stability of the insurance industry and for the protection of existing and potential policy holders. See IA HK About Us available online at https://www.ia.org.hk/en/aboutus/role/statutory_functions.html (last accessed on 15 December 2024).

522 Hong Kong Monetary Authority, "A bridge to the future: Hong Kong Fintech promotion roadmap" available online https://www.hkma.gov.hk/media/eng/doc/key-information/guidelines-and-circular/2023/20230825e1a1.pdf (last accessed on 12 April 2024).

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Hong Kong as a Fintech Hub. It also sets out the roadmap kick-off planned initiatives, which include various stages, for instance, sourcing, which has some of the following planned initiatives: the revamping of the Fintech Knowledge Hub, the launching of a Fintech Spotlight (i.e., video series), and hosting of Fintech Showcases and Roundtable discussions.[523] In terms of the activation stage, some of the additional initiatives are the publishing of Fintech research reports, conducting knowledge-sharing webinars/seminars, and also delivering training sessions for Fintech stakeholders. The main message flowing from the government through these publications is that they are committed to ensuring the ongoing success of Fintech adoption in Hong Kong and that they have adequate plans to nurture Hong Kong's position as a leading Fintech hub in the Asia Pacific region.[524]

In terms of regulatory treatment, cryptocurrencies are considered a form of virtual assets in Hong Kong and are generally categorised either as security tokens or utility tokens. Those that exhibit characteristic characteristics of "securities" under the *CAP.571 Securities and Futures Ordinance*[525] are considered "security" tokens that fall under the jurisdiction of the Securities and Futures Commission of Hong Kong.[526] The term "securities" as defined in *Schedule1, Part One of CAP.571 Securities and Futures Ordinance* encompasses a wide range of financial instruments, including shares, stocks, debentures, loan stocks, funds, bonds, notes, rights, options, interests in collective investment schemes, certificates of interest or participation, and structured products. However, it excludes private company shares, certain collective investment schemes, insurance contracts, general partnership interests, negotiable receipts, bills

523 Hong Kong Fintech Roadmap, Page 11.

524 News.HK.Gov, Business & Finance,"HK a dynamic Fintech hub",(2024) available online at https://www.news.gov.hk/eng/2024/10/20241025/20241025_200849_545.html (last accessed on 15 December 2024).

525 Hong Kong E-legislation available online at https://www.elegislation.gov.hk/hk/cap571!en.pdf (last accessed on 12 April 2024).

526 The Securities and Futures Commission of Hong Kong is the independent statutory body charged with regulating the securities and futures markets in Hong Kong. See Hong Kong Lawyer, 2024, Ivan Chang," The SFC – Thirty-Five Years and Going Strong on Enforcement in Hong Kong (and Overseas)" available online at https://www.hk-lawyer.org/content/sfc-%E2%80%93-thirty-five-years-and-going-strong-enforcement-hong-kong-and-overseas (last accessed on 12 April 2024).

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of exchange, promissory notes, and non-transferable debentures.[527] The *CAP.571 Securities and Futures Ordinance* aims to consolidate and amend the law relating to financial products, the securities and futures market and the securities and futures industry, the regulation of activities and other matters connected with financial products, the securities and futures market, and the securities and futures industry, the protection of investors, and other matters incidental thereto or connected therewith, and for connected purposes.[528] The Securities and Futures Commission of Hong Kong has extended its jurisdiction over assets that are non-securities as defined in the *CAP.571 Securities and Futures Ordinance* as far as a party proposes to operate a virtual asset trading platform in Hong Kong Special Administrative Region (SAR) (or offer a virtual asset trading platform services into Hong Kong SAR), even if that virtual asset trading platforms will only list non-security tokens for trading. Stablecoins are considered a subset of virtual assets, and the Hong Kong Monetary Authority is formulating a regulatory regime for Stablecoin issuers in Hong Kong. With a view to facilitating the subsequent implementation of the regime, the Hong Kong Monetary Authority has launched a "sandbox arrangement"[529] to facilitate the exchange of views between the Hong Kong Monetary Authority and the industry on the proposed regulatory requirements in respect of Stablecoins.[530] The proposed framework has been formalised into a Stablecoins Bill, which was gazetted on 06 December 2024 and being considered by the Bills Committee.[531]

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527 Cap.571: Securities and Futures Ordinance, Schedule 1, Part 1.

528 Cap.571: Securities and Futures Ordinance, Part I 1-2, Section 1.

529 A regulatory sandbox is a safe testing space created by regulators to test innovative business models or products without incurring all the regulatory consequences. See Jayoung James Goo, Joo-Yeun Heo, "The Impact of the Regulatory Sandbox on the Fintech Industry, with a Discussion on the Relation between Regulatory Sandboxes and Open Innovation", *Journal of Open Innovation: Technology, Market, and Complexity*, Volume 6, Issue 2, 2020, 43, ISSN 2199-8531, https://doi.org/10.3390/joitmc6020043. (last accessed on 14 December 2024).

530 Hong Kong Monetary Authority, "Stablecoins" available online at https://www.hkma.gov.hk/eng/key-functions/international-financial-centre/Stablecoin-issuers/ (last accessed on 12 April 2024).

531 Stablecoins Bill 2024 available online at https://www.gld.gov.hk/egazette/english/gazette/file.php?year=2024&vol=28&no=49&extra=0&type=3&number=31 (last accessed on 15 December 2024).

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The proposed framework includes a licencing regime requiring entities to obtain a licence from the Hong Kong Monetary Authority if they conduct a regulated activity in Hong Kong SAR or actively market a regulated activity to the Hong Kong SAR public, or conduct a regulated activity concerning a Stablecoin that references the value of the Hong Kong SAR dollar.[532] The licence requirement is applicable regardless of whether such regulated activity is conducted in Hong Kong SAR or actively marketed to the Hong Kong SAR general public or is considered by the HKMA that they should be regulated, having regard to "matters of significant public interest".[533]

In terms of licencing, both in terms of the *Securities and Futures Ordinance and the Anti-Money Laundering and Counter-Terrorist Financing Ordinance (Cap. 615)*, centralised virtual asset trading platforms carrying on their businesses in Hong Kong, or actively marketing their services to Hong Kong investors, are required to be licenced and regulated by the Securities and Futures Commission. The *Anti-Money Laundering and Counter-Terrorist Financing Ordinance* provides for the imposition of requirements relating to consumer due diligence and record-keeping on specified financial institutions and designated non-financial businesses and professions; provides for the powers of the relevant authorities and regulatory bodies to supervise compliance with those requirements and other requirements under this *Ordinance* provides for the regulation of the operation of a money service. The licencing of money service operators provides for the regulation of the operation of a trust or company service and the licencing of trust or company service providers, further provides for the regulation of activities involving virtual assets and the licencing of virtual asset service providers and their representatives and establishes a review tribunal to review certain decisions made by the relevant authorities under this Ordinance, and provide for incidental and related matters.[534] For the purposes of this overview, only the licencing regime under the *CAP 571 - Securities and Futures Ordinance* will be discussed and not the licencing regime under the *CAP 615 - Anti-Money Laundering and Counter-Terrorist*

[532] Stablecoins Bill Clause 5(1).

[533] Stablecoins Bill Clause 5(8).

[534] Hong-Kong E-legislation available online at https://www.elegislation.gov.hk/hk/cap615 (last accessed on 12 April 2024).

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Financing Ordinance, as dealing with AML frameworks in detail is beyond the scope of this research.

In terms of the *Securities and Futures Ordinance*, there are two types of licences: the first is a Type 1 regulated activity (dealing in securities) licence, and the second is a Type 7 regulated activity (providing automated trading services). The scope of the licencing is centralised platforms providing trading services in security tokens using an automated trading engine that matches consumer orders and also provides custody services as an ancillary service to their trading services. The licencing regime applies to both licenced corporations and licenced representatives of licenced corporations (including responsible officers[535]).[536]

(h) India

India is the third-largest Fintech ecosystem in the world, and this is partly due to the country's accommodative regulatory regime and conducive policy landscape.[537] India does not have an overarching regulatory framework governing the trading of crypto assets or setting up or operations of crypto asset service providers, although these activities are not explicitly prohibited. There is also no framework to register or licence crypto platforms or crypto asset service providers in India. However, it has contemporised various statutes like the *Companies Act, 2013*[538], necessitating the reporting of virtual digital assets in an effort to reflect the emerging dynamics of the

[535] "Responsible officer" means an individual who is approved by the Commission under section 126(1) of this Ordinance as a responsible officer of a licenced corporation. See Cap.571: Securities and Futures Ordinance, Schedule 1.

[536] Cap.571: Securities and Futures Ordinance, Section103 - Offence to issue advertisements, invitations or documents relating to investments in certain cases. See Hong-Kong E-legislation available online at https://www.elegislation.gov.hk/hk/cap615 (last accessed on 12 April 2024).

[537] World Economic Forum, "Why India has the perfect conditions to make the most of digital technology"(2023) https://www.weforum.org/agenda/2023/05/india-technology-opportunity/ (last accessed on 12 April 2024).

[538] Companies Act, 2013 available online at https://www.mca.gov.in/Ministry/pdf/CompaniesAct2013.pdf (last accessed on 12 April 2024).

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financial landscape. What the *Companies Act of 2013* requires in terms of reporting requirements includes profit or loss on transactions involving crypto assets, the amount of crypto assets held as of the reporting date, and deposits or advances from any person for the purpose of trading or investing in crypto assets.[539] Crypto assets are captured in the regulatory remit in terms of AML within India as of March 2023, when the Government brought[540] all crypto asset service providers (or virtual asset service providers) under the ambit of the *Prevention of Money Laundering Act, 2002*[541], as a reporting entity.[542] The *Prevention of Money Laundering Act, 2002*, is an Act of the Parliament of India enacted to prevent money laundering and to provide for the confiscation of property derived from money laundering. Crypto assets cannot be used as a legal tender or a medium of exchange in India.[543] In terms of Stablecoins, a meticulous approach has been taken, since there may be a threat to India's economic stability and the sovereignty of its macroeconomic policies if it is based on a foreign currency and adopted on a large scale.[544]

The Indian Government released a note titled" *Presidency Note"* in 2023 as an input for a *Roadmap on Establishing a Global Framework for Crypto Assets*. The *Presidency Note* is a high-level input for the *IMF-FSB Synthesis Paper: Policies for Crypto-*

539 Companies Act 2013, Schedule III.

540 In the exercise of its powers under section 2(1)(sa)(vi) of the Prevention of Money Laundering Act, 2002, the Central Government, via a notification dated March 07, 2023, has brought activities involving or relating to virtual digital assets ('VDA'), including cryptocurrencies and NFTs under the purview of the Prevention of Money Laundering Act, 2002.See EGazette Notification available online at https://egazette.gov.in/WriteReadData/2023/244184.pdf (last accessed on 17 December 2024).

541 The Prevention of Money-Laundering Act, 2002 available online at https://enforcementdirectorate.gov.in/sites/default/files/Act%26rules/THE%20PREVENTION%20OF%20MONEY%20LAUNDERING%20ACT%2C%202002.pdf (last accessed on 12 April 2024)

542 "reporting entity" means a banking company, financial institution, intermediary or a person carrying on a designated business or profession. See Section 2 of the Prevention of Money-Laundering Act, 2002. (last accessed on 17 December 2024).

543 ET India," Cryptocurrency will never be a legal tender in India: Finance secretary", (2022), available online at https://government.economictimes.indiatimes.com/news/digital-india/cryptocurrency-will-never-be-a-legal-tender-in-india-finance-secretary/89341518 (last accessed on 15 December 2024).

544 PCMI,M Swaminathan," Why Stablecoins Are Unlikely to Be Adopted in India",(2024), available online at https://paymentscmi.com/insights/Stablecoin-adoption-in-india/ (last accessed on 15 December 2024).

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assets[545], indicating certain important areas that can be covered more comprehensively in the roadmap.[546] A draft piece of legislation is awaited, which is in the form of the *Cryptocurrency and Regulation of Official Digital Currency Bill, 2021.* The *Bill* seeks to create a favorable framework for the creation of digital currency that will be issued by the Reserve Bank of India. The only classification of crypto assets that is in place in India, is in respect of the *Income Tax Act, 1961*.[547] The classification contains the following definitions to capture and classify crypto assets: any information, code, number, or token (not being Indian currency or foreign currency) that meets the prescribed conditions; non-fungible token[548] or any other token of similar nature, by whatever name called; and any other digital asset, as the Government may specify by notification.[549] With respect to sales and promotion, there is no dedicated regulation on the sales and promotion of virtual currencies in India.[550] The Advertising Standards Council of India[551], a membership-based self-regulatory body, has issued guidelines for advertising and promotion of virtual digital assets and services.[552]

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545 IMF-FSB Synthesis Paper: Policies for Crypto-Assets, (2023) available online at https://www.fsb.org/uploads/R070923-1.pdf (last accessed on 15 December 2024).

546 G20 – India ""Presidency Note as an input for a Roadmap on Establishing a Global Framework for Crypto Assets" (2023) available online at https://www.g20.in/content/dam/gtwenty/gtwenty_new/document/Presidency_note_on_Framework_for_Crypto_Assets.pdf (last accessed on 12 April 2024).

547 The Income-Tax Act, 1961, available online at https://www.indiacode.nic.in/bitstream/123456789/2435/1/a1961-43.pdf (last accessed on 12 April 2024).

548 See Chapter 1,1.2.6.

549 Section 2(47A) of the Income-tax Act, 1961.

550 A Jain, NB Jain, A Dulani, S Kumar," Navigating the Global Crypto Landscape with PwC: 2024 Outlook – India" (2023) available online at https://www.pwc.com/gx/en/industries/financial-services/assets/navigating-the-global-crypto-landscape-with-PwC-2024.pdf (last accessed on 12 April 2024).

551 The Advertising Standards Council of India is a voluntary self-regulatory organization of the advertising industry in India. See Vajiram & Ravi-Institute for IAS Examination," Advertising Standards Council of India",(2024), available online at https://vajiramandravi.com/upsc-daily-current-affairs/prelims-pointers/advertising-standards-council-of-india/ (last accessed on 12 April 2024).

552 ASCI Code for self-regulation of advertising content in India available online at https://www.ascionline.in/wp-content/uploads/2022/11/asci_code_of_self_regulation.pdf (last accessed on 15 December 2024).

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(i) Japan

The Government of Japan has indicated that part of its key pillars for the growth of the Japanese economy includes Web3.[553] In further support of the development of Web3 policies in Japan, a rulemaking hackathon[554] was organised at the end of 2023. The focus of this event was to address the governance and operational structures of Decentralised Autonomous Organisations.[555] The Japanese government, in April 2023, approved a Web3 White Paper[556] indicating more openness to Web3. The White Paper titled, "*Towards an era where everyone utilises digital assets*", proposes several recommendations for Japan's cryptocurrency industry. The document highlights the need for responsible and innovative practices in the field and suggests that Japan should play a leadership role in shaping international regulations for Web3 technologies.[557] In terms of regulation, the structure of the crypto assets determines the applicability of regulations in Japan. The Web3 White Paper 2023 was followed by a newer version in 2024.[558] For instance, the Web3 White Paper explains that if the crypto assets have characteristics that can be used for settlement with, and be purchased from, and sold to, unspecified persons, it could be captured under the *Payment Services Act No. 59 of June 24, 2009.*[559] Also, if the crypto assets are

553 See Chapter 1, 1.2.3.

554 A hackathon is a collaborative, time-bound event where participants, often developers and programmers, work together to solve problems or create solutions to challenges, typically within a short period, like 24 or 48 hours. See Hassan, Mohammad Asif. (2024). Research Article of Hackathon. 10.13140/RG.2.2.31526.09280. (last accessed on 07 April 2025).

555 M Patel, "Japan's Emerging Web3 Policies: Leading The Way In Blockchain Technology" (2024) available online at https://nftnewstoday.com/2024/01/25/japans-emerging-web3-policies-leading-the-way-in-blockchain-technology/ (last accessed on 12 April 2024).

556 CoinDesk, AU Lavender ,"Japan Approves Web3 White paper to Promote Industry Growth in the Country" available online at https://www.coindesk.com/policy/2023/04/06/japan-releases-web3-white-paper-to-promote-industry-growth-in-the-country (last accessed on 15 December 2024).

557 Web3 White paper," A New Era Where Technology Forms the Foundation of Society", Page 7.

558 Web3 White paper 2024," A New Era Where Technology Forms the Foundation of Society", Available online at https://www.taira-m.jp/The%20web3%20White%20Paper%202024%EF%BC%88English%2Cver%29.pdf (last accessed on 15 December 2024).

559 Payment Services Act (Act No. 59 of June 24, 2009) available online at https://www.japaneselawtranslation.go.jp/en/laws/view/3078/en (last accessed on 15 December

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electronically recorded and transferable and not a legal currency or assets denominated in legal currency, this may subject the crypto assets to the *Payment Services Act* in Japan. The purpose of this Act, as stipulated in Chapter One of the *Act*, is to enforce registration and provide other necessary measures with respect to the issuance of prepaid payment instruments, or exchange transactions carried out by persons other than deposit-taking institutions, exchange of crypto assets, etc.[560] The *Payment Services Act* deals with the registration of both crypto-asset services providers[561] and crypto asset exchange service providers.[562] It requires any entity that is providing exchange services to be registered with the Financial Services Agency[563] and the local finance bureau.[564]

In terms of Stablecoins, the amended *Payment Services Act of 2022*[565] in Japan also captures Stablecoins if the token can be used for settlement with, and be purchased from, and sold to, unspecified persons and is electronically recorded and transferable, and has its denomination in legal currency. This legislation is also known as Japan's revised *Payment Services Act of 2022*[566], which provides the legal regulation for

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2024).

560 Japanese Law Translation, available online at https://www.japaneselawtranslation.go.jp/en/laws/view/3965/en#:~:text=Article%201The%20purpose%20of,the%20clearing%20of%20exchange%20transactions, Chapter 1 General Provisions, Article 1, (last accessed on 12 April 2024).

561 Payment Services Act, Article 63-4.

562 Payment Services Act, Article 63-2.

563 The Financial Services Agency is a Japanese government agency and an integrated financial regulator responsible for overseeing banking, securities and exchange, and insurance sectors in order to ensure the stability of the financial system of Japan. See Financial Services Agency,"About Us" available online at https://www.fsa.go.jp/en/about/pamphlet_e.pdf (last accessed on 12 April 2024).

564 Article 63-2 of the PSA, available at: http://www.japaneselawtranslation.go.jp/law/detail/?id=3078&vm=02&re=02&new=1

565 Japanese Law Translation available online at https://www.japaneselawtranslation.go.jp/en/laws/view/3965/en (last accessed on 04 October 2024).

566 The "Bill for partial amendment to the Payment Services Act, etc. for the purpose of establishing a stable and efficient payment and settlement system" (the "Amended Act") was promulgated on June 10, 2022. See AMT Law, K Kawai, K Hatano, H Sohkawa," Draft Cabinet Ordinances and Cabinet Office Ordinances, Etc. Concerning Stablecoin Legislation (Part II)", available online at

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Stablecoins. When a token is denominated in crypto assets or stabilised by way of an algorithm, then it may be treated as crypto asset from a regulatory perspective. Security Tokens have been captured under the *Financial Instruments and Exchange Act No. 25 of 1948*[567], through amendments of this Act, that establish electronically recordable transferable rights and regulations applicable thereto and also introduce regulations regarding derivative instruments, including regulations governing unfair acts[568] in crypto assets or crypto-asset derivatives.[569] As explained, crypto assets fall under the definition of "financial instruments", and crypto asset derivative transactions will fall under the definition of "over-the-counter derivative transactions".[570] The *Financial Instruments and Exchange Act No. 25 of 1948*[571] deals with the issuance of securities and transactions related to other financial instruments in Japan. Securities under the *Financial Instruments and Exchange Act* are classified as Paragraph 1 and Paragraph 2 securities. Paragraph 1 securities, among many others, include financial instruments such as shares of capital stock companies, bonds, units of investment trusts, shares of investment corporations, warrants, and commercial paper.[572] Paragraph 2 securities include beneficial interests of a trust (excluding units of investment trusts), interests in limited partnerships, limited liability partnerships, and limited liability companies.[573]

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https://www.amt-law.com/asset/pdf/bulletins2_pdf/230522.pdf (last accessed on 15 December 2024).

567 Financial Instruments and Exchange Act,1948, available online at https://www.fsa.go.jp/common/law/fie01.pdf (last accessed on 15 December 2024).

568 Financial Instruments and Exchange Act,1948, Article 1.

569 Arora, Gaurav, Cryptoasset Regulatory Framework in Japan (October 27, 2020). Available at SSRN: https://ssrn.com/abstract=3720230 or http://dx.doi.org/10.2139/ssrn.3720230(last accessed on 14 April 2024).

570 Article 2, Paragraph 22, available at: http://www.japaneselawtranslation.go.jp/law/detail/?id=2355&vm=02&re=02

571 Financial Instruments and Exchange Act (Act No. 25 of 1948), available online at https://www.fsa.go.jp/common/law/fie01.pdf (last accessed on 13 March 2025).

572 Article 2, Paragraph 1 of FIEA, available at: http://www.japaneselawtranslation.go.jp/law/detail/?id=2355&vm=02&re=02

573 Article 2, Paragraph 2 of FIEA, available at: http://www.japaneselawtranslation.go.jp/law/detail/?id=2355&vm=02&re=02

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With respect to registration or licencing requirements, at the time of writing, crypto asset exchange service providers must be registered with the Financial Services Agency in Japan.[574] Security token brokers must be registered as a "financial instruments business operator" under the *Financial Instruments and Exchange Act*, as the security token would constitute "electronically recorded transferable rights" and fall within the definition of "securities" under the *Financial Instruments and Exchange Act*.[575]

(j) United Arab Emirates

The United Arab Emirates is experiencing rapid growth in its local crypto asset ecosystem and is attempting to establish itself as one of the leading global crypto asset hubs. Payment services in respect of crypto assets are regulated by the United Arab Emirates Central Bank[576], and the rest of the ecosystem is regulated by the Securities and Commodities Authority,[577] which was empowered to regulate in terms of the *Cabinet Resolution 111 of 2022*.[578] These payment services under the United Arab

[574] Crypto asset exchange businesses became regulated under the Payment Services Act No. 59 of June 24 of 2009, in 2017 through amendments to the Act. Payment Services Act is available online at https://www.japaneselawtranslation.go.jp/en/laws/view/3078/en (last accessed on 14 December 2024).

[575] T Ashizawa, C Suzuki, H Takeuchi,H Nishida, M Hibi, T Maruyama, H Togawa," Navigating the Global Crypto Landscape with PwC: 2024 Outlook – Japan" (2023) available online at https://www.pwc.com/gx/en/industries/financial-services/assets/navigating-the-global-crypto-landscape-with-PwC-2024.pdf (last accessed on 14 April 2024).

[576] The Central Bank of the United Arab Emirates is the state institution responsible for managing the currency, monetary policy, banking, and insurance regulation in the United Arab Emirates. See Central Bank of the UAE," Monetary Policy and Domestic Markets", available online at https://www.centralbank.ae/en/our-operations/monetary-policy-and-domestic-markets/ (last accessed on 04 October 2024).

[577] The Securities and Commodities Authority is a federal financial regulatory agency in the United Arab Emirates. See Securities and Commodities Authority," SCA Services", available online at https://www.sca.gov.ae/en/home.aspx (last accessed on 04 October 2024).

[578] UAE legislation, available online at https://www.sca.gov.ae/assets/d7a86b26/cabinet-resolution-no-111-of-2022-concerning-the-regulation-of-virtual-assets-and-their-service.aspx (last accessed on 04 October 2024).

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Emirates Central Bank are regulated under the Payment Token Services Regulation contained in *Circular No.2/2024 dated 7 June 2024*.[579] However, there was a delegation of powers made under *Cabinet Resolution No.111 of 2022*[580] from the Securities and Commodities Authority[581] to the Dubai Virtual Asset Regulatory Authority,[582] which was formed under *Dubai Law No. 4 of 2022*, in respect of the Emirate of Dubai, except for the Dubai International Financial Centre[583], through *Cabinet Resolution 112* (December 2022). In terms of Abu Dhabi, the Abu Dhabi Global Market Financial Service Regulatory Authority[584] which was established on 21st October 2015 has established a crypto asset or virtual assets regime in the United Arab Emirates in 2018, which was established under the *Financial Services and Markets Regulations of 2015* made under Article 6(1) of Law No. 4 of 2013.[585] The

[579] CBUAE Rule Book available online at https://rulebook.centralbank.ae/en/rulebook/payment-token-services-regulation (last accessed on 14 December 2024).

[580] Cabinet Resolution No. (111) of 2022 Regulating Virtual Assets and the Related Service Providers available online at https://uaelegislation.gov.ae/en/legislations/1623/download last accessed on 14 December 2024).

[581] The Securities and Commodities Authority (SCA) is a federal financial regulatory agency in the United Arab Emirates. It was established based on Federal Decree No. (4) of 2000 by then-president of the UAE, Khalifa Bin Zayed Al Nahyan and it's amendments issued in Federal Law 25 of 2006, amending the former law. See About Us, Securities and Commodities Authority available online at https://www.sca.gov.ae/en/about-us/overview.aspx (last accessed on 15 December 2025).

[582] The Virtual Assets Regulatory Authority (VARA) is responsible for regulating and overseeing the provision, use, and exchange of virtual assets in and from the emirate of Dubai. See ADGM, "Financial Services Regulatory Authority", available online at https://www.adgm.com/financial-services-regulatory-authority (last accessed on 04 October 2024).

[583] The Dubai International Financial Centre is a special economic zone in Dubai covering 110 ha, established in 2004 as a financial hub for companies operating throughout the Middle East, Africa, and South Asia markets. See ADGM, "Financial Centre of Abu Dhabi", available online at https://www.adgm.com/financial-services-regulatory-authority (last accessed on 04 October 2024).

[584] Abu Dhabi Global Market's Financial Services Regulatory Authority was established to advocate a progressive financial services environment and uphold the integrity of the whole international financial centre by managing any potential risk exposure and undesirable impacts. See ADGM, "Financial Services Regulatory Authority", available online at https://www.adgm.com/financial-services-regulatory-authority (last accessed on 04 October 2024).

[585] Abu Dhabi Global Market, "Financial Services and Markets Regulations 2015", available online at https://en.adgm.thomsonreuters.com/rulebook/financial-services-and-markets-regulations-2015-0 (last accessed on 14 December 2024).

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Financial Services and Markets Regulations establish the legislative and regulatory framework for financial services in the Abu Dhabi Global Market, which was established in 2013 and became fully operational in 2015,[586] and has been broadly modelled on the *United Kingdom's Financial Services and Markets Act 2000*[587] and other related legislation.

The Virtual Assets Regulatory Authority took a singular approach by issuing a comprehensive, activity-based, and product-agnostic regulatory framework to licence and supervise virtual asset service providers in the form of the virtual assets and related activities regulations.[588] What is contained in these regulations is four compulsory rulebooks comprising of the company rulebook, compliance and risk management rulebook, technology and information rulebook, and the market conduct rulebook.[589] Additionally, the Regulations comprise eight rulebooks specific to crypto or virtual asset activities, addressing themes such as advisory[590], broker-dealer[591],

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586 Abu Dhabi Global Market is an international financial centre and free zone located on Al Maryah Island in the United Arab Emirates's capital, Abu Dhabi. See ADGM, "Financial Centre of Abu Dhabi", available online at https://www.adgm.com/financial-services-regulatory-authority (last accessed on 04 October 2024).

587 This piece of legislation defines the "regulatory perimeter", setting out the activities and entities that fall within the scope of United Kingdom's financial services regulation. See LexisNexis, "The Financial Services and Markets Act 2000 (FSMA) definition", available online at https://www.lexisnexis.co.uk/legal/glossary/the-financial-services-and-markets-act-2000-fsma#:~:text=The%20financial%20services%20and%20markets%20act%202000%20(FSMA)%20is%20a,of%20UK%20financial%20services%20regulation (last accessed on 04 October 2024).

588 Virtual Assets Regulatory Authority, "A Singular Approach to Regulation - Empowering innovation through responsible regulation of the virtual assets industry." Available online at https://www.vara.ae/en/ (last accessed on 04 October 2024).

589 Virtual Assets Regulatory Authority, VARA Rulebooks – Compulsory rulebooks available online at https://rulebooks.vara.ae/rulebook/compulsory-rulebooks (last accessed on 15 December 2024).

590 Virtual Assets Regulatory Authority, VARA Rulebooks – Advisory services rulebook available online at https://rulebooks.vara.ae/rulebook/advisory-services-rulebook (last accessed on 15 December 2024).

591 Virtual Assets Regulatory Authority, VARA Rulebooks – Broker-dealer services rulebook available online at https://rulebooks.vara.ae/rulebook/broker-dealer-services-rulebook (last accessed on 15 December 2024).

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custody, exchange[592], lending and borrowing[593], management and investment[594], transfer and settlement[595], and crypto or virtual asset issuance.[596] The activity-specific rulebooks provide an additional layer of oversight, ensuring that each licenced virtual asset activity is subject to appropriate regulatory supervision tailored to such activity.

When applying for a licence with the Virtual Assets Regulatory Authority, the applicant must specify its activities from a list of seven categories of licences. The seven categories consist of crypto or virtual advisory services, broker-dealer services, custody services, exchange services, lending and borrowing services, management and investment services, and transfer and settlement services.[597] There are certain exemptions in place from licencing, including those for United Arab Emirates government entities and their public, non-profit, and charitable organisations.[598] These entities only have to notify the Virtual Assets Regulatory Authority of their activities and obtain non-objection confirmations. Furthermore, the Virtual Assets Regulatory Authority acknowledges (subject to certain requirements) exemptions for professionals

592 Virtual Assets Regulatory Authority, VARA Rulebooks – Custody services rulebook available online at https://rulebooks.vara.ae/rulebook/custody-services-rulebook (last accessed on 15 December 2024).

593 Virtual Assets Regulatory Authority, VARA Rulebooks – Lending and borrowing services rulebook available online at https://rulebooks.vara.ae/rulebook/lending-and-borrowing-services-rulebook (last accessed on 15 December 2024).

594 Virtual Assets Regulatory Authority, VARA Rulebooks – Management and investment services rulebook available online at https://rulebooks.vara.ae/rulebook/va-management-and-investment-services-rulebook (last accessed on 15 December 2024).

595 Virtual Assets Regulatory Authority, VARA Rulebooks – Transfer and settlement rulebook available online at https://rulebooks.vara.ae/rulebook/va-transfer-and-settlement-services-rulebook (last accessed on 15 December 2024).

596 Virtual Assets Regulatory Authority, VARA Rulebooks – Virtual asset issuance rulebook available online at https://rulebooks.vara.ae/rulebook/virtual-asset-issuance-rulebook (last accessed on 15 December 2024).

597 Virtual Assets and Related Activities Regulations 2023 - Part IV – Licencing available online at https://rulebooks.vara.ae/rulebook/licencing-requirements (last accessed on 15 December 2024).

598 Virtual Assets and Related Activities Regulations 2023, Schedule 4, Definitions, “Exempt entity” available online at https://rulebooks.vara.ae/sites/default/files/en_net_file_store/VARA_EN_18_VER993.pdf (last accessed on 14 December 2024).

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such as lawyers, accountants, and licenced business consultants[599] who incidentally, engage in virtual or crypto activities as part of their professional practice but do not engage in these activities in a material way.[600] In respect of Stablecoins, the Abu Dhabi Global Market framework regards Stablecoins as blockchain-based tokens that are valued by reference to an underlying fiat currency or basket of assets.[601]

The last interesting aspect of the crypto asset or virtual asset ecosystem in the United Arab Emirates is the Ras Al Khaimah (RAK) Digital Oasis Freezone[602], a tailored ecosystem. Established in October of 2023 by the Emirate of Ras Al Khaimah, it was specifically created for, and dedicated to, virtual asset companies. Ras Al Khaimah is one of the seven emirates that make up the United Arab Emirates. Ras Al Khaimah is the northernmost emirate of the United Arab Emirates.[603] This tailored ecosystem with a robust and transparent framework with minimal stumbling blocks attracts companies and entrepreneurs involved in digital assets and cryptocurrencies active in emerging and innovative sectors, including metaverse, blockchain, utility tokens, virtual asset wallets, NFTs[604], DAOs[605], dApp[606], and other Web3-related businesses. The founding legislation is *Law No 2 of 2023 on Establishing Ras Al Khaimah Digital Assets*

599 Virtual Assets and Related Activities Regulations 2023, Part 4.

600 D Dey, S Mrozinski, G Pospodinis, O Sanni, "Dubai Launches Virtual Assets Licencing Regime: An Overview of the VARA Licencing Process"(2023) available online at https://www.whitecase.com/insight-alert/dubai-launches-virtual-assets-licencing-regime-overview-vara-licencing-process (last accessed on 14 April 2024).

601 Financial Services Regulatory Authority, Guidance – Regulation of Digital Securities Activities in ADGM,(2020), Page 3 available online at https://assets.adgm.com/download/assets/Attachment+2+Proposed+amendments+to+VA+Guidance.pdf/18b4b284a0bf11ef937e9e0297c09672 (last accessed on 14 December 2024).

602 Digital Asset Oasis," RAK Digital Assets "available online at https://www.rakdao.com/ (last accessed on 20 January 2024).

603 Government of Ras Al Khaimah, "About Ras-AlKhaimah" available online at https://psd.rak.ae/en/pages/aboutrak.aspx (last accessed on 05 October 2024).

604 See Chapter 1, 1.2.6.

605 See Chapter 1, 1.2.4.

606 See Chapter 1, 1.2.4.

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Oasis[607], which decrees the establishment of RAK Digital Assets Oasis.[608] This seems to be a true reflection of the city's strive to be a global Fintech hub.

(k) Singapore

Singapore has the aim of being positioned as one of the countries with an innovative as well as responsible digital asset ecosystem. There is also a restrictive approach in the regulatory design with respect to speculation in crypto assets, and the design aims to discourage this practice. Crypto assets that meet the definition of a "capital markets product" under the *Securities and Futures Act of 2001*[609], get the same regulatory treatment as other capital markets products, with the same risk and the same regulatory approach. The *Securities and Futures Act of 2001* defines "capital markets products" to mean "any securities, futures contracts, contracts or arrangements for the purposes of foreign exchange trading, contracts or arrangements for the purposes of leveraged foreign exchange trading, and such other products as the Authority may prescribe as a capital markets products".[610] The *Securities and Futures Act of 2001*[611]

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607 Law No. (2) of 2023 on Establishing Ras Al Khaimah Digital Assets Oasis. Available online at https://www.rak.ae/wps/portal/rak/legislative-committee/legislation-search/!ut/p/z1/jZBBD4IwDIV_Eek2yNyO00TQZKJZRLeLWXTikgkkIr9fIF5Be2v7vb6XgoEzmMp2vrStrysb-l4bemFZSkmKiMzXcYwOuOAipzxVlMJpBBKMCeEJlgwxjsRW4aJYLXHGEjD_6NFECfRbb2aRDf0CcxFHYCaDchXoPuhi0kYmoIY7wZX-Fcbv7WrQBJE4IhEZVvY6TEHf3N2-Q9vY0kHzPJ6R3z-aTooP_T4FDQ!!/ (last accessed on 08 April 2025).

608 RAK Government, Law 2 of 2023, available online at https://www.rak.ae/wps/portal/rak/legislative-committee/legislation-search/!ut/p/z1/jZBBD4IwDIV_Eek2yNyO00TQZKJZRLeLWXTikgkkIr9fIF5Be2v7vb6XgoEzmMp2vrStrysb-l4bemFZSkmKiMzXcYwOuOAipzxVlMJpBBKMCeEJlgwxjsRW4aJYLXHGEjD_6NFECfRbb2aRDf0CcxFHYCaDchXoPuhi0kYmoIY7wZX-Fcbv7WrQBJE4IhEZVvY6TEHf3N2-Q9vY0kHzPJ6R3z-aTooP_T4FDQ!!/ (last accessed on 14 December 2024).

609 Securities and Futures Act 2001, available online at https://sso.agc.gov.sg/Acts-Supp/42-2001/Published/20021231?DocDate=20011203 (last accessed on 05 October 2024).

610 Securities and Futures Act, 2001, Part 1, Section 2.

611 Securities and Futures Act 2001, available online at https://sso.agc.gov.sg/Acts-Supp/42-2001/Published/20021231?DocDate=20011203 (last accessed on 05 October 2024).

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governs the regulation of activities and institutions in the securities and derivatives industry, including leveraged foreign exchange trading of financial benchmarks and clearing facilities.

Crypto assets used as a means of payment or discharge of a debt may be regulated as a Digital Payment Token[612] or electronic money[613] under the *Payment Services Act, 2019*.[614] The *Payment Services Act* is a relatively new Act and is considered a forward-looking and flexible framework for regulating payment systems and payment service providers in Singapore. It provides for regulatory certainty and consumer safeguards, while encouraging innovation and growth of payment services and Fintech. Service providers must apply for a licence under the *Securities and Futures Act, 2001*, and the *Payment Services Act, of 2019* respectively. The regulatory remit in respect of crypto assets is further expanded by the *Financial Services and Markets Act 2022*[615] to align

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612 "digital payment token" means any digital representation of value (other than an excluded digital representation of value) that —
(a) is expressed as a unit;
(b) is not denominated in any currency, and is not pegged by its issuer to any currency;
(c) is, or is intended to be, a medium of exchange accepted by the public, or a section of the public, as payment for goods or services or for the discharge of a debt;
(d) can be transferred, stored or traded electronically; and
(e) satisfies such other characteristics as the Authority may prescribe;

613 "electronic money" means any electronically stored monetary value that —
(a) is denominated in any currency, or pegged by its issuer to any currency;
(b) has been paid for in advance to enable the making of payment transactions through the use of a payment account;
(c) is accepted by a person other than its issuer; and
(d) represents a claim on its issuer,
but does not include any deposit accepted in Singapore, from any person in Singapore;

614 Payment Services Act 2019, available online at https://sso.agc.gov.sg/Act/PSA2019 (last accessed on 05 October 2024).

615 The Financial Services and Markets Act (FSMA) is an omnibus Act for the sector-wide regulation of financial services and markets. Parliament passed the FSMA on 5 April 2022. See Monetary Authority of Singapore," Financial Services and Markets Act 2022",(2024), available online at https://www.mas.gov.sg/regulation/acts/financial-services-and-markets-act-2022 (last accessed on 04 October 2024).

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with the FATF[616] Recommendations by providing a licencing requirement for crypto asset service providers, also known as virtual asset service providers.

In terms of a licence or registration regime, the Monetary Authority of Singapore[617] granted the first "in-principle" approval to a crypto asset provider under *the Payment Services Act 2019*, allowing the Independent Reserve[618] to provide a digital payment token service in the city-state in 2021.[619] The Monetary Authority of Singapore issues three distinct licence types for digital payment token service providers under section 6 of the *Payment Services Act 2019*, categorising them based on transaction volume and the nature of their activities. With a dual focus on fostering innovation and managing associated risks, the Monetary Authority of Singapore implements stringent AML/CFT regulations to ensure a secure and compliant crypto environment.[620]

(l) Switzerland

One of the first movers in adapting its regulatory framework to be fit for purpose for crypto assets and to introduce bespoke regulations, the Swiss Financial Market Supervisory Authority (FINMA),[621] is the Swiss government body responsible for

616 See Chapter 1, 1.9.

617 The Monetary Authority of Singapore (MAS) is Singapore's central bank and integrated financial regulator. MAS also works with the financial industry to develop Singapore as a dynamic international financial centre. See MAS, "Who we are", available online at https://www.mas.gov.sg/who-we-are (last accessed on 24 March 2025).

618 Independent Reserve is the first crypto exchange to operate a licenced crypto exchange for all investors in Singapore. See About Us – Independent Reserve available online at https://www.independentreserve.com/sg/about (last accessed on 14 December 2024).

619 Lexology, "The Payments Newsletter including Digital Assets & Blockchain, May/June 2023",(2023), available online at https://www.lexology.com/library/detail.aspx?g=0b28573a-85b0-4794-91a3-d13934a6dae8 (last accessed on 05 October 2024).

620 KYC Hub, "Singapore Crypto Regulations: All You Need to Know" (2024) available online at https://www.kychub.com/blog/singapore-crypto-regulations/ (last accessed on 18 April 2024).

621 FINMA was founded on 22 June 2007 with the passing of the Federal Act on the Swiss Financial Market Supervisory Authority. See FINMA – An Overview available online at https://www.finma.ch/en/finma/finma-an-overview/ (last accessed on 16 December 2024).

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financial regulation. This includes the supervision of banks, insurance companies, stock exchanges, and securities dealers, as well as other financial intermediaries in Switzerland. FINMA is responsible for ensuring the effective functioning of Swiss financial markets and is also the regulatory body for crypto activities. In terms of the classification of crypto assets in Switzerland, FINMA, in its *guidelines for initial coin offerings (ICOs)*[622] published on 16 February 2018, classifies tokens that are used for the acquisition of goods and services or as a means of money and value transfer, as "payment tokens".[623] If a crypto asset is classified as a payment token, this will result in the *Federal Act on Combating Money Laundering in the Financial Sector of 10 October 1997* [624] applying to this token. This *Anti-Money Laundering Act* will then apply to the financial intermediary activity involving crypto assets. Notably, a financial intermediary in Switzerland that holds or helps to transfer payment tokens for third parties is subject to the same obligations as if the currency used were fiat money, e.g., Swiss francs.[625] Where a token is designed to represent assets such as participations in companies, earnings streams, or an entitlement to dividends or interest payments, therefore, a "security token," carries the same economic function as traditionally based equities, bonds, or derivative instruments. This classification as a security token will trigger the duty to issue a prospectus on a person who makes a public offer for the acquisition of securities or any person who seeks the admission of securities to trading on a trading venue and, depending on the activity related to such security token, a licence requirement.

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622 See Chapter 2, 2.2.4.

623 Guidelines for enquiries regarding the regulatory framework for initial coin offerings (ICOs),published on16 February 2018 available online at https://www.finma.ch/en/~/media/finma/dokumente/dokumentencenter/myfinma/1bewilligung/Fintech/wegleitung-ico.pdf (last accessed on 16 December 2024).

624 Federal Act on Combating Money Laundering in the Financial Sector,1997, available online at https://www.finma.ch/FinmaArchiv/gwg/e/dokumentationen/gesetzgebung/bundesgesetzgebung/pdf/AMLA_e.pdf?lang=en (last accessed on 15 December 2024).

625 State Secretariat for International Finance, SIF Financial System & Financial Markets – Fact sheet," Blockchain and crypto assets in the financial sector: Switzerland's pioneering role on the international stage" available online at file:///C:/Users/Johann.Vanderlith/Downloads/Factsheet%20Crypto.pdf (last accessed on 30 April 2024).

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The duty to issue a prospectus emanates from the *Swiss Financial Services Act* of 2018, which introduced a general duty to publish a prospectus for securities.[626] The *Swiss Financial Services Act, 2018*, seeks to protect the consumers of financial service providers and establish comparable conditions for the provision of financial services by these providers, thereby contributing to the enhancement of Switzerland's financial centre's reputation and competitiveness.[627] When a token is designed to provide access to an application or service by means of a blockchain-based infrastructure only, it is a "pure utility token", and this will not be captured within the existing regulatory framework. Another type of token that does not attract any regulatory requirements is a "non-fungible token".[628] These tokens are not classified as security or payment tokens and may not be in the scope of financial market regulation. When considering and classifying "Stablecoins"[629], the focus is on the economic function, and this will depend on the specific construct. To provide clarity on this type of classification, FINMA issued a supplement to the guidelines for "Stablecoins" in 2019 titled "*Supplement to the guidelines for enquiries regarding the regulatory framework for initial coin offerings (ICOs)*".[630] This guidance stipulates that in the cases where the token is designed to be linked to a specific fiat currency with a fixed redemption claim, classification as a "deposit" under banking law may be relevant.[631] Where there is a redemption claim dependent on price developments, for example, as a result of the token being linked to a basket of currencies, the distinction between a "deposit" under banking law and a "collective investment scheme"[632] can become relevant.

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626 Financial Services Act, 2018, Chapter 1, Article 35.

627 FINMA, Federal Act on Financial Services,2018, Article 1 available online at https://www.fedlex.admin.ch/eli/cc/2019/758/en (last accessed on 30 April 2024).

628 See Chapter 1,1.2.6.

629 See Chapter 1,1.2.5.

630 FINMA, "Supplement to the guidelines for enquiries regarding the regulatory framework for initial coin offerings (ICOs)" (2019) available online at https://www.finma.ch/en/~/media/finma/dokumente/dokumentencenter/myfinma/1bewilligung/Fintech/wegleitung-stable-coins.pdf?sc_lang=en&hash=68854A0D6DAFC3F8F1D4F1C9AF56BA4D (last accessed on 30 April 2024).

631 Page 2, FINMA, FINMA, "Supplement to the guidelines for enquiries regarding the regulatory framework for initial coin offerings (ICOs)" (2019).

632 Federal Act on Collective Investment Schemes, Chapter 2, Article 7 defines "collective schemes" as follows: "Collective investment schemes are assets raised from investors for the purpose of

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If the underlying assets are managed for the account and risk of the token holder, this could mean that the classification would be that of a collective investment scheme. Where this is managed for the account as well as the risk of the issuer, this can be classified as deposit-taking. Where the stabilisation is linked to commodities, in other words, the peg is commodities, the type of commodity is considered, as well as the rights emanating from the token design. If the right is purely contractual against the issuer, on what is considered banks' precious metals, this could lead to classification as deposit-taking. Where there is a contractual claim on other commodities, the token will generally qualify as a security and possibly as a derivative. A token that is linked to an individual security by way of a contractual right for delivery to the token holder would normally also constitute a security under the *Federal Act on Stock Exchange and Securities Trading Act of 24 March 1995*.[633]

In Switzerland, financial market participants who deal in crypto may need to obtain a licence from FINMA or an affiliate as a financial intermediary to a self-regulatory organization such as VQF[634] or SO-FIT[635], both authorised and supervised by FINMA

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collective investment, and which are managed for the account of such investors. The investment requirements of the investors are met on an equal basis." See Federal Act on Collective Investment Schemes, available online at https://www.fedlex.admin.ch/eli/cc/2006/822/en (last accessed on 15 December 2024).

633 FINMA, "Supplement to the guidelines for enquiries regarding the regulatory framework for initial coin offerings (ICOs)" (2018) available online at https://www.finma.ch/en/~/media/finma/dokumente/dokumentencenter/myfinma/1bewilligung/Fintech/wegleitung-stable-coins.pdf?sc_lang=en&hash=68854A0D6DAFC3F8F1D4F1C9AF56BA4D (last accessed on 30 April 2024).

634 VQF is an association under the terms of Art. 60 et seq. of the Swiss Civil Code (SCC), recorded in the Commercial Register of the Canton of Zug and enjoys the official recognition of the Federal Financial Market Supervisory Authority (FINMA) as an SRO pursuant to Art. 24 AMLA. See VQF, available online at https://www.vqf.ch/en/sro#:~:text=Compliance-,SRO,hereinafter%3A%20%22AMLA%20%22). (last accessed on 08 April 2025).

635 SO-FIT is a self-regulatory organization approved by the Swiss Federal Financial Markets Supervisory Authority (FINMA) for the supervision of financial intermediaries referred to in article 2 al. 3 of the Swiss federal law on the fight against money laundering and the financing of terrorism (MLA). See Swiss Money," Supervision", available online at https://swissmoney.com/supervision

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for AML purposes under the *Federal Act on Combating Money Laundering and Terrorist Financing of 10 October 1997*. Which registration or licencing requirement applies depends on the classification of the digital asset and on the type of activity conducted in relation to the digital asset, as explained above.[636]

FINMA published further guidance on Stablecoins on 26 July 2024, called "*Stablecoins: risks and challenges for issuers of Stablecoins and banks providing guarantees".*[637] Further guidance was issued because several projects incorporating Stablecoins have materialised in Switzerland, and the use of Stablecoins has gained momentum and importance. The guidance also follows frequently questions regarding the licence requirements in terms of the *Banking Act (BA; SR 952.0)* or the *Collective Investment Schemes Act (CISA; SR 951.31)*.[638]

(m) Taiwan

There is no specific legislation in Taiwan regarding crypto assets. In September 2023, the Financial Supervisory Commission (FSC)[639] introduced guidelines[640] for virtual

(last accessed on 08 April 2025).

636 Federal Council, "Legal framework for distributed ledger technology and blockchain in Switzerland An overview with a focus on the financial sector" (2018) available online at https://www.newsd.admin.ch/newsd/message/attachments/55153.pdf (last accessed on 01 May 2024).

637 FINMA Guidance 06/2024,"Stablecoins: risks and challenges for issuers of Stablecoins and banks providing guarantees",(2024) available online at https://www.finma.ch/en/~/media/finma/dokumente/dokumentencenter/myfinma/4dokumentation/finma-aufsichtsmitteilungen/20240726-finma-aufsichtsmitteilung-06-2024.pdf?sc_lang=en&hash=03D675C1247EAFAE0C391363A2F18B9A (last accessed on 16 December 2024).

638 FINMA Guidance 06/2024, Page 3.

639 The Financial Supervisory Commission (FSC) was established on 1 July 2004 following the enactment of the Organic Act, Governing the Establishment of the Financial Supervisory Commission of the Executive Yuan. The FSC is the competent authority responsible for development, supervision, regulation, and examination of financial markets and financial service

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asset services providers (VASPs) called: *Guiding Directions for the Administration of Virtual Asset Platform or Transaction Service Providers(guidelines)*. These guidelines cover disclosure of information by virtual asset service providers; review procedures for listing of product; segregation of consumer's assets; protection of consumer rights; cyber security; and management of hot or cold crypto asset wallet.[641] The guidelines require that issuers of crypto assets should publish a White Paper[642] in respect of the token to be issued, and further disclose trading rules and other relevant information on its website that is linked to its crypto asset platform, and that it should have processes in place for a review procedure of its White Paper.[643]

The guidelines also stipulate that there should be a segregation of assets between consumer assets and those of the crypto asset platform and require that platforms should be fair, reasonable, equitable, and honest in their business dealings.[644] The

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enterprises in Taiwan. See About Us FSC available online at https://www.fsc.gov.tw/en/home.jsp?id=1&parentpath=0 (last accessed on 16 December 2024).

640 Financial Services Commission,(2023) "Important Measure September 2023" available online at https://www.fsc.gov.tw/en/home.jsp?id=74&parentpath=0&mcustomize=multimessage_view.jsp&dataserno=202311150001&dtable=Bulletin (last accessed on 08 September 2024).

641 Financial Services Commission, Press release:" Released the Financial Supervisory Commission's "Guiding Principles for the Management of Virtual Asset Platforms and Transaction Business Enterprises (VASP)",(2023),available online at https://www.fsc.gov.tw/ch/home.jsp?id=96&parentpath=0,2&mcustomize=news_view.jsp&dataserno=202309260005&dtable=News (last accessed on 17 December 2024).

642 See Chapter 1, 1.2.4.

643 Taiwan Financial Supervisory Commission: Guidelines for Administration of Virtual Asset Service Providers (VASPs)(Bilingual version), Page 3. Available online at https://www.crowe.com/tw/en-us/-/media/crowe/firms/asia-pacific/tw/crowehorwathtw/newsimage/pdf/taiwanguidelinesforvaspsbilingual.pdf?rev=64cdf2359eb74fcdb24a864aac6d0bfe&hash=504A317A310A79CB045628E166983CEC (last accessed on 29 January 2025).

644 Taiwan Financial Supervisory Commission: Guidelines for Administration of Virtual Asset Service Providers (VASPs)(Bilingual version), Page 4. Available online at https://www.crowe.com/tw/en-us/-/media/crowe/firms/asia-pacific/tw/crowehorwathtw/newsimage/pdf/taiwanguidelinesforvaspsbilingual.pdf?rev=64cdf2359eb74fcdb24a864aac6d0bfe&hash=504A317A310A79CB045628E166983CEC (last accessed on 29 January 2025).

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guiding principles further provide guidance with respect to the establishment of operational systems, security, and measures for both hot and cold wallet storage[645] as well as internal controls, including audit.[646] Offshore firms are prohibited from soliciting business in Taiwan, according to this guidance.[647] The FSC previously announced that it would propose a new draft of digital asset regulations for Taiwan in September 2024. However, this did not materialise, and the draft law is now expected around June or July of 2025.[648] The aforesaid digital asset regulations are aimed at bolstering investor protection and overseeing the industry more effectively. Due to the increasing interconnectedness between crypto assets and traditional finance, this Bill will introduce comprehensive regulations for the crypto industry, improve investor protections, and address risks to the traditional financial system.[649]

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645 Cryptocurrency wallets can be divided into two major categories and they are: cold wallets and hot wallets. The difference between two of them is that for hot wallets an internet connection is necessary and for cold wallets is not. Hot wallet users usually use them in order to buy something on the internet and hold a small amount of money for that purpose, while cold wallet is just like vault in the bank to store different kind of digital values. The best thing is to have both wallets mainly for security reasons. See Jokić, Stevo & Cvetković, Aleksandar Sandro & Adamović, Saša & Ristić, Nenad & Spalević, Petar. (2019). Comparative analysis of cryptocurrency wallets vs traditional wallets. Ekonomika. 65. 10.5937/ekonomika1903065J (last accessed on 19 March 2025).

646 Taiwan Financial Supervisory Commission: Guidelines for Administration of Virtual Asset Service Providers (VASPs)(Bilingual version), Page 6. Available online at https://www.crowe.com/tw/en-us/-/media/crowe/firms/asia-pacific/tw/crowehorwathtw/newsimage/pdf/taiwanguidelinesforvaspsbilingual.pdf?rev=64cdf2359eb74fcdb24a864aac6d0bfe&hash=504A317A310A79CB045628E166983CEC (last accessed on 29 January 2025).

647 Taiwan Financial Supervisory Commission: Guidelines for Administration of Virtual Asset Service Providers (VASPs) (Bilingual version), Page 7. Available online at https://www.crowe.com/tw/en-us/-/media/crowe/firms/asia-pacific/tw/crowehorwathtw/newsimage/pdf/taiwanguidelinesforvaspsbilingual.pdf?rev=64cdf2359eb74fcdb24a864aac6d0bfe&hash=504A317A310A79CB045628E166983CEC (last accessed on 29 January 2025).

648 R Chang, E Hsiung," Global Legal Insights - Blockchain & Cryptocurrency Laws and Regulations 2025 – Taiwan",(2025) available online at https://www.globallegalinsights.com/practice-areas/blockchain-cryptocurrency-laws-and-regulations/taiwan/ (last accessed on 29 January 2025).

649 CU Today, "Taiwan Set to Propose New Digital Asset Regulations" (2024) available online at https://www.cutoday.info/site/THE-globe/Taiwan-Set-to-Propose-New-Digital-Asset-Regulations (last accessed on 01 May 2024).

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(n) Spain

The Markets in Crypto Asset Regulation: *Regulation (EU) 2023/1114 of the European Parliament and of the Council of 31 May 2023 on markets in crypto-assets*[650]*, and amending Regulations (EU) No 1093/2010 of the European Parliament and of the Council of 24 November 2010*[651] *and (EU) No 1095/2010*[652] *of the European Parliament and of the Council of 24 November 2010 and Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms*[653] *and (EU) 2019/1937of the European Parliament and of the Council of 23 October 2019 on the protection of persons who report breaches of Union law*[654], which is the European Union regulatory and supervisory framework for crypto assets, is applicable to Spain as one of the European Union countries. The *Markets in Crypto Asset Regulation*,[655] which will be discussed in more detail in Chapter Five, given its

650 Regulation (EU) 2023/1114 of the European Parliament and of the Council of 31 May 2023 on markets in crypto-assets. Available online at https://eur-lex.europa.eu/eli/reg/2023/1114/oj/eng (last accessed on 08 April 2025).

651 Regulation (EU) No 1093/2010 of the European Parliament and of the Council of 24 November 2010 establishing a European Supervisory Authority. Available online at https://eur-lex.europa.eu/eli/reg/2010/1093/oj/eng (last accessed on 08 April 2025).

652 Regulation (EU) No 1095/2010 of the European Parliament and of the Council of 24 November 2010 establishing a European Supervisory Authority. Available online at https://eur-lex.europa.eu/eli/reg/2010/1095/oj/eng (last accessed on 08 April 2025).

653 Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms. Available online at https://eur-lex.europa.eu/eli/dir/2013/36/oj/eng (last accessed on 08 April 2025).

654 Directive (EU) 2019/1937 of the European Parliament and of the Council of 23 October 2019 on the protection of persons who report breaches of Union law, available online at https://eur-lex.europa.eu/eli/dir/2019/1937/oj/eng (last accessed on 08 April 2025).

655 Markets in Crypto Asset (MiCA) Regulation is the European Union regulation governing the issuance and provision of services related to crypto assets, set to become law in July 2023. See European Commission," Crypto assets - A comprehensive framework for crypto assets and related services to ensure that the Union financial services are fit for the digital age" available online at https://finance.ec.europa.eu/digital-finance/crypto assets_en (last accessed on 19 July 2023).

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pertinent relevance for this thesis, entered into force in June 2023. The rules on "Stablecoins" (*Titles III and IV of the Regulation*) came into effect on 30 June 2024. All other provisions of the *Markets in Crypto Asset Regulation* will apply as of 30 December 2024. In terms of implementation, the implementation date is envisaged for June 2026, but the Government of Spain announced that it will bring forward by six months, the implementation of the *Markets in Crypto Assets Regulation*, being a global pioneering framework for its implementation in Spain in December 2025.

The rationale for this step by Spain is to create a stable regulatory and supervisory framework that gives legal certainty and protects investors in relation to the provision of crypto asset services.[656] In terms of national legislative requirements, Spain also applies the *Securities Market and Investment Services Act*[657], *Circular Comisión Nacional del Mercado de Valores 1/2022(Circular National Stock Market Commission 1/2022)*[658], on the advertising of crypto assets, and the *Royal Decree 814/2023*[659], of November 8, on financial instruments, admission to trading, registration of negotiable securities and market infrastructures. In accordance with *Law 10/2010 of the Money Laundering and Terrorism Financing Prevention and the Royal Decree 304/2014*[660], the Banco de España as central bank, is responsible for registering natural and legal persons offering or providing virtual currency exchange services in Spain for fiat currency and electronic wallet custody services; natural persons whose base, management, or direction of these activities is in Spain; and legal persons established

656 La Moncloa," Spain brings forward the implementation of the world's first crypto assets market regulation" (2023) available online at https://www.lamoncloa.gob.es/lang/en/gobierno/news/Paginas/2023/20231026_crypto assets-market-regulation.aspx (last accessed on 01 May 2024).

657 Securities Market and Investment Services Act available online at https://www.cnmv.es/DocPortal/Legislacion/leymercado/LM_203-March2008_20_2.pdf (last accessed on 01 May 2024).

658 Circular National Stock Market Commission 1/2022 available online at https://www.boe.es/eli/es/cir/2022/01/10/1 (last accessed on 15 December 2024).

659 Royal Decree 814/2023 available online at https://www.boe.es/eli/es/rd/2023/11/08/814/dof/spa/pdf (last accessed on 15 December 2024).

660 Law 10/2010, of 28 April, prevention of money laundering and terrorism financing, available online at https://www.tesoro.es/sites/default/files/leyes/pdf/Law10-2010.pdf (last accessed on 06 October 2024).

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in Spain that provide these services. In agreement with *Law 6/2023, of March 17, on Securities Markets and Investment Services*, the National Securities Market Commission[661] is the competent authority for the supervision of the issuance, offer, and admission to trading of certain crypto assets that are not financial instruments, for example, Bitcoin.

(o) Portugal

Portugal is also one of the European Union countries that fall under the harmonised frameworks on the *Markets in Crypto Asset Regulation's* scope, which Regulation, as indicated above, entered into force in June 2023. The rules under the *Markets in Crypto Asset Regulation* on Stablecoins, including those classified as "significant," came into effect on 29 June 2024. All other provisions will apply as of December 2024. In terms of national legislation, Portugal does not have a legal framework with respect to crypto assets. There are certain pieces of legislation that apply, but this is limited to AML/CFT legislation[662] and personal tax.[663] Therefore, the *Markets in Crypto Asset Regulation* will determine the asset classification framework, crypto asset regulation, Stablecoin regulation, and provisions for other digital assets. Entities intending to act as virtual asset service providers are required to register[664] with the Portuguese central bank, Banco de Portugal, as the competent authority responsible for both conducting

661 The National Securities Market Commission, founded on 28 July 1988 with the passing of law 24/1988, also known as the "Stock Market" act, is the Spanish government agency responsible for the financial regulation of the securities markets in Spain. It is an independent agency that falls under the Ministry of Economy. See National Securities Market Commission," CNMV functions", available online at https://www.cnmv.es/portal/quees/funciones/funciones.aspx?lang=en (last accessed on 04 October 2024).

662 Law No 83/2017 of 18 August 2017, available online at https://diariodarepublica.pt/dr/detalhe/lei/83-2017-108021178 (last accessed on 16 December 2024).

663 Law No. 24-D/2022 available online at https://diariodarepublica.pt/dr/detalhe/lei/24-d-2022-205557192 (last accessed on 15 December 2024).

664 Article 112-A of Law No 83/2017 and Notice of the Banco de Portugal No 3/2021of 23 April 2021 ("Notice No 3/2021") regulate the registration process with the Banco de Portugal. See Banco de Portugal, "Registration of virtual assets service providers" available online at https://www.bportugal.pt/en/page/registration-virtual-assets-service-providers (last accessed on 17 December 2024).

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the registration procedure and verifying compliance with the legal and regulatory provisions governing the prevention of AML/CFT.[665]

2.3 International Monetary Fund

2.3.1 Background

The IMF was established many years ago at an international conference in the United States (in Bretton Woods, New Hampshire), in 1944,[666] with 44 founding members. Today, it boasts 191 member countries and is supported by employees from over 150 countries, bringing a diversity of thought to progress its various objectives.[667]

The IMF aims to achieve sustainable growth and prosperity for its members and is accountable to its member country governments. It supports essential elements for increased productivity, job creation, and overall economic well-being through economic policies. The IMF performs three critical functions;[668] furthering monetary cooperation, encouraging the expansion of trade and economic growth, and discouraging policies that would harm the prosperity of the member countries. The IMF and World Bank also

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665 CM Mascarenhas, M Boura, " PWC -Navigating the Global Crypto Landscape with PwC: 2024" (2024) available online at https://www.pwc.com/gx/en/industries/financial-services/assets/navigating-the-global-crypto-landscape-with-PwC-2024.pdf (last accessed on 01 May 2024).

666 At an international conference in the United States (in Bretton Woods, New Hampshire). The Bretton Woods meeting resulted in the founding of the IMF and the World Bank, twin intergovernmental pillars supporting the structure of the world's economic and financial order. The World Bank finances economic development, while the IMF oversees the international monetary system. See International Monetary Fund, Conflict and Cooperation (1871 -1944) available online at https://www.imf.org/external/np/exr/center/mm/eng/cc_sub_4.htm#:~:text=Bretton%20Woods%3A%20July%201%2D22,oversees%20the%20international%20monetary%20system (last accessed on 15 December 2024).

667 International Monetary Fund "about us" available online at https://www.imf.org/en/About (last accessed on 11 January 2024).

668 International Monetary Fund "What is the IMF" available online at https://www.imf.org/en/About/Factsheets/IMF-at-a-Glance. (last accessed on 13 July 2023).

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conduct Financial Sector Assessment Programs, which are assessments of a country's financial sector, to identify vulnerabilities and recommend policies to enhance resilience. The IMF Financial Sector Assessment Programs started pilot exercises in 2018 to cover Fintech and crypto assets issues.[669]

2.3.2 Steer from the IMF in respect of crypto assets

During their roundtable discussions in 2022 on the regulation and supervision of crypto assets, the IMF stated that their two *Fintech Notes*[670] on crypto assets propose five key recommendations to members.[671] The first of these recommendations dealt with a licencing regime that licences, authorises, and registers what is termed "crypto-asset services providers" (CASPS), where these CASPS partake in significant functions. These licencing requirements should be akin to those providers requiring licencing in the traditional financial sector. The recommendation further elaborates on the possible functions of these CASPS that can be set to play a material role and include those providing storage, transfer, exchange, settlement, and custody services.[672] In this research, these types of functions will be focused on in Chapter Six, which deals with the construction of a joint regulatory framework to regulate CASPS operating in multiple African countries.

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669 IMF," The Changing Landscape of Crypto Assets—Considerations for Regulatory and Supervisory Authorities IMF-FSB-OCC Crypto Conference", available online at https://www.imf.org/en/News/Articles/2024/02/23/sp022324-changing-landscape-crypto-assets-considerations-regulatory-and-supervisory-authorities (last accessed on 08 April 2025).

670 Regulating the Crypto Ecosystem: The Case of Unbacked Crypto Assets (NOTE/2022/007) and Regulating the Crypto Ecosystem: The Case of Stablecoins and Arrangements (NOTE/2022/008). See World Economic Forum, "Here's why crypto markets need more regulation and supervision",(2023), available online at https://www.weforum.org/stories/2023/01/crypto-market-regulation-supervision-economy/ (last accessed on 17 December 2024).

671 IMF "Roundtable on Regulation and Supervision of Crypto Assets" available online at https://www.imf.org/en/Videos/view?vid=6316892759112 (last accessed on 11 January 2024).

672 IMF Fintech Note - Regulating the Crypto Ecosystem: The Case of Unbacked Crypto Assets, Page 31.

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The second recommendation flows from recent failures, for instance, FTX[673] , which highlighted the need for the segregation of consumer funds or assets and the increased risks where CASPS perform multiple functions. This recommendation proposes additional prudential requirements where the CASP performs multiple functions.[674] The third of the recommendations firstly acknowledges that Stablecoins[675] could possibly be widely accepted as payment instruments, and if they operate in a regulatory *lacuna,* this could bring about severe monetary and financial stability concerns. For this reason, the IMF proposes stricter prudential requirements on Stablecoins.[676]

Briefly, the fourth recommendation emanating from this IMF publication deals with regulated firms and their exposure to and engagement with crypto assets. The recommendation requires clear requirements on these already-regulated financial institutions to address the exposure risks.[677]

Lastly, the fifth recommendation calls for a robust, globally consistent, and comprehensive regulatory response.[678] This recommendation supports the proposal for the alignment of regulatory approaches in this thesis since the steer for consistent regulatory requirements facilitates the theoretical possibility of a trans-border licence that builds on the similarities of approaches by individual countries, hence avoiding arbitrary regulatory barriers to entry.

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673 FTX Trading Ltd., commonly known as FTX, was one of the largest digital currency exchange platforms that went bankrupt. See Zeidan, Adam. "Sam Bankman-Fried." Encyclopedia Britannica, 24 Sep. 2024, available online at https://www.britannica.com/money/Sam-Bankman-Fried (last accessed on 29 September 2024).

674 IMF Fintech Note - Regulating the Crypto Ecosystem: The Case of Unbacked Crypto Assets, Page 5.

675 See Chapter 1,1.25.

676 IMF Fintech Note - Regulating the Crypto Ecosystem: The Case of Stablecoins and Arrangements, Page 7.

677 IMF Fintech Note - Regulating the Crypto Ecosystem: The Case of Unbacked Crypto Assets, Page 9.

678 IMF Fintech Note - Regulating the Crypto Ecosystem: The Case of Unbacked Crypto Assets, Page 35.

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The *IMF Paper on Elements of Effective Policies for Crypto Assets*, issued in February 2023, aims to respond to member countries' questions regarding the benefits and risks of crypto assets and how policies should be structured appropriately to provide a response. The paper sets out nine elements to help member countries develop a comprehensive, coordinated, and consistent policy response.[679] Of the nine elements, only the ones most relevant to this research will be touched on, namely: establishing legal certainty; developing oversight requirements for all crypto asset market actors; and establishing international collaborative arrangements to enhance supervision and enforcement.

In terms of establishing legal certainty, the paper sets out three core actions that the member countries should pursue. One of the actions is clarifying the financial law treatment of crypto assets.[680] The paper provides some examples, and one approach as an example that is particularly relevant to this research, is for jurisdictions to issue bespoke laws on crypto assets (For example, the EU's *Markets in Crypto Asset Regulation).*[681] It is submitted that using this approach, multiple countries can align the licencing requirements applicable to CASPS to avoid overburdening these Fintechs by duplicating requirements.[682]

The element dealing with oversight requirements builds on the notion that the more appropriate response is comprehensive regulation, not outright bans[683] of crypto assets. According to the IMF, this element calls for licencing of CASPS and for global standards, where they exist, to be implemented by domestic regulators. Regarding a collaborative approach, the IMF states that the borderless nature of crypto assets challenges national approaches in that their effectiveness with these technologies is

679 IMF Elements of Effective Policies, Page 2.

680 IMF Elements of Effective Policies, Page 26.

681 See Chapter 2, 2.4.2.

682 IMF Elements of Effective Policies, Page 26, Paragraph 1.

683 Trading crypto-currency has officially been banned in China since 2019. See BBC," China declares all crypto-currency transactions illegal",2021, available online at https://www.bbc.com/news/technology-58678907 (last accessed on 19 July 2023).

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limited. The approach should rather be one of collaboration and information sharing across borders.[684]

The introductory line of the IMF publication with respect to the regulation of crypto assets speaks volumes. It states:

> "The rapid growth of crypto assets has raised questions about the appropriate regulatory perimeter and the ability of the existing regulatory architecture to adapt to changing conditions".[685]

This research is acutely cognisant of the fast-paced nature of the crypto asset environment, where change is basically a daily constant, and regulators have discarded their initial regulatory inertia on the issue of whether these complex and dynamic new financial products and services require formal regulation. In line with this realisation, the research undertaken in this thesis is about changing traditional regulatory architecture and approaches to supervision. It aims to push the thinking toward closer coordination across jurisdictions and the use of embedded supervisory techniques that provide real-time reporting.

This IMF publication*, Elements of Effective Policies for Crypto Assets*, suggests that authorities should consider a proactive and holistic approach and further states that active engagement is needed to identify cross-border considerations and gaps that can lead to regulatory arbitrage.[686] It is also clear that, in line with other international bodies, it is envisaged that the regulatory frameworks should be risk-based and proportional.[687] This study will approach the proposed joint framework on that basis.

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684 IMF Elements of Effective Policies, Page 34.

685 Cristina Cuervo, Anastasiia Morozova, Nobuyasu Sugimoto "Regulation of Crypto Assets"(2020) available online at https://www.imf.org/en/Publications/Fintech-notes/Issues/2020/01/09/Regulation-of-Crypto assets-48810(last accessed on 19 July 2023).

686 IMF Elements of Effective Policies, Page 34.

687 IMF Elements of Effective Policies, Page 10.

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For the purposes of this research, the IMF publication, *Regulation of Crypto Assets-Note/19/03*, provides a guide to essential elements that need consideration when building a regulatory framework. It sets out the considerations for the Development of Regulatory Frameworks in the following categories: Offering Crypto Assets, Trading Crypto Assets, Custody of Crypto Assets, and Exposure to Crypto Assets. These elements and others inform the foundation of the proposed joint framework for CASPS operating in multiple countries in Africa.[688]

(a) Offering Crypto Assets

The creation and distribution of crypto assets may generate some consumer risks. Firstly, it is important to provide requirements that will allow consumers to make informed decisions based on timely and accurate information. The ability to make informed decisions is further supported by adequate financial technology literacy, which can be achieved through tailored communication, outreach programs, and other education initiatives. Secondly, during this phase, the IMF recommends in the considerations that an appropriate disclosure regime should be implemented, as this could greatly assist in minimising fraud and misleading advertising by ensuring transparency and adequate data and facts.[689]

(b) Trading Crypto Assets

Under the theme of trading crypto assets, the IMF publication on the regulation of crypto assets proposes some elements for authorities to consider when building a regulatory framework. The first one of these elements under the heading of trading crypto assets is governance requirements for platform operators, including prudential requirements. Senior management and the control functions, considered fit and proper,

688 IMF, Regulation of Crypto Assets, Pages 19 - 24.

689 IMF Elements of Effective Policies, Page 28.

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should develop a robust governance framework.[690] There should be appropriate operational requirements, e.g., resources, to ensure the company's reliability. Capital requirements should consider the function of the operator namely, whether the functionality is bi-lateral[691] or multi-lateral.[692]

The second element relates to access to trading, meaning whether retail consumers can directly access trading platforms or whether access is controlled through intermediaries. The third element speaks to the operating systems' robustness, resiliency, and integrity. Cybersecurity requirements are needed to protect this important vulnerability, considering the digital nature of crypto assets.[693]

The third of the essential elements under this section is market integrity requirements, where trading of crypto assets akin to securities takes place. There have been many examples of market manipulation[694], and some of the tactics are quite novel to crypto assets. The text in the publication calls for authorities to consider which market surveillance mechanisms and market abuse rules should be implemented. In addition to what is provided in the text, innovative ways to undertake surveillance should be considered, where distributed ledger technologies[695] are employed.[696]

A further element mentioned in the *IMF Regulation of Crypto Assets* publication is ensuring transparency to promote the efficiency and integrity of trading.[697] This element is composed of the transparency of the platform rules and procedures, the availability of pre- and post-trade information, and the type of dissemination, e.g.,

690 IMF, Regulation of Crypto Assets, Pages 14.

691 Being counterparty to each transaction, see IMF Regulation of Crypto Assets, Page 23 (last accessed on 26 January 2025).

692 Matching buy and sell orders, see IMF Regulation of Crypto Assets, Page 23 (last accessed on 26 January 2025).

693 IMF Elements of Effective Policies, Page 28.

694 See Chapter 1, 1.2.7.

695 See Chapter 1, 1.2.4.

696 IMF Regulation of Crypto Assets, Page 14.

697 IMF Regulation of Crypto Assets, Page 24.

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aggregated, reliable, timely, and non-discriminatory[698]. The FATF standards should also be considered with respect to AML/CFT requirements.[699] Of particular relevance here is FATF Recommendation 15 in respect of new technologies. Recommendation 15 states that:

> "To manage and mitigate the risks emerging from virtual assets, countries should ensure that virtual asset service providers are regulated for AML/CFT purposes, and licenced or registered and subject to effective systems for monitoring and ensuring compliance with the relevant measures called for in the FATF Recommendations".[700]

An essential element in this publication regarding products offered on a platform is whether the authorities should statutorily intervene in determining which type of crypto assets should be offered to retail consumers, for example. This is over and above the disclosure requirements. When considering the implications of clearing and settlement, providing legal certainty regarding the transfer of ownership and other rights is essential. It is submitted that, in addition, the authorities need to consider internal record-keeping and accounting requirements.

(c) Custody of crypto assets

The critical element, from a regulatory perspective, in regard to wallets[701] is custodianship and the type of storage and security of private keys.[702] Some

698 IMF Regulation of Crypto Assets, Page 24.

699 Financial Action Task Force " The FATF Recommendations" (2012) available online at https://www.fatf-gafi.org/content/dam/fatf-gafi/recommendations/FATF%20Recommendations%202012.pdf.coredownload.inline.pdf (last accessed on 19 July 2023).

700 Financial Action Task Force " The FATF Recommendations" (2012) available online at https://www.fatf-gafi.org/content/dam/fatf-gafi/recommendations/FATF%20Recommendations%202012.pdf.coredownload.inline.pdf (last accessed on 19 July 2023).

701 Program or hardware that stores the public and private keys necessary to send, receive and store crypto assets. See Sean Michael Kerner, TechTarget," available online at https://www.techtarget.com/searchsecurity/definition/crypto-wallet-cryptocurrency-wallet" (last

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jurisdictions require certain levels of cold or warm wallets[703] to provide an additional layer of security regarding cyber risks. There are obviously different risks emanating from each type of wallet, where cybersecurity is a prominent risk with respect to hot wallets, and the risk to cold wallets consists of the risk of loss and physical damage. As explained in the *IMF Regulation of Crypto Assets publication,* most consumers with crypto assets store the majority offline in cold wallets; the remainder for short-term use is stored in hot wallets.[704] When considering appropriate regulatory measures, it should further be noted that consideration extends not only to appropriate cybersecurity measures but also to the prudential regulation of wallets. It is prudent to consider appropriate prudential requirements for third-party wallet providers[705] to mitigate contagion risks to other parts of the financial sector and mitigate individual consumer losses. The prudential requirements can consist of risk management frameworks that include provisions regarding operational risk[706], protection of consumer's assets[707], and minimum capital and liquidity requirements.[708]

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accessed on 19 July 2023).

702 V Budau, H Tourpe, IMF, ASAP: A Conceptual Model for Digital Asset Platforms, WP/24/19 (2024) (last accessed on 26 January 2025).

703 See Chapter 2, 2.2.4.

704 IMF, Regulation of Crypto Assets, Page 25.

705 Custodial wallet providers are companies that offer crypto asset wallet services where they, rather than the user, hold and manage the private keys that control the user's cryptocurrency assets. These providers essentially act as custodians of the user's digital assets, offering a convenient and user-friendly experience. See Tom Barbereau, Balázs Bodó, Beyond financial regulation of crypto-asset wallet software: In search of secondary liability, Computer Law & Security Review, Volume 49, 2023, 105829, ISSN 2212-473X, https://doi.org/10.1016/j.clsr.2023.105829 (last accessed on 21 April 2025).

706 Operational risk is defined as the risk of loss resulting from inadequate or failed internal processes, people and systems, or from external events. See BIS Papers No 138," Financial stability risks from cryptoassets in emerging market economies",(2023) Page 18. Available online at https://www.bis.org/publ/bppdf/bispap138.pdf (last accessed on 27 January 2025).

707 Protection of clients' assets refers to having systems, policies, procedures, and legal systems in place aiming to minimize the risk of loss or misuse and maintaining accurate and up-to-date records and accounts of client's assets that readily establish the precise nature, amount, location and ownership status of Client Assets and the clients for whom the assets are held. See IOSCO, "Policy Recommendations for Crypto and Digital Asset Markets - Final Report",(2023) available online at https://www.iosco.org/library/pubdocs/pdf/IOSCOPD747.pdf (last accessed on 21 February 2025).

708 IMF, Regulation of Crypto Assets, Page 10.

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(d) Exposure to crypto assets

Notably, prudential standards are slower to develop with respect to crypto assets, and as such, there are no global prudential standards that have been fully implemented at the time of writing.[709] In this publication of the IMF, reference is made to the following statement titled "*Statement on crypto assets*" by the Basel Committee on Banking Supervision in 2019[710]:

> "The committee will in due course clarify the prudential treatment of such exposures to appropriately reflect the high degree of risk of crypto assets."

From the same statement, the Basel Committee on Banking Supervision described some of the minimum expectations regarding due diligence, risk management, and disclosure.[711] On the topic of crypto asset exposure, this statement on crypto assets highlights the need for conservative treatment of direct exposures of crypto assets since their high volatility could expose regulated entities to high risk. This statement on crypto assets by the Basel Committee on Banking Supervision encourages regulated entities to monitor both direct and indirect exposures. Direct exposures could emanate from a variety of sources, including loans to crypto investors, derivative exposures with crypto-asset trading platforms, and cyber insurance to wallet providers.[712]

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709 The Basel Committee on Banking Supervision finalised a standard for the prudential treatment of cryptoasset exposures in December 2022, which requires banks to disclose qualitative information on their cryptoasset activities and quantitative information on exposures and related capital/liquidity requirements, with an implementation date of January 1, 2026. See BIS, Press release, "Basel Committee publishes final disclosure framework for banks' cryptoasset exposures and targeted amendments to its cryptoasset standard",(2024), available online at https://www.bis.org/press/p240717.htm (last accessed on 08 April 2025).

710 BIS, "Statement on crypto assets", (2019), available online at https://www.bis.org/publ/bcbs_nl21.htm.(last accessed on 08 April 2025).

711 Bank of International Settlements "BCBS statement on crypto assets" available online at https://www.bis.org/publ/bcbs_nl21.htm (last accessed on 20 July 2023).

712 IMF, Regulation of Crypto Assets, Page 7.

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Certain pertinent points come to the forefront regarding this aspect of exposure. Again, there is clearly a need for cooperation due to the cross-border nature of these crypto assets and the need for swift capacity building by regulators. All this takes place in a way that builds trust and that does not stifle innovation. These pertinent points support the stance taken in this research that a collective framework and the pooling of expert resources to oversee this collective framework could be a possible solution to some of the challenges regulators face.

The *Fintech Note* by the IMF in 2022 titled *"Regulating the Crypto Ecosystem: The Case of Unbacked Crypto Assets"*[713] provides high-level guidance to regulators to consider when designing a regulatory and supervisory approach to crypto assets.[714] For the purposes of this research, the focus on this note will be limited to the section on *"Building a regulatory architecture"*. In this section, the authors set out six steps for developing a consistent and comprehensive global regulatory framework. The six steps deal with monitoring development and the landscape; prioritisation considering perhaps stretched resources; determining a clear scope; coordination and collaboration; the need for continuous assessment of risk in a rapidly changing landscape; and some considerations on data available in respect of data insights.[715]

It is submitted that two of the steps here require illumination at this point in the thesis, one being the importance of having accurate, granular, and standardised data, as the data insights are fragmented or unavailable in many jurisdictions. Again, considering the borderless nature of crypto assets, it is submitted that building these data sets

[713] Parma Bains ; Arif Ismail ; Fabiana Melo ; Nobuyasu Sugimoto(2022) "Regulating the Crypto Ecosystem: The Case of Unbacked Crypto Assets" available online at www.imf.org/en/Publications/Fintech-notes/Issues/2022/09/26/Regulating-the-Crypto-Ecosystem-The-Case-of-Unbacked-Crypto assets-523715 (last accessed on 20 July 2023).

[714] Parma Bains ; Arif Ismail ; Fabiana Melo ; Nobuyasu Sugimoto(2022) "Regulating the Crypto Ecosystem: The Case of Unbacked Crypto Assets" available online at www.imf.org/en/Publications/Fintech-notes/Issues/2022/09/26/Regulating-the-Crypto-Ecosystem-The-Case-of-Unbacked-Crypto assets-523715 (last accessed on 20 July 2023).

[715] IMF - Regulating the Crypto Ecosystem The Case of Unbacked Crypto Assets, Pages 29 – 37.

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could lead to improved monitoring and more holistic understanding if this is done across African countries instead of in silos.

This may be a potential benefit of a collective regulatory licencing framework. The second potential benefit is collaboration. This step focuses on the *Fintech note* on domestic collaboration, but some of the content could be equally applied to cross-border collaboration. For instance, the risks of potential arbitrage could be addressed by aligning regulatory requirements and the scarceness of resources and expertise that can be cured by African countries ' collectively tackling the risks. It is submitted that it is not enough to have information sharing through, for instance, supervisory colleges between African regulators.

2.4 Financial Stability Board

2.4.1 Background

The Financial Stability Board (FSB) was established 24 years ago, in 1999, by the Ministers of the Central Bank Governors of the (then) G7.[716] It was called the Financial Stability Forum at that stage.

The FSB is an international standard setting body that works to coordinate regulatory and supervisory policy regarding financial sector issues at an international level and promotes information sharing and coordination amongst its members.[717] The FSB, working through its members, seeks to strengthen financial

[716] The Group of Seven is an intergovernmental political & economic forum consisting of Canada, France, Germany, Italy, Japan, the United Kingdom and the United States; additionally, the European Union is a "non-enumerated member". See Global Summitry Project," Global Summits & Global Order — G7", available online at https://globalsummitryproject.com/global-engagement/g7-japan/ (last accessed on 04 October 2024).

[717] Deutsche Bundesbank Eurosystem "Financial Stability Board (2023) available online at www.bundesbank.de/en/tasks/financial-and-monetary-system/international-cooperation/fsb/financial-stability-board-fsb--625728 (last accessed on 21 July 2023).

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systems and increase the stability of international financial markets. The policies developed to pursue this agenda are implemented by jurisdictions and national authorities.[718] The FSB's perspective is to promote financial stability through the coordination and harmonisation of its members' regulatory and supervisory frameworks and other financial sector policies. It will further use outreach activities with respect to non-member countries through its six regional consultative groups. These outreach activities discuss policies while they are still being formulated and the effects of such policies as they are being implemented.[719]

2.4.2 Steer from the FSB in respect of crypto assets

The *High-level Recommendations for the Regulation, Supervision and Oversight of Crypto-asset Activities and Markets: Final Report(Final Report)*, holds the principle of the same activity, same risk, and same regulation as its foundation.[720] This foundation also echoes in the proposals in this research that, since the same regulations can be used to address the same risk, this can hold true for the implementation of a set of rules across African countries. Duplication is unnecessary. However, it is submitted that in practice, the technology being used as a delivery mechanism brings nuances, and it would be more appropriate to term this the “same activity, comparable risk, and same regulatory outcome”.

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[718] Financial Stability Board “About the FSB” available online at https://www.fsb.org/about/ (last accessed on 21 July 2023).

[719] Financial Stability Board “Work of the FSB” available online at https://www.fsb.org/work-of-the-fsb/#outreach (last accessed on 21 July 2023).

[720] Financial Stability Board, “High-level Recommendations for the Regulation, Supervision and Oversight of Crypto asset Activities and Markets: Final report”, (2023), available online at https://www.fsb.org/2023/07/high-level-recommendations-for-the-regulation-supervision-and-oversight-of-crypto asset-activities-and-markets-final-report/#:~:text=Markets%3A%20Final%20report-,High%2Dlevel%20Recommendations%20for%20the%20Regulation%2C%20Supervision%20and%20Oversight%20of,Activities%20and%20Markets%3A%20Final%20report&text=In%20October%202022%2C%20the%20FSB,set%20of%20high%2Dlevel%20recommendations. (last accessed on 05 October 2024).

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Of the policy recommendations encapsulated in the aforementioned *Final Report*, this research will only illuminate those of particular pertinence to this research outcome. The first of these is Recommendation Two, which requires members to apply effective regulation, supervision, and oversight with respect to crypto assets.[721] This principle is enclosed by the foundation mentioned in the paragraph above: "same activity, same risk, same regulation". Recommendation Two clearly indicates that the conservative notion of a "wait and see" approach has departed, and regulators need to respond to the rising use of crypto assets and their underlying technology.[722]

Recommendation Three recommends cooperation and coordination between members[723], both domestically and internationally. One of the objectives of this principle is to encourage consistency of regulatory and supervisory outcomes. This aim of consistency of regulatory and supervisory outcomes provides a bridge for African regulators to use the same principle or outcomes-focused[724] requirements in a trans-border collective framework. The *Final Report* sets out some of the challenges regulators face when developing regulatory and supervisory frameworks in respect of crypto assets. One such challenge is again the cross-border nature of crypto assets. The challenges arise, for instance, from differences in classification and the lack of appropriate cooperation agreements.[725]

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721 FSB Final Report, p9.

722 FSB Final Report, p9.

723 Membership includes financial authorities from Angola, Botswana, Ghana, Kenya, Mauritius, Namibia, Nigeria, South Africa, Tanzania, Uganda, and Zambia, as well as the Central Bank of West African States (BCEAO) and the Bank of Central African States (BEAC). See Financial Stability Board, "About the FSB, Organisational Structure and Governance, Members of the FSB" available online at https://www.fsb.org/about/organisation-and-governance/members-of-the-financial-stability-board/ (last accessed on 04 October 2024).

724 Outcome-focused regulations recognize that there may be a variety of ways to achieve the same result. See Patrick Bracher," The Insurance Institute of South Africa NPC", available online at https://www.iisa.co.za/images/downloads/outcomes-based-regulation-oct2023.pdf (last accessed on 04 October 2024).

725 FSB Final Report, p9.

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The proposed recommendations in this *Final Report* seek to promote comprehensiveness in regulatory and supervisory frameworks internationally and further consistency among the FSB members. The recommendations set out the key objectives that an effective regulatory and supervisory framework should achieve but are high-level and flexible so that they can be incorporated into a wide variety of regulatory frameworks.

The second publication from the FSB in respect of crypto assets is the *High-level Recommendations for the Regulation, Supervision and Oversight of Global Stablecoin Arrangements: Final Report (GSC Final Report)*.[726] This GSC *Final Report* was published on 17 July 2023. Stablecoins are a subset of crypto assets, and global Stablecoins are Stablecoins with unique characteristics that include some kind of stabilisation mechanism[727], mainly used for payment or store of value,[728] and have potential reach and adoption across multiple jurisdictions. Because global Stablecoins reach across numerous jurisdictions and promise efficiencies, such as cheaper transactions, greater security, and wider financial inclusion, this research will touch on some of the FSB recommendations concerning global Stablecoins. Global Stablecoins also have the potential to address unmet consumer demand for payment services.

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[726] Financial Stability Board, "High-level Recommendations for the Regulation, Supervision and Oversight of Global Stablecoin Arrangements: Final report", (2023), available online at https://www.fsb.org/2023/07/high-level-recommendations-for-the-regulation-supervision-and-oversight-of-global-Stablecoin-arrangements-final-report/ (last accessed on 05 October 2024).

[727] The stabilisation mechanism is the process through which the Stablecoin maintains a stable value relative to its peg. See South African Reserve Bank, H Steyn, H Campbell, G van Deventer, and B Chibi, "A primer on Stablecoins," (2023), available online at https://www.resbank.co.za/content/dam/sarb/what-we-do/financial-stability/A%20Primer%20on%20Stablecoins.pdf (last accessed on 17 March 2025).

[728] To be useable as a means of payment and/or store of value, a Stablecoin arrangement typically provides three core functions. These core functions include (i) issuance, redemption and stabilisation of the value of the coins; (ii) transfer of coins; and (iii) interaction with coin users for storing and exchanging coins. See Financial Stability Board," High-level Recommendations for the Regulation, Supervision and Oversight of Global Stablecoin Arrangements", (2023), available online at https://www.fsb.org/uploads/P170723-3.pdf (last accessed on 04 October 2024).

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The recommendations in this GSC *Final Report* will be taken into account when proposing the requirements in a collective trans-border framework. Recommendation Four requires that members apply comprehensive regulatory, supervisory, and oversight requirements consistent with international standards in their jurisdictions.[729] Three of the high-level recommendations stipulate that authorities should cooperate and coordinate with each other domestically and internationally. This recommendation fosters effective communication, information sharing, and consultation to ensure comprehensive regulation across borders and sectors. The recommendations also deal with certain types of requirements that should form part of the members' regulatory framework. These will be mentioned briefly.

(a) Governance framework

Recommendation Four concerns governance structures and decentralised operations. According to this recommendation, Authorities should require comprehensive governance frameworks with clear and direct responsibilities.[730] The framework should be consistent with international standards, cover all the activities in the global Stablecoin arrangements, and cover all the participants and functions being performed. It also addresses reliance on any third parties and, in that instance, requires that the governing body do a comprehensive assessment and disclosure on how this outsourcing does not impede the responsibilities and functioning of the entity.[731]

(b) Risk management framework

Recommendation Five sets out the policy recommendation in respect of risk management. It recommends that Authorities should require effective risk management frameworks covering operational resilience, cyber security, AML/CFT requirements, and necessary 'fit and proper' requirements.[732] One of the essential aspects of this

729 FSB GSC Final Recommendations, p4.

730 FSB GSC Final Recommendations, p10.

731 FSB GSC Final Recommendations, p11.

732 FSB GSC Final Recommendations, p11.

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recommendation is that there should be a due diligence done with respect to persons involved in the management and in control of Global Stablecoin Arrangements (GSC). There are further requirements for ongoing risk assessment as well as contingency preparedness and continuity planning. It is also recommended that over and above the prudential requirements, a GSC arrangement should have comprehensive liquidity arrangements in place to respond adequately to large amounts of redemption requests.[733]

(c) Data storage and access to data

Recommendation Six concerns data storage as well as access to data. It is suggested that in any GSC, Authorities in the national jurisdictions should include requirements into their frameworks regarding robust systems that the GSC needs to have in place to collect and store data and safeguard both off[734] and on-chain[735] data. The Authorities should also have both complete and timely access to the data sets to be able to effectively regulate and supervise the entities.[736]

(d) Recovery and resolution of GSC

Recommendation Seven concerns recovery and the resolution recommendations in terms of GSC arrangements.[737] This recommendation deals with national authorities, including requirements in their legislative frameworks in respect of appropriate planning

[733] FSB GSC Final Recommendations, p12.

[734] Data emanating from transactions that occur outside of the blockchain network. See Göknil Bağatarhan," What Are Off-Chain Transactions? What Are On-Chain Transactions?",2023, available online at https://metatime.com/en/blog/what-are-off-chain-transactions-what-are-on-chain-transactions#! (last accessed on 29 September 2024).

[735] Data emanating from transactions that have been verified and are recorded on a blockchain. See Göknil Bağatarhan," What Are On-Chain Transactions? What Are On-Chain Transactions?",2023, available online at https://metatime.com/en/blog/what-are-off-chain-transactions-what-are-on-chain-transactions#! (last accessed on 29 September 2024).

[736] FSB GSC Final Recommendations, p12.

[737] FSB GSC Final Recommendations, p12.

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to support an orderly wind-down or resolution under the applicable legal (or insolvency) frameworks. Recommendation seven also further recommends the involvement of all the authorities in which the entity conducted business in the case of resolution, which again highlights the cross-border nature and the need for cooperation in the context of crypto asset regulation.[738]

(e) Disclosures

Recommendation Eight sets out the steer in terms of disclosure. Disclosures are an important tool for regulators to improve the integrity of the crypto assets markets and protect financial consumers by improving their understanding of how these markets operate. This recommendation deals with disclosure requirements with respect to various aspects of GSC operations to bring about transparency, including redemption rights and reserve holding. The focus in this recommendation is drawn to the adequate disclosure of the stabilisation mechanism, redemption rights, and the redemption process to users and the market as a whole.[739]

(f) Robust legal claims for financial consumers

The second-to-last recommendation sets out the recommendation in regard to redemption rights, stabilisation, and prudential requirements. This recommendation Nine speaks to Authorities ensuring that requirements are placed in their regulatory frameworks that ensure that financial consumers have robust legal claims against the issuers of crypto assets and against the underlying reserve assets.[740] There are three subsections within this recommendation, one dealing with redemption, the other with stabilisation, and the last dealing with prudential requirements. In terms of redemption, it is suggested that Authorities should mandate that GSC arrangements offer a strong

738 FSB GSC Final Recommendations, p12.

739 FSB GSC Final Recommendations, p13.

740 FSB GSC Final Recommendations, p15.

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legal claim and ensure timely redemption for all users, aligning with the standards for other payment and settlement assets. Redemption requests must be processed without imposing undue costs on users. Issuers must guarantee that users' redemption rights are not compromised by disruptions or failures of intermediaries or other relevant entities, ensuring direct redemption with the issuer if necessary. GSC arrangements should provide clear information on the redemption process and enforcement of users' claims, ensuring smooth execution even under stressed conditions. They should avoid imposing restrictive conditions on redemption rights and ensure that any fees are clearly communicated, proportionate, and not so high as to deter redemption.[741]

In terms of the stabilisation mechanism, the recommendation can be summarised as follows: The recommendation states that Authorities should require that GSCs maintain a stable value through an effective stabilisation method, which includes holding a reserve of assets equal to the outstanding Stablecoins, unless the issuer meets stringent prudential standards.[742] It is further recommended that GSCs should not rely on arbitrage or algorithms for stability. For reserve-based GSCs,[743] authorities must ensure reserves are composed of high-quality, liquid assets, excluding speculative or volatile assets. The reserves should be unencumbered and easily convertible to fiat currency[744], and their market value should always cover outstanding claims. Custodial risks must be managed, ensuring safe custody, proper record-keeping, and protection of ownership rights, especially in insolvency scenarios. Additionally, it is recommended that operational, credit, and liquidity risks associated with custody service providers should be minimised.[745]

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741 FSB GSC Final Recommendations, p14.

742 FSB GSC Final Recommendations, p14.

743 Reserve-backed Stablecoins are digital assets that are stabilized by other assets. See Bloomberg, "Stable Coin Backed by Circle, Coinbase Draws Most Early Demand",(29 October 2018). Available online at https://www.bloomberg.com/news/articles/2018-10-29/stable-coin-backed-by-circle-coinbase-draws-most-early-demand (last accessed on 28 January 2025).

744 A fiat currency is a national currency that is not pegged to the price of a commodity such as gold or silver. See IG,"FIAT currency definition", available online at https://www.ig.com/za/glossary-trading-terms/fiat-currency-definition (last accessed on 28 January 2025).

745 FSB GSC Final Recommendations, p14.

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Lastly, in terms of prudential requirements, the recommendation is that the GSC arrangements should have appropriate capital and liquidity requirements to absorb losses and deal with the outflow of funds through redemptions of the token.[746]

2.4.3 The interaction and link between the Financial Stability Board's recommendations and the International Monetary Fund's recommendations

As indicated above, both the Financial Stability Board and the International Monetary Fund have advanced policy and regulatory recommendations regarding crypto assets. To explain how these sets of recommendations interact with each other and fit together, the Financial Stability Board and the International Monetary Fund jointly published the *IMF-FSB Synthesis Paper: Policies for Crypto-assets* (Synthesis Paper) in September 2023.[747] The *Synthesis Paper* aims to integrate the fundamental policy elements and recommendations from both the Financial Stability Board and the International Monetary Fund, which both support the development of comprehensive national regulatory frameworks globally that are coordinated and aligned with each other.

Considering some of the overlap between the recommendations of the Financial Stability Board and the International Monetary Fund, this publication is very helpful in identifying, assessing, and mitigating macro-economic and financial stability risks pertaining to crypto assets.[748] The publication draws from the existing policy recommendations and guidelines issued by the Financial Stability Board, the International Monetary Fund, IOSCO, and other standard-setting bodies and integrates these policy developments for the readers to digest more simply. In terms of macroeconomic stability policies, the *Synthesis Paper* sets out the policy and regulatory response under the themes of: safeguarding monetary sovereignty and stability; guarding against excessive capital flow volatility; addressing fiscal risks and

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[746] FSB GSC Final Recommendations, p15.

[747] FSB & IMF, "IMF-FSB Synthesis Paper: Policies for Crypto assets" (2023) available online at https://www.fsb.org/wp-content/uploads/R070923-1.pdf (last accessed on 12 May 2024).

[748] IMF & FSB Synthesis Paper, Page 4.

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adopting unambiguous tax treatment; and monitoring the impact of crypto assets on the International Monetary System.[749]

With respect to the theme of safeguarding monetary sovereignty and stability, the *Synthesis Paper* sets out five policy and regulatory responses. The first of these policy and regulatory responses is developing effective frameworks and policies, which is the best way to limit substitution into crypto assets.[750] Adrian *et al* poignantly state that there is a need for effective frameworks and policies to limit substitution because weak monetary policy frameworks, combined with fiscal deficits and pressures for central bank financing, can undermine monetary credibility and instigate currency substitution.[751] The second of these policy and regulatory responses, in terms of safeguarding monetary sovereignty and stability, is that an effective monetary policy framework helps to safeguard monetary sovereignty in a country through transparency, coherence, and consistency.[752] What this does when there is an effective monetary policy, is that it enhances understanding, market expectations, and policy effectiveness.[753] The third of these responses mentioned in the *Synthesis Paper* is that countries should avoid large deficits and high debt levels, as this is important to protect monetary sovereignty, especially when monetary policy frameworks are weak, since this could encourage the use of crypto assets as a means of payment. The fourth of the policy responses is that crypto assets should not be granted official currency or legal tender status in countries to protect monetary stability. The *Synthesis Paper* stipulates that if crypto assets are granted official currency or legal tender status, this

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749 IMF & FSB – Synthesis Paper, Pages 17 – 19.

750 IMF & FSB – Synthesis Paper, Page 21.

751 Adrian, T., C. J. Erceg, S. T. Gray, and R. Sahay. 2021. "Asset Purchases and Direct Financing: Guiding Principles for Emerging Markets and Developing Economies during COVID-19 and Beyond." Departmental Paper No 2021/023. Washington, DC: International Monetary Fund available online at https://www.imf.org/en/Publications/Departmental-Papers-Policy-Papers/Issues/2021/10/08/Asset-Purchases-and-Direct-Financing-Guiding-Principles-for-Emerging-Markets-and-Developing-464660 (last accessed on 13 May 2024).

752 IMF & FSB – Synthesis Paper, Page 21.

753 Unsal, F. D., C. Papageorgiou, and H. Garbers. 2022. "Monetary Policy Frameworks: An Index and New Evidence." Working Paper No 2022/022. Washington, DC: International Monetary Fund available online at https://www.imf.org/en/Publications/WP/Issues/2022/01/28/Monetary-Policy-Frameworks-An-Index-and-New-Evidence-512228 (last accessed on 13 May 2024).

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will pose a fundamental risk, since crypto assets do not fulfill the three basic conditions of the official currency, namely: to serve as a unit of account, a means of exchange and a store of value.[754]

The last of the policy and regulatory responses under this theme is that, across the globe, governments should minimise fiscal and operational risks in cases of official crypto asset use.[755] It is argued that the official use of crypto assets for payment purposes exposes government revenues to variations in crypto-asset prices. The second theme is guarding against excessive capital flow volatility. Under this theme, there are two policy or regulatory responses. The first of these is that policymakers should take steps to counter the potential erosion of capital flows and capital flow management measures caused by the adoption of crypto assets. The *Synthesis Paper* suggests that possible steps a country can take to counter the potential erosion include clarifying the legal status of crypto assets, and it also indicates that by addressing existing data gaps, the Authorities can better monitor the development of risks and implement capital flows and capital flow management measures more successfully. According to the Synthesis Paper, good data is essential to better understand adoption and use patterns, as well as implications, which are also needed to evaluate, for instance, spillover effects[756], policy leakage, and currency substitution.[757]

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[754] Bossu, W., M. Itatani, C. Margulis, A. D. P. Rossi, H. Weenink, and A. Yoshinaga. 2020. "Legal Aspects of Central Bank Digital Currency: Central Bank and Monetary Law Considerations." Working Paper 2020/254. Washington, DC: International Monetary Fund available online at https://www.imf.org/en/Publications/WP/Issues/2020/11/20/Legal-Aspects-of-Central-Bank-Digital-Currency-Central-Bank-and-Monetary-Law-Considerations-49827 (last accessed on 13 May 2024).

[755] IMF & FSB – Synthesis Paper, Page 22.

[756] Linkages to the traditional economy that can transmit harm that occurs in the crypto asset ecosystem to the real economy. See M Chimienti, U Kochanska and A Pinna, "Understanding the crypto-asset phenomenon, its risks and measurement issues"(2025, available online at https://www.ecb.europa.eu/press/economicbulletin/articles/2019/html/ecb.ebart201905_03~c83aeaa44c.en.html (last accessed on 27 January 2025).

[757] In the context of cryptoassets, currency substitution refers to the substitution of fiat currency with, cryptoassets. See BIS Papers No 138," Financial stability risks from cryptoassets in emerging market economies", (2023) available online at https://www.bis.org/publ/bppdf/bispap138.pdf (last accessed on 27 January 2025).

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The second policy or regulatory response is that jurisdictions may need to consider greater exchange-rate flexibility, balancing the three competing objectives of monetary autonomy, exchange rate stability, and financial openness. This is applicable in countries where there is large crypto-asset adoption, to the effect that the capital flows and capital flow management measures become ineffective.[758]

Under the third theme of addressing fiscal risks and adopting unambiguous tax treatment, four policy or regulatory responses are captured in the *Synthesis Paper*.[759] The first response is about understanding the fiscal risks as they relate to crypto assets on a national level; this means identifying the risks, assessing and quantifying the risks, and monitoring the risks on an ongoing basis.[760] Where there is an absence of comprehensive and effective regulation of crypto assets, it can allow for exposure to explicit and implicit fiscal risks from the financial sector. The second of these policy and regulatory responses is closely linked to the previous one since it also deals with the identification and monitoring of risks emanating from crypto asset adoption, however, the perspective in this response is that effective monitoring will promote fiscal credibility and sustainable public finances.[761] In the *Synthesis Paper*, it is pronounced that these risks to public finance should be included in the government's fiscal risk statement to promote fiscal transparency.[762]

The third of the responses stipulates that the national tax policies on the tax treatment of crypto asset-related gains should be clear with respect to both income taxes and value-added taxes[763] and that the authorities in charge of tax compliance should

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758 FSB & IMF – Synthesis Paper, Page 18, Paragraph 3.1.2.

759 FSB & IMF – Synthesis Paper, Page 19.

760 FSB & IMF – Synthesis Paper, Page 22.

761 FSB & IMF – Synthesis Paper, Page 23.

762 IMF (International Monetary Fund). 2019a. "The Fiscal Transparency Code." Washington, DC: International Monetary Fund available online at https://www.imf.org/external/np/fad/trans/Code2019.pdf (last accessed on 13 May 2024).

763 Baer, K., R. de Mooij, S. Hebous, and M. Keen. 2023. "Taxing Cryptocurrencies." Working Paper No 2023/144. Washington, DC: International Monetary Fund available online at https://www.imf.org/en/Publications/WP/Issues/2023/06/30/Taxing-Cryptocurrencies-535510 (last accessed on 13 May 2024).

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strengthen efforts to ensure compliance by utilising amongst other things, third-party information, especially when intermediaries such as crypto asset trading platforms, broker-dealers, and other intermediaries are involved.[764] The last of the responses under this theme deals with the important point of cross-border collaboration and information sharing to ensure effective tax compliance. This response also mentions how beneficial consolidated global reporting is and, to this effect, references the Crypto-asset Reporting Framework (CARF) proposed by the Organisation for Economic Co-operation and Development[765] (OECD).[766] The next theme is the monitoring of the impact of crypto assets on the international monetary system, which contains three responses.

The first of these responses is that the international monetary system may face new challenges, such as increased fragmentation, large and volatile capital flows, and new risks to financial stability and integrity. The introduction and adoption of crypto assets could amplify these existing vulnerabilities and also pose new risks to the financial stability of the international monetary system. The second highlights that the International Monetary Fund's primary role, as spelt out in its articles of agreement[767], is to ensure the stability and efficiency of the International Monetary System. Some of the actions of the International Monetary Fund are through multilateral and bilateral surveillance, capacity development, and lending.[768]

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764 Crypto asset transactions, when parties operate off-chain, peer-to-peer, or through unhosted or cold wallets, may be more difficult to bring into the tax system. See FSB & IMF – Synthesis Paper, Page 19 (last accessed on 13 May 2024).

765 The OECD (Organisation for Economic Co-operation and Development) is an intergovernmental organization with 38 member countries, founded in 1961 to stimulate economic progress and world trade, and works to build better policies for better lives. See OECD, “Who We Are”, available online at https://www.oecd.org/en/about.html (last accessed on 08 April 2025).

766 OECD (Organisation for Economic Co-operation and Development). 2022b. “Public Consultation on the Crypto Asset Reporting Framework and Amendments to the Common Reporting Standard: Comments by B. Michel and T. Falcao.” Paris: OECD. Available online at https://www.oecd.org/tax/exchange-of-tax-information/crypto asset-reporting-framework-and-amendments-to-the-common-reporting-standard.pdf (last accessed on 13 May 2024).

767 Articles of Agreement of the International Monetary Fund, available online at https://www.imf.org/external/pubs/ft/aa/ (last accessed on 08 April 2025).

768 FSB & IMF – Synthesis Paper, Page 19, Paragraph 3.1.4.

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In the context of crypto assets, an important part of the International Monetary Fund's efforts involves assessing the macro financial and spillover risks of the crypto asset ecosystem. The third and last of the responses under this specific theme speaks to how imperative the ongoing analysis and review of rules are.[769] The response sets out five areas that need close monitoring under this theme, and these are: (i) crypto assets' impacts on gross and net cross-border capital flows; (ii) changes in financial intermediation, currency substitution, and international currency use; (iii) effects on exchange-rate and capital-account regimes, as well as capital flow management measures; (iv) financial integrity risks; and (v) demand for, and supply of, Global Financial Safety Net resources.[770]

In terms of Financial Stability Regulation, the *Synthesis Paper* sets out three themes with policy and regulatory responses underneath, which speak to the work done by the Financial Stability Board, specifically the recommendations that have been published as discussed above.[771] The first of the themes under this section speaks to the Financial Stability Board's global framework for crypto-asset activities. There are three policy or regulatory responses under this theme. The first response stipulates that the Financial Stability Board's recommendations provide a global framework for the effective regulation, supervision, and oversight of crypto-asset activities and markets and global Stablecoin arrangements. It explains that the framework is based on the principle of the "same activity, same risk, same regulations".[772] The global framework is indeed an excellent foundational basis for building comprehensive and efficient frameworks that are proportional to the risks that crypto assets represent.[773]

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769 FSB & IMF – Synthesis Paper, Page 19, Paragraph 3.1.4.

770 FSB & IMF – Synthesis Paper, Page 19; The Global Financial Safety Net (GFSN) comprises various resources, including IMF resources, regional financing arrangements (RFAs), and countries' own foreign exchange reserves, designed to provide insurance against economic crises and lessen their impact. See IMF," Global Financial Safety Net", available online at https://www.imf.org/en/Publications/fandd/issues/2023/12/PT-global-financial-safety-net (last accessed on 08 April 2025).

771 See Chapter 2, 2.4.

772 See Chapter 2, 2.4.2.

773 FSB & IMF – Synthesis Paper, Page 20.

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The second part of the policy and regulatory response explains the distinction between the two sets of recommendations published by the Financial Stability Board. It is explained here that the recommendations for crypto assets and markets apply to any type of crypto-asset activity, including Stablecoins and those conducted through DeFi.[774] It also explains that when a Stablecoin reaches a particular scale and is widely accepted, and crosses different jurisdictions, it can be classified as a "Global Stablecoin" and could pose certain risks to financial stability. For this reason, it was decided to issue a separate and distinct supplementary set of recommendations to reflect the specific risks applicable to Global Stablecoins. The recommendations for Global Stablecoins, therefore, heightened regulatory and supervisory requirements.[775]

The last of the responses under this theme speaks about the characteristics of the recommendations, specifically designed so that they should be high-level and allow sufficient flexibility to allow global implementation and make room for other standard-setting bodies to provide more detailed guidance in respect to their mandates and the sectors in which they set standards.[776]

The next theme in the *Synthesis Paper* deals more in-depth with the *Financial Stability Board High-level Recommendations for the Regulation, Supervision and Oversight of Crypto-asset Activities and Markets: Final report.*[777] This theme has eight policy or regulatory responses that deal with different recommendations. The first of these responses set out the recommendation that the authorities regulating and supervising crypto assets in their national jurisdictions should have and utilise the necessary and appropriate powers to regulate this part of the sector. The authorities also require adequate resources and should implement comprehensive regulatory frameworks to

774 See Chapter 1, 1.2.6.

775 FSB & IMF – Synthesis Paper, Page 21.

776 FSB & IMF – Synthesis Paper, Page 20.

777 FSB," High-level Recommendations for the Regulation, Supervision and Oversight of Crypto-asset Activities and Markets: Final report",(2023), available online at https://www.fsb.org/2023/07/high-level-recommendations-for-the-regulation-supervision-and-oversight-of-crypto-asset-activities-and-markets-final-report/ (last accessed on 08 April 2025).

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regulate, supervise, and oversee crypto asset activities and markets and to enforce the requirements that they impose on these participants.[778]

The second response, which is very relevant to this research, is the call for coordination and the need for consistency in approaches to the regulation and supervision of crypto asset activities and markets. The third regulatory response deals with governance and recommends that both crypto-asset issuers and service providers have comprehensive governance frameworks in place, which include establishing clear and direct lines of responsibility and accountability for all functions and activities that are being conducted.[779] The next response deals with the process and control of monitoring and dealing with the risks that stem from operational resilience, cyber security, and AML/CFT. The recommendation stipulates that effective risk management frameworks should be in place that comprehensively address all material risks associated with the functions and activities that are being performed. The fifth response taken from the Financial Stability Board's final recommendations focusses on the important topic of data and having measures in place to address data gaps.[780] It is recommended, therefore, that the CASPS should have robust data frameworks, which are needed to ensure proper regulation, supervision, and oversight. The data frameworks should be comprehensive and include systems and processes for collecting, storing, safeguarding, and reporting data in a timely and accurate manner. It is further recommended that the national authorities must ensure that they have access to this data, through having the necessary powers to request the information as needed.[781]

The next response deals with transparency and disclosures to both the financial consumers and stakeholders. The recommendation is that users and relevant stakeholders should be provided with comprehensive, clear, and transparent

[778] FSB & IMF – Synthesis Paper, Page 20.

[779] FSB & IMF – Synthesis Paper, Page 20.

[780] FSB & IMF – Synthesis Paper, Page 21.

[781] FSB & IMF – Synthesis Paper, Page 21.

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information about crypto-asset markets and services. Number seven of the responses deals with the increase in interconnectedness both within the crypto-asset ecosystem and between the crypto-asset ecosystem and the wider financial system.[782] It is observed that crypto assets' growing interconnectedness with traditional finance and the real economy may also pose a threat to monetary sovereignty and need to be monitored. The policy and regulatory response from the Financial Stability Board recommendations in this respect is that authorities should identify and monitor the relevant interconnections, both within the crypto-asset ecosystem and between the crypto-asset ecosystem and the wider financial system and address financial stability risks.[783]

Coming to the last of the responses under this theme, this final response deals with what is termed “multi-function crypto asset intermediaries”. According to the Financial Stability Board, such multifunction crypto-asset intermediaries are individual firms, or groups of affiliated firms, that combine a broad range of crypto-asset services, products, and functions typically centered around the operation of a trading platform.[784] The Financial Stability Board's recommendations in this respect provide that crypto-asset service providers that combine multiple functions and activities when permissible should be subject to appropriate regulation, supervision, and oversight.[785]

The main takeaway from this is that the multiple activities of these ecosystem participants, although not a different risk from where activities are combined in traditional finance, means that some of the combinations can be seen to exacerbate the risks of vulnerabilities, and this requires the national authorities to establish risk mitigation in the form of regulatory frameworks and its supervision activities to address risks arising from the combination of functions, including conflicts of interest and separation of certain functions.

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782 FSB & IMF – Synthesis Paper, Page 21.

783 FSB & IMF - Synthesis Paper, Page 21.

784 Financial Stability Board. “The Financial Stability Implications of Multifunction Crypto asset Intermediaries” (2023) available online at https://www.fsb.org/wp-content/uploads/P281123.pdf (last accessed on 14 May 2024).

785 FSB & IMF - Synthesis Paper, Page 21.

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The next theme that is covered by the *Synthesis Paper* is the *Financial Stability Board's high-level recommendations for Global Stable Coins*. As stated earlier, there are two sets of high-level recommendations. *The recommendations for Global Stablecoins* aim to address the specific risks that emanate from Stablecoins in taking a broad approach, but only the cases where adoption and use in multiple jurisdictions classify the specific Stablecoin as a global Stablecoin. Under this theme, more detailed information is provided regarding the policy and regulatory responses that emanate from this set of recommendations. There are five responses to this theme of global Stablecoins that will be touched upon briefly hereinafter.

The first of the regulatory responses in this theme explains that the FSB recommendations take a broad approach. The national authorities should also apply other sectoral international standards, where those standards are focused on specific economic functions and the risks emanating in respect of that economic function. The broader approach that the Financial Stability Board has taken serves as a foundation for a global and consistent regulatory framework.[786] The second of the responses clarifies that the *Financial Stability Board Global Stablecoin Recommendations* are complementary to those for other crypto assets, while reflecting the particular risks and heightened regulatory and supervisory requirements of Global Stablecoins.[787] This means that, similar to the set of recommendations that apply to crypto assets, this set also calls for authorities to utilise the appropriate regulatory powers to provide comprehensive oversight of Global Stablecoin activities and functions. The recommendations promote cross-border cooperation and information sharing, robust data frameworks, and effective risk management frameworks for Global Stablecoin arrangements, but also include additional requirements to address Global Stablecoins' particular risks. The third of the responses deals with recovery and resolution planning[788] for Global Stablecoins. The recommendation of the Financial Stability

[786] FSB & IMF – Synthesis Paper, Page 21.

[787] FSB & IMF – Synthesis Paper, Page 21.

[788] The objective of an effective resolution regime is to make feasible the resolution of financial institutions without severe systemic disruption and without exposing taxpayers to loss, while protecting vital economic functions through mechanisms which make it possible for shareholders

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Board in this respect is that the national authorities should require that Global Stablecoin arrangements have in place appropriate planning to support a recovery, resolution, or orderly wind down under the applicable legal (or insolvency) frameworks.[789]

The fourth of the responses under this theme, deals with transparency and disclosure in terms of the workings of the Global Stablecoin arrangement. It states that Global Stablecoin issuers and, where applicable, other participants in the Global Stablecoin arrangements[790], should provide all users and relevant stakeholders with comprehensive and transparent information to understand the functioning of the Global Stablecoin arrangement.[791] The disclosures that are stipulated in this response to enable an understanding of the arrangement include: disclosing comprehensive information about the governance framework; any conflicts of interest and their management; redemption rights; and the Global Stablecoin's stabilisation mechanisms, operations, risk management framework, and financial condition.[792] The second-to-last of the policy and regulatory responses under the *Global Stablecoin Recommendations* of the Financial Services Board in the *Synthesis Paper* states that Global Stablecoin arrangements should be subject to robust redemption rights, stabilisation, and prudential requirements to maintain a stable value at all times and to mitigate the risk of runs. A run on a Stablecoin arrangement could occur, for instance, if end users lose confidence in the issuer or its network. A run is a sudden spike in redemption

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and unsecured and uninsured creditors to absorb losses in a manner that respects the hierarchy of claims in liquidation. Recommendation 11 of the FSB "Key Attributes of Effective Resolution Regimes for Financial Institutions" sets out the core elements necessary for an effective recovery and resolution regime. See Pages 17 – 19, available online at https://www.fsb.org/uploads/P250424-3.pdf (last accessed on 10 April 2025).

789 FSB & IMF – Synthesis Paper, Page 21.

790 The FSB's 2020 report, "Regulation, Supervision and Oversight of 'Global Stablecoin' Arrangements" described three characteristics that distinguish a GSC from other crypto-assets and other stablecoins. Those characteristics include: (i) the existence of a stabilisation mechanism, (ii) the usability as a means of payment and/or store of value, and (iii) the potential reach and adoption across multiple jurisdictions. See Page 7, available online at https://www.fsb.org/2020/10/regulation-supervision-and-oversight-of-global-stablecoin-arrangements/ (last accessed on 10 April 2025).

791 FSB & IMF – Synthesis Paper, Page 21.

792 FSB & IMF – Synthesis Paper, Page 21.

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requests, triggered by, for example, a price fall, rumours of instability, or concerns about underlying asset quality, which results in a "fire sale"[793] of the assets backing the Stablecoin.[794]

The last of the policy and regulatory responses under the Global Stablecoin section of the *Synthesis Paper* stipulates that global Stablecoin arrangements must conform to regulatory, supervisory, and oversight requirements before commencing operations. Under this response, it is recommended that global Stablecoin arrangements meet all applicable regulatory, supervisory, and oversight requirements of a particular jurisdiction before commencing any operations in that jurisdiction and adapting to new regulatory requirements as necessary and as appropriate.[795]

2.5 IOSCO

2.5.1 Background

The International Organization of Securities Commissions (IOSCO)[796] is the international body that brings together the world's securities regulators and is recognized as the global standard setter for the securities sector. IOSCO develops, implements, and promotes adherence to internationally recognised standards for

[793] A fire sale is essentially a forced sale of an asset at a dislocated price. See Shleifer, Andrei & Vishny, Robert. (2010). "Fire Sales in Finance and Macroeconomics". *Journal of Economic Perspectives*. 25. 29-48. 10.2307/23049437. (last accessed on 10 April 2025).

[794] C Dark, E Rogerson, N Rowbotham and P Wallis, Reserve Bank of Australia, "Stablecoins: Market Developments, Risks and Regulation", (2022). Available online at https://www.rba.gov.au/publications/bulletin/2022/dec/Stablecoins-market-developments-risks-and-regulation.html#:~:text=Stablecoins%20can%20be%20vulnerable%20to,the%20assets%20backing%20the%20Stablecoin (last accessed on 28 January 2025).

[795] FSB & IMF – Synthesis Paper, Page 36.

[796] See Chapter 2, 2.1.

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securities regulation. It works intensively with the G20 and the FSB on the global regulatory reform agenda.[797]

IOSCO published its *Consultation Report,* titled "*Policy Recommendations for Crypto and Digital Asset Markets",* in May 2023.[798] The *Consultation Report* aims to culminate in policy recommendations to address market integrity and investor protection issues in respect of crypto assets. Following the *Consultation Report*, IOSCO published the *Policy Recommendations for Crypto and Digital Asset Markets - Final Report* on 16 November 2023.[799]

2.5.2 Steer from IOSCO

The *IOSCO Final Report* sets forth 18 policy recommendations that aim to support greater consistency among its members' oversight and regulatory frameworks. It is further designed to address concerns related to market integrity and investor protection arising from crypto-asset activities. The policy recommendations in the *Final Report* are principal-based and outcomes-focused, focusing on crypto-asset service providers.[800]

The policy recommendations in the *Final Report* follow a life cycle approach that covers six key areas: Conflicts of interest arising from the vertical integration of

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797 The International Organization of Securities Commissions "About IOSCO" available online at https://www.iosco.org/about/?subsection=about_iosco. (last accessed on 20 July 2023).

798 The International Organization of Securities Commissions,"Policy Recommendations for Crypto and Digital Asset Markets", available online at https://www.iosco.org/library/pubdocs/pdf/IOSCOPD734.pdf. (last accessed on 20 July 2023).

799 The International Organization of Securities Commissions, "Policy Recommendations for Crypto and Digital Asset Markets - Final Report ", (2023), available online at https://www.iosco.org/library/pubdocs/pdf/IOSCOPD747.pdf (last accessed on 05 October 2024).

800 CASPS are service providers that conduct a wide range of activities relating to crypto assets, including but not limited to, admission to trading, trading (as agent or principal), operating a market, custody, and other ancillary activities such as lending / staking of crypto assets and the promotion and distribution of crypto assets on behalf of others. See IOSCO Report, Page 6, (last accessed on 05 October 2024).

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activities and functions; market manipulation; insider trading; and fraud; cross-border risks and regulatory cooperation; custody and consumer asset protection; operational and technological risk; and retail access; suitability; and distribution. This research will briefly consider certain recommendations that speak to the need for alignment or coordination or those recommendations in the *Final Report* that will be incorporated into the proposed regulatory framework in Chapter Six of this thesis.

IOSCO Recommendation 1 deals with common standards of regulatory outcomes. This recommendation seeks to ensure that the regulators use either existing or newly crafted frameworks to provide similar levels of protection to financial consumers as what is provided in traditional financial products.[801] Furthermore, these recommendations refer to the work of other international bodies, such as the FSB and Bank of International Settlements (BIS), to highlight the global move to coordinated frameworks to prevent regulatory arbitrage and provide for level playing fields across jurisdictions.[802]

IOSCO Recommendation 2 speaks to the organisational governance of CASPS, including disclosing conflicts of interest. This is an important topic and is reoccurring in publications by international bodies. The recommendations call, amongst other things, for effective governance arrangements to be considered in light of the activities that the CASP performs through policies, procedures, and systems. In terms of conflict of interest, the recommendations seek to implore regulators to require avoidance and effective mitigation of conflicts of interest that may arise, including arising from performing multiple functions. Implementational requirements can include policies, procedures, and controls and provide public disclosure, reporting, and annual effectiveness reviews.[803]

801 IOSCO Final Report, p19.

802 IOSCO Final Report p20.

803 IOSCO Final Report p21.

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IOSCO Recommendation 11 deals with the need for enhanced regulatory cooperation in light of the cross-border nature of crypto assets.[804] The explanatory text in this recommendation acknowledges that differing approaches in different jurisdictions raise significant issues and upsurge the risk of regulatory arbitrage. This IOSCO recommendation 11 also calls on various initiatives that the regulators may consider for enhancing cooperation in order to support rigorous and effective ongoing supervision of CASPS operating across multiple jurisdictions.[805]

IOSCO Recommendation 12 considers custody arrangements and measures to protect the consumer's assets. This is also considered a big-ticket item if one looks at the various recommendations and notes published by international bodies and what has been incorporated into legislation globally. This recommendation calls on the adequate protection of the consumer's assets, adequate record keeping, and ensuring that consumers understand their rights with respect to the crypto assets being held, for instance, when it comes to insolvency proceedings against the CASP.[806]

The last of the IOSCO recommendations that will be briefly mentioned here is recommendation 17, which relates to the management and disclosure of operational as well as technological risks.[807] The *Final Report* states that although many similarities in risks can be drawn between crypto assets and traditional financial products, some novel risks present themselves through the use of distributed ledger technology and smart contracts, for instance. Therefore, it is recommended that regulators should insert requirements into their regulatory frameworks to ensure that disclosures are made to consumers concisely and non-technically to ensure transparency and understanding of consumers' risks.[808]

804 IOSCO Final Report p36.

805 IOSCO Final Report p36.

806 IOSCO Final Report p38.

807 IOSCO Final Report p44.

808 IOSCO Final Report p60.

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2.6 Bank of International Settlements (BIS)

2.6.1 Background

Established in 1930 to facilitate German reparations after World War I, promote central bank cooperation, and provide facilities for international financial operations, the BIS is owned by 63 central banks, representing countries worldwide that together account for about 95% of the world's GDP.[809] Its head office is in Basel, Switzerland, and it has two representative offices: in Hong Kong SAR and in Mexico City, as well as Innovation Hub Centers around the world.[810] The BIS is an international organisation that serves central banks and other financial authorities across the globe to support their pursuit of monetary and financial stability through international cooperation. It also acts as a bank for central banks.[811] The BIS achieves its mission by providing different services to its members, for instance, serving as a forum for dialogue and broad international cooperation or providing in-depth analysis and insights on core policy issues. The BIS also serves as a platform for responsible innovation and knowledge sharing and provides its members with sound and competitive financial services. Certain relevant aspects will now be considered in more detail. In terms of international cooperation, this international body, through the Basel process[812], promotes international cooperation among monetary authorities and financial supervisory officials.[813]

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[809] Gross domestic product is a monetary measure of the market value of all the final goods and services produced and rendered in a specific time period by a country or countries. See IMF, Tim Callen," Gross Domestic Product: An Economy's all" available online at https://www.imf.org/en/Publications/fandd/issues/Series/Back-to-Basics/gross-domestic-product-GDP#:~:text=GDP%20measures%20the%20monetary%20value,the%20borders%20of%20a%20country; BIS ,"BIS History-Overview", available online at https://www.bis.org/about/history_newarrow.htm#:~:text=The%20BIS%20was%20established%20in,following%20the%20First%20World%20War (last accessed on 23 April 2024).

[810] Bank of International Settlements, "Digital Asset RegTech 2022 – About Us", available online at https://dartech.jwgevents.org/sponsor/bis/ (last accessed on 23 April 2024).

[811] Bank of International Settlements – About us, "Promoting global monetary and financial stability through international cooperation"(2023) available online at https://www.bis.org/about/profile_en.pdf (last accessed on 23 April 2024).

[812] The Basel Process refers to the way in which the BIS promotes international cooperation among

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The BIS hosts and supports a number of international institutions engaged in standard setting and financial stability, one of which is the Basel Committee of Banking Supervision, established in 1974 by the central bank governors of the Group of Ten countries.[814] The Basel Committee of Banking Supervision is the primary global standard setter for the prudential regulation of banks and provides a forum for cooperation on banking supervisory matters. Its mandate is to strengthen the regulation, supervision, and practices of banks worldwide with the purpose of enhancing financial stability.[815] Some of the other committees are the BIS Committee on Payments and Market Infrastructures, which establishes and promotes global regulatory/oversight standards for payment, clearing, settlement, and other market infrastructures and monitors and analyses developments in these areas.[816] There is also the Committee on the Global Financial System, which monitors and analyses issues relating to financial markets and systems.[817]

2.6.2 Steer from the Bank of International Settlements

monetary authorities and financial supervisory officials. See BIS," The Basel process – Overview", available online at https://www.bis.org/about/basel_process.htm (last accessed on 10 April 2025).

813 International cooperation among central banks and other financial authorities in the pursuit of monetary and financial stability is known as the Basel Process. See BIS," The Basel Process – overview" available online at https://www.bis.org/about/basel_process.htm#:~:text=This%20international%20cooperation%20is%20known,international%20groups%20pursuing%20financial%20stability (last accessed on 23 April 2024).

814 BIS, "The Basel Committee – A brief history", available online at https://www.bis.org/bcbs/history2_obsolete.htm#:~:text=Following%20bank%20failures%20in%20both,quality%20of%20banking%20supervision%20worldwide (last accessed on 10 April 2025).

815 Bank of International Settlements – Charter available online at https://www.bis.org/bcbs/charter.htm?m=78 (last accessed on 23 April 2024).

816 Bank of International Settlements, "CPMI – overview", available online at https://www.bis.org/cpmi/about/overview.htm (last accessed on 29 January 2025).

817 Bank of International Settlements," Committee on the Global Financial System – Overview", available online at https://www.bis.org/cgfs/index.htm (last accessed on 29 January 2025).

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In December 2022, this publication of the Basel Committee on Banking Supervision: *Prudential treatment of crypto asset exposures* sets out the final standard on the prudential treatment of crypto asset exposures, it was further revised in July 2024, which the Basel Committee on Banking Supervision has agreed to implement by 1 January 2025.[818] The published standard requires that banks, on an ongoing basis, classify crypto assets into one of two groups. The first group of crypto assets is subject to capital requirements[819] based on the risk weights of underlying exposures as set out in the existing Basel Framework[820] and includes tokenised traditional assets and crypto assets with effective stabilisation mechanisms. The second group is subject to more conservative capital treatment because they are seen as more risky types of crypto assets. The crypto assets that will fall under this group are any crypto assets that failed to meet any of the classification conditions of group one and include unbacked crypto assets[821]. The standard also sets exposure limits with a bank's total exposure to the second group of crypto assets, which must not exceed 2% of the bank's Tier 1 capital and should generally be lower than 1%.[822]

The first of the classification conditions is that the crypto asset is either: (i) a tokenised traditional asset; or (ii) has a stabilisation mechanism that is effective at all times in linking its value to a traditional asset or a pool of traditional assets (i.e., reference asset(s)). Crypto assets will not meet the condition set out in cases where they first require conversion or redemption into traditional assets before they receive the same legal rights as direct ownership of traditional assets or in the event that their specific

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818 Bank of International Settlements - Prudential treatment of crypto asset exposures available online at https://www.bis.org/bcbs/publ/d545.pdf (last accessed on 25 April 2024).

819 Chapter 1, 1.1.

820 In certain jurisdictions, bank-issued tokenised payment assets that are backed by the general assets of the bank and not by a pool of reserve assets may be referred to as "Stablecoins." Notwithstanding how they may generally be referred to within the jurisdiction, these assets may be included in Group 1a provided they meet all the requisite conditions and would not be assigned to Group 1b based solely on their commonly used local name. See Bank of International Settlements - Prudential treatment of crypto asset exposures available online at https://www.bis.org/bcbs/publ/d545.pdf (last accessed on 25 April 2024).

821 See Chapter 1, 1.8.1.

822 BCBS Standard – P1-2.

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construction involves additional counterparty credit risks relative to traditional assets.[823] Other elements of the standard include descriptions of how the operational risk[824], liquidity risk[825], leverage ratio[826], and significant exposure requirements should be applied to banks' crypto asset exposures. The supervisory review process and a specific set of disclosure requirements are also prescribed.[827]

2.7 G20

2.7.1 Background

The Group of 20 (G20) is a premier forum for economic cooperation comprising 19 countries and the European Union.[828] It was established in 1999, after the Asian Financial Crises[829], as a way for finance Ministers and Central Bank Governors to

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[823] BCBS Standard – P6-7.

[824] See Chapter 2,2.3.2.

[825] In the context of crypto assets, liquidity risk refers to the difficulty or cost associated with quickly converting an asset into cash without significantly impacting its market price. Assets with low liquidity can experience price drops when attempting to sell, and vice versa. See Ernest & Young, J Ardouin, (2024), "If crypto assets are shaking up finance, how do you stabilize risk?", available online at https://www.ey.com/en_ch/insights/banking-capital-markets/if-crypto-assets-are-shaking-up-finance-how-do-you-stabilize-risk#:~:text=Liquidity%20risk,to%20have%20higher%20liquidity%20risk (last accessed on 18 March 2025).

[826] Leverage Ratio reflects the proportion of margin to leverage as a ratio. See Kraken," What is leverage trading in crypto?", available online at https://www.kraken.com/learn/leverage-trading-crypto (last accessed on 10 April 2025).

[827] BCBS Standard – P2.

[828] The members of the G20 are: Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Republic of Korea, Mexico, Russia, Saudi Arabia, South Africa, Türkiye, the United Kingdom, and the United States. See Australian Government -Department of Foreign Affairs and Trade," The G20", available online at https://www.dfat.gov.au/trade/organisations/g20 (last accessed on 12 January 2024).

[829] The Asian financial crisis, originating in Thailand and subsequently spreading to other nations in the

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deliberate on global economic and financial issues.[830] The G20 brings together the world's foremost and systemically important economies. Its members represent 85% of global GDP, 75% of international trade, and two-thirds of the world's population.[831]

2.7.2 G20 Note on the macro implications of crypto assets

The G20 Note[832] focuses on the macro-financial[833] implications of crypto assets. It starts by acknowledging that the crypto asset market has grown in complexity and that funds channelling investments to crypto assets have become commonplace, answering a growing consumer demand. It also notes in its introduction that there are clear risks, and policymakers are reacting by pushing for regulation to protect consumers. The international standard-setting bodies are also driving this.

Specifically relevant to this research, is the section that deals with financial inclusion as it relates to crypto assets and the underlying technology. It is noted that there is a possible benefit in deepening financial inclusion by the promises of lower prices and fees, for instance, in the payments use case.[834] To unlock these benefits, there is a

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region during the latter half of 1997, precipitated severe economic downturns. These recessions were characterized by escalating unemployment rates, increased poverty levels, and significant social dislocation. See T Lane, IMF, "The Asian Financial Crisis What Have We Learned?",(1999). Available online at https://www.imf.org/external/pubs/ft/fandd/1999/09/lane.htm (last accessed on 28 January 2025).

830 The Group of Twenty "About us" is available online at https://www.g20.org/en/about-g20/ (last accessed on 21 July 2023).

831 OECD "What is the G20?" available online at https://www.oecd.org/g20/about/ (last accessed on 12 January 2024).

832 G20 Note on the Macrofinancial Implications Of Crypto Assets,(2023), available online at https://www.imf.org/-/media/Files/Research/imf-and-g20/2023/g20-report-macrofinancial-implications-crypto-assets-february23.ashx (last accessed on 28 January 2025).

833 See Chapter 2,2.1.

834 The payments use case can be broken down into domestic payments (i.e. person to-person transfers in the form of domestic remittances or for payment of goods and services within South Africa's borders) and regional or international remittances (i.e. person-to-person cross-border transfers). See IFWG Crypto Asset Working Group, " Position Paper on Crypto Assets",(2021),

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need for a degree of internet connectivity and an understanding of how to access and use the platforms.[835]

2.8 Conclusion

The chapter started with global Fintech insights showcasing the increased focus and activity in several countries and the work that the regulators are doing in those countries to progress their regulatory frameworks. It is clear that regulating crypto assets has become a priority matter on regulators' agendas worldwide, and that there is a need to align regulatory approaches. This is due to the quick rise in on-chain crypto asset activities, which means that more and more financial consumers have some exposure to crypto assets. Crypto assets are impacting the financial sector in profound ways. Regulators are trying to adapt and be agile to provide adequate protection measures while supporting innovation and exposing the benefits of crypto assets.

Even the most cautious are changing their policy views, acknowledging that crypto assets are becoming more prevalent in use, and a “wait and see” approach is no longer an appropriate policy response. The risks are materialising, as vividly seen from some of the 2022 failures. These include the Terra Luna[836] (LUNA)/Terra USD (UST) crash, which saw UST, a Stablecoin pegged to the U.S, dollar lose 99 % of its value, while LUNA lost 90% of its value over a matter of hours.[837] Another highly publicised

available online at https://www.resbank.co.za/content/dam/sarb/publications/media-releases/2021/Fintech/IFWG%20CAR%20WG%20Position%20paper%20on%20crypto%20assets.pdf (last accessed on 08 February 2025).

835 IMF, G20 Note Page 12.

836 Terra (LUNA) is a public blockchain protocol that emerged from Terra Classic. See Ledger,” Terra wallet” available online at https://www.ledger.com/coin/wallet/terra-luna-2 (last accessed on 29 September 2024).

837 Rebecca Oi “Top 10 Biggest Crypto Failures of 2022” (2022) available online at https://Fintechnews.sg/67859/crypto/top-10-biggest-crypto-failures-of-2022/ (last accessed on 22 July 2023).

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failure, as already mentioned, is the FTX exchange[838],whose collapse meant that all over the world, the names Sam Bankman-Fried[839] and Alameda Research[840] have become well known.[841] These implosions led to various lawsuits and the company's filing for bankruptcy. The world has noticed the risks and the fundamental changes that crypto assets, and the underlying technology bring to the financial sector. The benefits can be harnessed if regulatory frameworks and coordination can appropriately contain the risks.

In this chapter, it is evident from the exposition of the publications and recommendations from the international standard-setting bodies that a major focus is the comprehensive and effective regulation of crypto assets. Furthermore, jurisdictions domestically, regionally, and internationally should coordinate and cooperate with each other to seek alignment of approaches. Another critical factor is the need to share information and lean on expert resources and experience between the regulators. As can be seen from the detail in this chapter, certain key elements that should be incorporated into a regulatory framework echo the different publications that this chapter considered.

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838 In early 2022, it had more than a million users, with a US$32 billion valuation. See Brad Goodall, Finextra Research, “Add Value or Go Home - why payments delivering consumer value and helping merchants foster loyalty”,(2023), available online at https://www.finextra.com/blogposting/23612/add-value-or-go-home---why-payments-delivering-consumer-value-and-helping-merchants-foster-loyalty (last accessed on 06 October 2024).

839 Sam Bankman-Fried was the co-founder and former CEO of FTX and its sister trading firm, Alameda Research. A federal jury found Sam Bankman-Fried, founder of failed cryptocurrency company FTX, guilty on seven counts of fraud and conspiracy. See Forbes – Finance, 2024, available online at https://www.forbes.com/profile/sam-bankman-fried/ (last accessed on 22 July 2024).

840 Alameda Research was Sam Bankman-Fried's first company. He built FTX partly to help Alameda's trading business. See New York Times,”How FTX’s Sister Firm Brought the Crypto Exchange Down”(2022). Available online at https://www.nytimes.com/2022/11/18/business/ftx-alameda-ties.html (last accessed on 28 January 2025).

841 Alameda Research was a cryptocurrency trading firm, co-founded in September 2017 by Sam Bankman-Fried and Tara Mac Aulay. In November 2022, FTX, Alameda's sister cryptocurrency exchange, experienced a solvency crisis, and both FTX and Alameda filed for Chapter 11 bankruptcy. See Forbes - 2022, “Almeida Research”,2022 available online at https://www.forbes.com/profile/alameda-research/ (last accessed on 22 July 2023).

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It is submitted that the steer from the international standard-setting bodies provides a fertile foundation for African regulators to cooperate, coordinate, and align regulatory frameworks to such an extent that the requirements imposed are clear and consistent across the different countries. This gives Fintechs transparency as to what needs to be complied with and supports strategies by the Fintech players to invest and grow in African countries. The members of the international standard-setting bodies will need to comply with the recommendations that are made by the international standard setters, which prompts action in a collective manner in jurisdictions that have been cautious to act and provide some measures to protect consumers against the risks that may be posed by crypto assets. Again, this opens up a foundation for collective discussions on how to best implement the recommendations emanating from the international standard-setting bodies. The publications that were detailed in this chapter highlighted that alignment is possible and indeed required because the risks and challenges are the same in different jurisdictions and also due to the nature of the risks in crypto assets that are not contained within a country's borders since the nature of these technologies and products is borderless.

Certain key elements of effective regulatory frameworks were highlighted in this chapter, which aimed to infuse the reader with the understanding that if these elements are implemented across different African countries, one should avoid duplication of costs and regulatory hurdles by working in silos. Cooperation and coordination can protrude beyond mere supervisory colleges or elementary information sharing into shared regulatory frameworks and supervisory efforts. Collectively, regulators can be more effective and more proactive in their responses as risks are monitored across the borders of the countries.

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CHAPTER 3

ANALYSIS OF THE REGULATORY LANDSCAPE OF THE COMPARATOR AFRICAN COUNTRIES

3.1 Introduction

3.2 South – Africa

3.2.1 Local crypto asset landscape

3.2.2 Local regulatory and supervisory approach and landscape

3.2.3 FAIS Declaration on crypto assets as a financial product

3.2.4 Financial Markets Act 19 of 2012 (FMA)

3.2.5 Collective Investment Schemes Control Act 45 of 2002(CISCA)

3.3 Mauritius

3.3.1 Local crypto asset landscape

3.3.2 Local regulatory and supervisory approach and landscape

3.3.3 Virtual Asset and Initial Token Offering Services Act 2021(VAITOS)

3.3.4 FSC Rules made by the Financial Services Commission under sections 31 and 52 of the Virtual Asset and Initial Token Offerings Services Act

3.3.5 FSC Rules made by the Financial Services Commission under sections 31 and 52 of the Virtual Asset and Initial Token Offerings Services Act

3.3.6 Virtual Asset and Initial Token Offerings Services (Consumer Disclosure) Rules 2022

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3.3.7 Virtual Asset and Initial Token Offerings Services (Custody of Consumer Assets) Rules 2022 (Custody of Consumer Assets Rules)

3.3.8 Virtual Asset and Initial Token Offerings Services (Publication of Advertisements) Rules 2022 (Publication of Advertisement Rules)

3.3.9 Virtual Asset and Initial Token Offerings Services (Risk Management) Rules 2022 (Risk Management Rules)

3.3.10 Guidance Note - Regulatory Treatment of Non-Fungible Tokens Issued under section 7(1)(a) of the Financial Services Act

3.4 Kenya

3.4.1 Local crypto asset landscape

3.4.2 Local regulatory and supervisory approach and landscape

3.5 Namibia

3.5.1 Local crypto asset landscape

3.5.2 Local regulatory and supervisory approach and landscape

3.5.3 The Namibia Virtual Assets Act 2023

3.5.4 Stock Exchanges Control Act 1 of 1985 (NAM)

3.6 Zambia

3.6.1 Local crypto asset landscape

3.6.2 Local regulatory and supervisory approach and landscape

3.7 Conclusion

3.1 Introduction

Sub-Saharan Africa, where the comparator countries for this research are located, is home to one billion people, half of whom will be under 25 by 2050.[842] It is a unique and

[842] WorldBankGroup, "The World Bank in Africa – Overview", (2024), Paragraph 1, available online at

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diverse continent with much potential in the 1.2-billion-person market.[843] The IMF projected growth in sub-Saharan Africa at 3.6% in 2024, unchanged from 2023, with a modest increase to 4.2% in 2025. This growth rate is insufficient to significantly reduce poverty or address development challenges.[844] Some of the serious concerns are the rising energy and food prices that impact this region harshly, especially the vulnerable groups within these regions. Also, public debt and inflation are seen at levels that were not witnessed for decades. The short-term prospects are highly uncertain because of the many dependencies on the global economy. The challenge in these regions provides an arduous foundation for regional policymakers to try and implement policies that can support high-quality growth to attain prosperity. Moving away from *'the edge'* the African countries currently face, requires strong growth in the medium term as one of the competing demands that policymakers face. Sustainable, strong growth is essential to eliminate existing imbalances, and a growing tax base is inextricably linked with a growing economy.[845] It is submitted that attracting Fintechs can be one component of this push toward economic growth, as local presence will mean increased employment and increased corporate and individual tax revenue.

At the end of 2022, approximately one-quarter of African countries in Sub-Saharan Africa had started to formally regulate and supervise crypto assets within their financial sector regulatory frameworks.[846] The activity level of crypto assets in Africa has risen sharply since 2020. According to available statistics, the crypto assets market grew by over 1200% during this period, driven by retail investors.[847] According to *Ernst & Young*

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https://www.worldbank.org/en/region/afr/overview (last accessed on 02 February 2025).

843 WorldBankGroup, "The World Bank in Africa – Overview", (2024), Paragraph 1, available online at https://www.worldbank.org/en/region/afr/overview (last accessed on 02 February 2025).

844 International Monetary Fund, "IMF's Sub-Saharan Africa Regional Economic Outlook: Reform Amid Great Expectations",(2024) available online at https://www.imf.org/en/News/Articles/2024/10/25/pr-24395-ssa-imf-ssa-reo-reform-amid-great-expectations (last accessed on 02 February 2025).

845 International Monetary Fund "Regional Economic Outlook – Sub Saharan Africa: Living on the edge" (2022) available online at: https://www.imf.org/en/Publications/REO/SSA (last accessed on 04 August 2023).

846 International Monetary Fund "Regional Economic Outlook – Sub Saharan Africa: Living on the edge" (2022) available online at: https://www.imf.org/en/Publications/REO/SSA (last accessed on 04 August 2023).

847 Chain analysis" 2021 Geography of crypto currency"(2021) available online at

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(2019). 'Fintechs in Sub-Saharan Africa: an Overview of Market Developments and Investment Opportunities'. London: Ernst & Young Global, the Fintech sector in Sub-Saharan Africa in 2019, comprised more than 260 active companies. These active companies are split into local (80%) and international (20%) players.[848] It is important to note that Africa is one of the fastest-growing crypto asset markets in the world.[849] Global pressures, for instance, the strengthening of the United States dollar and local increases in inflation rates, have driven the usage of crypto assets as a store of value and hedge against inflation as an alternative to local currencies. It is submitted that crypto assets in Africa have a number of tangible uses within the African setting, and these remain useable even in turbulent and uncertain economic situations.

The technology and use cases of crypto assets can assist in addressing some of the topical economic concerns in Africa. For instance, crypto assets can help reduce the financing gaps for micro, small, and medium-sized enterprises (MSME), facilitate the transfer of remittances, and accelerate affordable mortgages. Pezesha[850] is one example of mortgages being facilitated by crypto assets in Kenya. Pezesha focuses on MSME credit scoring and loan origination. In essence, it facilitates transferring USD Stablecoin from foreign lenders to be converted into Kenyan shillings to bridge the

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https://blog.chainalysis.com/reports/africas-grassroots-cryptocurrency-adoption/?utm_source=MyBroadband&utm_medium=Article&utm_term=August+2023 (last accessed on 04 August 2023).

848 Ernest & Young " Africa's Fintech landscape has grown at an annual rate of approximately 24% over the last 10 years" available online at https://www.ey.com/en_za/news/2019/01/africa-Fintech-landscape-has-grown-at-an-annual-rate-of-approximately-24-over-the-last-10-years (last accessed on 25 September 2025).

849 IMF Blog,H Fuje, S Quayyum, T Molosiwa,"Africa's Growing Crypto Market Needs Better Regulations",(2022), available online at https://www.imf.org/en/Blogs/Articles/2022/11/22/africas-growing-crypto-market-needs-better-regulations#:~:text=Africa%20is%20one%20of%20the,of%20users%20in%20the%20region (last accessed on 02 February 2025).

850 Pezesha Africa Limited ("Pezesha") is a capital enablement lending infrastructure platform in sub-Saharan Africa focused on increasing access to finance for retail trade MSMEs by integrating financial services into existing supply chain verticals. See DFC," Public Information Summary Pezesha Africa Limited" available online at https://www.dfc.gov/sites/default/files/media/documents/9000116407.pdf (last accessed on 02 February 2025).

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capital divide between MSMEs and investors, further employing alternative credit scoring as leverage. [851]

It is submitted that regional integration of regulatory frameworks could serve as a critical tool to unlock the potential benefits that Fintechs, through blockchain technology[852] and crypto assets, can unlock for African economies. Although there has been some development in terms of legislation, a lot of uncertainties remain regarding crypto assets across the African region. The policy approaches by governments and regulators regarding crypto assets vary from country to country. They are controversial and ever-changing under the context of the growing digitalisation trend accelerated by the pandemic.[853] In 2022, the United Nations Development Programme reported that nearly 70% of the countries in the Sub-Saharan Africa region take a neutral or uncertain policy approach to crypto assets, i.e., no explicit position on accepting or rejecting cryptocurrencies and no regulation in place. However, some governments and regulators, for example, in South Africa and Mauritius, have shown increasing interest and positive stances toward crypto assets.[854]

In the Sub-Saharan African region, many countries have taken some steps, for instance, in the form of issuing public notices advising consumers to exercise caution regarding the risks associated with crypto assets and their different use cases.[855]

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851 ICT Works, "The Cryptocurrency Opportunity for African Digital Financial Services", (2022), available online at https://www.ictworks.org/cryptocurrency-opportunity-african-digital-financial-services/#:~:text=Similarly%2C%20Pezesha%2C%20a%20Kenyan%20fintech,Kenya%20and%20344%20in%20Ghana; Website available online at https://pezesha.com/ (last accessed on 04 August 2023).

852 See Chapter 1,1.1.

853 Ankun Liu, Orria Goni and Aiaze Mitha "Crypto currency in Africa – Alternative Opportunities for Advancing the Sustainable Development Goals?" (2022) available online at https://www.undp.org/sites/g/files/zskgke326/files/2023-01/UNDP-DFS-Cryptocurrency-in-Africa.pdf(last accessed on 04 August 2023).

854 Page 14, United Nations Development Programme, A Liu, O Goni and A Mitha, "Cryptocurrency in Africa", (2022) available online at https://www.undp.org/sites/g/files/zskgke326/files/2023-01/UNDP-DFS-Cryptocurrency-in-Africa_0.pdf (last accessed on 10 April 2025).

855 Page 16, United Nations Development Programme.

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However, it is submitted that this is far from adequate to comprehensively and thoroughly address the unique dangers or similar risks that come with using crypto assets in a new way, especially in countries without the foundation of established risk-based crypto asset regulatory and supervisory frameworks. Despite the regulatory uncertainty in some of the African countries and the differing approaches, the crypto asset market is nevertheless showing strong growth trends.[856]

Notably, the Financial Stability Board set up six regional consultative groups in 2011, including representatives from a wide range of emerging markets and developing economies. These consultative groups reach out to about 70 regulators in different countries to discuss policies, while the regulators develop these policies locally and further discuss the effects of the policies that are being implemented.[857] Particularly relevant to this research is the Regional Consultative Group For Sub Saharan Africa (RCG-SSA) comprised of the following: Angola; Botswana; Ghana, Kenya; Mauritius; Namibia; Nigeria; South Africa; Tanzania; Uganda; Zambia; Bank of Central African States (Banque des États de l'Afrique Centrale and Central Bank of West African States.[858] The RCG-SSA met in Botswana at the end of May 2023 to discuss global and regional macroeconomic and financial market developments and their implications for financial stability. One of the matters that was discussed during this session was the finalisation of the *FSB's High-level Recommendations for the Regulation, Supervision and Oversight of Crypto-asset Activities and Markets: Final report*. The members of this meeting discussed vulnerabilities arising from crypto assets and agreed on the importance of an effective global regulatory framework for crypto assets.[859]

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856 The Business and Management Review, Volume 15 Number 1, M Adelowotan," Exploring the development of regulatory framework for crypto assets in South Africa", (2024), Page 2, available online at https://cberuk.com/cdn/conference_proceedings/2024-05-19-18-57-54-PM.pdf (last accessed on 02 February 2024).

857 FSB, "Regional Consultative Groups (RCGs) - Financial Stability Board", available online at https://www.fsb.org/about/rcgs/#:~:text=The%20FSB%20established%20in%202011,global%20nature%20of%20the%20financial (last accessed on 10 April 2025).

858 Bank of Botswana "Regional Consultative Group For Sub Saharan Africa" available online at https://www.bankofbotswana.bw/content/regional-consultative-group-sub-saharan-africa-rcg-ssa (last accessed on 04 August 2023).

859 Financial Stability Board press release "FSB Sub-Saharan Africa group discusses recent market

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Following the finalisation of the two sets of policy recommendations with respect to crypto assets from the FSB, the FSB RCG SSA met on December 6, 2024, in Cape Town. This meeting began with an overview of the FSB work programme for 2025[860], emphasising its contributions to South Africa's G20 Presidency. A significant focus for 2025 will be on implementing the F*SB's High-level Recommendations for the Regulation, Supervision and Oversight of Crypto-asset Activities and Markets: Final report*, *FSB High-level Recommendations for the Regulation, Supervision and Oversight of Global Stablecoin Arrangements: Final report*, and enhancing global cross-border payments. Participants discussed global and regional financial system vulnerabilities, noting persistent issues like high debt levels in governments, corporations, and households. They also highlighted the challenges regional authorities face in monitoring risks from non-bank financial intermediation and looked forward to the FSB *Global Monitoring Report on Non-Bank Financial Intermediation for 2024*.[861]

This chapter examines firstly the crypto asset activity in each country. After that, it sets out the government divisions and the financial sector regulators that make policy decisions and regulate and supervise crypto assets regarding conduct and prudential risks. The chapter will further consider policy stances and regulatory frameworks applicable in each comparator country, finalised legislation, and those under development. The chapter, in particular, aims to highlight the principal risks and the similarities in the requirements imposed to mitigate the identified risks in each country.

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turmoil, spill-over effects and crisis preparedness in the region"(2023) available online at https://www.fsb.org/wp-content/uploads/R010623.pdf (last accessed on 04 August 2023).

860 FSB, Work Programme for 2025, available online at https://www.fsb.org/2025/01/fsb-work-programme-for-2025/ (last accessed on 10 April 2025).

861 FSB, "FSB Sub-Saharan Africa Group discusses financial scams and fraud prevention, and crisis preparedness and resolution", (2024), available online at https://www.fsb.org/2024/12/fsb-sub-saharan-africa-group-discusses-financial-scams-and-fraud-prevention-and-crisis-preparedness-and-resolution/ (last accessed on 02 February 2025).

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3.2 South Africa

3.2.1 Local crypto asset landscape

South African consumers are increasingly engaging in financial activities involving crypto assets, including investing in derivative instruments with crypto as the underlying asset, especially given the proliferation of online trading platforms. Based on an *Information Request*[862] published by the Financial Sector Conduct Authority (FSCA)[863] in the form of *FSCA Information Request 7 of 2022 (FAIS)*, it appears that most Crypto Asset Financial Services Providers (FSPs) in South Africa provide financial services by using unbacked crypto assets[864], followed by Stablecoins and security tokens. It was also observed that crypto assets-related business models are diverse.[865]

From the *Information Request* that the FSCA published, 47 of the Crypto Asset FSPs or CASPS[866] responded substantively. Based on these submissions, it was seen that

[862] FSCA Information Request 7 of 2022 (FAIS) requesting Crypto Asset FSPs to furnish the authority with information related to their business practices.

[863] The Financial Sector Conduct Authority (FSCA) is the market conduct regulator for financial institutions in South Africa, established through statute. It is responsible for overseeing the conduct of financial institutions, ensuring fair treatment of clients, promoting financial literacy, and supporting the integrity and stability of the financial system. The FSCA replaced the Financial Services Board (FSB) in South Africa. See FSCA, "About Us", available online at https://www.fsca.co.za/Pages/Vision-and-Mission.aspx (last accessed on 11 April 2025).

[864] See Chapter 1, 1.8.1.

[865] FSCA Crypto Assets Market Study – South Africa,(2023), Page 4, available online at https://www.fsca.co.za/Documents/Crypto%20Market%20Study.pdf (last accessed on 02 February 2025).

[866] FAIS Notice 90 of 2022, Defines "Crypto Asset FSP" to mean a person that is licenced under section 8 of the Act to render a financial service in relation to crypto assets. For the purpose of the section on the South African legislation CASPS will be used instead of Crypto Asset FSPs, as they carry the same meaning. Available online at https://www.fsca.co.za/notices/forms/allitems.aspx?Paged=TRUE&p_SortBehavior=0&p_Created=20221006%2010%3A31%3A16&p_ID=2421&PageFirstRow=481&&View=%7B46386E88-2C88-4172-996C-4754CE739CC8%7D (last accessed on 11 April 2025).

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most CASPS in South Africa provide financial services by using unbacked crypto assets[867] (60%), followed by Stablecoins (26%) such as USD Coin[868] and Binance Coin[869]. This is then followed by security tokens (7%) and NFT tokens (4%). From the submissions, 22% of the Fintechs operate an exchange, followed by providing advice (16%) and facilitating foreign currency conversion (14%). From a revenue perspective, 80% of the CASPS stated that their company's total revenue from crypto asset activities, as per the most recent annual financial statements, was less than ZAR50 million; 5% had total revenue from crypto asset activities closer to ZAR200 million.[870]

Considering some of the available statistics, it was estimated that in 2022, over 5.8 million people, 9.44% of South Africa's total population, owned crypto assets.[871] According to the Tripple A report titled "*South Africa | 2022 - Cryptocurrency adoption in South Africa in 2022*"[872], a large number of the crypto asset owners in South Africa, around 77%, have an annual income of less than R450,000.00 per annum, and the majority are between 18 and 44 years of age. Further to this, the Tripple-A report suggests that crypto asset owners are educated, holding a bachelor's degree or higher as a minimum academic qualification. From the information available in the Tripple-A report, it seems that the crypto asset owners in South Africa are exploring different use

867 See Chapter 1, 1.8.1.

868 USD Coin is a digital Stablecoin pegged to the United States dollar. See Luno Helpcenter, "What is USD Coin (USDC)?", available online at https://guide.luno.com/hc/en-gb/articles/11035556081693-What-is-USD-Coin-USDC (last accessed on 06 October 2024).

869 Binance Coin (BNB) is a cryptocurrency that can be used to trade and pay fees on the Binance cryptocurrency exchange. See Corporate Finance Institute, "What is Binance Coin", available online at https://corporatefinanceinstitute.com/resources/cryptocurrency/binance-coin bnb/#:~:text=Start%20Free,What%20is%20Binance%20Coin%20(BNB)%3F,1.4%20million%20transactions%20per%20second. (last accessed on 02 February 2025).

870 FSCA Information Request 7 of 2022 (FAIS)(2022) available online at https://www.fsca.co.za/Regulatory%20Frameworks/Pages/Notices.aspx (last accessed on 06 August 2023).

871 Tripple A "Cryptocurrency information about South Africa" (2022) https://www.triple-a.io/cryptocurrency-ownership-data/cryptocurrency-ownership-south-africa-2022 (last accessed on 06 August 2023).

872 Tripple A "Cryptocurrency information about South Africa" (2022) https://www.triple-a.io/cryptocurrency-ownership-data/cryptocurrency-ownership-south-africa-2022 (last accessed on 06 August 2023).

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cases, for instance, payment on everyday purchases, and that the majority are looking to increase their holdings in the future. Looking at the types of crypto asset tokens, not surprisingly, a large majority of the holdings, estimated at 79%, are with Bitcoin, followed by Ethereum and also Tether and Ripple (XRP).[873] The Triple-A report also indicates that the projections onward show a positive outlook, with aggressive growth projected over the coming years.[874]

According to the same Tripple-A report, revenue in the South African market showed an expected annual growth rate (CAGR 2023-2027) of 12.90%, resulting in a projected total amount of US$372.40m by 2027. In the crypto asset market, users are expected to be 15,020.00k by 2027.[875] The analyst in this research from Statista expressed the following opinions, amongst others:

> "The digital assets market is expected to continue growing in the coming years, driven by the increasing adoption of blockchain technology, interest in decentralized finance, and the increasing popularity of non-fungible tokens. Additionally, the development of new use cases for digital assets, such as in the gaming industry and for digital identity verification, is likely to further drive growth. However, as with any emerging market, there are risks and challenges, such as regulatory uncertainty and market volatility."

As of 10 December 2024, the Financial Sector Conduct Authority licenced approximately 248 CASPS locally as required under section 7(1) of the *Financial Advisory and Intermediary Services (FAIS Act) Act, No. 37 of 2002*, and received in

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873 Tripple A "Cryptocurrency information about South Africa" (2022) https://www.triple-a.io/cryptocurrency-ownership-data/cryptocurrency-ownership-south-africa-2022 (last accessed on 06 August 2023).

874 Ripple is a real-time gross settlement system, currency exchange and remittance network that is open to financial institutions worldwide and was created by Ripple Labs Inc., a US-based technology company.

875 Meredith Alda – Statista "Digital-Assets South Africa (2023) available online at https://www.statista.com/outlook/dmo/Fintech/digital-assets/south-africa (last accessed on 06 August 2023).

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total around 420 applications for such licences.[876] The licencing process for CASPS commenced on 1 June 2023. Existing institutions that were rendering financial services relating to crypto assets were required to submit their licence applications by 30 November 2023. The FSCA continues to receive and consider applications from new and existing CASPS.[877] Also, as of 10 December 2024, the FSCA has declined nine licence applications. The applications were declined primarily because the applicants failed to submit pertinent information despite the numerous requests by the licencing department of the FSCA, which led to insufficient applications to meet the requirements that were imposed.[878] Furthermore, the applications that were denied failed to meet the applicable fit and proper requirements[879] under the *FAIS Act*.[880]

Further to the aforesaid, there was also a total of one hundred and six licence applications that the applicants voluntarily withdrew. These applicants have not been able to meet the fit and proper requirements, in particular, the competency (i.e., they have been unable or failed to demonstrate appropriate crypto asset-related experience[881] and operational ability[882] (i.e., lack of key policies, clear and

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876 FSCA, "FSCA update on licenced crypto asset service providers", available online at https://www.fsca.co.za/News%20Documents/FSCA%20Press%20Release%20-%20FSCA%20update%20on%20Crypto%20Asset%20Service%20Providers%2012%20December%202024.pdf?ref=mariblock.com (last accessed on 11 April 2025).

877 FSCA Press Release, "FSCA confirms list of currently approved crypto asset service providers"(2024) available online at https://www.fsca.co.za/News%20Documents/FSCA%20Press%20Release%20-%20FSCA%20update%20on%20Crypto%20Asset%20Service%20Providers%2012%20December%202024.pdf (last accessed on 05 February 2025).

878 FSCA update on licenced crypto asset service providers, Page 1.

879 Determination of fit and proper requirements for financial services providers, 2017 - BN 194/2017, available online at https://discover.sabinet.co.za/document/1167100 (last accessed on 05 February 2025).

880 FSCA Press Release, "FSCA confirms list of currently approved crypto asset service providers"(2024) available online at https://www.fsca.co.za/News%20Documents/FSCA%20Press%20Release%20-%20FSCA%20update%20on%20Crypto%20Asset%20Service%20Providers%2012%20December%202024.pdf (last accessed on 05 February 2025).

881 Determination of fit and proper requirements for financial services providers, 2017 - BN 194/2017, Chapter 3, Part 2, Sections 15 – 21."15. General experience requirement

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(1) An FSP and representative must have adequate and appropriate experience in the rendering of a particular financial service in respect of a-

(a) particular financial product; and

(b) particular category of FSP,

(2) A key individual must have adequate and appropriate experience to manage or oversee the rendering of a particular financial service in respect of a particular category of FSP for which it is approved or in respect of which approval is sought.

16. Lapsing of experience

(1) The experience gained by an FSP or a representative lapse when the FSP or representative has not rendered the particular financial service in respect of a particular financial product relevant to a particular category of FSP for a period of five consecutive years.

(2) The experience gained by a key individual lapses when the key individual has not managed or overseen the rendering of a particular financial service in respect of a particular category of FSP for a period of five consecutive years.

17. Category I FSPs

(1) A Category I FSP and its representatives must in relation to the financial products listed in Column A of Table 1 in Annexure One have the minimum experience listed in column B and/or C of that Table in respect of the particular financial services for which it is authorised or appointed or in respect of which authorisation or appointment is sought.

(2) A key individual of a Category I FSP must have at least one year's experience in the management or oversight of

the rendering of a particular financial service by a Category I FSP.

18. Category II FSPs

(1) A Category II FSP and its representative must in relation to a financial product listed in Column A of Table 2 in Annexure One have the minimum experience in the rendering of Category II financial services in respect of the financial products listed in column B of the Table.

(2) A key individual of a Category II FSP must have at least one year's experience in the management or oversight of category II financial services.

19. Category IIA FSPs

(1) A Category IIA FSP and its representatives must have at least three years' experience in the rendering of category IIA financial services.

(2) A key individual of a Category IIA FSP must have at least one year's experience in the management or oversight of category IIA financial services.

20. Category III FSPs

(1) A Category III FSP and its representatives must have at least three years' experience in the rendering of category III financial services.

(2) A key individual of a Category III FSP must have at least one year's experience in the management or oversight of category III financial services.

21. Category IV FSPs

(1) A Category IV FSP and its representatives must have at least one year's experience in the

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comprehensive business plans, etc.) and therefore decided to withdraw their applications.[883]

Within the South African borders, several large crypto exchanges have a presence locally and provide trading and also custody services to South African consumers with an appetite for crypto assets. One such example is Binance, the world's biggest crypto asset exchange, which established a presence here and offers an extensive suite of cryptocurrency-related features, including general trading, derivatives, futures, financing, and Non-Fungible Tokens (NFTs). Binance has over 120 million users engaging on its platform and offers over 350 types of crypto assets.[884] Luno, considered the most recognised crypto asset exchange locally, expanded to nine offices in eight countries.[885] Its consumer base is estimated at approximately 10 million consumers, and it offers eight types of crypto assets and 51 trading pairs. Ovex is another prominent player in the South African crypto asset market and specialises in over-the-counter (OTC) trading of open exchange order books[886], which is particularly suited to institutions and high-net-worth individuals who want to make high-volume trades. OVEX has a presence in multiple African jurisdictions, including Nigeria, Ghana,

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rendering of category IV financial services.

(2) A key individual of a Category IV FSP must have at least one year's experience in the management or oversight of category IV financial services" (last accessed on 05 February 2025).

882 Determination of fit and proper requirements for financial services providers, 2017 - BN 194/2017, Chapter 5, Sections 36 – 42. (last accessed on 05 February 2025).

883 FSCA Press release, 12 December 2024, Page 1(last accessed on 05 February 2025).

884 Reuters, T Wilson, A Berwick and E Howcroft,"Tom Wilson, Angus Berwick and Elizabeth Howcroft",(2022), available online at https://www.reuters.com/technology/binances-books-are-black-box-filings-show-crypto-giant-tries-rally-confidence-2022-12-19/ (last accessed on 06 February 2025).

885 Mybroadband "Top cryptocurrency exchanges in South Africa"(2023) available online at https://mybroadband.co.za/news/cryptocurrency/483259-top-cryptocurrency-exchanges-in-south-africa.html (last accessed on 07 August 2023).

886 An order book is a real-time, dynamic list of buy and sell orders on a cryptocurrency exchange. See NadCab Labs,"What's a Crypto Exchange Order Book?" available online at https://www.nadcab.com/blog/whats-a-crypto-exchange-order-book (last accessed on 06 February 2025).

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Botswana, Mozambique, and Senegal. The digital asset trading platform does business for around ZAR5.5 billion in monthly volume.[887]

Revix is a significant participant in providing local consumers with investment bundles, which combine allocations of multiple cryptocurrencies in the local market. It also offers a USD Savings Vault that allows users to deposit USD Stablecoins and earn annualised interest. Revix raised ZAR58.5 million (US$4 million) in funding to help it launch a presence within the South African market.[888] Lastly, VALR, the largest crypto exchange headquartered in South Africa, allows consumers to buy, sell, transfer, and store cryptocurrency and other digital assets. As of December 2022, VALR reported having over 350,000 individual consumers and 800 corporate consumers in South Africa.[889] As of April 2024, VALR had over 600,000 retail consumers and over 1,000 institutional consumers across South Africa and globally, of which about 75% of its consumers are from South Africa.[890]

3.2.2 Local regulatory and supervisory approach and landscape

Though still nascent, Fintech development in South Africa has already been catalysed by consumers and businesses seeking novel financial products and services to store value, make payments, save, borrow, and insure against daily risks. To date, the South African government has embraced a pro-innovation stance, working across agencies to

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887 ITWeb "OVEX launches 100m trading rewards pool for whales, closes its Automated Arbitrage Service" (2022) available online at https://www.itweb.co.za/content/KzQenqjVGzaqZd2r (last accessed on 07 August 2023).

888 DisruptAfrica,T Jackson, "SA crypto startup Revix raises $4m to launch mobile app, expand to EU", (2021), available online at https://disruptafrica.com/2021/04/15/sa-crypto-startup-revix-raises-4m-to-launch-mobile-app-expand-to-eu/ (last accessed on 06 February 2025).

889 Mybroadband "Top cryptocurrency exchanges in South Africa" (2023) available online at https://mybroadband.co.za/news/cryptocurrency/483259-top-cryptocurrency-exchanges-in-south-africa.html (last accessed on 07 August 2023).

890 Reuters, "South African cryptocurrency exchange VALR targets global expansion", (2024), available online at https://www.reuters.com/business/finance/south-african-cryptocurrency-exchange-valr-targets-global-expansion-2024-04-30/ (last accessed on 11 April 2025).

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develop harmonised approaches to Fintech and clarifying the regulatory stance on emerging technologies and products that benefit all South Africans.[891] South Africa prescribes the Twin Peak model of regulation[892] as the chosen architecture to regulate and supervise the financial sector in South Africa. This approach to financial regulation separates prudential and conduct regulators. A Twin Peaks model allows for a more dedicated focus on market conduct issues informed by the Treating Consumer Fairly (TCF) framework.[893] In June 2011, the Cabinet approved the move towards the Twin Peaks model. The *Financial Sector Regulation (FSR) Act, 2017 (Act No.9 of 2017)*[894]*,* being the framework law that sets out the South African Twin Peaks model, was signed into law on 21 August 2017, marking an important milestone on the journey toward a safer and fairer financial system that can serve all citizens. The *FSR Act* brings about three significant changes to the regulation of the financial sector.[895]

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[891] National Treasury "An inclusive financial sector for all" (2023) available online at https://www.treasury.gov.za/comm_media/press/2023/2023112701%20An%20Inclusive%20Financial%20Sector%20for%20all%202023.pdf (last accessed on 06 December 2023).

[892] A twin peak model of regulation comprises two peak regulators, one whose objective is financial system stability, the other whose objective is market conduct and consumer protection. See Schmulow, Dr Andy. (2015). "Twin Peaks: A Theoretical Analysis". *SSRN Electronic Journal*. 10.2139/ssrn.2625331. (last accessed on 22 March 2025).

[893] Financial Sector Conduct Authority "The Philosophy behind Twin Peaks" available online at https://www.fsca.co.za/TPNL/1/FSB/thephilosophy.html;Treating Consumers Fairly (TCF) is an outcomes based regulatory and supervisory approach designed to ensure that regulated financial institutions deliver specific, clearly set out fairness outcomes for financial consumers. See FSCA," Treating Consumers Fairly", available online at https://www.fsca.co.za/Regulatory%20Frameworks/Pages/Treating-consumers-fairly.aspx#:~:text=Treating%20Consumers%20Fairly%20(TCF)%20is,fairness%20outcomes%20for%20financial%20consumers. (last accessed on 07 August 2023).

[894] Financial Sector Regulation (FSR) Act, 2017 (Act No.9 of 2017), available online at https://www.gov.za/documents/financial-sector-regulation-act-9-2017-english-sepedi-22-aug-2017-0000 (last accessed on 22 March 2025).

[895] National Treasury "Financial Sector Conduct Authority" available online at https://nationalgovernment.co.za/units/view/98/financial-sector-conduct-authority-fsca#:~:text=The%20FSCA's%20mandate%20is%20to,assist%20in%20maintaining%20financial%20stability (last accessed on 07 August 2023).

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Regarding market conduct, the Financial Sector Conduct Authority (FSCA) was established by the *FSR Act* to become a dedicated market conduct authority on 1 April 2018.[896] The FSCA's mandate is to enhance the efficiency and integrity of financial markets, promote fair consumer treatment by financial institutions, provide financial education and promote financial literacy, and assist in maintaining financial stability, also set out in the objectives under the *FSR Act*.[897]Therefore, the FSCA is the market conduct regulator of financial institutions that provide financial products and services and financial institutions licenced under financial sector laws, including banks, insurers, retirement funds and administrators, and market infrastructures.[898]

The other (twin) peak in the South African Twin Peak model, is the Prudential Authority (PA). The PA was established on 1 April 2018 as a juristic person within the South African Reserve Bank's administration and is the prudential regulator and supervisor of financial institutions and Financial Market Infrastructures (FMIs)[899] in South Africa.[900] The Prudential Authority (PA) was established under the auspices of the South African Reserve Bank (SARB) in April 2018 in accordance with section 32 of the *FSR Act*.[901] The objective of the PA is to maintain and enhance the safety and soundness of regulated financial institutions and support financial stability.[902]

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896 FSR Act, Section 56.

897 FSR Act, Section 57.

898 FSCA, "About Us" available online at https://www.fsca.co.za/Pages/About-Us.aspx#:~:text=The%20FSCA%20is%20the%20market,and%20administrators%2C%20and%20market%20infrastructures (last accessed on 06 February 2025).

899 Section 1(1) of the Financial Markets Act 19 of 2012 (FMA) defines a market infrastructure as a central counterparty, a central securities depository, a clearing house, an exchange and a trade repository.

900 FSR Act, Section 32.

901 South African Reserve Bank,"Prudential Authority Regulatory Strategy 2021-2024), Page 2, available online at https://www.resbank.co.za/content/dam/sarb/what-we-do/prudential-regulation/PA%20Regulatory%20and%20Supervisory%20Strategy%202021.pdf (last accessed on 06 February 2025).

902 FSR Act, Section 33.

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South Africa did not initially seek to formally regulate crypto assets (initially called virtual currencies). Some developments took place when, in 2014, the National Treasury[903] issued a user alert regarding virtual currencies.[904] The user alert was given due to the lack of any regulatory framework in respect of crypto assets and the increasing use of crypto assets by South African consumers. The user alert sets out some details as to what crypto assets are and the risks they can present. Following the user alert, the South African Reserve Bank, as the central bank responsible for currency issues, issued a position paper on crypto assets through its National Payment System Department (NPSD) in 2014 titled, *"Position Paper on Virtual Currencies".*[905] The *Position Paper on Virtual Currencies* reiterated that crypto assets at that stage remained unregulated by the South African Reserve Bank, highlighted the risks, and confirmed that the South African Reserve Bank would be monitoring the activities and developments in this area.[906] In 2016, the Intergovernmental Fintech Working Group (IFWG) was established with membership from the National Treasury, the Financial Sector Conduct Authority, the Prudential Authority, the South African Reserve Bank, and the Financial Intelligence Centre. Other regulators, for instance, the South African Revenue Service and the Competition Commission, joined in 2019. The IFWG assists the regulators and policymakers in understanding the local Fintech developments and promotes a common understanding.[907]

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903 The National Treasury is responsible for managing South Africa's national government finances. Supporting efficient and sustainable public financial management. See National Government of South Africa, "National Treasury – Overview", available online at https://nationalgovernment.co.za/units/view/27/national-treasury (last accessed on 22 March 2025).

904 At the time this statement was issued, the term 'virtual currencies' was used to refer to crypto assets.

905 South African Reserve Bank – National Payment System Department, "Position Paper on virtual currencies", (2014), Position Paper number 02/2014, available online at https://www.resbank.co.za/content/dam/sarb/what-we-do/financial-surveillance/general-public/Virtual%20Currencies%20Position%20Paper%20%20Final_02of2014.pdf (last accessed on 05 February 2025).

906 National Treasury "Position Paper on Crypto Assets" (2021) available online at https://www.treasury.gov.za/comm_media/press/2021/IFWG_CAR%20WG_Position%20paper%20on%20crypto%20assets_Final.pdf (last accessed on 08 August 2023).

907 IFWG," About Us," available online at https://www.ifwg.co.za/Pages/About-Us.aspx (last accessed on 05 February 2025)

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In 2018, the IFWG created a sub-working group specifically focusing on crypto assets called the Crypto Asset Working Group (CARWG). Through this sub-working group, a coherent and comprehensive policy stance was developed in respect of crypto assets. This work on the policy stance started with the publication of a consultation paper titled "*Consultation Paper on Policy Proposals for Crypto Assets"* (Consultation Paper) in 2019.[908] The *Consultation Paper* set out five use cases for crypto assets to apply as a basis of classification, looking at the economic function of the crypto assets. The *Consultation Paper* further analysed the risks and benefits associated with the use cases and highlighted the different regulatory approaches being used internationally. Lastly, the *Consultation Paper* presented policy proposals for consideration and comment to the participants and stakeholders. The use cases at that stage consisted of: (i) purchasing or selling; (ii) payments; (iii) capital raising through initial coin offerings; (iv) crypto derivatives and funds, and (v) market provisioning. In providing the policy proposals for consideration, the CARWG stipulated that the objective of creating a regulatory framework for crypto assets locally was to ensure the safety and efficiency of the financial system and financial institutions and provide adequate consumer and investor protection.[909]

Further to this, the objectives include, but are not limited to, supporting financial inclusion efforts and the advancement of technological innovation in a responsible and balanced manner. Certain principles were incorporated in the policy proposals to inform an approach on how South African financial regulators can regulate crypto assets effectively. These principles apply a risk-based approach to regulation[910], as far as possible, using a technology-neutral methodology and aiming to be unified, taking into consideration international steer.[911] The *Consultation Paper* proceeded to set out

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908 National Treasury "Consultation Paper on Crypto Assets" (2019) available online at https://www.treasury.gov.za/comm_media/press/2019/CAR%20WG%20Consultation%20paper%20on%20crypto%20assets_final.pdf (last accessed on 15 August 2023).

909 CARWG, Consultation Paper on Crypto Assets, Paragraph 6.1, P23.

910 Organization for Economic Co-operation and Development "OECD Regulatory Policy Outlook 2021 - Policy Brief Chapter 6: Risk-based regulation"(2021) available online at https://www.oecd.org/gov/regulatory-policy/chapter-six-risk-based-regulation.pdf (last accessed on 16 August 2023).

911 CARWG, Consultation Paper on Crypto Assets, P24.

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three phases, starting with a registration or licencing process of CASPS. The second phase envisaged reviewing existing regulatory frameworks followed by new regulatory requirements or amendments to existing regulations. The third phase constituted a review that assessed the effectiveness of the implemented regulatory actions.[912]

Following the IFWG's *Consultation paper*, a *Draft Position Paper*, built on that paper, was published on 14 April 2020.[913] The *Draft Position Paper* took into consideration the industry's feedback on the *Consultation Paper* by the IFWG, which helped shape the overall policy recommendations contained in the *Draft Position Paper*. The first of the overall recommendations in this *Draft Position Paper* recommends that certain activities and entities be classified as CASPS. These entities and activities include: crypto asset trading platforms; crypto asset vending machine providers; crypto asset token issuers; crypto asset fund or derivative service providers; crypto asset digital wallet providers[914]; and crypto asset safe custody providers. Briefly, the second recommendation speaks to amending Schedule One of the *Financial Intelligence Centre Act, 2001 (Act 38 of 2001) (FIC Act)* to add CASPS to the list of accountable institutions and, therefore, make all the provisions of the *FIC Act* applicable to them.[915] The third of the recommendations deals with supervisory powers regarding accountable institutions and recommends that the Financial Intelligence Centre assume this role, subject to later review.

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912 CARWG, Consultation Paper on Crypto Assets, P25.

913 IFWG "Position Paper on Crypto Assets" (2020) available online at https://www.fic.gov.za/Documents/IFWG%20Position%20Paper%20on%20Crypto%20Assets.pdf (last accessed on 17 August 2023).

914 See Chapter 2,2.3.2.

915 IFWG "Position Paper on Crypto Assets" (2020), Page 25; Following the publication of the position paper, the Schedules to the FIC Act were amended and entered into force on 19 December 2022, bringing among others, crypto asset service providers (CASPs) under the remit of the FIC Act by making them accountable institutions under item 22 of Schedule 1. See FIC," fic - consultation paper- On the implementation of the travel rule for those accountable institutions that engage in crypto asset transfers" available online at https://www.fic.gov.za/wp-content/uploads/2024/04/Consultation-paper-Draft-Directive-9-on-the-travel-rule-relating-to-crypto-asset-transfers.pdf (last accessed on 06 February 2025).

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Recommendation 4 advises that the CAR Working Group should persist in monitoring crypto assets and delineate the specific focus of a crypto assets monitoring program. This program should encompass several aspects: monitoring the overall market capitalisation of crypto assets to continuously assess market growth and systemic significance; tracking the number and consumer base of crypto asset trading platforms[916] domiciled in South Africa to profile each platform, including their functions, services, trading volumes, variety of traded assets, insurance, and governance mechanisms; observing crypto asset payment service providers and the number of merchants or retailers accepting crypto assets as payment within South Africa, regionally, and internationally; monitoring the volume of crypto assets transacted through vending machines; and overseeing the cross-border flows of crypto asset transactions.[917]

Regarding recommendation 5, the CAR IFWG is of the view that crypto assets should remain without legal tender status and not be deemed electronic money. Recommendation 6 deals with market infrastructures and recommends that crypto assets should not be allowed for money settlements and that a policy stance in respect of crypto assets in financial market infrastructures should be considered. Only when an appropriate regulatory framework is in place should crypto assets be able to interface with market structures. Recommendation 7 proposes that the Prudential Authority create appropriate supervisory and prudential frameworks for crypto assets, including reporting on direct exposures to crypto assets. The last of the overarching recommendations, recommendation 8, proposes that the Tax Policy Unit of the National Treasury and the South African Revenue Service[918] consider adopting a uniform definition of "crypto assets"[919] instead of referring to these digital

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916 See Chapter 1, 1.2.6.

917 IFWG "Position Paper on Crypto Assets" (2020), Page 26, (last accessed on 06 February 2025).

918 This recommendation aims to reduce the misalignment in the regulatory treatment of crypto assets. See IFWG "Position Paper on Crypto Assets" (2020), Page 54, (last accessed on 06 February 2025).

919 A crypto asset is a digital representation of value that is not issued by a central bank, but is traded, transferred and stored electronically by natural and legal persons for the purpose of payment, investment and other forms of utility, and applies cryptography techniques in the underlying technology. See SARS, "Crypto Assets & Tax", available online at

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representations of value as "cryptocurrency".[920] This is part of a drive for uniform taxonomy, driving common understanding. This *Draft Position Paper* again solicited comments from the industry, which helped inform the *Final Position Paper* on crypto assets.

The IFWG published the *Crypto Asset Regulatory Working Group Position Paper on Crypto Assets (Final Position Paper)* on 11 June 2021.[921] The *Final Position Paper* confirmed that crypto assets would be brought into the South African regulatory purview in a phased and structured manner and made twenty-five recommendations to inform this process. The eight overarching recommendations, as discussed above, were transposed from the *Draft Position Paper* to the *Final Position Paper*, and action points were allocated to the responsible authorities to further progress. From a conduct perspective, at the time of writing this thesis, an interim step was completed through the inclusion of financial services (advice and intermediary services) within the existing regulatory framework. This was achieved by declaring crypto assets as a "financial product" under section 1 of the *Financial Advisory and Intermediary Services Act 37 of 2002*.[922]

Furthermore, the Financial Intelligence Centre (FIC) on 29 November 2022 published Government Gazette 47596 to amend Schedule One of the *Financial Intelligence Centre (FIC) Act 38 of 2001*, meaning that CASPS must comply with the FIC requirements. As the nation's financial intelligence unit, the FIC fulfills a critical role

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https://www.sars.gov.za/individuals/crypto-assets-tax/#:~:text=A%20crypto%20asset%20is%20a,techniques%20in%20the%20underlying%20technology (last accessed on 11 April 2025).

920 IFWG "Position Paper on Crypto Assets" (2020), Page 54, (last accessed on 06 February 2025).

921 IFWG Crypto Asset Regulatory Working Group Position Paper on Crypto Assets,(2021), available online at https://www.treasury.gov.za/comm_media/press/2021/IFWG_CAR%20WG_Position%20paper%20on%20crypto%20assets_Final.pdf (last accessed on 06 February 2025).

922 Declaration of a crypto asset as a financial product under the Financial. Advisory and Intermediary Services Act, 2022. Available online at https://www.gov.za/sites/default/files/gcis_document/202210/47334gen1350.pdf (last accessed on 06 February 2025).

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within the national framework for AML, CFT, and Counter-Proliferation Financing (CPF). The *FIC Act, 2001 (Act 38 of 2001)*, authorises the FIC to implement measures aimed at identifying the proceeds of crime, combating money laundering, terrorist financing, and the financing of the proliferation of weapons of mass destruction.[923] In terms of reporting thresholds, section 28 of the *FIC Act* requires all accountable institutions[924] to report cash transactions above the prescribed limit to the FIC. Accountable institutions must report cash transactions of more than R49 999.99.[925]

The IFWG also published a *South Africa Fintech Vision* in 2020. This high-level Fintech Vision has been developed based on the results of the *Fintech Landscaping Assessment* conducted in 2019[926] and the recommendations put forward by that Report. The *Fintech Vision Report* reiterated that, the government had embraced a pro-innovation stance, working across agencies to develop harmonised approaches to Fintech. Further, also working together in clarifying the regulatory stance on emerging technologies and products, with the goal of benefiting the market and providing clarity on effectively managing the risks emanating from the use of these technologies. It is communicated in this report that the vision is "for South Africa to be a leading Fintech hub for Africa, promoting financial inclusion while spurring competition, digital skills, and economic growth through innovation". This *Fintech Vision Report* conveyed the six foundational elements of the Fintech Ecosystem in South Africa.[927]

The first of these foundational elements is infrastructure. In terms of this element, it is stated in the Report that South Africa has strong foundations and the potential to continue to grow and expand its digital economy. South Africa has a well-developed

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923 FIC, "About" available online at https://www.fic.gov.za/about/ (last accessed on 06 February 2025).

924 Defined in Schedule 1 of the Financial Intelligence Centre Act, 2001 (Act 38 of 2001). Available online at https://www.fic.gov.za/wp-content/uploads/2023/10/Financial-Intelligence-Centre-Act-2001-Act-38-of-2001.pdf (last accessed on 06 February 2025).

925 Financial Intelligence Centre Act, 2001 (Act 38 of 2001), Section 28.

926 Fintech Scoping in South Africa, (2019), available online at "https://www.fsca.co.za/Documents/Fintech%20Scoping%20in%20South%20Africa.pdf (last accessed on 06 October 2024).

927 South Africa Fintech Vision (2020), Page 5.

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National Payment System[928], and there is a strong identity ecosystem comprising digitised and fully integrated national identification documents and civil registration systems.[929] The second foundational element is regulation.[930] At the time of the *Fintech Vision Report*'s publication, it was stated that the creation of the IFWG and associated Innovation Hub, including the Regulatory Guidance Unit[931], Sandbox[932], and Innovation Accelerator[933], were important developments towards creating an enabling regulatory environment for Fintech.[934] Following the *Fintech Vision Report*, significant steps have been taken to bring CASPS within the regulatory framework.

These steps are expanded further below. The third of the foundational elements in the *Fintech Vision Report* is funding.[935] At the time of publication, the South African government had various financing and incentive programs for early-stage

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928 A national payment system (NPS) is a set of arrangements and infrastructures that enables consumers, businesses, and other entities to effect financial transactions, including making payments to one another and using the accounts and payment instruments issued by financial institutions. The NPS enables the payment for goods and services between South African corporates and citizens as well as their counterparties, both locally and abroad. See Reserve Bank," The National Payment System Framework and Strategy, Vision 2025", Foreword by Governor, Page 1, available online at https://www.resbank.co.za/content/dam/sarb/what-we-do/payments-and settlements/Vision%202025.pdf (last accessed on 06 February 2025).

929 South Africa Fintech Vision (2020), Page 6.

930 South Africa Fintech Vision (2020), Page 6.

931 The Regulatory Guidance Unit exists to help market innovators resolve specific questions regarding the policy landscape and regulatory requirements. See IFWG," IFWG Website Regulatory-Guidance-Unit" available online at https://www.ifwg.co.za/Pages/Regulatory-Guidance-Unit.aspx (last accessed on 06 February 2025).

932 The Regulatory Sandbox (RSB) provides market innovators with an opportunity to test new products and services that push the boundaries of existing legislation. See IFWG," The IFWG's Regulatory Sandbox", available online at https://www.ifwg.co.za/Pages/Regulatory-Sandbox.aspx (last accessed on 06 February 2025).

933 The Innovation Accelerator exists to provide a collaborative, exploratory environment for financial sector regulators to learn from and work with each other. See IFWG," IFWG Website Innovation-Accelerator", available online at https://www.ifwg.co.za/Pages/Innovation-Accelerator.aspx (last accessed on 06 February 2025).

934 South Africa Fintech Vision (2020), Page 6.

935 South Africa Fintech Vision (2020), Page 5.

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entrepreneurs, including venture capital, private equity, angel investors[936], and bank financing, but these were not always easily accessible by Fintechs. However, there was hope that the growing angel investor would prove to be an important development in improving funding required by early-stage Fintechs.

The fourth foundational element is the business support ecosystem of the Fintech ecosystem in South Africa. A business support ecosystem for Fintechs consists of interactions with regulators, global dialogue, and industry bodies.[937] At the time of publication, the support ecosystem started developing well with service providers such as innovation districts, incubators, accelerator programs, innovation hubs, co-working spaces, and event organisers and foundations. There were already close to sixty enablers in the ecosystem, including innovation hubs, co-working offices, and accelerators working across sectors.[938] The fifth foundational element in the *Fintech Vision Report*, is demand.[939] The demand came, amongst other things, from Fintechs, which have the opportunity to reach consumer and business segments that are not, or are inadequately served, by traditional financial service providers and provide tailored solutions to those who are. The sixth foundational element in this report is skills and their development.[940] At the time of publication, many science, technology, engineering, and mathematics students were enrolled in higher education institutions, and there were plans to cater to curriculums for more Fintech-focused modules.

The *Fintech Vision Report* provided four objectives: regional objectives, IFWG objectives, market objectives, and consumer objectives.[941] The regional objective was for South Africa to become a Fintech regional hub for all of Africa, supporting the

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936 Angel investors are established individuals who provide business funding during the early stages of a company start-up. See StandardBank, Bizconnect,"Top tips for securing angel investment for your business", available online at https://www.standardbank.co.za/southafrica/business/bizconnect/help-me-start-my-business/guides/top-tips-for-securing-angel-investment-for-your-business (last accessed on 05 February 2025).

937 South Africa Fintech Vision (2020), Page 5.

938 South Africa Fintech Vision (2020), Page 8.

939 South Africa Fintech Vision (2020), Page 6.

940 South Africa Fintech Vision (2020), Page 6.

941 South Africa Fintech Vision (2020), Page 7.

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Fourth Industrial Revolution through the transformation of the financial services sector, promoting financial inclusion goals, cross-border development, enhancing skills, and supporting investment while encouraging appropriate access and progress towards a digital economy.[942]

The IFWG objective aims to achieve a coordinated, public-private collaboration approach toward Fintech Policy to foster Fintech innovation while ensuring the continued efficient functioning of financial markets and financial stability and protecting the rights and interests of consumers and investors. The market objective aims to introduce more competition into the financial services ecosystem while transforming institutions to be more digital; promote collaboration with Fintechs to build solutions that impact local communities and manage risks appropriately to ensure robust financial stability and integrity. Lastly, the consumer objective aims to foster access to relevant and innovative solutions that meet the needs of consumers and ensure that risks, including those from players normally outside the financial regulatory perimeter, are fully transparent.[943]

A strategic *Implementation Roadmap* was provided in the *Report*. In this roadmap, seven steps were provided under the first roadmap destination.[944] These steps consisted of: supporting the development of advanced digital payment options; improving access to credit and a range of financial services for individuals and SMMEs; passing the *Conduct of Financial Institutions Bill* (CoFi)[945] for consumer protection; incentivising partnerships between incumbents and Fintech players; support streamlined and efficient consumer on-boarding; utilising the predictive power of credit

942 South Africa Fintech Vision (2020), Page 7.

943 Intergovernmental Fintech Working Group "South Africa Fintech Vision", P 7, (2020) available online at https://www.ifwg.co.za/Reports/Vision%20for%20South%20Africa%E2%80%99s%20Fintech%20Sector.pdf (last accessed on 11 January 2024).

944 South Africa Fintech Vision (2020), Page 8.

945 National Treasury, Conduct of Financial Institutions Bill, available online at https://www.treasury.gov.za/twinpeaks/Conduct%20of%20Financial%20Institutions%20Bill.pdf (last accessed on 05 February 2025). At the time of writing the Bill was not yet submitted to Parliament.

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scoring models to expand access to finance, and promoting the use of innovative savings and investment products.[946]

The second destination on the *Roadmap* is the encouragement of expanded investment in South African Fintechs.[947] The steps to be taken to achieve this, as stated in the *Report* are: promoting the South African Fintech ecosystem at local and international events, providing a platform for Fintech at a proposed Annual South African Fintech Conference; growing South Africa's angel investor network, and improving linkages to foreign risk capital; reviewing public sector financing channels tailored for Fintech; encouraging large financial institutions to invest more in digital platforms and outreach, and exploring the use of alternative finance such as crowdfunding platforms.[948]

The third destination on the *Roadmap* is enhancing the legal and regulatory environment to promote innovation, competition, and stability. The steps set out thereunder are: instituting dedicated Fintech units at the regulators to both enable Fintech; monitor trends; and mitigate risks, including data privacy and cybersecurity; setting up an innovation hub to facilitate collaboration and promoting ecosystem growth; launching a regulatory sandbox[949] to test new innovations; coordinating with

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946 South Africa Fintech Vision (2020), Page 8.

947 South Africa Fintech Vision (2020), Page 8.

948 South Africa Fintech Vision (2020), Page 8; Crowdfunding platforms are websites that enable interaction between fundraisers and the crowd. Financial pledges can be made and collected through the crowdfunding platform. See European Union, Access to Finance, "Crowdfunding explained", available online at https://single-market-economy.ec.europa.eu/access-finance/guide-crowdfunding/what-crowdfunding/crowdfunding-explained_en#:~:text=Crowdfunding%20platforms%20are%20websites%20that,fundraising%20campaign%20has%20been%20successful (last accessed on 19 March 2025).

949 A regulatory sandbox is an innovative approach available to regulators that is used to determine the most appropriate regulatory course of action in response to the ubiquitous development of a wide range of Fintech products and services. See McCallum, W., & Aziakpono, M. J. (2023). Regulatory sandbox for Fintech regulation: Do the conditions for effective adoption exist in South Africa? Development Southern Africa, 40(5), 1100–1116. https://doi.org/10.1080/0376835X.2023.2182759 (last accessed on 19 March 2025).

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the SADC[950] region on Fintech policy and learnings; specialised support to access the SME credit guarantee instrument[951] released under COVID-19[952] and supporting the move towards open data[953] and APIs[954] to create a level playing field. The last of the destinations on this roadmap is to build South Africa's talent base. In this respect, the steps are: creating a revised critical skills shortage list; promoting digital financial capability for consumers; promoting learning in science; technology; engineering; and mathematics (STEM); and collaborating with relevant stakeholders to develop fiscal and non-fiscal incentives to attract and retain talent to the local Fintech ecosystem, reduce the "not in education, employment, or training"[955] rate significantly through the Fintech sector.

In respect of financial inclusion in South Africa and the link with Fintech, the National Treasury published a policy paper in November 2023 titled, "*An Inclusive Financial Sector for All"* (*Financial Inclusion Paper*). The objective of this *Financial Inclusion Paper* was to establish the overarching policy for financial inclusion in South Africa. The *Financial Inclusion Paper* outlines the Government's policy to shape regulatory

950 See Chapter 1, 1.7.

951 The President announced an R100-R200 billion credit guarantee in April 2020 and this is not a grant. In terms of the credit guarantee, the clients apply to their banks and banks use their funds. Should there be significant defaults from banks' clients, the guarantee will back the losses to certain pre-determined amounts. See Parliamentary Monitor Group, "COVID-19 Loan Guarantee Scheme: Treasury, BASA & SARB Input", available online at https://pmg.org.za/committee-meeting/30954/ (last accessed on 12 April 2025).

952 Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus. See World Health Organisation," Coronavirus disease (COVID-19)" available online at https://www.who.int/health-topics/coronavirus#tab=tab_1 (last accessed on 29 September 2024).

953 Data are considered to be "open" if anyone can freely access, use, re-use and redistribute them, for any purpose, without restrictions. See WorldBank, Open-data toolkit, "Open Data in 60 Seconds", available online at https://opendatatoolkit.worldbank.org/en/data/opendatatoolkit/open-data-in-60-seconds (last accessed on 05 February 2025).

954 See Chapter 1, 1.2.7.

955 This indicator presents the share of young people who are not in employment, education or training (NEET), as a percentage of the total number of young people in the corresponding age group, by gender. See OECD, "Youth not in employment, education or training (NEET)", available online at https://www.oecd.org/en/data/indicators/youth-not-in-employment-education-or-training-neet.html (last accessed on 03 February 2025).

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approaches, the evolving Financial Sector Code (FSC)[956], and sector market practices in general.[957] This paper elucidates the current most prominent underlying problems for individuals' financial inclusion. These include inadequate usage of bank accounts and leveraging of opportunities for financial inclusion arising from social grants. Furthermore, low levels of use of formal or regulated remittances and consumer on-boarding are due to perceived onerous regulatory requirements. Further prominent problems pointed out in the *Financial Inclusion Paper* are over-indebtedness relating to excessive take-up of unsecured credit; frustrated access to housing finance; and inadequate leveraging of opportunities for inclusion arising from social grants.[958]

The designed response in this *Financial Inclusion Paper* sets out two strategic core policy pillars and a supporting pillar. The strategic core of Policy Pillar One is to deepen financial inclusion for individuals. To achieve this Core Policy Pillar One objective, the Financial Inclusion Paper outlines strategies to improve the beneficial use of financial products and services for newly included and underserved segments, as well as to foster inclusion for completely excluded individuals. Policy Pillar Two speaks to extending access to financial services for SMMEs[959] by improving access to, and use of, quality financial products and services by SMMEs. Policy Pillar Three sets out to

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956 The Financial Sector Charter, later changed into the Financial Sector Code is a voluntary agreement by all National Economic Development and Labour Council (NEDLAC), a multilateral social dialogue forum on social, economic and labour policy, members to promote social and economic integration and access to the financial services sector. See The Banking Association of South Africa, "Introduction of the Financial Sector Charter" available online at https://www.banking.org.za/consumer-information/consumer-information-legislation/financial-sector-charter-code/#:~:text=The%20Financial%20Sector%20Charter%20(FSC,to%20the%20financial%20services%20sector (last accessed on 03 February 2025).

957 National Treasury "An inclusive financial sector" 2023, Executive summary, paragraph 1.

958 National Treasury "An inclusive financial sector" 2023, page 37.

959 National Small Business (NSB) Act 102 of 1996 defines SMMEs as separate entities that exist within any sector or subsector of the economy, classified as micro enterprises, very small enterprises, small enterprises, and medium enterprises. See Sustainable Livelihoods of Township Small, Medium and Micro Enterprises towards Growth and Development - Scientific Figure on ResearchGate. Available from: https://www.researchgate.net/figure/Definition-of-small-medium-and-micro-enterprises-SMMEs-according-to-the-National_tbl1_340649736 (last accessed 6 Feb 2025).

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improve the enabling foundations by leveraging a more diversified provider and distribution base by supporting competition and diversification of the supply base to strengthen the enabling foundation to support tangible progress in Pillar One and Pillar Two.[960] Under Policy Pillar Three, priority 16, is leveraging Fintech disruptors to promote and support financial inclusion. Regarding this priority, it is stated that the G20 recognises digital financial inclusion as an important feature of economic growth. The G20 also points out that leveraging the opportunities that technology offers to reduce costs, expanding access to financial products and services, and extending their reach is vital to the success of achieving universal financial inclusion.[961]

The *GPFI*[962] *High-Level Principles for Digital Financial Inclusion*[963], issued in 2016, provides guidance on country-level actions needed to harness digital financial services and delivery mechanisms to safely expand access and the usage of financial services for under-served market segments. What is evident here in the *GPFI High-Level Principles for Digital Financial Inclusion* is that financial technology supports financial inclusion goals and that new business and distribution models, such as Fintech disruptors, are needed.[964] If one asks why there is a need for Fintech disruptors? The answer is that it is because Fintech disruptors are changing the landscape of economics by offering financial services that are accessible, easy, and affordable for

960 National Treasury "An inclusive financial sector" 2023, page 35.

961 National Treasury "An inclusive financial sector" 2023, page 37.

962 Global Partnership for Financial Inclusion was established as a coordinating platform. The GPFI coordinates the implementation, by signatory countries of the financial inclusion action plan and the G20 Principles for Innovative Financial Inclusion. See G20 Brasil 2024, "Finance Track Global Partnership for Financial Inclusion (GPFI)" available online at https://www.g20.org/en/tracks/finance-track/financial-inclusion (last accessed on 14 September 2024).

963 The 2016 High-Level Principles for Digital Financial Inclusion build on the success of the 2010 G20 Principles for Innovative Financial Inclusion which spurred initial efforts by providing a basis for country action plans reflecting country context and national circumstances to leverage the potential offered by digital technologies See https://www.gpfi.org/publications/g20-high-level-principles-digital-financial-inclusion (last accessed on 14 September 2024).

964 GPFI High Level Principles for Digital Financial Inclusion, Page 21.

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all. The widespread adoption of Fintech can also significantly boost corporate competitiveness.[965]

3.2.3 FAIS Declaration on crypto assets as a financial product

The first step to bring crypto assets within the conduct regulatory framework was taken on 20 November 2020. This was done by publishing a *Draft Declaration* of crypto assets as a financial product. This *Draft Declaration* was informed by the local policy developments that have been highlighted in this chapter and the country review in November 2019 of South Africa by the FATF[966], the latter producing a *Mutual Evaluation Report*[967] with recommendations on how the AML/CFT supervision in South Africa could be strengthened. What was seen locally in the market at this point was a growing risk because of the expansion of the level of crypto asset use, combined with increased scams and fraudulent activity. Because advice and intermediary services were not regulated with respect to crypto assets, there was potential for abuse, leaving consumers vulnerable.[968] These risks prompted the financial conduct regulator to intervene and capture these activities within the regulatory perimeter to protect consumers. Following the *Draft Declaration*, which invited comments from stakeholders, the FSCA also undertook research into the local crypto asset market and conducted a survey through an *Information Request 3 of 2022* that was published on 12 April 2022.[969]

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965 Song Tang, Zejin Chen, Jiawei Chen, Lei Quan, Kaiyang Guan, Does FinTech promote corporate competitiveness? Evidence from China, Finance Research Letters, Volume 58, Part D, 2023, 104660, ISSN 1544-6123, https://doi.org/10.1016/j.frl.2023.104660 (last accessed on 12 April 2025).

966 See Chapter 1, 1.9.

967 FATF," Mutual Evaluation Report of South Africa," (2019), available online at https://www.fatf-gafi.org/content/dam/fatf-gafi/mer/Executive-Summary-Mutual-Evaluation-South-Africa.pdf (last accessed on 06 February 2025).

968 IFWG CAR WG Position paper on crypto assets,(2021), Page 23 available online at https://www.resbank.co.za/content/dam/sarb/publications/media-releases/2021/Fintech/IFWG%20CAR%20WG%20Position%20paper%20on%20crypto%20assets.pdf (last accessed on 03 February 2025).

969 FSCA "Request for information – Crypto asset related activities performed by FSPs"(2022) available online at

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On 19 October 2022, the Financial Sector Conduct Authority (FSCA) issued *General Notice 1350 of 2022* called the *"Declaration of a crypto asset as a financial product under the Financial Advisory and Intermediary Services Act, 2022 (Declaration)"*[970], which declared a crypto asset as a financial product under the *Financial Advisory and Intermediary Services Act 37 of 2002*.

Crypto Assets was declared under paragraph (h) of the definition of "financial product" which provides that: "any other product similar in nature to any financial product referred to in paragraphs (a) to (g), inclusive, declared by the Authority by notice in the Gazette to be a financial product for the purposes of this Act." The *Declaration* provided a regulatory and licencing regime for CASPS. This translates into CASPS being required to be licenced in terms of section 7(1) of the *FAIS Act* and consequently subject to regulatory oversight and supervision. Following the extension period that was provided for licencing under section 8 of the *FAIS Act* (June 2023 – 30 November 2023), any person who, "as a regular feature of the business of such person, renders financial services in relation to crypto assets without a licence" will be in contravention of section 7(1) of the *FAIS Act*, unless exempted.[971] The temporary exemption provided an extension of the licencing period, which meant that a CASP[972] could continue to

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https://www.fsca.co.za/Notices/FSCA%20Information%20Request%203%20of%202022%20(FAIS).pdf (last accessed on 25 August 2023).

970 General Notice 1350 of 2022, available online at https://www.gov.za/sites/default/files/gcis_document/202210/47334gen1350.pdf (last accessed on 25 March 2025).

971 FSCA FAIS Notice 90 of 2022 exempts persons rendering financial services in respect of crypto assets recorded on a blockchain with unique identification, that distinguishes them from each other and can be associated with real-world objects i.e., non-fungible tokens. See FSCA FAIS Notice 90 of 2022 available online at https://www.fsca.co.za/notices/forms/allitems.aspx?Paged=TRUE&p_SortBehavior=0&p_Created=20220819%2015%3A47%3A33&p_ID=2404&PageFirstRow=451&&View=%7B46386E88-2C88-4172-996C-4754CE739CC8%7D (last accessed on 03 February 2025).

972 "Crypto Asset FSP" means a person that is licenced under section 8 of the Act to render a financial service in relation to crypto assets. See FSCA FAIS Notice 90 of 2022 available online at https://www.fsca.co.za/notices/forms/allitems.aspx?Paged=TRUE&p_SortBehavior=0&p_Created=20220819%2015%3A47%3A33&p_ID=2404&PageFirstRow=451&&View=%7B46386E88-2C88-

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provide financial services without contravening the *FAIS Act*, provided that a licence application is submitted within the stipulated period. The full *FAIS Act* applies to the CASPS after the licencing period unless they have received exemptions.

Some of the most important requirements in the *FAIS Act*, applicable to CASPS, will be explained here to provide the reader with an understanding of what protections the *FAIS Act* brings to consumers and to benchmark these protections against the *FSB High-level Recommendations for the Regulation, Supervision and Oversight of Crypto-asset Activities and Markets: Final report*[973] as well as to consider what legal requirements are provided for in the other comparator countries. The *FAIS Act* aims to protect consumers of financial products[974] and services[975] by regulating the advice-giving activities and intermediary services that FSPs provide. These requirements ensure that the consumer is given adequate information about the products and services and professionalise the industry. The *FAIS Act* itself is the primary legislation and is largely enabling in its nature in the sense that it provides for various administrative matters and does not impose significant requirements that apply directly to CASPS. Only a number of specific requirements apply directly to CASPS governed by the *FAIS Act*. These consist of Chapter One of the *FAIS Act*, which addresses the authorisation or licencing framework for FSPs. Section 7(1) of the *FAIS Act* determines that no person may act or offer to act as a "Financial Services Provider"[976] unless such

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4172-996C-4754CE739CC8%7D (last accessed on 03 February 2025).

973 The recommendations establish a global regulatory baseline, and some jurisdictions may also decide to take more restrictive regulatory measures. Their aim is to promote a regulatory, supervisory and oversight framework that is technology-neutral and focuses on underlying activities and risks. See FSB, "High-level Recommendations for the Regulation, Supervision and Oversight of Crypto-asset Activities and Markets: Final report", (2023), available online at https://www.fsb.org/2023/07/high-level-recommendations-for-the-regulation-supervision-and-oversight-of-crypto-asset-activities-and-markets-final-report/ (last accessed on 19 March 2025).

974 Section 1(1) of the Financial Advisory and Intermediary Services Act 37 of 2002. Available online at https://www.gov.za/documents/financial-advisory-and-intermediary-services-act (last accessed on 08 February 2025).

975 Section 1(1) of the Financial Advisory and Intermediary Services Act 37 of 2002. Available online at https://www.gov.za/documents/financial-advisory-and-intermediary-services-act (last accessed on 08 February 2025).

976 Section 1(1) of the FAIS Act defines "financial services provider" to mean "any person, other than a

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a person is licenced under section 8 of the *FAIS Act* or alternatively has been appointed as a representative of the licenced FSP under section 13 of the *FAIS Act*. Section 7(3) prohibits authorised FSPs from conducting financial services-related business with a person who renders financial services and is not authorised to do so or operates outside of licence parameters. Section 8(1) of the *FAIS Act* enables the FSCA to determine the form and manner of a licence application and that the applicant must provide, in addition, sufficient information regarding its fit and properness to satisfy the FSCA to grant it a licence.[977]

Further powers enabled in this chapter are, for instance, the powers set out in section 8(2) of the *FAIS Act*, which empowers the FSCA to ask for additional information or require that any submitted information be verified. Section 8(4)[978] of the *FAIS Act* provides necessary and broad powers to the FSCA to impose licencing restrictions and conditions. Section 8 of the *FAIS Act* further ensures that a copy of the licence, if granted, is displayed, visible, and reflected in any business communication.

Section 8A of the *FAIS Act*[979] mandates that authorised FSPs, their key individuals, representatives, and the key individuals of those representatives must continuously

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representative, who as a regular feature of the business of such person –

(a) furnishes advice; or

(b) furnishes advice and renders any intermediary service; or (c) renders an intermediary service;"

977 FAIS Act, Section 8(1) further determines that the information submitted must also be accompanied by documentation demonstrating that the applicant meets the fit and proper requirements to the satisfaction of the Authority.

978 FAIS Act, Section 8(4) provides that upon granting an application, the registrar may impose necessary conditions and restrictions on the licence, considering the category of financial products the applicant is suited to handle. These conditions may include requirements for approval of any new or replacement key individuals by the registrar, ensuring they meet the fit and proper standards, especially if changes in their personal circumstances affect compliance.

979 FAIS Act, Section 8(A), "An authorised financial services provider, key individual, representative of the provider and key individual of the representative must-

(a) continue to comply with the fit and proper requirements; and

(b) comply with the fit and proper requirements relating to continuous professional development."

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adhere to the fit and proper requirements. This includes compliance with the standards pertaining to continuous professional development.

Other powers provided in this chapter of the *FAIS Act* that are important to consider when proposing a trans-border regulatory licence are contained in sections 9 and 11. Section 9 sets out the provisions regarding the suspension and withdrawal of licences that have been granted. Some conditions upon which a withdrawal or suspension can be actioned are that the FSP or key individual no longer meets the fit and proper requirements or if any false or misleading information was provided in the licencing phase. A withdrawal or suspension of licence can also result from non-compliance with a directive by the FSCA or non-compliance relating to any requirement imposed by law on the FSP. Section 11(1) (a) – (d)[980] deals with scenarios in which the licence held by a natural person or by a juristic person will lapse.

Also, Chapter Three of the *FAIS Act*, which deals with representatives, applies directly to CASPS. Section 13 in Chapter Three states that the FSP may not conduct business as an FSP without meeting the fit and proper requirements and the *General Code of Conduct for Authorised Financial Services Providers and their representatives*, as discussed later below. The rest of Chapter Three deals with keeping registers of each and every representative and key individual and also sets out the circumstances in which the FSCA can debar representatives of FSPs, which includes cases of non-compliance and failure to meet statutory requirements.[981]

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[980] FAIS Act, Section 11(1) (a) – (d), "Lapsing of licence (1) A licence lapses –

(a) where the licencee, being a natural person –

(i) becomes permanently incapable of carrying on any business due to physical or mental disease or serious injury;

(ii) is finally sequestrated; or

(iii) dies;

(b) where the licencee, being any other person, is finally liquidated or dissolved; (c) where the business of the licencee has become dormant; and (d) in any other case, where the licencee voluntarily and finally surrenders the licence to the registrar."

[981] FAIS Act, Section 13(3)(a): "(3) An authorised financial services provider must-

(a) maintain a register of representatives, and key individuals of those representatives, which must be regularly updated and be available to the Authority for reference or inspection purposes;"

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Lastly, Chapter Five sets out the duties of authorised CASPS and other FSPs (including requirements relating to compliance officers and arrangements, maintenance of records, and accounting and audit requirements). Section 17 in Chapter Five requires the appointment of one or more compliance officers, who are fit and proper and have been approved by the FSCA, to oversee the compliance function and monitor the FSP's compliance with the *FAIS Act*. Section 18 in Chapter Five sets the minimum requirements for recording keeping by an FSP, including storing the information set out in section 18 (a) – (e)[982] for a minimum period of five years.

The *General Code of Conduct for Authorised Financial Services Providers and Representatives (General Code)*[983] issued under section 7(1) of the *FAIS Act* sets standards of competence, conduct, and consumer care for the financial services industry. Various of the FSB recommendations with respect to crypto assets are dealt with under the General Code; for instance, risk management (FSB recommendation 5) is considered in sections 11 to 13. Disclosures (FSB recommendation 7) are addressed in section 7, and data collection, recording, and reporting (FSB recommendation 6) are set out in Part Two and sections 9, 10, 15, 18 and 19. These sections will be unpacked in this part of the thesis. Section 2 of the *General Code* provides that an FSP must at all times render financial services honestly and fairly, with due skill, care, and diligence, and in the interests of consumers and the integrity of the financial services industry.

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982 "An authorised financial services provider must, except to the extent exempted by the registrar, maintain records for a minimum period of five years regarding –

(a) known premature cancellations of transactions or financial products by clients of the provider;

(b) complaints received together with an indication whether or not any such complaint has been resolved;

(c) the continued compliance with the requirements referred to in section 8;

(d) cases of non-compliance with this Act, and the reasons for such non compliance; and

(e) the continued compliance by representatives with the requirements referred to in section 13(1) and (2)."(last accessed on 09 February 2025).

983 General Code of Conduct for Authorised Financial Services Providers and Representatives (2003) available online at https://discover.sabinet.co.za/document/1167112 (last accessed on 20 September 2023).

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The disclosure requirements in section 7 of the *General Code* deal with both provider and product disclosures and are positioned in a general way. They merely require that specific information regarding the provider, financial service, product, and so on, be provided. The requirements are sufficiently principles-based to ensure that they can be applied to financial services rendered with respect to any financial product, including in a CASP environment. It is trite that proper risk management and a system of internal control are critical to any business. Therefore, the *General Code of Conduct* sets high-level requirements for implementing risk management procedures and internal controls, which are equally critical in a CASP environment and can be applied in their current form. The record-keeping requirements include: keeping a record of verbal and written communications with financial consumers; complaints; advertisements; and any advice provided to financial consumers when rendering financial services.[984] It is also required that the FSP store the records for a minimum of five years in a way that keeps them safe from destruction.[985] In terms of reporting, it is stipulated that the FSP must ensure that it has appropriate processes in place to report complaints to the regulator or to the public if the regulator requires this.[986]

The *Determination of fit and proper requirements for financial services providers, 2017* (fit and proper requirements)[987] set the honesty and integrity, competency, and operational ability requirements for all FSPs, key individuals, and representatives. The fit and proper requirements are mostly general and product agnostic and, therefore, apply easily to CASPS. However, some requirements differentiate between, or apply to, specific financial products, in particular the Competence[988] and Continuous Professional Development ("CPD")[989] requirements. The honesty, integrity, and good

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984 General Code of Conduct for Authorised Financial Services Providers and Representatives (2003), Section 9(1).

985 General Code of Conduct for Authorised Financial Services Providers and Representatives (2003), Section 3(2)(b).

986 General Code of Conduct for Authorised Financial Services Providers and Representatives (2003), Section 19.

987 Determination of fit and proper requirements (2007) available online at https://discover.sabinet.co.za/document/1167100 (last accessed on 20 September 2023).

988 Determination of fit and proper requirements (2007), Chapter 3, Part 1,2 and 3, sections 11 – 24.

989 Determination of fit and proper requirements (2007), Chapter 4, sections 31 – 34.

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standing requirements, which provide that an FSP (including its key individuals and representatives) must be honest, have integrity, and be of good standing[990], are, for instance, general and product agnostic. The same goes for the requirements relating to operational ability, which include requirements dealing with governance, outsourcing, representatives, key individuals, and the like.[991]

Furthermore, the financial soundness requirements contained in Chapter Six of the fit and proper requirements are also general and product agnostic. Comparing the framework in terms of fit and proper requirements, it is clear that they speak to some of the *FSB High-level Recommendations for the Regulation, Supervision and Oversight of Crypto-asset Activities and Markets: Final report,* for example, recommendations 4 – 7.[992]

3.2.4 Financial Markets Act 19 of 2012 (FMA)

The *FMA*[993] provides for the regulation of financial markets and, among other things, regulates securities services, including the provision of over-the-counter (OTC) derivatives. The *FMA's* focal point is the regulation of exchanges[994], central securities

990 Determination of fit and proper requirements (2007), Chapter 2.

991 Determination of fit and proper requirements (2007), Chapter 5.

992 FSB High-level Recommendations for the Regulation, Supervision and Oversight of Crypto-asset Activities and Markets: Final report recommendation 4 deals with governance, 5 with risk management, 6 with data collection, recording and reporting and recommendation 7 deals with disclosure requirements. See FSB High-level Recommendations for the Regulation, Supervision and Oversight of Crypto-asset Activities and Markets: Final report,(2023), available online at https://www.fsb.org/2023/07/high-level-recommendations-for-the-regulation-supervision-and-oversight-of-crypto-asset-activities-and-markets-final-report/ (last accessed on 09 February 2025).

993 Financial Markets Act, 2012 available online at https://www.gov.za/sites/default/files/gcis_document/201409/36121a.pdf (last accessed on 25 September 2023).

994 FMA Section 1 defines an "exchange" as follows: "means a person who constitutes, maintains and provides an infrastructure-
(a) for bringing together buyers and sellers of securities;
(b) for matching bids and offers for securities of multiple buyers and sellers; and

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depositories[995], clearing houses[996], and their members.[997] The *FMA* does, however, not capture crypto assets that mimic securities in a digital form.

Therefore, security tokens[998] fall outside of the *FMA* due to the token's nature, which aims to represent ownership of the company's stock. The same is true for capital-raising tokens in the form of "Initial Coin Offerings" (ICO).[999] These tokens are not captured under the *FMA* at this point because of the definition of "security,"[1000] which

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(c) whereby a matched bid and offer for securities constitutes a transaction;"

995 FMA Section 1 defines an "central securities depository" as follows: "means a person who constitutes, maintains and provides an infrastructure for holding uncertificated securities which enables the making of entries in respect of uncertificated securities, and which infrastructure includes a securities settlement system".

996 FMA Section 1 defines "clearing house" as follows: "means a person who constitutes, maintains and provides an infrastructure to clear transactions in securities".

997 FMA Section 1 defines "clearing members" as follows:" means-

(a) in relation to an associated clearing house, a person authorised by a licenced exchange with which it is associated to perform clearing services or settlement services or both clearing services and settlement services in terms of the exchange rules;

(b) in relation to a licenced independent clearing house or a licenced central counterparty, a person authorised by that independent clearing house to perform clearing services or settlement services or both clearing services and settlement services in terms of the clearing house rules, and includes an external clearing member, where appropriate".

998 Security tokens are an innovative form of digital assets that represent an investment in real financial assets or property rights over these assets. See Cointribune, " Crypto security tokens: A complete guide", available online at https://www.cointribune.com/en/security-tokens-crypto-le-guide-complet-pour-comprendre-2/ (last accessed on 09 February 2025).

999 Initial coin offerings can be defined as a "decentralized method of financing, whereby a firm calls for funding by issuing coins to online investors. Coins (or tokens) are a digital medium of value exchange based on the blockchain, which can operate independently and can be traded between investors". Initial coin offerings (ICOs) are a popular way to raise funds for products and services usually related to cryptocurrency. ICOs are similar to initial public offerings (IPOs), but coins issued in an ICO also can have utility for a software service or product. A few ICOs have yielded returns for investors. See Huang W, Meoli M, Vismara S (2020) The geography of initial coin offerings. Small Bus Econ 55:77–102, available online at https://doi.org/10.1007/s11187-019-00135-y (last accessed on 14 September 2024).

1000 FMA Section 1 defined "securities" as follows: -

"(a) listed and unlisted-

(i) shares, depository receipts and other equivalent equities in public companies, other than

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does not capture any digital representations of securities. Many of the other definitions and requirements in the *FMA* specifically contain references to "securities", thereby excluding these tokens under the requirements. What is captured in the *FMA* is derivatives referencing crypto assets. The *FMA* defines a "derivative instrument" as "a financial instrument or contract that creates rights and obligations whose value depends on, or is derived from the value of one or more underlying asset, rates, or indexes, on a measure of economic value, or a default event".[1001] A contract that creates rights and obligations and whose value depends on, or is derived from, the value of one or more crypto assets (crypto asset derivative) is, therefore, a "derivative instrument" as defined in the *FMA*. In turn, the *FMA* defines "securities" as including a

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shares in a share block company as defined in the Share Blocks Control Act, 1980 (Act No. 59 of 1980);

(ii) debentures, and bonds issued by public companies, public state-owned enterprises, the South African Reserve Bank and the Government of the Republic of South Africa;

(iii) derivative instruments;

(iv) notes;

(v) participatory interests in a collective investment scheme as defined in the Collective Investment Schemes Control Act, 2002 (Act No. 45 of 2002), and units or any other form of participation in a foreign collective investment scheme approved by the Authority in terms of section 65 of that Act; and

(vi) instruments based on an index;

(b) units or any other form of participation in a collective investment scheme licenced or registered in a country other than the Republic;

(c) the securities contemplated in paragraphs (a)(i) to (vi) and (b) that are listed on an external exchange;

(d) an instrument similar to one or more of the securities contemplated in paragraphs (a) to (c) prescribed by the registrar to be a security for the purposes of this Act;

(e) rights in the securities referred to in paragraphs (a) to (d), but excludes-

(i) money market securities, except for the purposes of Chapter IV; or if prescribed by the registrar as contemplated in paragraph (d);

(ii) the share capital of the South African Reserve Bank referred to in section 21 of the South African Reserve Bank Act, 1989 (Act No. 90 of 1989); and

(iii) any security contemplated in paragraph (a) prescribed by the registrar".

[1001] Policy document supporting the Declaration of Crypto Assets as a financial product under the Financial Advice and Intermediary Service Act (2022) available online at https://www.fsca.co.za/Regulatory%20Frameworks/Temp/Policy%20Document%20supporting%20the%20Declaration%20of%20crypto%20assets%20as%20a%20financial%20product.pdf (last accessed on 25 September 2023).

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derivative instrument, and the *FAIS Act* defines a financial product as including "securities" as defined in the *FMA*. As such, financial services rendered in relation to crypto asset derivatives have, thus, since crypto asset derivatives came into use, always been subject to the *FAIS Act*. FSPs providing financial services in relation to crypto asset derivatives were thus already subject to the requirements of the *FAIS Act* before the *Declaration of a crypto asset as a financial product under the Financial. Advisory and Intermediary Services Act, 2022*, and that position remains.

3.2.5 Collective Investment Schemes Control Act 45 of 2002 (CISCA)

CISCA is the governing statute with respect to collective investment schemes. It is administered by the FSCA, which supervises collective investment schemes in respect of market conduct. *CISCA* aims to regulate and control the establishment and administration of collective investment schemes, amend, or repeal certain laws, and provide for incidental matters.[1002]

A "collective investment scheme" is defined in *CISCA* as:

> "a scheme, in whatever form, including an open-ended investment company, in pursuance of which members of the public are invited or permitted to invest money or other assets in a portfolio, and in terms of which –
>
> (a) two or more investors contribute money or other assets to and hold a participatory interest in a portfolio of the scheme through shares, units or any other form of participatory interest; and
>
> (b) the investors share the risk and the benefit of investment in proportion to their participatory interest in a portfolio of a scheme or on any other basis determined in the deed, but not a collective investment scheme authorised by any other Act.
> "

[1002] Collective Investment Schemes Control Act 45 of 2002, Preamble. Available online at https://www.gov.za/documents/collective-investment-schemes-control-act (last accessed on 25 February 2025).

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In the writer's view, considering the wording used, it casts a wide net with respect to schemes that will qualify as collective investment schemes. The contribution in paragraph (a) of the definition can consist of money or other assets, and participatory interest is not limited to shares or units but any form of participatory interest. Furthermore, the type of portfolio the investors can invest in, provided for in paragraph (b) of the definition, is not limited to certain types of underlying assets. Therefore, if it can be ascertained that when an investor tokenises their fiat currency to invest in a portfolio where real-world items are tokenised and fractionalised, then this would fall under the auspices of *CISCA*.

In conclusion, crypto assets have been brought into the regulatory remit to a certain extent under the *FAIS Act*, but there are some clear gaps with respect to issuers of tokens and also no bespoke requirements that address the unique risks that certain types of crypto assets, such as, Stablecoins, bring. Further work is being undertaken on a collective basis by the IFWG and the CARWG with respect to topical matters, such as tokenization and Stablecoins, which will culminate in policy recommendations.[1003] On this front, the IFWG published, through the CARWG, a paper in March 2025, titled *"South African Stablecoin Landscape Diagnostic"*[1004] which sets out the developing local landscape and some of the risks pertaining to this type of crypto asset.

[1003] As reflected in the 2024 Budget Review, the IFWG, through the Crypto Asset Regulatory Working Group (CAR WG), will conduct analytical work to understand the applicable use cases of Stablecoins to inform an appropriate policy and regulatory response by the financial services regulators. See National Treasury, 2024 Budget Review, available online at https://www.treasury.gov.za/documents/National%20Budget/2024/review/FullBR.pdf (last accessed on 27 March 2025).

[1004] IFWG, "South African Stablecoin Landscape Diagnostic" available online at https://www.ifwg.co.za/Reports/IFWG%20South%20African%20Stablecoin%20Landscape%20Diagnostic.pdf (last accessed on 27 March 2025).

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3.3 Mauritius

3.3.1 Local crypto asset landscape

In 2022, Mauritius ranked 131st on the global crypto list of 157 countries.[1005] It was estimated at that time that 23,208 people owned crypto assets in the country. During this time, within its ecosystem, Pursa[1006] was the most trusted exchange in Mauritius, with almost 40% of its total crypto traders transacting daily.[1007] Mauritius is a growing Fintech hub and is considered by many to be a safe and robust offshore jurisdiction. It is, therefore, positioned as a crypto asset-friendly jurisdiction. The objective of the Government of Mauritius is well underway in making the jurisdiction a Fintech Hub for the region. During the 2017-2018 Budget Speech, the Prime Minister of Mauritius stated that "Mauritius must harness the benefits of the Fintech revolution the more, so that, there is good potential for making of Mauritius a Fintech hub for Africa".[1008] In 2023, Ashveen Gopee, managing partner of Lex Frontier Law Firm[1009] and a member

[1005] FurtherAfrica, "Mauritius enforces crypto licencing in a bid to promote adoption" available online at https://furtherafrica.com/2023/03/17/mauritius-enforces-crypto-licencing-in-a-bid-to-promote-adoption/#:~:text=was%20no%20exception.-,On%20the%20global%20crypto%20list%20of%20157%20countries%2C%20Mauritius%20ranks,1.266%20million%20as%20of%202021 (last accessed on 06 October 2024).

[1006] Pursa is an exchange providing a secure platform to buy and sell Bitcoin & Tether website available online at https://pursa.co/ (last accessed on 25 September 2023).

[1007] WebAfrica "Mauritius enforce crypto licencing in a bid to promote adoption" (2023) available online at https://furtherafrica.com/2023/03/17/mauritius-enforces-crypto-licencing-in-a-bid-to-promote-adoption/ (last accessed on 25 September 2023).

[1008] Republic of Mauritius, Budget speech 2017/2018, available online at https://govmu.org/EN/portaldocs/Pages/Budget-Speech-2017-2018.aspx (last accessed on 25 February 2025).

[1009] LexFrontier is an Alternative Legal Service Provider combining legal expertise with innovative business models, technology integration, remote/hybrid workforces and specialised skill-sets. See Chambers and Partners, "What is an Alternative Legal Service Provider (ALSP)?",(2024) available online at https://chambers.com/articles/what-is-an-alternative-legal-service-provider-alsp-exploring-a-new-frontier-in-legal-support (last accessed on 08 February 2025).

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of Alliott Global Alliance[1010], one of the world's largest global multidisciplinary alliances, made the following comments in respect of the crypto market in Mauritius:

> "Crypto adoption in Mauritius is gaining traction, particularly among the younger generation. There's definitely growing interest in cryptos in Mauritius, and a lot more people are looking to enter this space. Mauritius is crypto-friendly, and this VAITOS Act is fully compliant with FATF and international best practices. It is salient to note that if you are carrying out business activities of a VASP in or from Mauritius, you will have to be licenced with the Financial Services Commission."

Some of the popular crypto asset exchanges that were found in Mauritius at the time of writing were Binance[1011], Kraken[1012] , and Coinmama.[1013] In terms of crypto asset wallet providers, there is Zengo[1014], amongst others. Zengo is an iOS[1015] & Android[1016]

[1010] Established in 1979, AGA is an alliance of general practice commercial, mid-market law and accounting firms. See Chambers and Partners, available online at https://chambers.com/law-firm/alliott-global-alliance-global-2:317147 (last accessed on 25 February 2025).

[1011] Binance available online at https://accounts.binance.com/en/register?ref=771498634&gclid=EAIaIQobChMI0v2Dm7zugQMVTO3tCh1oVQOwEAAYASAAEgKTyPD_BwE (last accessed on 11 October 2023).

[1012] Kraken available online at https://www.kraken.com/ (last accessed on 11 October 2023).

[1013] Coinmama available online athttps://www.coinmama.com/ (last accessed on 11 October 2023).

[1014] Zengo is the most secure crypto wallet: The only self-custodial wallet with no seed phrase vulnerability, powered by MPC. See Zengo," The Most Secure Crypto Wallet," available online at https://zengo.com/security/ (last accessed on 08 February 2025).

[1015] iOS is an operating system developed by Apple for its mobile devices such as the iPhone and iPad. See DDI Development, "10 Major Differences Between Android and iOS App Development",(2024), available online at https://ddi-dev.com/blog/programming/10-differences-between-android-and-ios-app-development/#:~:text=iOS%20is%20an%20operating%20system,%2C%20Huawei%2C%20and%20Google%20itself (last accessed on 09 February 2025).

[1016] Android is an operating system developed by Google and used on a wide range of devices from different manufacturers. See DDI Development, "10 Major Differences Between Android and iOS App Development",(2024), available online at https://ddi-dev.com/blog/programming/10-differences-between-android-and-ios-app-development/#:~:text=iOS%20is%20an%20operating%20system,%2C%20Huawei%2C%20and%20Google%20itself (last accessed on 09 February 2025).

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crypto and NFT wallet.[1017] It allows the users to buy, sell, and self-custody directly from the application. Also, BlueWallet[1018], which is a popular desktop wallet that is compatible with Windows, Mac, and Linux. The crypto asset market in Mauritius is projected to grow by 13.90% (2023-2027), resulting in a market volume of €2.71m in 2027.[1019] It is also further predicted that the number of users will increase to 112.70k users by 2027 and that user penetration will hit 8.8% by 2027.

3.3.2 *Local regulatory and supervisory approach and landscape*

In Mauritius, the Financial Services Commission (FSC) is the integrated regulator for the non-bank financial services sector and global business. The FSC is the apex regulator responsible for licencing, regulating, monitoring, and supervising all non-banking financial activities. The FSC was established through the *Financial Services Development Act, 2001 (FSD Act).* The FSC has strong and effective powers of inspection under Part Four of the *FSD Act*, and it may give directions, issue roles, guidelines, or codes for the proper conduct of business for non-bank financial activities, such as asset management, pension schemes, and pension management.[1020] The FSC is mandated under section 3 of the *Financial Services Act,* 14 *of 2007*, the section

[1017] These are generally crypto wallets based on a programme that enables NFT enthusiasts to save their digital assets, including NFTs and cryptocurrency. See ClearTax,"What Is NFT Wallet: Its Significance And How To Select It?" available online at https://cleartax.in/s/nft-wallets#:~:text=What%20is%20an%20NFT%20wallet,complete%20authority%20over%20digital%20assets (last accessed on 09 February 2025).

[1018] BlueWallet is a lightweight Bitcoin wallet for iOS and Android, with a client for macOS. It supports both Bitcoin and the Lightning Network, offering a user-friendly interface and robust features for both new and experienced users. See Bitcoinit,"BlueWallet - Bitcoin Wiki", available online at https://en.bitcoin.it/wiki/BlueWallet#:~:text=BlueWallet%20is%20a%20lightweight%20Bitcoin,both%20new%20and%20experienced%20users (last accessed on 09 February 2025).

[1019] Statista "Cryptocurrencies – Mauritius" (2023) available online at https://es.statista.com/outlook/dmo/Fintech/digital-assets/cryptocurrencies/mauritius (last accessed at 11 October 2023).

[1020] Pre-amble, the Financial Services Development Act,2001, available online at https://www.sunibel.com/wp-content/uploads/2020/05/Mauritius_THE-FINANCIAL-SERVICES-DEVELOPMENT-ACT-2001.pdf (last accessed on 27 February 2025).

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4 of the *Captive Insurance Act, 2015 (Act No. 32 of 2015)*, section 3(1) of the *Insurance Act, 21 of 2005*, section 5 of the *Private Pension Schemes Act, 2012*, section 6(1) of the *Securities Act, 2005 (Act No. 22 of 2005)*, and section 5 of the *Virtual Asset and Initial Token Offering Services Act, 2021* to licence, regulate, monitor and supervise the conduct of business activities in these sectors.[1021]

Under the *Financial Services Act, 2007 (Financial Services Act)*, the FSC is mandated to, amongst other things, ensure the orderly administration of the financial services and global business activities and the sound conduct of business in the financial services sector and in the global business sector. The FSC is also mandated to elaborate policies that are directed to ensure fairness, efficiency, and transparency of financial and capital markets in Mauritius and study new avenues for development in the financial services sector, to respond to new challenges, and to take full advantage of new opportunities for achieving economic sustainability and job creation. The last of the mandates speaks to ensuring the soundness and stability of the financial system in Mauritius and working out objectives, policies, and priorities for the development of the financial services sector and global business.[1022]

The Bank of Mauritius regulates and supervises banking institutions and non-bank deposit-taking financial institutions under the provisions of the *Banking Act 2004(Act No. 35 of 2004)* [1023] and is established and governed in terms of the *Bank of Mauritius Act 2004 (Act No 34 of 2004).*[1024] The Bank of Mauritius also regulates money changers and foreign exchange dealers.[1025]

The regulatory and supervisory functions of the Bank of Mauritius, as central bank, include the processing of applications for banking licences, as well as authorisations

[1021] Financial Services Commission Mauritius "About us" available online at https://www.fscmauritius.org/en/about-us/who-we-are (last accessed on 11 October 2023).

[1022] VAITOS Act, Section 6 (g).

[1023] Bank of Mauritius Act 2004 (Act No 34 of 2004), Section 5.

[1024] Bank of Mauritius Act 2004 (Act No 34 of 2004), Section 5(1)(b) (i) and (ii).

[1025] "Regulatory environment – Mauritius" available online at https://www.alliance-mauritius.com/regulatory-environment/ (last accessed on 12 October 2023).

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for non-bank deposit-taking activity, money changers, and foreign exchange dealers.[1026] It also includes the issuing of prudential regulations to be observed by authorised institutions; and carrying out on-site inspection and off-site surveillance of such institutions.[1027]

3.3.3 Virtual Asset and Initial Token Offering Services Act 2021

The enactment of the *Virtual Asset and Initial Token Offering Services Act 2021 (VAITOS Act)* established a comprehensive legislative framework to regulate the business activities of virtual asset service providers and initial token offerings. The *VAITOS Act* defines "virtual asset service providers" as:

> ""virtual asset service provider" means a person that, as a business, conducts one or more of the following activities or operations for, or on behalf of, another person –
>
> (a) exchange between virtual assets and fiat currencies;
>
> (b) exchange between one or more forms of virtual assets;
>
> (c) transfer of virtual assets;
>
> (d) safekeeping of virtual assets or instruments enabling control over virtual assets;
>
> (e) administration of virtual assets or instruments enabling control over virtual assets;
>
> (f) participation in, and provision of, financial services related to –
>
> (i) an issuer's offer and sale of a virtual asset;
>
> (ii) an issuer's offer or sale of a virtual asset;"

[1026] Part II, Section 5(1), Bank of Mauritius Act 2004 (Act No 34 of 2004); Regulated in terms of the Foreign Exchange Dealers Act 1995.

[1027] Bank of Mauritius, Regulation and Supervision of Banks, available online at https://www.bom.mu/pdf/Research_and_Publications/Annual_Report/AnnualRep2002/Chapter2%20Supervision.doc (last accessed on 08 February 2025).

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In terms of the *VAITOS Act*, initial token offerings (ICO's) are defined to mean:

> "initial token offerings" or "ITO" means an offer for sale to the public, by an issuer of initial token offerings, of a virtual token in exchange for fiat currency or another virtual asset"

The *VAITOS Act* stipulates that any person who carries on the business of a "virtual asset service provider"[1028] or a "custodian"[1029] as defined in the *Financial Services Act*, must, following the commencement of the *VAITOS Act*, apply for a licence or registration, as may apply, to the FSC within 3 to 18 months.[1030] The *VAITOS Act* came into force on 07 February 2022. Following the enactment of the *VAITOS Act*, it is an offence for any person to carry out the business activities of a virtual asset service provider or an issuer of ICO's in or from, Mauritius without an appropriate licence issued by the FSC. In accordance with sections 7(2) and 23(2) of the *VAITOS Act*, any person found in contravention thereof commits an offence and will be, on conviction, liable to a fine not exceeding 5 million rupees and to imprisonment for a term not exceeding ten years. Contained in the *VAITOS Act* are: technical requirements[1031]; requirements with respect to governance structures[1032]; risk management requirements[1033]; disclosure of information requirements[1034]; and the requirements regarding the protection of consumers with respect to virtual assets (crypto assets). The licencing regime that is in place provides for several subcategories of licences.[1035] Class M is applicable to virtual asset brokers and dealers[1036], and Class O is applicable

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[1028] VAITOS Act, Section 2.

[1029] Virtual Asset Custodian means safekeeping of virtual assets or instruments enabling control over virtual assets. See VAITOS Act, Schedule 2. (last accessed on 27 February 2025).

[1030] Financial Services Commission "Proclamation of the Virtual Asset and Initial Token Offering Services Act 2021" (2022) available online at https://www.fscmauritius.org/media/119931/communique-proclamation-of-the-virtual-asset-and-initial-token-offering-services-act-2021.pdf (last accessed on 13 October 2023).

[1031] VAITOS Act, sections 17,18, 19,20,21 and 22.

[1032] VAITOS Act, sections 14,15, 16 and 34.

[1033] VAITOS Act, sections 17,18, 19,20,21 and 22.

[1034] VAITOS Act, sections 27 and 29.

[1035] VAITOS Act, Schedule 2, Section 2, Class of virtual asset service provider licence.

[1036] VAITOS Act, Schedule 2, Section 2, Class of virtual asset service provider licence.

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to wallet services[1037]. Class R relates to custodianship, and Class I relates to advisory services.[1038] The last of the classes is Class S, which covers virtual asset marketplaces that include both centralised and decentralised exchanges.[1039]

Outside of the *VAITOS Act's* regulatory perimeter are any closed-loop items[1040] and digital currencies issued by the Bank of Mauritius. The *VAITOS Act* requires, through the licencing criteria, that the providers must have a presence in Mauritius through being a registered company, but further that the company must also have a physical presence and be directed and managed (board meetings, key persons are resident and where decisions take place) from within Mauritius.[1041] Within this framework, VASPs and initial token issuers must have effective and comprehensive strategies and risk management systems to assess and monitor the amounts and, types, and distribution of financial and non-financial resources, own funds, and unimpaired capital held.[1042] The VASP must also document how it has met the prudential requirements.[1043] When it comes to requirements with respect to disclosure, a general disclosure rule is imposed in section 4 to give due regard to the information needs of its consumers and communicate information to them in a way that is clear, fair, and not misleading.[1044] The *Virtual Asset and Initial Token Offerings Services (Consumer Disclosure) Rules 2022*[1045] under the *VAITOS Act*, stipulates that general information

[1037] VAITOS Act, Schedule 2, Section 2.

[1038] VAITOS Act, Schedule 2, Section 2.

[1039] VAITOS Act, Schedule 2, Section 2.

[1040] A closed-loop digital asset is a type of crypto asset that can only be used within a particular virtual environment. See KPMG, L Chou, C Daftary, P Garlett, N Suit, J Tompkins," Closed loop transactions vs Limited Access regulated networks under the final broker digital asset reporting regulations. (last accessed on 28 February 2025).

[1041] Sovereign "Mauritius brings VAITOS Act into force" (2022) available online at https://www.sovereigngroup.com/news/news-and-views/mauritius-brings-vaitos-act-2021-into-force/ (last accessed on 14 October 2023).

[1042] VAITOS Act, Section 20, Section 34(e).

[1043] VAITOS Act, Section 25(2)(f).

[1044] Virtual Asset and Initial Token Offerings Services (Client Disclosure) Rules 2022, Part II, Section 4.

[1045] Virtual Asset and Initial Token Offerings Services (Client Disclosure) Rules 2022, made by the Financial Services Commission under section 52 of the Virtual Asset and Initial Token Offerings Services Act. Government Notice No. 174 of 2022 available online at

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needs to be provided in writing, as applicable, before providing relevant products and or services: including the name and address and the contact details of the VASP; a description of the products and services provided; the languages and mode of communication; any specific technological requirements; the law and competent court applicable to the provision of the product or services and any other information as may be required.[1046]

Sections 17, 18, and 19 of the *VAITOS Act* set out the responsibilities of the VASPS. Section 17 articulates the requirements when it comes to the custody and protection of consumer's assets. Section 17(1) requires that the VASP maintain, in its custody, a sufficient amount of each type of virtual asset in order to meet its obligations to consumers. Section 17(2) stipulates that any virtual assets held by the VASP on behalf of their consumers are held for the consumer, are not considered to be that of the VASP, and cannot be considered by creditors as assets of the VASP. Market abuse provisions are provided for in section 18 of the *VAITOS Act*.

Section 18 of the *VAITOS Act* requires proportionate systems and controls to be applied to business activities, including: enabling transaction monitoring; record keeping; ensuring discharge of rights and liabilities; and business continuity. Section 19 of the *VAITOS Act* governs the transfer of virtual assets and includes requirements to obtain originator information as well as beneficiary information and keep it in a manner that can be provided to the FSC on request. Section 21 of the *VAITOS Act* requires that VASPS that hold virtual assets of consumers must keep their accounts in respect of such assets separate from any accounts kept in respect of any other business, thereby ringfencing the consumers' assets.

Section 29 of the *VAITOS Act* sets out specific disclosures with respect to initial token issuers when providing offers to financial consumers. In this section, it is required that

https://www.fscmauritius.org/media/130478/a2-virtual-asset-and-initial-token-offerings-services-client-disclosure-rules-2022.pdf (last accessed on 10 February 2025).

[1046] Virtual Asset and Initial Token Offerings Services (Client Disclosure) Rules, Section 5.

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an issuer of ICO's should publish its White Paper[1047], but before the close of the offer period, if it becomes aware of any information that could affect the interests of purchasers, it must immediately give written notice to the FSC and disclose that information by a supplement to the White Paper. This section further stipulates that where an issuer of ICO's fails to give written notice to the FSC or make a disclosure pursuant to subsection 29(1), it shall commit an offence and shall, on conviction, be liable to a fine not exceeding one million rupees and to imprisonment for a term not exceeding five years. For the purpose of this thesis, not all the remaining sections of the *VAITOS Act* will be considered, but the focus will briefly be on sections 31,32, 33, and 34. Section 31 deals with advertisements of ICO's. General rules on advertisements and specific rules on advertisements for virtual asset service providers are contained in the *FSC Rules* made by the Financial Services Commission under sections 31 and 52 of the *Virtual Asset and Initial Token Offerings Services Act* (Publication of advertisements), 2022 contained in *Government Notice No. 177 of 2022*.[1048] In terms of section 31, advertisements in respect of ICO's must be accurate, clearly identifiable as an advertisement, compliant with any *FSC Rules*[1049] issued under the *VAITOS Act*, and consistent with the White Paper issued.[1050]

The FSC has enabled powers under this section to direct any person to modify, amend, or remove an advertisement that appears to not comply with the FSC Rules under the *VAITOS Act* or that is false, inaccurate, or misleading, to the FSC. In respect

[1047] A white paper is a document that a token issuer provide that provides a full and accurate disclosure of information which would allow potential purchasers to make an informed decision. See Virtual Asset and Initial Token Offerings Services (Publication of Advertisements) Rules, Section 27(1).

[1048] Virtual Asset and Initial Token Offerings Services (Publication of Advertisements) Rules available online at https://www.fscmauritius.org/media/127914/virtual-assets-and-ito-publication-of-advertisements-rules.pdf (last accessed on 08 February 2025).

[1049] Subsequent to this enabling provision in respect of future rules published by the FSC in respect of advertisements, the FSC published bespoke rules for advertisements which must be complied with. See Virtual Asset and Initial Token Offerings Services (Publication of Advertisements) Rules 2022, made by the Financial Services Commission under sections 31 and 52 of the Virtual Asset and Initial Token Offerings Services Act. Government Notice No. 177 of 2022 available online at https://www.fscmauritius.org/media/130474/a5-virtual-asset-and-initial-token-offerings-services-publication-of-advertisements-rules-2022.pdf (last accessed on 10 February 2025).

[1050] Section 31 (1) (a) –(d) of the VAITOS Act.

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of section 32, the purchaser of an ICO where the White Paper contained material misrepresentation in respect of matters set out in Schedule 4 of the *VAITOS Act* has a right of action against the issuer for rescission of the subscription or in the alternative damages. Section 33 of the *VAITOS Act* provides the purchaser of such assets with the ability to withdraw the purchase by way of written notice to the initial token issuer in the initial 72 hours following the purchase. It, therefore, provides for a "cooling-off period".[1051] Where this right is exercised, the issuer must pay over the purchase price within five working days of the purchaser's request. Lastly, section 34 of the *VAITOS Act* prescribes the requirements in terms of the professional conduct of virtual asset service providers and issuers of initial token offerings. Amongst others, the requirements include the duty to act honestly and fairly; with due care and diligence; maintaining a high standard of professional conduct, and having measures in place to comply with the provisions of the *VAITOS Act*.[1052]

3.3.4 FSC Rules made by the Financial Services Commission under sections 31 and 52 of the Virtual Asset and Initial Token Offerings Services Act

The FSC issued eight different sets of rules under the *VAITOS Act*. The rules deal with: Capital and other Financial Requirements[1053]; Consumer Disclosure[1054]; Custody of

[1051] In its simplest form a cooling-off right can be described as a statutory right accorded a party in terms of which he or she may withdraw from the agreement without reason or penalty within a specified time, provided that this is done in accordance with the statutory formalities of the particular Act. See Barnard, Jacolien. 2020. "The Virtue of Cooling-off Rights to Consumers: 'Be in the Habit of Choosing the Mean' - A Comparative Discussion of South Africa, the United Kingdom and Belgium". *Comparative and International Law Journal of Southern Africa* 49 (1):1-23. Available online at https://unisapressjournals.co.za/index.php/CILSA/article/view/8227 (last accessed on 08 February 2025).

[1052] Section 34 (a) – (h) of the VAITOS Act.

[1053] Virtual Asset and Initial Token Offerings Services (Capital and Other Financial Requirements) Rules 2022, made by the Financial Services Commission under sections 20 and 52 of the Virtual Asset and Initial Token Offerings Services Act. Government Notice No. 173 of 2022 available online at https://www.fscmauritius.org/media/130477/a1-virtual-asset-and-initial-token-offerings-services-capital-and-other-financial-requirements-rules-2022.pdf(last accessed on 12 February 2025).

[1054] Virtual Asset and Initial Token Offerings Services (Client Disclosure) Rules 2022, made by the Financial Services Commission under section 52 of the Virtual Asset and Initial Token Offerings

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Consumers Assets[1055]; Cyber Security[1056]; Publication of Advertisements[1057]; Risk Management[1058]; Statutory Returns[1059]; and Travel[1060]. For the purposes of this thesis, the following sets of rules will not be addressed: Cyber Security; Statutory Returns; and Travel. The remainder of the sets of rules will be unpacked briefly for consideration of how they can be worked into a unified framework across African countries in order to inform the recommendations in Chapter Six of this thesis.

Services Act. Government Notice No. 174 of 2022 available online at https://www.fscmauritius.org/media/130478/a2-virtual-asset-and-initial-token-offerings-services-client-disclosure-rules-2022.pdf (last accessed on 12 February 2025).

[1055] Virtual Asset and Initial Token Offerings Services (Custody of Client Assets) Rules 2022, made by the Financial Services Commission under section 52 of the Virtual Asset and Initial Token Offerings Services Act. Government Notice No. 175 of 2022 available online at https://www.fscmauritius.org/media/130479/a3-virtual-asset-and-initial-token-offerings-services-custody-of-client-assets-rules-2022.pdf (last accessed on 12 February 2025).

[1056] Virtual Assets and Initial Token Offerings Services (Cybersecurity) Rules 2022, made by the Financial Services Commission under section 52 of the Virtual Asset and Initial Token Offerings Services Act. Government Notice No. 176 of 2022 available online at https://www.fscmauritius.org/media/130473/a4-virtual-asset-and-initial-token-offerings-services-cybersecurity-rules-2022.pdf (last accessed on 12 February 2025).

[1057] Virtual Asset and Initial Token Offerings Services (Publication of Advertisements) Rules 2022, made by the Financial Services Commission under sections 31 and 52 of the Virtual Asset and Initial Token Offerings Services Act. Government Notice No. 177 of 2022 available online at https://www.fscmauritius.org/media/130474/a5-virtual-asset-and-initial-token-offerings-services-publication-of-advertisements-rules-2022.pdf (last accessed on 12 February 2025).

[1058] Virtual Assets and Initial Token Offerings Services (Risk Management) Rules 2022, made by the Financial Services Commission under section 52 of the Virtual Asset and Initial Token Offerings Services Act. Government Notice No. 178 of 2022 available online at https://www.fscmauritius.org/media/130475/a6-virtual-asset-and-initial-token-offerings-services-risk-management-rules-2022.pdf (last accessed on 12 February 2025).

[1059] Virtual Asset and Initial Token Offerings Services (Statutory Returns) Rules 2022, made by the Financial Services Commission under Section 52 of the Virtual Asset and Initial Token Offerings Services Act. Government Notice No. 179 of 2022 available online at https://www.fscmauritius.org/media/130476/a7-virtual-asset-and-initial-token-offerings-services-statutory-returns-rules-2022.pdf (last accessed on 12 February 2025).

[1060] Virtual Asset and Initial Token Offerings Services (Travel) Rules 2022, made by the Financial Services Commission under section 52 (2) (c) of the Virtual Asset and Initial Token Offerings Services Act. Government Notice No. 226 of 2022 available online at https://www.fscmauritius.org/media/131321/a8-virtual-asset-and-initial-token-offerings-services-travel-rules-2022.pdf (last accessed on 12 February 2025).

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3.3.5 Virtual Asset and Initial Token Offerings Services (Capital and Other Financial Requirements) Rules 2022[1061] (Capital and other financial requirements rules)

The *Capital and Other Financial Requirements Rules*[1062] apply to all VASPs that carry out business in, or from, Mauritius and are read with the *VAITOS Act*. For the purposes of this thesis, only Part Two, which contains the general requirements, and Part III, which contains the capital requirements, will be critically considered. In terms of Part Two, a VASP must always have adequate unimpaired capital[1063] and liquidity resources considering its activities' nature, scale, and complexity and the risks to which it is or could be exposed.[1064] The rest of the sections under Part Two set out the factors the VASP needs to consider when determining capital and liquidity resource adequacy. Part Three, section 5 stipulates that a virtual asset service provider shall, as a minimum, as unimpaired capital and liquidity resources, have at all times "the greater of the own fund's requirement alternatively the prudential requirement or such other amount" as may be imposed by the FSC and will not take into account intangible assets, including goodwill, when calculating its capital. Section 6, which deals with the own fund's requirement, provides that combined capital requirements apply for each licence held by the VASP in the event of multiple licences. In respect of section 7, the VASP shall at all times have prudential safeguards equal to an amount of capital "that is at least the higher of one-quarter of the fixed overheads of the VASP over the preceding year", reviewed annually and resources requirements as determined under

[1061] Issued by way of Government Notice No.173 of 2022, available online at https://www.fscmauritius.org/media/130477/a1-virtual-asset-and-initial-token-offerings-services-capital-and-other-financial-requirements-rules-2022.pdf (last accessed on 31 October 2023).

[1062] Virtual Asset and Initial Token Offerings Services (Capital and Other Financial Requirements) Rules 2022, made by the Financial Services Commission under sections 20 and 52 of the Virtual Asset and Initial Token Offerings Services Act. Government Notice No. 173 of 2022 available online at https://www.fscmauritius.org/media/130477/a1-virtual-asset-and-initial-token-offerings-services-capital-and-other-financial-requirements-rules-2022.pdf(last accessed on 12 February 2025).

[1063] Unimpaired capital means capital that is not impaired by losses that exceed applicable reserves. See LawInsider," Unimpaired capital Definition" available online at https://www.lawinsider.com/dictionary/unimpaired-capital (last accessed on 12 February 2025).

[1064] Part II, Section (4)(1) of the Virtual Asset and Initial Token Offerings Services (Capital and Other Financial Requirements) Rules 2022.

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the *Virtual Asset and Initial Token Offerings Services (Risk Management) Rules 2022*. Lastly, in this Part Three, specifically section 7(3), it is stated that a VASP is prohibited from using unaudited interim profits in capital calculation unless it has obtained the FSC's prior approval.

3.3.6 Virtual Asset and Initial Token Offerings Services (Consumer Disclosure) Rules 2022

The general requirements under Part Two place requirements on the VASP to have due regard to the information needs of its consumers and communicate information to them in a way that is clear, fair, and not misleading. It is submitted that this can also be interpreted as a requirement that places a duty on the VASP to understand the market segment that the VASP is dealing with and accordingly comprehend the specific segment's level of understanding of the products and services and what level of information would be further required for that segment to make informed choices. Section 4(2) of the *Consumer Disclosure Rules* sets out various requirements when the virtual asset service provider communicates to consumers, including that the communications are accurate, up-to-date, and relevant to the means of communication used and do not disguise, diminish, or obscure important items, statements, or warnings.

Part Three sets out general disclosure requirements. Section 5(1) prescribes that certain information mentioned in (a) to (m) must be provided to the consumer before providing any actual products or services. The information required by section 5(1) includes details of the provider and a description of the products and services provided; the minimum duration of the contract, in the case of services to be performed permanently or recurrently; and other information listed here.[1065] What is very important

[1065] Section 5 (1) "A virtual asset service provider shall provide clients with the following general information in writing, as applicable before providing relevant products and / or services –
(a) the name and address of the virtual asset service provider, and the contact details necessary to enable a client to communicate effectively with the virtual asset service provider;
(b) a description of the products and services provided;

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when it comes to crypto assets, in the view of the writer of this thesis, is the disclosure provisions contained in sections 5(3)(d) and (e). These subsections require that the VASP must make a clear and prominent statement that past performance is not an indicator of future performance, and information provided based on past performance is required to be based on objective information. Also, any information provided on future performance must be balanced, objective, and clear on the basis for predicting future performance.

In Part Three, specific sections are allocated to deal with Virtual Asset Advisor Services, risk disclosure, fee disclosure, and disclosures when the virtual asset service provider holds the consumers' assets. Considering only the disclosure requirements with respect to holding virtual assets, the rules provide disclosure that the consumer's assets may be held by a third party, if applicable. Also required is disclosure as to what level of responsibility the VASP takes for any acts or omissions of the third party and what happens in the case of insolvency of that third party. The last of the substantive

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(c) the methods of communication to be used between the virtual asset service provider and the client;

(d) the languages in which the virtual asset service provider and clients may communicate;

(e) any specific technological requirements that the clients shall have in place in order to benefit from the products or services (for example, if the client must have a particular wallet in order to receive virtual asset);

(f) a statement of the fact that the virtual asset service provider is licenced under the Act and the activities for which it is licenced;

(g) a description, which may be provided in summary form, of any conflicts of interest which may arise and how the virtual asset service provider will ensure fair treatment of the client;

(h) any cancellation or withdrawal rights that the client has in relation to the products or services, including practical instructions for exercising any right to cancel or withdraw, including the contact details to which any cancellation or withdrawal notice shall be sent;

(i) minimum duration of the contract, in the case of services to be performed permanently or recurrently;

(j) any rights the parties may have to terminate the contract early or unilaterally under its terms, including any penalties imposed by the contract in such cases;

(k) details regarding how complaints may be made and the virtual asset service provider's procedure for handling complaints;

(l) the law and competent court applicable to the provision of the product / services; and

(m) any other information as may be required."

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sections, section 12, provides in relation to record-keeping, that the VASP must maintain adequate records of its communications with consumers for a period of not less than seven years after the relationship with the consumer has ended, or such other period which the FSC may request.

3.3.7 Virtual Asset and Initial Token Offerings Services (Custody of Consumer Assets) Rules 2022 (Custody of Consumer Assets Rules)

In the *Custody of Consumer Assets Rules*[1066]*,* an important step was taken to define what "custody" means in the aforementioned context with respect to crypto assets, as it materially differs from custody in respect of other assets and requires a unique definition to capture the holding of private keys, as the proof of ownership of assets. The "holding" of virtual assets, or virtual assets being "held," or to "hold" virtual assets, are defined within the *Custody of Consumers Assets Rule* as "the ability to exercise control over the virtual assets by use of a private key or another equivalent mechanism". Part Two sets out the general requirements relating to adequate arrangements so as to safeguard consumers' ownership rights, especially in the event of the Virtual Asset Custodian's insolvency. Section 4(2) of Part Two requires that the Custodian of Virtual Assets establish, implement and maintain adequate organisational arrangements to minimise and mitigate the risk of the loss or diminution of consumers' virtual assets or the rights in connection with those virtual assets. Part Three of the *Custody of Consumer Assets Rules* contains specific sections dealing with holding virtual assets[1067], hardware and software[1068], technology audits[1069], using virtual assets for own account[1070], and third-party security interests.[1071]

[1066] Virtual Asset and Initial Token Offerings Services (Custody of Client Assets) Rules 2022, made by the Financial Services Commission under section 52 of the Virtual Asset and Initial Token Offerings Services Act. Government Notice No. 175 of 2022 available online at https://www.fscmauritius.org/media/130479/a3-virtual-asset-and-initial-token-offerings-services-custody-of-client-assets-rules-2022.pdf (last accessed on 12 February 2025).

[1067] Section 5, Virtual Asset and Initial Token Offerings Services (Custody of Client Assets) Rules 2022.

[1068] Section 6, Virtual Asset and Initial Token Offerings Services (Custody of Client Assets) Rules 2022.

[1069] Section 7, Virtual Asset and Initial Token Offerings Services (Custody of Client Assets) Rules 2022.

[1070] Section 8, Virtual Asset and Initial Token Offerings Services (Custody of Client Assets) Rules 2022.

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Of the aforementioned, the technology audits section and third-party security interests are of specific importance for this study in terms of designing a usable framework across African countries. Hence, the sections that deal with these aspects are considered further. In particular, Section 7, dealing with technology audits, requires the Virtual Asset Custodian to appoint a suitably qualified and experienced independent third-party professional to conduct an annual audit of the Virtual Asset Custodian's hardware and software used to hold virtual assets. The section further requires a written report to be provided, setting out the methodology and results of the technology audit and listing any recommendations or areas of concern.[1072]

Section 9, which deals with third-party security interests, places restrictions on granting any security interest, lien, or right of set-off to another person over a consumer's virtual assets. Such a security interest, lien, or right of set-off can only occur in two ways, according to section 9. The first is if the security interest, lien, or right of set-off is in respect of debts that relate to one or more of the Virtual Asset Custodian's consumers or the provision of services by that other person to one or more of the Virtual Asset Custodian's consumers.[1073] The second way is if virtual assets are deposited with a third-party custodian and the applicable law of a third-country jurisdiction mandates a security interest, lien, or right of set-off, the Virtual Asset Custodian must inform the consumer of the associated risks.[1074] Additionally, the Virtual Asset Custodian must ensure that holding such assets under these conditions is in the best interests of their consumers.[1075]

[1071] Section 9, Virtual Asset and Initial Token Offerings Services (Custody of Client Assets) Rules 2022.

[1072] Section 7(2), Virtual Asset and Initial Token Offerings Services (Custody of Client Assets) Rules 2022.

[1073] Section 9(a)(i), Virtual Asset and Initial Token Offerings Services (Custody of Client Assets) Rules 2022.

[1074] Section 9(b)(i), Virtual Asset and Initial Token Offerings Services (Custody of Client Assets) Rules 2022.

[1075] Section 9(b)(ii), Virtual Asset and Initial Token Offerings Services (Custody of Client Assets) Rules 2022.

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3.3.8 Virtual Asset and Initial Token Offerings Services (Publication of Advertisements) Rules 2022 (Publication of Advertisement Rules)

Part Two of the *Publication of Advertisement Rules*[1076] contains the general provisions regarding the publication of advertisements. The general provisions stipulate, amongst other things, that advertisements must be fair; clear; complete; concise; unambiguous; and unbiased; they shall not be false; misleading; or deceptive; and must be consistent with the products and services provided. An important requirement is contained in section 4(6), which states that, before entering into a relationship with a consumer emanating from an advertisement, a VASP must ensure that consumers have received sufficient information regarding such products or services to make an informed decision. Section 6(1) requires that advertisements should be in plain language, and the language used should consider the target market to which the advertisement is directed. Section 6(2) deals with complex products and services and places a restriction on advertisements in the form of requiring that such advertisements may only be directed and promoted to a suitable target audience, and no wider.

The disclosure requirements contained in section 7 aim to ensure that disclosures are fair, balanced, and easily understandable and make it clear who the service provider is. Of particular importance to crypto assets is section 7(4), which prohibits using words such as “safe”, “secure,” or “risk-free,” or, for instance, phrases such as “best performing” or “first”, unless supported by independent sources. Section 9 provides requirements in respect of fees and costs of the relevant product or service. It requires that the information disclosed should be realistic in terms of what the level of fees will be for the consumer and that there is no concealment of costs.

[1076] Virtual Asset and Initial Token Offerings Services (Publication of Advertisements) Rules 2022, made by the Financial Services Commission under sections 31 and 52 of the Virtual Asset and Initial Token Offerings Services Act. Government Notice No. 177 of 2022 available online at https://www.fscmauritius.org/media/130474/a5-virtual-asset-and-initial-token-offerings-services-publication-of-advertisements-rules-2022.pdf (last accessed on 12 February 2025).

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Part Four of the *Publication of Advertisement Rules* contains the advertising conduct standards. Section 12 under Part Four places' duties on the third parties publishing advertisements. These duties include acting responsibly, with honesty, fairness, integrity, and professionalism, and avoiding aggressive or offensive sales practices or tactics. A duty is also placed on the third party to deal respectfully with consumers and ensure sufficient disclosure in a way that empowers consumers to make informed decisions. Lastly, the third party is further required, through these rules, to always be transparent regarding the relationship with the VASP and to preserve the consumer's confidentiality in dealings with the consumer. An interesting prohibition is imposed by section 13, which relates to inducements of consumers that are considered unreasonable in that they constitute a real or apparent attempt to influence the choices or decisions of the consumers. In the view of the writer, this prohibition attempts to limit inducements of a consumer in relation to the product or service itself, with its unique characteristics and not inducements with outside elements of a consumer into a contractual relationship. The last of the sections to be explored in terms of Part Four is section 16, which deals with non-written and direct marketing (including cold calls[1077]). In section 16(1), there is a prohibition on making cold calls without an existing relationship with the consumer. Section 16(2) sets out requirements in (a) to (d) regarding non-written communications initiated with consumers.

3.3.9 Virtual Asset and Initial Token Offerings Services (Risk Management) Rules 2022 (Risk Management Rules)

The *Risk Management Rules*[1078] provide for a risk management framework. Part Two, section 4 of the *Risk Management Rules* sets out the general requirements for risk

[1077] Cold calling is the business practice of contacting a potential client or client who has not expressed previous interest in speaking with a client service representative or making a purchase. See TechTarget, L Fitzgibbons, "cold calling", available online at https://www.techtarget.com/searchclientexperience/definition/cold-calling (last accessed on 12 March 2025).

[1078] Virtual Assets and Initial Token Offerings Services (Risk Management) Rules 2022, made by the Financial Services Commission under section 52 of the Virtual Asset and Initial Token Offerings Services Act. Government Notice No. 178 of 2022 available online at https://www.fscmauritius.org/media/130475/a6-virtual-asset-and-initial-token-offerings-services-risk-

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management with respect to virtual assets. The general requirements include effective and comprehensive strategies, processes, and risk management systems. The purpose of having these strategies, processes, and risk management systems in place is set out further under subsections 4(1)(a) to (c) of the *Risk Management Rules*. It includes having enough financial and non-financial resources, own funds, and unimpaired capital[1079] to cover the nature and level of risks and the need for liquid assets adequate to cover its liabilities as they fall due. Section 5 sets out the major sources of risks for VASPs and requires them to consider these as relevant in identifying and managing risks.

3.3.10 Guidance Note - Regulatory Treatment of Non-Fungible Tokens Issued under section 7(1)(a) of the Financial Services Act

On 30 November 2022, the FSC issued a Guidance Note titled "*The regulatory treatment of Non-Fungible Tokens".*[1080] In this *Guidance Notice* issued under section 7(1)(a) of the *Financial Services Act*, the FSC stipulated that the purpose of the *Guidance Notice* was to clarify the regulatory stance that would be adopted with respect to NFTs. The *Guidance Notice* explained the different forms that NFTs may take, and the regulatory approach taken by the FSC through the *VAITOS Act,* depending upon the form the NFT takes. The first form that an NFT can take is that NFTs can operate as a "digital representation of collectibles"[1081] but cannot be used for payment or investment purposes.[1082] In terms of the said *Guidance Notice*, in the use

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management-rules-2022.pdf (last accessed on 12 February 2025).

[1079] See Chapter 3, 3.3.5.

[1080] FSC Fintech Notes " Guidance Notes – Regulatory Treatment of Non-Fungible Tokens" available online at https://www.fscmauritius.org/media/131504/guidance-notes-on-regulatory-treatment-of-nfts.pdf (last accessed on 31 January 2024).

[1081] A digital collectible is a unique or limited-edition copy of a virtual item. Typically, there's a visual element such as digital art, a video clip, or a digital trading card. See The Motley Fool, A Levy, (2023), available online at https://www.fool.com/investing/stock-market/market-sectors/financials/non-fungible-tokens/digital-collectibles/ (last accessed on 12 March 2025).

[1082] FSC Fintech Notes " Guidance Notes – Regulatory Treatment of Non-Fungible Tokens" available online at https://www.fscmauritius.org/media/131504/guidance-notes-on-regulatory-treatment-of-nfts.pdf (last accessed on 31 January 2024).

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cases where an NFT is deemed as a genuine digital representation of collectibles and not used for payment or investment purposes, the activities associated with the NFT shall not fall under the regulatory purview of the FSC, i.e. under the *VAITOS Act*.[1083] The second form, according to the *Guidance Notice*, is where NFTs display certain securities characteristics. In this type of use case, the NFT acts as a transferable financial asset, such as fractional NFTs[1084], which means the NFTs shall be considered as "securities"[1085] as defined in the *Securities Act 2005 (Act No.22 of 2005)*.[1086] Where such an NFT constitutes a share or an interest in a collective investment scheme[1087],

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[1083] Guidance Notes – NFTs, Page 3.

[1084] Where fractional NFTs allow numerous purchasers to acquire a partial ownership or interest in an underlying financial asset or in a collective investment scheme.

[1085] Section 2 of the Securities Act 2005 defines "securities" as:

"(a) shares or stocks in the share capital of a company, whether incorporated in Mauritius or elsewhere, other than a collective investment scheme;

(b) debentures, debenture stock, loan stock, bonds, convertible bonds or other similar instruments;

(c) rights warrants, options or interests in respect of securities mentioned in paragraphs (a) and (b);

(d) treasury bills, loan stock, bonds and other instruments creating or acknowledging indebtedness and issued by or on behalf of or guaranteed by the Government of the Republic of Mauritius or the government of another country, a local authority or public authority, as may be prescribed;

(e) shares in, securities of, or rights to participate in, a collective investment scheme;

(f) depository receipts or similar instruments;

(g) options, futures, forwards and other derivatives whether on securities or commodities;

(h) any other transferable securities, interests or assets as may be approved by the Commission; or

(i) any such other instruments as may be prescribed;"

[1086] Securities Act 2005(Act No. 22 of 2005).

[1087] Section 2 of the Securities Act 2005 defines "collective investment scheme" as:

(a) means a scheme constituted as a company, a trust, or any other legal entity prescribed or approved by the Commission -

(i) whose sole purpose is the collective investment of funds in a portfolio of securities, or other financial assets, real property or non-financial assets as may be approved by the Commission;

(ii) whose operation is based on the principle of diversification of risk;

(iii) that has the obligation, on request of the holder of the securities, to redeem them at their net assets value, less commission or fees; and

(iv) where the participants do not have day to day control over the management of the property, whether or not they have the right to be consulted or to give directions in respect of such management; and

(b) includes closed-end funds whose shares or units are listed on a securities exchange; but

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its marketing or distribution to the general public constitutes a regulated business activity, in accordance with the provisions of the *Securities Act and the Securities (Collective Investment Schemes and Closed-end Funds) Regulations 2008*[1088] respectively. The third and last form that is provided for in the *Guidance Notice* is related to persons that issue NFTs that neither have characteristics of digital collectibles or securities nor administer, hold, transfer, or exchange NFTs that fall under the category of crypto (virtual) assets (i.e. those which are not digital collectibles and are not securities), which persons are required apply for the relevant licence in accordance with section 8 of the *VAITOS Act*.[1089] The *Guidance Notice* lastly contains a caution to the public and investors. The caution stipulates that they should familiarise themselves with the risks of NFTs and that holders of NFTs may be exposed to significant risks, including illiquid secondary markets, volatility, opaque pricing, hacking, and fraud. If further cautions that if a consumer as an investor is not sufficiently knowledgeable in respect of crypto assets, such consumer- investor should be cautious and rather avoid such investments.

3.4 Kenya

3.4.1 Local crypto asset landscape

Kenya, the second-largest Fintech hub in Sub-Saharan Africa, hosts around 20 per cent of the entire Sub-Saharan Africa Fintech landscape, with a strong focus on the payments segment.[1090] The projected revenue in the crypto asset market in Kenya is

(c) does not include such schemes as are specified in Part II of the Schedule.

[1088] As defined under regulation 2 of the Securities (Collective Investment Schemes and Closed-end Funds) Regulations 2008.

[1089] Guidance Notes – NFTs, Page 5.

[1090] Ernst & Young (2019). 'Fintechs in Sub-Saharan Africa: an Overview of Market Developments and Investment Opportunities'. London: Ernst & Young Global available online at https://www.researchgate.net/profile/Varun-Mittal-9/publication/347443598_Fintech_in_Sub-Saharan_Africa/links/5fdc595a45851553a0c730a8/Fintech-in-Sub-Saharan-Africa.pdf (Last accessed on 30 January 2024).

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expected to reach US$40.0m by 2025.[1091] In the cryptocurrency market, users are expected to amount to 5.78 million by 2027. User penetration is expected to hit 9.25% by 2027.[1092] Vibrant Fintech activity is found in this region. The majority of the innovations have been focused on mobile money and payments, e.g., M-Pesa[1093], T-Kash[1094], Airtel Money[1095], etc. Other innovations have been lending platforms e.g., Branch[1096], Tala[1097] and savings related innovations, e.g., M-Shawari[1098], and crowdfunding, e.g., M-Changa[1099]. There have been developments like treasury bond purchases through M-Akiba[1100] in the securities space.[1101] Crypto assets have also

[1091] Statista," Cryptocurrencies – Kenya",(2025), available online at https://www.statista.com/outlook/fmo/digital-assets/cryptocurrencies/kenya (last accessed on 13 April 2025).

[1092] Statista, "Cryptocurrencies – Kenya"(2023) available online at https://www.statista.com/outlook/fmo/digital-assets/cryptocurrencies/kenya#:~:text=Revenue%20in%20the%20Cryptocurrencies%20market,US%2418.1m%20by%202027 (last accessed on 06 November 2023).

[1093] M-PESA is Africa's most successful mobile money service and the region's largest Fintech platform. See M-Pesa, available online at https://www.m-pesa.africa/what-is-mpesa (last accessed on 12 March 2025).

[1094] T-Kash is a mobile payment solution owned by Telkom, a telecommunication provider with a presence in more than 38 African countries. See IT News Africa, "Telkom Kenya is Planning a Loan Product on T-Kash", available online at https://www.itnewsafrica.com/2022/06/telkom-kenya-is-planning-a-credit-product/ (last accessed on 12 March 2025).

[1095] Airtel Money is a secure & convenient mobile commerce service. See Airtel Kenya, available online at https://www.airtelkenya.com/airtelmoney/about_airtelmoney (last accessed on 12 March 2025).

[1096] Branch is a bank in your pocket. It makes it easy for people in Kenya to access loans, transfer money, pay bills and save at competitive rates. See Branch International, available online at https://branch.co.ke/faq#:~:text=About%20Branch&text=Branch%20is%20a%20bank%20in,our%20website%20to%20learn%20more (last accessed on 12 March 2025).

[1097] Tala bridges digital and cash ecosystems to help clients seamlessly manage their financial lives, all in one app. See Tala, available online at https://tala.co/ (last accessed on 12 March 2025).

[1098] M-Shwari creates a safe environment for clients to borrow small amounts and links the amounts of credit available to the ability to save. See Vodafone, available online at https://www.vodafone.com/news/corporate-and-financial/m-shwari (last accessed on 12 March 2025).

[1099] M-Changa is Africa's first and largest crowdfunding platform. See Moving Worlds, available online at https://movingworlds.org/organization/876 (last accessed on 12 March 2025).

[1100] M-Akiba is a retail infrastructure bond issued by the Government of Kenya, which seeks to enhance financial inclusion for economic development. See National Treasury of Kenya," M-Akiba", available

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been part of the innovations in this region. According to the United Nations Conference on Trade and Development (UNCTAD)[1102], significant proportions of the population of African states are using digital currencies, rating Kenya at 8.5%, South Africa at 7.1% and, Nigeria at 6.3%. According to the *Meltwater Digital Report* (2023)[1103], about 12.4 percent of Kenyans aged between 16 and 64 own some form of crypto assets, with a majority of traders being male. Investors buy cryptocurrencies to preserve their savings or carry out remittances.[1104]

Other purposes for which crypto assets are being used locally include paying for goods and services. Transactions through cryptocurrency are seen as convenient and quick by the locals and have a strong appeal among those who want to remain anonymous in their transactions.[1105]

3.4.2 Local regulatory and supervisory approach and landscape

Three regulators contribute to Kenya's regulatory ecosystem. The first is the Central Bank of Kenya, which administers the *National Payments Systems Act, 2011 no. 39 of*

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online at https://www.treasury.go.ke/916-2/ (last accessed on 13 March 2025).

[1101] Irene Muthoni, Bowmans Law "Unscrambling the Blockchain - Regulation in Kenya" available online at https://bowmanslaw.com/wp-content/uploads/2018/09/Unscrambling-Blockchain_Session-1_Regulatory-Frameworks.pdf (last accessed on 06 November 2023).

[1102] UNCTAD is a permanent intergovernmental body established by the United Nations General Assembly in 1964. See Un Trade and Development, available online at https://unctad.org/about (last accessed on 13 March 2025).

[1103] An in-depth analysis of the latest trends in digital behaviour around the world by report author Simon Kemp. See The Global State of Digital in October 2023, available online at https://www.meltwater.com/en/blog/global-state-of-digital-october-2023 (last accessed on 13 March 2025).

[1104] Edna Mwenda "Business Daily – Kenyans invest average of Sh2,000 in crypto currencies"(2023) available online at https://www.businessdailyafrica.com/bd/markets/capital-markets/kenyans-invest-average-of-sh2-000-in-crypto-currencies--4157394 (last accessed on 06 November 2023).

[1105] Business Daily, "UN: Over 4 million Kenyans own crypto, highest share in Africa" available online at https://www.businessdailyafrica.com/bd/markets/currencies/un-kenya-tops-africa-s-share-of-crypto-clients-3870328 (last accessed on 13 March 2025).

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2011.[1106] The *Central Bank of Kenya* is a public institution established under Article 231 of the *Constitution of Kenya, 2010.*[1107] It is responsible for formulating monetary policy to achieve and maintain price stability and issuing currency.[1108] The *Central Bank of Kenya Act (Act No: CAP 491)*sets out the objectives of the Central Bank of Kenya.[1109] The Central Bank of Kenya promotes financial stability through regulation, supervision, and licencing of financial institutions under its mandate. Further to this, the Central Bank of Kenya provides oversight of payment, clearing, and settlement systems within the country.[1110] The mandate of the Central Bank is discharged through six main core functions: the first and primary of these is monetary policy.[1111] In terms of monetary policy, the Central Bank of Kenya collects and analyses economic and financial data and undertakes research in micro- and macro-economic activities to inform the formulation of monetary policy geared towards achieving and maintaining stability in the general level of prices.[1112] The second of the core functions is in terms of financial markets.[1113] In terms of implementing monetary policy, the Central Bank of Kenya employs financial tools at its disposal to foster liquidity in the financial market and manage the growth of credit in the economy. The Central Bank of Kenya manages the country's foreign exchange reserves and intervenes to mitigate unforeseen disruptions in order to ensure stability in the foreign exchange market. Further, the Central Bank of Kenya delegates its agency role to the National Treasury as it

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[1106] The National Payment System Act, 2011 no. 39 of 2011, available online at https://www.centralbank.go.ke/images/docs/legislation/NATIONAL%20PAYMENT%20SYSTEM%20ACT%20(No%2039%20of%202011)%20(2).pdf (last accessed on 23 February 2025).

[1107] Parliament of Kenya, Constitution of Kenya,2010 – Nairobi, available online at http://www.parliament.go.ke/sites/default/files/2023-03/The_Constitution_of_Kenya_2010.pdf (last accessed on 23 February 2025).

[1108] Central Bank of Kenya "Our mission" available online at https://www.centralbank.go.ke/our-mission/ (last accessed on 08 November 2023).

[1109] Central Bank of Kenya Act (Act No: CAP. 491), available online at http://kenyalaw.org:8181/exist/kenyalex/actview.xql?actid=CAP.%20491 (last accessed on 23 February 2025).

[1110] Section 4A, Central Bank of Kenya Act (Act No: CAP. 491).

[1111] Section 4(1), Central Bank of Kenya Act (Act No: CAP. 491).

[1112] Central Bank of Kenya "Our mission" available online at https://www.centralbank.go.ke/our-mission/ (last accessed on 08 November 2023).

[1113] Section 4(2), Central Bank of Kenya Act (Act No: CAP. 491).

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manages the government's domestic borrowing. The third of these core functions relates to its mandate in terms of banking supervision.[1114]

The Central Bank of Kenya provides a legal and regulatory framework as set out in the *CBK (Currency Handling) Regulations 2010*[1115], *Banking (Credit Reference Bureau) Regulations 2020*[1116], and issues *prudential guidelines* to govern the operations of financial institutions under its mandate. One example of prudential guidelines that was issued was the *Guideline on licencing of new institutions under the Bank Act*.[1117] It also licences[1118] and supervises financial institutions in accordance with the *Central Bank of Kenya Act (Act No: CAP 491)* to ensure compliance with laws and regulations.

The fourth of the core functions relates to the Central Bank's oversight of the payments and settlement systems in Kenya since safe and efficient payment and settlement systems are a key component of an effective and efficient financial sector. The Central Bank of Kenya's fifth core function is providing bank services to the government. Regarding this function, the Central Bank of Kenya's website explains that the Central Bank is the banker for the government, encompassing the national government, government ministries, parastatals, and county governments. These institutions hold a variety of accounts with the Central Bank, depending on their needs, which allow them to receive deposits and make payments. The Central Bank monitors these accounts to

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[1114] Commercial banks and mortgage finance institutions are licenced and regulated in accordance with the provisions of the Banking Act and the Regulations and Prudential Guidelines issued thereunder. See Central Bank of Kenya," Bank Supervision", available online at https://www.centralbank.go.ke/bank-supervision/ (last accessed on 23 February 2025).

[1115] CBK (Currency Handling) Regulations 2010, available online at https://www.centralbank.go.ke/wp-content/uploads/2016/08/cbk-currency-handling-regulations2010.pdf (last accessed on 23 February 2025).

[1116] Banking (Credit Reference Bureau) Regulations 2020, available online at https://www.centralbank.go.ke/wp-content/uploads/2021/05/Credit-Reference-Bureau-Regulations-2020.pdf (last accessed on 23 February 2025).

[1117] Central Bank of Kenya, "Guideline on licencing of new institutions under the Bank Act", (2013), available online at https://www.centralbank.go.ke/wp-content/uploads/2016/08/PRUDENTIAL-GUIDELINES.pdf (last accessed on 13 April 2025).

[1118] Section 33 B and 4A(1)(c), Central Bank of Kenya Act (Cap 491).

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ensure that the institutions are not at risk of becoming overdrawn, and the Central Bank also advises the institutions on financial matters.[1119] The last of the core functions relates to currency services. In terms of this function, the law prescribes that the Central Bank of Kenya is the only institution that may issue currency within the borders of Kenya.[1120] To meet its objectives in terms of this core function, the Central Bank of Kenya safeguards that it procures adequate and secure currency for distribution to meet the needs within the borders.[1121]

The second authority is the Capital Markets Authority (Authority), which administers the *Capital Markets Act (Cap. 485A)*.[1122] The Capital Markets Authority is an independent public agency established by an Act of Parliament, *Capital Markets Act (Cap. 485A)*, under the National Treasury and Economic Planning: The State Department for Economic Planning.[1123] The Capital Markets Authority is charged with the prime responsibility of both regulating and developing an orderly, fair, and efficient capital market in Kenya to promote market integrity and investor confidence.[1124] The statute that created the *Capital Markets Act (Cap. 485A),* and the regulations[1125] issued thereunder provide for the regulatory functions of the Capital Markets Authority.

[1119] Central Bank of Kenya "Our mission" available online at https://www.centralbank.go.ke/our-mission/ (last accessed on 08 November 2023).

[1120] Central Bank of Kenya Act (Cap 491), Section 22(1).

[1121] Central Bank of Kenya Act (Cap 491), Part 5, Sections 19 – 25.

[1122] Capital Market Act (Cap.485A), available online at https://kenyalaw.org/kl/fileadmin/pdfdownloads/Acts/CapitalMarketsAct_Cap485A.pdf (last accessed on 23 February 2025).

[1123] The State Department for Economic Planning is responsible for the formulation, coordination of implementation, monitoring, and evaluation of economic development plans, policies, and strategies towards achieving the national development agenda. See Republic of Kenya -The National Treasury & Economic Planning: State Department of Economic Planning, available online at https://www.planning.go.ke/ (last accessed on 23 February 2025).

[1124] Capital Markets Authority "About us" available online at https://www.cma.or.ke/about-us/ (last accessed on 10 November 2023).

[1125] The Capital Markets (Public Offers, Listings and Disclosures) Regulations, 2023 made pursuant to Section 12 (1) of the Capital Markets Act, available online at http://www.parliament.go.ke/sites/default/files/2024-03/Capital%20markets%20regulations%2C%202023%20%28LN%20NO.%20170%20OF%202023%2C%20LN%20NO.%20171%20OF%202023%2C%20LN%20NO.%20172%20OF%202023%20AND%20LN%20NO.%20173%20OF%202023%29-compressed.pdf (last accessed on 23 February

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Some of the regulatory functions include the licencing and supervision of all the capital market intermediaries and regulating and supervision of the issuance of the capital market products. Further regulatory functions include promoting market development, investor education, and public awareness, as well as ensuring proper conduct of all licenced persons and market institutions. The Board[1126] provides the overall policy direction and leadership to the Authority.[1127] The Board's primary responsibility is the protection of the interests of investors, the government, employees, issuers of securities, and market intermediaries.[1128]

The last authority or regulator that will be unpacked in this study with respect to Kenya is the Communications Authority, which administers the *Kenya Information and Communications Act,1998 (CAP. 411A)*.[1129] The Communications Authority of Kenya is the regulatory authority for the *Information and Communication* (ICT) industry in Kenya.[1130] The Communications Authority was first established in 1999 by the *Kenya Information and Communications Act, 1998(CAP. 411A)*. In terms of the statute, the Authority is responsible for facilitating the development of the information and communications sectors including: broadcasting; cybersecurity; multimedia; telecommunications; electronic commerce; postal and courier services. Some of the responsibilities of the Communications Authority include licencing and monitoring all systems and services in the communications industry, facilitating the development of a national cybersecurity framework, and developing e-commerce.[1131] Other

2025).

[1126] Means the Board of the Authority constituted under section 5 of the Capital Market Act (Cap.485A).

[1127] Capital Markets Authority, "The Capital Markets Authority Handbook",(2021),Page 14, available online at https://www.cma.or.ke/wp-content/uploads/2023/05/CMA-Handbook-2021.pdf (last accessed on 23 February 2025).

[1128] Paragraph 1, Capital Markets Authority "About us" available online at https://www.cma.or.ke/about-us/ (last accessed on 10 November 2023) (last accessed on 13 November 2023).

[1129] Kenya Information and Communications Act,1998(CAP. 411A), available online at https://kenyalaw.org/kl/fileadmin/pdfdownloads/Acts/KenyaInformationandCommunicationsAct(No2of1998).pdf (last accessed on 23 February 2025).

[1130] Communications Authority "Who we are" available online at https://www.ca.go.ke/ (last accessed on 13 November 2023).

[1131] Kenya Information and Communications Act Cap. 411A, Pre-amble, Page 9, available online at

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responsibilities include regulating retail and wholesale tariffs for communications services and managing the universal service fund.[1132] The vision of the Communications Authority, as found on its website, is a Digitally Transformed Nation.[1133] Looking at the mission page, the mission of the Authority is stipulated as building a connected society through enabling regulation, partnership, and innovation. The Communications Authority regards its core values as integrity, innovation, and excellence.[1134]

This section will consider the scope of the crypto assets' regulation by the authorities that have been discussed above. In terms of the scope of the Central Bank of Kenya empowered through the *National Payments Systems Act*, the Central Bank of Kenya is tasked to oversee and regulate payment systems and payment service providers in Kenya. With respect to crypto assets, in 2015, the Central Bank of Kenya took the first step and published public warnings on the risks of cryptocurrencies.[1135] The warnings published communicated that cryptocurrency is volatile and lacks specific regulation in Kenya. The Central Bank of Kenya did not ban or prohibit crypto asset activities, therefore, Kenyans are legally allowed to buy and sell cryptocurrencies.[1136] The Central Bank of Kenya subsequently demonstrated an active approach to regulation. It regulates cryptocurrencies through Kenya's *Money Remittance Regulations, 2013,*[1137]

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https://eregulations.invest.go.ke/media/Kenya%20Information%20and%20Communications%20Act%201998.pdf (last accessed on 23 February2025).

[1132] Kenya Information and Communications Act Cap. 411A, Section 84J, Page 65.

[1133] Report of the Auditor General of Communications Authority of Kenya for the year ended 30 June 2022, available online at https://www.treasury.go.ke/wp-content/uploads/2024/10/Communication-Authority-of-Kenya-2021_2022.pdf (last accessed on 23 February 2025).

[1134] Kenya Information and Communications Act (KICA) of 1998, Section 83(c).

[1135] Public Notice "Caution to the public regarding virtual currencies such as Bitcoin"(2015) available online at https://www.centralbank.go.ke/images/docs/media/Public_Notice_on_virtual_currencies_such_as_Bitcoin.pdf (last accessed on 14 November 2023).

[1136] Public Notice "Caution to the public regarding virtual currencies such as Bitcoin"(2015) available online at https://www.centralbank.go.ke/images/docs/media/Public_Notice_on_virtual_currencies_such_as_Bitcoin.pdf (last accessed on 14 November 2023).

[1137] Money Remittance Regulations, 2013, available online at https://www.centralbank.go.ke/wp-

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stipulating that cryptocurrency companies must acquire licencing from Kenyan authorities to offer transmission services in Kenya. In the understanding of the writer, how these regulations capture crypto assets are that it is worded in such a manner that when there is a transfer of any representation of monetary value without payment accounts created in the names of both the payee and the payer, a licence is required. This applies when: funds are received from a payer to transfer a corresponding amount to a payee or another payment service operator acting on behalf of the payee and where funds are received on behalf of and made available to the payee. Practically, this means that all CASPS would require a licence in terms of the regulations to do business within the borders of Kenya. The result of not having such a licence while performing the licenced activities is that the banking services to these entities are suspended. A case law example is *Lipisha Consortium Limited & another v Safaricom Limited*.[1138] In this case, Safaricom suspended Lipisha Consortium's and Bitpesa's M-PESA services because Bitpesa was operating a money remittance business through Bitcoin without the Central Bank of Kenya's authorisation.

At the time of this court case, which was served before the court in 2015, the Central Bank of Kenya had not yet stated its position on cryptocurrencies. The High Court of Kenya classified cryptocurrency trading as money remittance in this court case, stating that "money remittance business" is defined in law as "a service for the transmission of money or any representation of monetary value without any payment accounts being created in the name of the payer or the payee".[1139]

Looking at what the Governor of the Central Bank of Kenya, Mr Patrick Njoroge, was saying in the media, it seems to the writer that the Central Bank of Kenya conveyed that it would be embarking on a formal regulatory framework sooner rather than later. Mr Patrick Njoroge stated, according to the Kenyan WallStreet published on 23 September 2022 that:[1140]

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content/uploads/2016/08/Thelectronic_money-Remittance-Regulations-2013.pdf (last accessed on 23 February 2025).

[1138] Lipisha Consortium Limited & another v Safaricom Limited [2015] eKLR.

[1139] Lipisha Consortium Limited & another v Safaricom Limited [2015] eKLR.

[1140] The Kenyan WallStreet "Kenya Creating Legal Framework for Crypto Regulation – Central Bank"

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> "Regulation should not be sort of the enemy of innovation. On the contrary I think they work hand-in-hand… So, we are not in the business of inhibiting innovations. But what we need to do is to be sure that the framework around it is appropriate for our society."

To further highlight that the Central Bank of Kenya is proactive in its approach, it can be noted that the Central Bank of Kenya issued a *Discussion Paper*, titled "*Discussion Paper on Central Bank Digital Currency, 2022"*, assessing the applicability of a central bank digital currency (CBDC)[1141] in the country and seeking comment from the public on the technology. The *Discussion Paper* was underpinned by three broad themes: people-centricity, country context, and balance between opportunities and risks. The *Discussion Paper* was released on February 10, 2022.[1142] CBDC uses the technology that underlies crypto assets, but they are issued and stored more centrally.[1143]

(2022) available online at https://kenyanwallstreet.com/kenya-creating-legal-framework-for-crypto/ (last accessed on 14 November 2023).

[1141] Central bank Digital Currencies, or CBDCs, are a novel form of digital central bank money that represent the culmination of state efforts to manage this digital transition. They are designed to provide attractive instruments for both wholesale and retail functions, as well as bolster Central Banks' influence and control over the economy through new monetary, fiscal policy tools and programmable capabilities. See Lambis Dionysopoulos, Miriam Marra, Andrew Urquhart, Central bank digital currencies: A critical review, International Review of Financial Analysis, Volume 91, 2024, 103031, ISSN 1057-5219, https://doi.org/10.1016/j.irfa.2023.103031(last accessed on 20 March 2025).

[1142] Central Bank of Kenya, "Discussion Paper on Central Bank Digital Currency, 2022"(2022) available online at https://www.centralbank.go.ke/uploads/discussion_papers/CentralBankDigitalCurrency.pdf (last accessed on 14 November 2023).

[1143] Central Bank Digital Currencies (CBDCs) represent an innovative form of digital central bank money, epitomizing the culmination of governmental efforts to navigate the digital transition. These currencies are meticulously designed to serve both wholesale and retail purposes, thereby enhancing the central banks' influence and control over the economy. This is achieved through the implementation of novel monetary and fiscal policy tools, as well as programmable capabilities. See Lambis Dionysopoulos, Miriam Marra, Andrew Urquhart, *Central bank digital currencies: A critical review, International Review of Financial Analysis*, Volume 91, 2024, 103031, ISSN 1057-5219, https://doi.org/10.1016/j.irfa.2023.103031, (last accessed on 13 April 2025).

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The objective of the *Discussion Paper* was to inform policy decisions and public acceptance regarding financial sector innovation. Further to this *Discussion Paper*, the Central Bank of Kenya published a *Comments Paper,* titled "*Discussion Paper on Central Bank Digital Currency: Comments from the Public".*[1144] This follow-up publication, published in May 2023, summarises the views that were received on the applicability of a CBDC in Kenya, in addition to providing an update on key CBDC developments since February 2022.[1145] The most recent developments in Kenya with respect to crypto assets at the time of writing (March 2025) are that on January 9, 2025, the Cabinet Secretary for National Treasury and Economic Planning[1146] introduced the *Virtual Assets Service Provider's Bill 2025.*[1147] This pivotal piece of legislation is presently in the public participation phase, representing a crucial advancement in the regulation of virtual assets (VAs) and VASPs within Kenya. The *Bill* is designed to mitigate the regulatory and financial risks associated with the misuse of VAs, thereby establishing a comprehensive legislative framework that promotes development in innovation while safeguarding economic stability and consumer protection through adequate oversight.[1148]

[1144] Central Bank of Kenya,"Discussion Paper on Central Bank Digital Currency: Comments from the Public",(2023), available online at https://www.centralbank.go.ke/wp-content/uploads/2023/06/Discussion-Paper-on-Central-Bank-Digital-Currency-Comments-from-the-Public.pdf (last accessed on 23 February 2025).

[1145] Central Bank of Kenya "Central Bank Digital Currency – Comments from the Public"(2023) available online at https://www.centralbank.go.ke/wp-content/uploads/2023/06/Discussion-Paper-on-Central-Bank-Digital-Currency-Comments-from-the-Public.pdf (last accessed on 14 November 2023).

[1146] John Mbadi is the Cabinet Secretary (CS) for The National Treasury and Economic Planning. Before his appointment, Hon. Mbadi had an extensive career in public service, most recently serving as a nominated Member of Parliament (MP) and the Chairperson of the Public Accounts Committee in the National Assembly. See The National Treasury of Kenya, available online at https://www.treasury.go.ke/member/hon-cpa-john-mbadi-ngongo-egh-cabinet-secretary/#:~:text=John%20Mbadi%20is%20the%20Cabinet,Committee%20in%20the%20National%20Assembly (last accessed on 27 March 2025).

[1147] The National Treasury of Kenya, The Virtual Asset Services Bill, 2025, available online at https://www.treasury.go.ke/wp-content/uploads/2025/01/VIRTUAL-ASSET-SERVICE-PROVIDERS-BILL-2024.pdf (last accessed on 27 March 2025).

[1148] The National Treasury & Economic Planning, "Public Notice Draft National Policy on Virtual Assets and Virtual Asset Services Providers", available online at https://www.mygov.go.ke/sites/default/files/2025-

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Although tax laws are not a focus area in this research, for completeness' sake, the writer wishes the reader to note that the Kenyan government passed the *Digital Assets Tax* into law through the *Finance Act 2023 (Act No. 4 of 2023)*[1149], mandating crypto users to pay a 3% tax anytime they exchange an asset. The *Digital Assets Tax* (DAT), an amendment to Kenya's *Financel Act 2023 (Act No. 4 of 2023)*, came into effect on 01 September 2023.[1150] From a taxation perspective, Kenya also published the *Value Added Tax on Digital Marketplace Supply ("VAT-DMPS") Regulations* 2020[1151] to operationalise provisions imposing VAT on digital market supplies. Both the *DAT* and the VAT on digital marketplace regulations are aimed at giving Kenya the right to tax income earned by businesses without a physical presence in Kenya but which derive income from Kenya.[1152]

3.5 Namibia

3.5.1 Local crypto asset landscape

Namibia is witnessing an increasing interest in cryptocurrencies, as evidenced by the adoption of blockchain technology[1153] by local exchanges and businesses. This trend is

01/Public%20Notice%20Draft%20National%20Policy%20on%20Virtual%20Assets%20and%20Virtual%20Asset%20Service%20Providers%3B%20and%20Virtual%20Assets%20Service%20Providers%20Bill%2C%202024.pdf (last accessed on 27 March 2025).

[1149] Finance Act 2023(Act No.4 of 2023) available online at https://kenyalaw.org/kl/fileadmin/pdfdownloads/Acts/2023/TheFinanceAct_No.4of2023.pdf (last accessed on 13 March 2025).

[1150] Jacob Kabochi, Emily Wayua, Andrew Wanjiru(2023) "Taxation of the digital economy: A Kenyan perspective" available online at https://pwc-kenya.foleon.com/financial-focus-magazine-2020/pwc-financial-focus-2021/taxation-of-the-digital-economy-a-kenyan-perspective/ (last accessed on 27 November 2023).

[1151] Value Added Tax on Digital Marketplace Supply ("VAT-DMPS") Regulations 2020, available online at https://kra.go.ke/images/publications/Draft-VAT-Digital-Supply-Regulations-2020---29-05-2020.pdf (last accessed on 13 March 2025).

[1152] Jacob Kahochi paragraph 4.

[1153] See Chapter 1, 1.1.

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aimed at promoting greater financial inclusivity within the country. According to Statista, it is projected that the number of users in the crypto assets market for Namibia will reach 108.18k users by 2025.[1154] Furthermore, according to Statista[1155], revenue from crypto assets is expected to show an annual growth rate (CAGR 2023-2027) of 11.49%, resulting in a projected total amount of US$3.1m by 2027. It is further expected, according to the Statista market insights, that user penetration will be 5.40% in 2023 and is expected to hit 8.10% by 2027. Some of the crypto asset exchanges available in Namibia are Skilling[1156], Binance[1157], Avatrade[1158], Exness[1159], OKX[1160], Nexo[1161], and Kucoin.[1162]

[1154] Statista, " Cryptocurrencies – Namibia',(2025), available online at https://www.statista.com/outlook/fmo/digital-assets/cryptocurrencies/namibia (last accessed on 14 April 2025).

[1155] Statista, Market Insights, Namibia (2023) available online at https://www.statista.com/outlook/fmo/digital-assets/cryptocurrencies/namibia (last accessed on 27 November 2023).

[1156] Skilling enables you to trade CFD instruments across the most renowned asset classes across multiple award-winning platforms, including its own advanced proprietary platform. See Skilling," About us", available online at https://skilling.com/row/en/about-us/ (last accessed on 14 March 2025).

[1157] Binance is the world's leading cryptocurrency exchange, catering to 235 million registered users in over 180 countries. See Binance," Buy/Sell Bitcoin, Ether and Altcoins", available online at https://www.binance.com/en-ZA (last accessed on 14 March 2025).

[1158] AvaTrade is a regulated broker, founded in 2006, with the primary mission to empower people to trade with confidence. See AvaTrade South Africa, available online at https://www.avatrade.co.za/about-avatrade/why-avatrade (last accessed on 14 March 2025).

[1159] The Exness Group is a multi-asset brokerage, offering clients access to financial instruments such as CFDs on crypto, forex, and commodities, among others. See Exness,"About Us", available online at https://get.exness.help/hc/en-us/articles/360016475859-About-Exness (last accessed on 14 March 2025).

[1160] OKX is one of the world's largest and most trusted crypto platforms to buy, sell, trade, and earn crypto. See Capterra South Africa, "OKX Reviews - Capterra South Africa 2025", available online at https://www.capterra.co.za/reviews/1036947/okx#:~:text=OKX%20is%20one%20of%20the,%2C%20trade%2C%20and%20earn%20crypto (last accessed on 14 March 2025).

[1161] Nexo is a premier digital assets wealth platform designed to empower clients to grow, manage, and preserve their crypto holdings. See Nexo," What is Nexo", available online at https://support.nexo.com/article/what-is-nexo#:~:text=Nexo%20is%20a%20premier%20digital,by%2024%2F7%20client%20care (last accessed on 14 March 2025).

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3.5.2 Local regulatory and supervisory approach and landscape

In Namibia, there are two financial regulators: the Bank of Namibia and the Namibia Financial Institutions Supervisory Authority (NAMFISA). NAMFISA is an independent institution established under the *Namibia Financial Institutions Supervisory Authority Act, 2001 (Act No. 3 of 2001) (NAMFISA Act)*.[1163] It regulates and supervises financial institutions in the financial services industry in the public interest and is fully funded by levies imposed on this industry. According to the *NAMFISA Act*, the Authority's functions include advising the Minister of Finance and supervising the business of financial institutions and financial services. In terms of the *NAMFISA Act*, some of the functions of the Authority include advising the Minister of Finance and exercising supervision over the business of financial institutions and financial services. Further to this, NAMFISA supervises, monitors, and enforces compliance with the *Financial Intelligence Act, 2012 (Act 13 of 2012)*,[1164] with respect to all accountable and reporting institutions supervised by NAMFISA in terms of the *NAMFISA Act*. The mission of NAMFISA is to regulate and supervise financial institutions and intermediaries to foster a stable, fair, non-banking financial sector, promote consumer protection, and provide sound advice to the Minister of Finance.[1165] In terms of its vision, it comprises of having a safe, stable, and fair financial system contributing to the economic development of Namibia, in which consumers are protected. The other regulator is the Bank of Namibia. The Bank of Namibia was established in 1990 by the *Bank of Namibia Act*, 1990.[1166] The Bank of Namibia is Namibia's central bank, whose establishment is

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[1162] Kucoin is a digital currency exchange that allows user to buy coins with a credit card, bank transfer, and Apple Pay with data security. See Capterra South Africa, available online at https://www.capterra.co.za/software/1032888/kucoin (last accessed on 14 March 2025).

[1163] NAMFISA Act available online at https://www.lac.org.na/laws/annoSTAT/Namibia%20Financial%20Institutions%20Supervisory%20Authority%20Act%203%20of%202021.pdf (Last accessed on 14 March 2025).

[1164] This law addresses suspicious financial activities that may relate to money laundering or terrorism, by giving certain persons and businesses a duty to report on certain transactions.

[1165] NAMFISA" Mission, Vision & Values" available online at https://www.namfisa.com.na/mission-vision-values/ (last accessed on 28 November 2023).

[1166] Bank of Namibia "About us" available online at https://www.bon.com.na/About-Us.aspx (last

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enshrined in Article 128 of the *Namibian Constitution*[1167], adopted on 9 February 1990. It is located in the capital city of Windhoek.

The Bank of Namibia is responsible for formulating and implementing monetary policy, issuing banknotes and coins, and promoting financial stability.[1168] The object of the Bank is to promote monetary stability and to contribute towards financial stability conducive to the sustainable economic development of Namibia.[1169] It is also responsible for supervising the banking sector, administering exchange controls, and managing foreign exchange reserves.[1170] Lastly, the Bank of Namibia's responsibilities include ensuring the effective functioning of the national payments system and acting as the banker to the Government of Namibia.

In terms of monetary policy, the focus is on maintaining price stability.[1171] The Bank of Namibia sets a midway target of promoting both an economic and financial environment that results in the Namibian dollar and the South African rand having the same price. Regarding the maintenance of price, the Bank of Namibia maintains the stock of international reserves at levels adequate to cover Namibia's international transactions as well as above a minimum threshold defined as the amount of currency in circulation plus a 30-day moving average of commercial banks' net foreign payments.[1172] Looking at the responsibility of banking supervision, the Bank of Namibia supervises authorised banking institutions as defined in the *Banking Institutions Act, 2023 (Act No. 13 of 2023).*[1173] Seven of these are commercial banks.[1174] There is one

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accessed on 29 November 2023).

[1167] Namibian Constitution, (1990), available online at https://www.lac.org.na/laws/annoSTAT/Namibian%20Constitution.pdf (Last accessed on 14 March 2025).

[1168] Pre-amble, Bank of Namibia Act, 1990.

[1169] Section 4, Bank of Namibia Act, 1990.

[1170] Pre-amble, Bank of Namibia Act, 1990.

[1171] Bank of Namibia, "Monetary Policy", available online at https://www.bon.com.na/Bank/Monetary-Policy.aspx;Section 4(1), Bank of Namibia Act, 1990. (last accessed on 14 March 2025).

[1172] Bank of Namibia "Monetary policy" available online at https://www.bon.com.na/Bank/Monetary-Policy.aspx (last accessed on 29 November 2023).

[1173] Section 1 of Institutions Act, 2023 (Act No. 13 of 2023) defines "banking institution" to mean:" a

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branch of a foreign institution[1175] and one representative office. Another part of the supervision undertaken by the Bank of Namibia is the resolution of complaints. The Banking Supervision Department of the Bank of Namibia facilitates the expression and resolution of written or verbal grievances regarding banking institutions' products or services or their failure to provide these products or services to their consumers.[1176] This is a responsibility shared between NAMFISA and the Bank of Namibia in regard to financial stability. Responsibility for financial stability falls under the Bank of Namibia[1177] and NAMFISA[1178], respectively.

Currently, the Bank of Namibia primarily undertakes the role of promoting and maintaining financial stability in Namibia, with input and consultations with NAMFISA, the Ministry of Finance, and other partners.[1179] The roles are set out in the Financial Stability and Macroprudential Oversight Framework.[1180] In terms of supporting the

public company authorised under this Act to conduct banking business." Available online at https://www.bon.com.na/Regulations/Banking-Institutions-Act-2023.aspx (last accessed on 14 March 2025).

[1174] The commercial banks regulated by the Bank of Namibia are Banco Atlantico, Bank BIC Namibia Limited, Bank Windhoek Limited, First National Bank Namibia Limited, Nedbank Namibia Limited, Standard Bank Namibia Limited, and Letshego Bank Namibia Limited. See Bank of Namibia," The Banking System in Namibia", available online at https://www.bon.com.na/Bank/Banking-Supervision/The-Banking-System-in-Namibia.aspx (last accessed on 14 March 2025).

[1175] Banco Privado Atlantico - Europa, S.A. See Atlantico, available online at https://www.atlantico.na/homepage/atlanticoglobal/aboutatlantico (last accessed on 14 March 2025).

[1176] Bank of Namibia " Banking supervision" available online at https://www.bon.com.na/Bank/Banking-Supervision/The-Banking-System-in-Namibia.aspx last accessed on 29 November 2023).

[1177] Section 4 of the Bank of Namibia Act, 2020(Act No. 1 of 2020),available online at https://www.bon.com.na/CMSTemplates/Bon/Files/bon.com.na/81/8145f41a-768a-4690-9c9c-cf3c9cc24ec8.pdf (last accessed on 21 February 2025).

[1178] Section 3(b),NAMFISA Act, (Act No. 3 of 2001), available online at https://www.namfisa.com.na/download/namibia-financial-institutions-supervisory-authority-2021-act-no-3-of-2021/?wpdmdl=23356&refresh=67b8c8d130c5e1740163281 (last accessed on 21 February 2025).

[1179] Bank of Namibia " Financial Stability" available online at https://www.bon.com.na/Bank/Financial-Stability/Responsibility-for-financial-stability.aspx last accessed on 29 November 2023).

[1180] Bank of Namibia, "Financial Stability and Macroprudential Oversight Framework", available online at https://www.bon.com.na/CMSTemplates/Bon/Files/bon.com.na/93/93164959-35c0-4e0f-accb-45993c75dd82.pdf (last accessed on 14 April 2025).

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functioning of the national payments system, the Bank of Namibia is supported by the National Payment System Department, which ensures efficient and effective payment and settlement systems.[1181]

3.5.3 The Namibia Virtual Assets Act 2023

Namibia enacted the country's first crypto assets-related legislation, the *Namibia Virtual Assets Act, 10 of 2023*, to licence and regulate Virtual Asset Service Providers[1182] and Initial Token-Offering Service Providers.[1183] The *Virtual Assets Act, 2023 (Act No. 10 of 2023) (Virtual Assets Act 2023*) became operational on 25 July 2023 and is administered by the Bank of Namibia. The Bank of Namibia Governor, Johannes !Gawaxab remarked, following the newly assigned and additional regulatory mandate, that:

> "The monetary system consists of money and payment systems. The ability of the monetary system to function effectively depends on the public's confidence in the system. New technologies, products, and related services have the potential to spur financial innovation and efficiency and improve financial inclusion, but they also create opportunities for criminals to launder their proceeds or finance their illegal activities".

The preamble of the *Virtual Assets Act 2023* stipulates that it was enacted to provide "for the licencing and regulation of virtual asset service providers and to designate a

[1181] Bank of Namibia," National Payment System), available online at https://www.bon.com.na/Bank/National-Payment-System.aspx (last accessed on 21 February 2025).

[1182] "virtual asset service provider" means a person that by way of business provides virtual asset services for or on behalf of another person. See section 1 of the Virtual Assets Act,2023(Act No.10 of 2023), (last accessed on 21 February 2025).

[1183] Namibia Economist "Legislation to reduce the risks associated with investing in Virtual Assets enacted"(2023) available online at https://economist.com.na/81498/retail/legislation-to-reduce-the-risks-associated-with-investing-in-virtual-assets-enacted/;"initial token offering" means to offer to the public for sale a virtual token in exchange for fiat currency or another virtual asset. See section 1 of the Virtual Assets Act,2023(Act No.10 of 2023), (last accessed on 07 December 2023).

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regulatory authority to regulate and supervise virtual asset service providers and related activities, for purposes of ensuring consumer protection, preventing market abuse and preventing or mitigating the risk of money laundering and financing of terrorism and proliferation activities posed by virtual assets markets; and to provide for incidental matters." The *Virtual Assets Act 2023* consists of six chapters in total. Chapter One deals with the preliminary provisions, while Chapter Two sets out the designation of a regulatory authority and the powers and functions of the said regulatory authority. The licencing of virtual asset service providers is dealt with in Chapter Three of the *Virtual Assets Act 2023*. Chapter Three is set out in eight parts. Part One contains the licencing provisions, Part Two deals with the conduct of business and professional conduct, and Part Three sets out requirements in relation to the officers of the licence holders. Part Four prohibits issuing and transferring shares or interest, and Part Five outlines the responsibilities of the licence holder. Part Six contains the licence holder's responsibilities, and Part Seven provides for any amendments relating to licence and business activities. Lastly, in Chapter Three, Part Eight, contains the additional requirements relating to the initial token offering. Chapter Four sets out the provisions regarding the cancellation or suspension of a licence and the ceasing of business activities. Chapter Five sets out the provisions concerning inspection and investigation, and Chapter Six ends with the general provisions. The chapters containing the substantive provisions in respect of the licencing and regulation of virtual asset service providers will be set out hereinafter for further consideration and discussion.

Drawing from the *FSB High-Level recommendations*[1184]*,* specifically recommendation one, Chapter Two of the *Virtual Assets Act 2023* will be considered as to whether it aligns with this recommendation. The *FSB High-Level recommenda*tion one stipulates that Authorities should have and utilise, the appropriate powers, tools, and adequate resources to regulate, supervise, and oversee crypto-asset activities and markets, and enforce relevant laws and regulations effectively.[1185]

[1184] See Chapter 3, 3.2.3.

[1185] Financial Stability Board" High-level Recommendations for the Regulation, Supervision and Oversight of Crypto asset Activities and Markets"(2023) available online at https://www.fsb.org/wp-content/uploads/P170723-2.pdf; See Chapter 2, 2.2.4,(last accessed on 08 December 2023).

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Chapter Two of the *Virtual Assets Act 2023* provides foremost, that the Minister of Finance must, by notice in the Gazette, designate one or more entities as the regulatory authority to exercise the powers and perform functions of the regulatory authority in terms of this Act or any other law.[1186] Chapter Two also provides for the following powers and functions of the regulatory authority: licencing of virtual asset service providers;[1187] regulating, supervising and monitoring activities relating to the provision of virtual asset services;[1188] appointing inspectors for purposes of inspections and investigations required by the Act;[1189] making rules;[1190] issuing directives and taking enforcement against licence holders and other persons;[1191] publishing guidelines regarding the interpretation, application and enforcement of this Act;[1192] cooperating with the supervisory authority, competent authorities, investigating authorities and comparable entities, on sharing and exchange of relevant information;[1193] promoting investor education and other conditions that facilitate innovation and development of virtual assets;[1194] determining fees payable in terms of this Act;[1195] advising the Minister on all matters relating to virtual assets;[1196] and exercising powers and performing functions of the regulatory authority in terms of the Act or any other law.[1197] Comparing this section 6 of the *Virtual Assets Act 2023* to the *FSB High-Level Recommendation one*, illuminating the substance of the recommendation, it provides that Authorities should have the powers and capabilities to enforce applicable regulatory, supervisory, and oversight requirements, including authorisation and licencing requirements, and the ability to undertake inspections or examinations. While the empowering provisions to licence virtual asset service providers and to regulate,

[1186] Section 5(1) of the Virtual Assets Act,2023(Act No.10 of 2023).
[1187] Section 6(a) of the Virtual Assets Act,2023(Act No.10 of 2023).
[1188] Section 6(b) of the Virtual Assets Act,2023(Act No.10 of 2023).
[1189] Section 6(c) of the Virtual Assets Act,2023(Act No.10 of 2023).
[1190] Section 6(d) of the Virtual Assets Act,2023(Act No.10 of 2023).
[1191] Section 6(e) of the Virtual Assets Act,2023(Act No.10 of 2023).
[1192] Section 6(f) of the Virtual Assets Act,2023 (Act No.10 of 2023).
[1193] Section 6(g) of the Virtual Assets Act,2023(Act No.10 of 2023).
[1194] Section 6(h) of the Virtual Assets Act,2023(Act No.10 of 2023).
[1195] Section 6(i) of the Virtual Assets Act,2023 (Act No.10 of 2023).
[1196] Section 6(j) of the Virtual Assets Act,2023 (Act No.10 of 2023).
[1197] Section 6(k) of the Virtual Assets Act,2023 (Act No.10 of 2023).

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supervise, and monitor activities relating to the provision of virtual asset services sit within Chapter Two, the detail regarding how this mandate should be undertaken is set out in Chapter Three.[1198]

The *Virtual Assets Act 2023* provides for inspection powers in Chapter Five[1199], while the empowering provision is located in Chapter Two.[1200] In Chapter Five, it is provided that the regulatory authority may, from time to time, inspect and audit the books of any person who was, or is a licence holder, or any person who is or was a virtual asset service provider without holding a licence required by the *Virtual Assets Act 2023,* to determine the extent of compliance with the requirements of the Act.[1201]

In terms of licencing, the *Virtual Assets Act 2023* stipulates that a person may not operate as a virtual assets' provider[1202], unless that person is a company incorporated in Namibia, or is an individual, close corporation, partnership, trust, or an entity registered in Namibia and has a registered place of business in Namibia. Furthermore, suppose that person will be a token issuer. In that case, there is also a requirement of incorporation, and whether a virtual assets provider or token issuer[1203], such person must be licenced under the *Virtual Assets Act 2023*.[1204] The considerations in respect of a licence application consist both of pre-determined information that is listed in this section 8(3), but also, interestingly, the Bank of Namibia, as Regulator, may, on the determination of the application, consider any international standard relating to virtual assets, and any relevant information obtained from a competent authority or a comparable entity.[1205] In the writer's view, this allowance to consider international

[1198] Sections 7 to 14 of the Virtual Assets Act,2023(Act No.10 of 2023).

[1199] Sections 34 to 37 of the Virtual Assets Act,2023(Act No.10 of 2023).

[1200] Section 6(c) of the Virtual Assets Act,2023(Act No.10 of 2023).

[1201] Section 35(1) of the Virtual Assets Act,2023(Act No.10 of 2023).

[1202] Section 1 of the Virtual Assets Act,2023 (Act No.10 of 2023) defines "virtual asset service provider" to mean a person that by way of business provides virtual asset services for or on behalf of another person.

[1203] Section 1 of the Virtual Assets Act,2023 (Act No.10 of 2023) defines "token issuer" to mean a company that by way of business operates as issuer of initial offering.

[1204] Section 7 of the Virtual Assets Act,2023(Act No.10 of 2023).

[1205] Section 9(1) of the Virtual Assets Act,2023(Act No.10 of 2023).

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standards and other information from a competent authority or comparable entity, could serve as a good addition to a theoretical framework for licencing across African countries.

In terms of the pre-requisites listed in the *Virtual Assets Act 2023*, these consist of particulars of the natural person or company, including address and technology utilised, information to determine fit and properness, business plans and policies, and measures taken to meet obligations under the *Virtual Assets Act 2023* as well as those emanating from the *Financial Intelligence Act, 13 of 2012*.[1206] Chapter Three, Part Six deals with the financial requirements and enables the regulatory authority, by way of Government Notice, to prescribe the prudential requirements in relation to minimum unimpaired capital.

Following the enactment of the *Virtual Assets Act 2023*, *General Notice No. 513* was published by the Bank of Namibia, titled "*Capital and Other Financial Requirements: Virtual Assets Act, 2023",* published on 01 September 2023.*[1207]* This *General Notice* sets out the capital requirements in Chapter Three of the *General Notice* and the fixed overheads in Chapter Four. The *General Notice* applies to persons issued with a licence under the Act to operate as virtual asset service providers or as token issuers. As required by the general requirements, a licence holder must, at all times, have sufficient unimpaired capital and liquidity resources of such nature, amount, and quality that result in the capital and liquidity resources of the licence holder, when taken as a whole, being adequate, taking into account the nature, scale, and complexity of its activities and the risks to which it is or could be exposed.[1208] The general requirement also lists relevant matters in determining adequacy, including the type of business

[1206] Section 8(3) (a) – (q) of the Virtual Assets Act,2023(Act No.10 of 2023).

[1207] General Notice 513, Bank of Namibia: Capital and Other Financial Requirements: Virtual Assets Act, 2023 available online at https://gazettes.africa/akn/na/officialGazette/government-gazette/2023-09-01/8197/eng@2023-09-01 (last accessed on 21 February 2025).

[1208] General Notice 513, Bank of Namibia: Capital and Other Financial Requirements: Virtual Assets Act, 2023, Chapter 2, Section 3(1).

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being carried on, liability exposure, risks, and consideration of any outsourcing of services.[1209]

Part Three of the *General Notice* requires that the licence holder, at a minimum, have unimpaired capital and liquidity resources higher than the own fund's requirement[1210] and the prudential requirements[1211] or alternatively, such amounts specified by the regulatory authority under section 19 of the Virtual Assets Act *2023*. Part Three also stipulates the prudential safeguards and requires them to be equal to an amount of capital that is at least higher than one-quarter of the fixed overheads over the preceding year, and also equal to the financial resource's requirements determined under the *Bank of Namibia: Risk Management Rules: Virtual Assets Act, 2023*[1212] published under the *Virtual Asset Act 2023*. Part Three, section 6 of the *Risk Management Rules* contains enforcement in respect of contravention and provides wide powers to the regulatory authority. It may, therefore, "as it considers appropriate in the circumstance" and in accordance with the Act, issue a directive, suspend, or cancel a licence or amend a condition of a licence, impose administrative sanctions, or institute criminal proceedings in terms of the *Virtual Asset Act 2023*.[1213]

Returning to the *Virtual Assets Act 2023*, the writer is of the view that Part Six contains very important provisions regarding crypto assets, including requirements for the separation of accounts.[1214] In this part, it is provided that a licence holder that holds virtual assets of consumers must keep the accounts with respect to the virtual assets service separate from any other accounts.[1215] Part of important internal controls is ensuring that consumer funds are clearly identifiable and segregated from company

[1209] General Notice 513, Bank of Namibia: Capital and Other Financial Requirements: Virtual Assets Act, 2023, Chapter 2, Section 3(2)(a) – (d).

[1210] Contained in paragraph 5.

[1211] Contained in paragraph 6.

[1212] General Notice 514, Bank of Namibia: Risk Management Rules: Virtual Assets Act, 2023.

[1213] General Notice 513, Bank of Namibia: Capital and Other Financial Requirements: Virtual Assets Act, 2023, Part 6, Section 15.

[1214] General Notice 513, Bank of Namibia: Capital and Other Financial Requirements: Virtual Assets Act, 2023, Part 6, Section 20.

[1215] Section 17(2) of the Virtual Assets Act,2023(Act No.10 of 2023).

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revenues. In recent years, it has been seen that the commingling of consumer and corporate funds can be a precursor to heavy losses for consumers of financial firms.[1216]A string of publicised crypto failures leading to a loss for consumers due to the lack of protection of consumer assets, including the separation of consumer funds from business funds.[1217] Section 13 of the *Virtual Assets Act 2023* deals with the conduct of licence holders. It requires the licence holders to act honestly and fairly in respect of virtual asset services and also to act with due care, skill, and diligence. It further requires that the licence holder observes and maintains a high standard of professional conduct and ensures that appropriate measures are put into place for the protection of consumers' virtual assets, as well as having effective corporate governance arrangements consistent with sections 14 to 16 of the *Virtual Assets Act 2023*. Lastly, it provides that a licence holder must implement and maintain measures to preserve consumer information confidentiality.[1218]

Part three of the *Virtual Assets Act 2023* concerns the officers of the licence holder. The term "officer"[1219] is a defined concept in the *Virtual Assets Act 2023*, meaning "a director of a board, chief executive officer, managing director, manager, partner, trustee, company secretary, compliance officer, or other individual holding a similar position or performing a similar function or purporting to act in such capacity".[1220] In summary, the main components of the requirements imposed on officers in terms of Part three deal with the topics of fit and proper criteria, residency, rules, notification requirements, and notice of termination. An officer of a licence holder is required to be

[1216] The United States Security Exchange Commission and Commodity Futures Trading Commission alleged that the founder of the collapsed FTX crypto exchange, Sam Bankman-Fried, for years had commingled client funds at his trading firm and used the monies to finance venture capital investments, political donations and real estate purchases. See U.S. Securities and Exchange Commission," SEC Charges Samuel Bankman-Fried with Defrauding Investors in Crypto Asset Trading Platform FTX",2022 available online at https://www.sec.gov/newsroom/press-releases/2022-219 (last accessed on 10 December 2023).

[1217] Allyson Versprille, Lydia Beyoud, Bloomberg "A Handful of Simple Rules Might Have Prevented FTX's Demise"(2022) available online at https://www.bloomberg.com/news/articles/2022-12-08/a-handful-of-simple-rules-might-have-prevented-ftx-s-demise (last accessed on 10 December 2023).

[1218] Section 13(2) of the Virtual Assets Act,2023(Act No.10 of 2023).

[1219] Virtual Assets Act,2023(Act No.10 of 2023), Page 6.

[1220] Section 14 of the Virtual Assets Act,2023(Act No.10 of 2023).

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fit and proper. “Fit and proper” is defined in the *Virtual Assets Act 2023* to mean a person with the attributes contained in section 4 of the *Virtual Assets Act 2023*.[1221] In section 4, it is stated that the regulatory authority must have regard to the financial standing, the relevant experience and experience, the person's ability, reputation, character, financial integrity, and reliability when assessing whether such a person is considered fit and proper for a specific office.

Part four of the *Virtual Assets Act 2023*, specifically section 15, provides very tight control measures with respect to the issuing and the transfers of shares or interest in a licence holder. Licence holders are prohibited from issuing or transferring shares, legal interest, or beneficial interest without prior written approval from the regulatory authority.[1222] However, transfers of less than 5% are exempt unless they result in the transferee holding more than 25% or a change in effective control.[1223] This section, amongst other aspects, requires that licence holders must notify the regulatory authority of any issuance or transfer of less than 5%. Also, the prescribed applications for issuing or transferring shares must follow the form and manner set by the regulatory authority, including required information, documents, and an application fee. In terms of the submitted applications, the regulatory authority can approve or refuse applications, with or without conditions, and must provide reasons for refusals.[1224] Approval can be forthcoming in cases where the transferee’s influence ensures prudent business conduct and compliance with relevant laws, the transferee is fit and proper, and it serves the public interest. This section also imposes criminal and monetary sanctions for non-compliance with approval or notification requirements that can result in fines up to N$10,000,000, imprisonment up to 10 years, or both.[1225]

Part five of the *Virtual Asset Act 2023* contains the requirements relating to the responsibilities of the licence holder.[1226] This part sets out the requirements in terms of

[1221] Section 4(1)(a) – (e) of the Virtual Assets Act,2023(Act No.10 of 2023).

[1222] Section 15(1) of the Virtual Assets Act,2023(Act No.10 of 2023).

[1223] Section 15(2) of the Virtual Assets Act,2023(Act No.10 of 2023).

[1224] Section 15(5)(a) of the Virtual Assets Act,2023(Act No.10 of 2023).

[1225] Section 15 (7) of the Virtual Assets Act,2023(Act No.10 of 2023).

[1226] Part 5 Responsibilities of licence holder, Page 15, Virtual Assets Act,2023(Act No.10 of 2023).

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the safekeeping and protection of consumers' virtual assets. Section 20 is a separate section that deals with the requirement to keep the consumer's funds separate.[1227] In terms of safekeeping and protection, the *Virtual Asset Act 2023* stipulates that when a licence holder holds virtual assets on behalf of consumers, it should also maintain a sufficient amount of such types of virtual assets that are unencumbered and are not the property or virtual assets of the licence holder.[1228]

What is, however, not dealt with in this part in respect of the protection and safekeeping of consumers' assets, are requirements in respect of cyber security protections, including denial of service protections, security patches, firewalls, resiliency, penetration testing, and independent reviews.[1229] Also, there are no requirements requiring the licence holder, for instance, to provide information to the consumer regarding where their virtual assets will be kept and information about relevant transactions or resolution requirements to ensure that consumers retain access to, and ownership of, their virtual assets in the event of failure or segregation of duties and internal control audits for instance.[1230] In respect of information disclosure to consumers about the custody of their virtual assets, the Bank of Namibia has, under section 51(1) of the *Virtual Asset Act 2023*, made the *Consumer Disclosure Rules: Virtual Asset Act,2023*,[1231] which contains a section that deals with disclosure requirements when holding virtual assets.

In the *Virtual Asset Act 2023*, it is required that a licence holder must, within four months after the end of each financial year, file with the regulatory authority an audited financial statement in respect of all transactions and balances relating to their virtual

[1227] Section 20, Page 17, Virtual Assets Act,2023(Act No.10 of 2023).

[1228] Section 16(2)(a) –(c), Page 15, Virtual Assets Act,2023(Act No.10 of 2023).

[1229] Global Digital Finance," Crypto Asset Safekeeping and Custody Key Considerations and Takeaways" available online at https://www.gdf.io/wp-content/uploads/2019/02/GDF-Crypto_asset-Safekeeping_20-April-2019-2-cust-providers-additions-1-2.pdf (last accessed on 19 September 2024).

[1230] Global Digital Finance, Page 13.

[1231] General Notice No. 518 Bank of Namibia: Client Disclosure Rules, 2023: Virtual Asset Act, 2023 available online at https://www.lac.org.na/laws/2023/8202.pdf (last accessed on 19 September 2024).

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asset service.[1232] For the purpose of this section[1233] the *Virtual Asset Act 2023* defines a "financial year" in respect of the first year, as a period not exceeding eighteen months from either the date of incorporation or the date of licence issuance, following by a period not exceeding twelve months.[1234] Various activities of the licence holder require written approval from the regulatory authority before they can be undertaken.[1235] These activities include the licence holder expanding the scope of its business activities or the issuance of new virtual tokens, and any contemplated merger with another entity. Further restricted activities include the appointment of an officer[1236], the licence holder adding or reducing its shareholders, or changing or modifying its name. What is interesting here is the approval requirement in respect of new virtual tokens.[1237] It is submitted that regulators globally have had different appetites for product approval requirements in legislation. There is notably no statutory test set out in the *Virtual Asset Act 2023*, which sets out the minimum requirements in either principle or rules-based provisions as to what tokens need to meet to obtain such regulatory approval.

Some of the arguments brought against regulators approving products to confirm that they meet regulatory requirements and outcomes are that it may be unduly intrusive, not be feasible from a resource perspective, and stifle the progress of innovation.[1238] The *Virtual Assets Act 2023* also makes certain distinctions between different types of tokens in the *Virtual Assets Act 2023* and then prescribes unique requirements for these specific tokens, considering their structure and use.[1239] This type of distinction can also be considered within a framework that allows for multi-jurisdictional business

[1232] Section 21(2), Page 17 of the Virtual Assets Act,2023(Act No.10 of 2023).

[1233] Section 21, Page 17 of the Virtual Assets Act,2023(Act No.10 of 2023).

[1234] Section 21(1) (a) & (b) of the Virtual Assets Act,2023(Act No.10 of 2023).

[1235] Section 22(1), Page 18 of the Virtual Assets Act,2023(Act No.10 of 2023).

[1236] Officer is defined to mean a director of a board, chief executive officer, managing director, manager, partner, trustee, company secretary, compliance officer, or other individual holding a similar position or performing a similar function or purporting to act in such a capacity. See Section 1 of the Virtual Assets Act,2023(Act No.10 of 2023) (last accessed on 19 September 2024).

[1237] Section 30(2), Page 30 of the Virtual Assets Act,2023(Act No.10 of 2023).

[1238] Global Digital Finance, Page 5.

[1239] Part 5 sets out the responsibilities for Virtual Asset Service Providers, while Part 8 deals with initial token offerings specifically. See Virtual Assets Act,2023(Act No.10 of 2023), Part 5 and 8. (last accessed on 21 February 2025).

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under one licence as proposed in this research. To this end, Part eight of the *Virtual Assets Act 2023* sets out the additional requirements relating to initial token offerings.[1240]

The additional requirements in Part eight cover, among other topics, advertisements in respect of initial token offerings, a disclosure requirement, a prospectus, and purchasers' rights of withdrawal, rescission, or damages. It mandates that a prospectus must be drawn up, notified, and published before any initial token offering can proceed.[1241] This prospectus must be accessible online for the duration of the offer period and at least 15 days thereafter, providing full and accurate information to potential purchasers. The prospectus must be signed by all board members of the token issuer and include necessary documentation as per the rules.[1242] The regulatory authority has the power to direct amendments to the prospectus if supplementary information is required. Non-compliance with these requirements can result in severe penalties, including fines of up to N$10,000,000 or imprisonment for up to 10 years.[1243] The offer period for distributing virtual tokens is restricted to six months, with any extensions subject to regulatory action.[1244]

If new information arises that could affect purchasers' interests, the token issuer must promptly notify the regulatory authority and amend the prospectus. The classification of virtual tokens must be clearly identified in the prospectus, and any changes require prior approval from the regulatory authority.[1245] Advertisements for ICO's must be accurate, identifiable, consistent with the prospectus, and comply with regulatory criteria. Purchasers have the right to rescind their subscription or claim damages if the prospectus contains material misrepresentations. They can withdraw their purchase within 72 hours of the agreement, and full refunds will be processed within five working

[1240] Part 8, Page 19 of the Virtual Assets Act,2023(Act No.10 of 2023).

[1241] Section 24(1), Page 19 of the Virtual Assets Act,2023(Act No.10 of 2023).

[1242] Section 24(4)(a), Page 19 of the Virtual Assets Act,2023(Act No.10 of 2023).

[1243] Section 24(6), Page 20 of the Virtual Assets Act,2023(Act No.10 of 2023).

[1244] Section 25(2), Page 20 of the Virtual Assets Act,2023(Act No.10 of 2023).

[1245] Section 27(1), Page 20 of the Virtual Assets Act,2023(Act No.10 of 2023).

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days.[1246] It is submitted that this right of withdrawal is an important requirement that offers much-needed protection in cases of material misrepresentation.

For the purposes of this research, the last Chapter of the *Virtual Assets Act 2023,* that will be considered, is Chapter Four, which deals with the cancellation or suspension of licence and the ceasing of the business of the licence holder. Chapter Five, which outlines the details regarding investigations and inspections, will not be discussed because the process may differ materially from that of an entity operating across multiple jurisdictions under a single licence. In summary, in terms of Chapter Four, the regulatory authority has the power to cancel or suspend a licence if certain conditions are met.[1247] These include: violations of the *Virtual Assets Act 2023*; failure to commence virtual asset services within 12 months[1248]; providing false information;[1249] and not being fit and proper persons.[1250] Other grounds include non-compliance with financial laws; dissolution or deregistration of the licence holder; and termination of authority in another country. The process involves notifying the licence holder; specifying the grounds and period of suspension; and allowing for representations.[1251]

The regulatory authority must consider these representations before making a final decision. Upon cancellation or suspension of the licence holder, the regulatory authority must inform the licence holder, supervisory authority, competent authority, and the public. In urgent cases, the regulatory authority can temporarily suspend a licence without prior notice to protect the public or financial industry. The licence holder can also notify the regulatory authority of their intention to cease operations, submit a cessation plan, and follow the directions provided by the regulatory authority.[1252]

[1246] Section 30(2) and (3), Page 22 of the Virtual Assets Act,2023(Act No.10 of 2023).

[1247] Section 31, Page 22 of the Virtual Assets Act,2023(Act No.10 of 2023).

[1248] Section 31(1)(b), Page 22 of the Virtual Assets Act,2023(Act No.10 of 2023).

[1249] Section 31(1)(c), Page 22 of the Virtual Assets Act,2023(Act No.10 of 2023).

[1250] Section 31(1)(d), Page 22 of the Virtual Assets Act,2023(Act No.10 of 2023).

[1251] Section 31(2) – (5), Page 22 of the Virtual Assets Act,2023(Act No.10 of 2023).

[1252] Section 33, Page 24 of the Virtual Assets Act,2023(Act No.10 of 2023).

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3.5.4 Stock Exchanges Control Act 1 of 1985 (NAM)

The *Namibian Stock Exchanges Control Act 1985 ("SEC Act")* regulates, inter alia, stock exchanges[1253], stock-brokers[1254], and security-backed loans. The definition of "securities" in the *SEC Act* aligns with its traditional interpretation and includes stocks, shares, debentures, notes, options (on such stock, shares, debentures, or notes), and corresponding rights.[1255]

Hence, crypto assets do *not* fall within the definition of "security" in the *SEC Act 1985*. The *SEC Act 1985* will be repealed by the *Financial Institutions and Markets Act 2 of*

[1253] Namibian Stock Exchanges Control Act 1985, Section 1. "stock exchange" means –

(i) in relation to premises of a licenced stock exchange, the one place in those premises which is recognized by the committee of that stock exchange to be the place where dealings in listed securities may take place; and

(ii) in relation to persons, a number of persons who either on their own account or on behalf of their employers, congregate at intervals, regular or other, for the purpose of buying and selling securities on behalf of other persons or on their own account;

[1254] Namibian Stock Exchanges Control Act 1985, Section 1. "stock-broker" means any person who is a member of a licenced stock exchange and is under the rules of that stock exchange authorized to carry on the business of buying and selling securities on behalf of other persons or on his own account, or on behalf of other persons and on his own account;

[1255] Namibian Stock Exchanges Control Act 1985, Section 1. "securities" includes stocks, shares, debentures (whether issued by the State or a company having a share capital or any other body corporate or association of persons), notes, units of stock issued in place of shares, and options on stocks or shares or on such debentures, notes or units, and rights thereto, but excluding –

(i) shares in a private company; or

(ii) stocks or shares in a public company which cannot be acquired or transferred without the consent or approval of the directors or representatives of the company, other than such consent or approval required by, under or by virtue of any law, or options on or rights to such stocks or shares; or

(iii) treasury bills, bankers' acceptances, negotiable certificates of deposit issued by a banking institution registered under the Banks Act, 1965 (Act No. 23 of 1965), or by a building society registered under the Building Societies Act, 1986 (Act 2 of 1986), or any other similar short-term instruments designated by the Registrar by notice in the Gazette, or options on or rights to such bills, acceptances, certificates or instruments;

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2021[1256], which will provide for a broader definition that includes not just tangible financial instruments but also various investment schemes and instruments that can affect a consumer's financial interests. The *Financial Institutions and Markets Act 2 of 2021* will be brought into force on a date set by the Minister by notice in the Government Gazette, which, at the time of writing, has not yet been provided. Within the *Financial Institutions and Markets Act 2 of 2021,* NAMFISA is given the powers to declare an instrument as a "security" in order to capture that instrument so declared within the scope of the *Financial Institutions and Markets Act 2 of 2021.*[1257]

3.6 Zambia

3.6.1 Local crypto asset landscape

Considering some of the statistics available regarding crypto assets in Zambia, revenue in the crypto asset market is projected to reach US$3.0 million this year. This is based on an expected annual growth rate (CAGR 2024-2028) of 11.71%, which is projected to result in a total amount of US$4.8m by 2028.[1258] In terms of users in the crypto asset market in Zambia, the number is expected to reach 711.20k by 2028.[1259] Further to this, the Statista report predicts that in Zambia, user penetration[1260] will be 2.55% in 2024 and is expected to reach 3.09% by 2028. In terms of crypto asset service providers, VALR is one of the providers that was launched in Zambia. Zambians can use VALR to buy or sell Bitcoin (BTC) and USD

[1256] Financial Institutions and Markets Act 2 of 2021 (NAM).

[1257] Chapter 3, Section 78(1), Financial Institutions and Markets Act 2 of 2021 (NAM).

[1258] Statista "Cryptocurrencies – Zambia"(2024) available online at https://www.statista.com/outlook/fmo/digital-assets/cryptocurrencies/zambia (last accessed on 16 January 2024).

[1259] Statista – Zambia (2024).

[1260] User penetration is the percentage of population that purchases or own crypto assets in a region over a period of time. See Konigle," User Penetration",2023 available online at https://konigle.com/glossary/u/user-penetration#:~:text=User%20penetration%20is%20the%20percentage,over%20a%20period%20of%20time (last accessed on 19 January 2024).

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Coin (USDC) directly with Kwacha (ZMW), in addition to more than 60 crypto assets. VALR is the largest crypto asset service provider headquartered in Africa.[1261] According to an article on Bitrawr, within the Zambian border, Binance is the most popular Bitcoin exchange in Zambia, with 170,000,000 users.

Another popular crypto asset exchange in Zambia is Kraken, which, according to this article, is user-friendly and allows the buying and selling of Bitcoin with three forms of payment. Coinmama also provides services in Zambia. Some of the other popular exchanges that are being used in Zambia are PaxFul and LocalBitcoins.[1262] Locally, several options are available for buying and selling without verification on peer-to-peer exchanges[1263], although they are much less user-friendly and are recommended for more advanced users.[1264] One of the prominent wallets in Zambia is Zengo, which, according to the Bitrawr article, is an easy iOS[1265] & Android[1266]

[1261] IT-Online "SA crypto exchange VALR launches in Zambia"(2022) available online at https://it-online.co.za/2022/11/25/sa-crypto-exchange-valr-launches-in-zambia/ (last accessed on 19 January 2024).

[1262] TechinAfrica "Zambia's Cryptocurrency Landscape"(2023) available online at https://www.techinafrica.com/zambias-cryptocurrency-landscape/ (last accessed on 20 January 2024).

[1263] A P2P crypto exchange is a decentralized platform that allows people to trade without any intermediaries. See Jahir,SLDC Corp,"Basic to advanced features of a P2P cryptocurrency echange platform",2024 available online at https://sdlccorp.com/post/basic-to-advanced-features-of-a-p2p-cryptocurrency-exchange-platform/ (last accessed on 19 January 2024).

[1264] Bitrawr "How to buy Bitcoin in Zambia" available online at https://www.bitrawr.com/zambia (last accessed on 19 January 2024).

[1265] iOS is a mobile operating system based on macOS and on components of the Mach microkernel and FreeBSD, a Unix-like operating system, developed by Apple Inc. See bhavsar, ankit & Devare, Manoj & Yannawar, Pravin. (2019). Mobile Operating Systems available online at https://www.researchgate.net/publication/367511197_Mobile_Operating_Systems (last accessed on19 January 2024).

[1266] Android is a mobile operating system based on a modified version of the Linux kernel and other open-source software, designed primarily for touchscreen mobile devices such as smartphones and tablets. See Bin Wan Mohd Hazan Amri, Wan Muhammad Azim. (2020). Android as open source and operating system. The Journal of Open Source Software. 1. 8 available online at https://www.researchgate.net/publication/342051937_Android_as_open_source_and_operating_system (last accessed on 20 January 2024).

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crypto and NFT wallet. Buy, sell, and self-custody directly from the app. Zengo is a mobile wallet. In terms of hardware wallets, Ledger Nano S Plus is available and, according to the Btrawr is a secure hardware wallet that connects to the customer's computer via USB-C.[1267] A popular desktop wallet used in Zambia is BlueWallet, a popular desktop Bitcoin wallet compatible with Windows, Mac, and Linux. According to TechinAfrica, Bitcoin remains Zambia's most popular crypto asset, with other crypto assets such as Ethereum and Litecoin gaining traction. In addition, stablecoins like Tether are becoming more widely used to mitigate the volatility of other cryptocurrencies.[1268] Although Crypto Asset adoption is still in its early stages compared to other countries, it is clear that the usage of crypto assets is growing at a steady pace. Some of the drivers of adoption include the avoidance of high banking fees in the traditional banking use and access to financial services that may not be available through more traditional means.[1269]

In response to high banking fees, the Consumer Unit Trust Society (CUTS)[1270] International, Zambia, noted that it may be necessary for the government to consider intervening in the excessive bank charges imposed on consumers for various transactions. A recent survey revealed that banks are charging anything from K5[1271] to K500 for clients to access their money through ATMs and over-the-counter transactions, while mobile money providers charge between K2 and K100 to send or

[1267] USB-C, or USB Type-C, is a connector that supersedes previous USB connectors and can carry audio, video and other data, e.g., to drive multiple displays, to store a backup to an external drive. It can also provide and receive power, such as powering a laptop or a mobile phone. See Dell Technologies, “Guide to USB Type-C” available online at https://www.dell.com/support/kbdoc/en-za/000141238/guide-to-usb-type-c (last accessed on 20 January 2024).

[1268] TechinAfrica “Zambia’s Cryptocurrency Landscape”(2023) available online at https://www.techinafrica.com/zambias-cryptocurrency-landscape/ (last accessed on 20 January 2024).

[1269] TechinAfrica (2023).

[1270] Consumer Unity & Trust Society (CUTS) is a registered, recognised, non-profit, non-partisan, non-government organisation (NGO) pursuing social justice and economic equity both within and across borders. See Consumers International,” Consumer Unity and Trust Society (CUTS)” available online at https://www.consumersinternational.org/members/members/consumer-unity-and-trust-society-cuts/ (last accessed on 15 September 2024).

[1271] At the time of writing each one1 ZAR, equalled 1.38949 Zambian Kwacha.

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receive money.

Ms Chenai Mukumba, the CUTS International Zambia Coordinator, stated the following in terms of the banking charges in Zambia:

> "Bank charges should ideally be within affordable limits for consumers. Some banks have been known to charge high fees and this is an issue that we have noted may be a concern in Zambia. As CUTS we have received a number of complaints from consumers regarding bank charges."

The Department of Technology and Science published its digital transformation strategy for 2023 – 2027. The Department of Technology and Science was established by the then-newly assembled Government appointed in 2021. The appointed Government clearly demonstrated its commitment and focus to digital transformation by tasking this Department with driving digital transformation in Zambia. [1272]

3.6.2 Local regulatory and supervisory approach and landscape

Crypto assets are a new and emerging virtual digital currency in Zambia. There is a rapid-increasing public interest in crypto assets, with many Zambians investing in, or contemplating investing in crypto assets. In the Zambian border, the Ministry of Finance does the overall strategic guidance and coordination of the financial sector in Zambia through the National Financial Sector Development Policy (2017) and the National Financial Inclusion Strategy (2017 - 2022), whose vision is "*to achieve universal access to and usage of a broad range of quality and affordable financial services".* The National Financial Sector Development Policy follows after Zambia's first and second Financial Sector Development Plans (FSDPs)[1273], which ran in two

[1272] United States Agency of International Development "Digital Ecosystem Country Assessment"(2022) available online at https://www.usaid.gov/sites/default/files/2022-12/USAID_Zambia_DECA.pdf (Last accessed on 20 January 2024).

[1273] The Financial Sector Development Programme (FSDP) was launched by the Zambian government

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successive five-year cycles from 2004 to 2009 and from 2010 to 2015. After the two cycles of the FSDP's the Government of Zambia recognised the need for a comprehensive national policy to accelerate progress toward an inclusive, stable, and competitive financial sector within its borders.[1274] Without considering the entire FSDP, the section on Digital Financial Services can be highlighted here for the research purposes. Zambia was first out of the gate to adopt Digital Financial Services in 2002 with the launching of Zap by Celplay.[1275] However, in other aspects, the country lagged behind for a long period. At the time of the publication of the FSDP, Zambia had a low cellular penetration rate, and consequently, the use of mobile financial services was low.[1276] The FSDP also states that in 2017, the Zambia Financial Capability Survey Report found that the country's mobile penetration rate is 74.5 percent, which is low compared with Africa's average rate of 90.8 percent and Ghana's and Côte d'Ivoire's rates at 129.7 percent and 119.3 percent, respectively.

Further to this, a Finscope report[1277] in 2015 submits that in terms of the adult population, at that point in time, only a mere 11% owned a money mobile account, of that 11% only 4% transacted on that account.[1278] This update has significantly changed from 2015 to 2020. Many African countries, such as Zambia, have also adopted mobile money technologies for various services such as cash-outs, mobile transfers, mobile savings, or bill payments. According to FinScope 2020 Survey Report[1279], mobile money transfer services used by Zambian adults increased

in 2004 as a strategy to create and enhance financial sector infrastructure in order to promote economic diversification and long-term growth.

[1274] Republic of Zambia " National Financial Sector Development Policy 2017" available online at https://www.boz.zm/National-Financial-Sector-Development-Policy-2017.pdf (Last accessed on 25 January 2024).

[1275] The first M-payment service was Celplay, launched in Zambia in 2001.

[1276] Republic of Zambia " National Financial Sector Development Policy 2017, Page 4.

[1277] FinScope, a FinMark Trust initiative, is the most comprehensive national household survey focused on the financial services needs and usage FinScope is a representative study of the usage of and access to financial services. See FinScope Zambia – 2020 Survey Report, available online at https://www.boz.zm/FinScope-2020-Survey-Report.pdf (last accessed on 14 September 2024).

[1278] Republic of Zambia " National Financial Sector Development Policy 2017, Page 4.

[1279] Finscope Zambia, "2020 Survey Report"(2020) available online at https://www.boz.zm/FinScope-

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to 48.7% in 2020 compared to 36.8% in 2015.

It is submitted that Zambia, overall, takes a cautious but pro-innovation approach to crypto assets. Zambia has three main financial regulators in the financial sector. First is the Bank of Zambia, which is responsible for monetary and supervisory policy and regulates banks and other financial service institutions registered under the Banking and Financial Services Act, Chapter 387 of the Laws of Zambia. The Bank of Zambia is the Central Bank of the Republic of Zambia and derives its functions and powers from the Bank of Zambia Act, 2022 (Act No. 5 of 2022) and the Banking and Financial Services Act, Chapter 387 of the Laws of Zambia. The Bank's Mission Statement is to achieve and maintain price and financial system stability to foster sustainable economic development.[1280] On the Bank of Zambia website, the vision of the Central bank is stated as: "To be a Dynamic and Credible Central Bank that contributes to the Economic Development of Zambia." To elaborate on this vision, Bank aims to be responsive and vibrant in relation to changes in the operating environment that, in the writers' view, can be interpreted as being agile and proactive, while instilling confidence and trust in its stakeholders.[1281] Considering the mission, the website of the Bank of Zambia stipulates that the mission is: "To Achieve and Maintain Price and Financial System Stability to foster Sustainable Economic Development".

Looking at this mission more granularly, it envisages contributing to achieving high levels of economic activity and employment through increased investor and consumer confidence in the economy. Furthermore, in terms of financial system stability, it envisages the smooth transformation of savings into investments and efficient settlement of payments, and it ensures that risks are managed satisfactorily and proactively. The values of the Bank of Zambia are encapsulated in the word "Actione", an acronym used to describe firstly, accountability, in other words, taking

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2020-Survey-Report.pdf (last accessed on 27 January 2024).

[1280] Bank of Zambia Website "About us) available online at https://www.boz.zm/about-us.htm (last accessed on 27 January 2024).

[1281] Bank of Zambia Website "Vision and Mission" available online https://www.boz.zm/about/vision-and-mission.htm (last accessed on 27 January 2024).

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responsibility for decisions and actions taken by the Bank of Zambia in executing its mandate.[1282] The "c" in the acronym stands for the Bank's commitment to excellence on agreed requirements with internal and external stakeholders. They do not just meet the requirements but hold themselves to the highest standards when they do so. The "t" in this acronym stands for meeting the set timelines when performing the functions of the Bank. The "I" stands for the measurement of integrity through the Bank acting honestly, transparently, professionally, and sincerely at all times in its dealings. Objectives form the "o," and the commitment is setting itself as the Bank's challenging, specific, measurable, achievable, realistic, and timebound (SMART) objectives, and the Bank will work diligently towards achieving them. The last two are new ideas and equity. In terms of new ideas, the Bank commits to being innovative and open to new ideas and developing the skills to meet current and future challenges for us and our colleagues.

In respect to equity, this, in this context, refers to being fair and impartial while performing its duties. The Bank of Zambia issued a specific statement regarding crypto assets. This statement was issued in October 2018, where the Bank of Zambia confirmed that crypto assets "are not legal tender in Zambia" and confirmed that in terms of section 30 of the Bank of Zambia Act,2022 (Chapter 360 of the Laws of Zambia), the Bank of Zambia is the only body with the right to issue notes and coins and as it "has not issued any form of crypto asset.[1283]

The statement further warned its citizens against the buying, trading, or usage of crypto assets as it was not responsible for overseeing, supervising, or regulating the cryptocurrency landscape. Finally, the Bank of Zambia advised that any use of crypto assets would be at the user's own risk as "in most cases, no legal recourse

[1282] Bank of Zambia Website" About Us – Value and Functions" available online at https://www.boz.zm/about/values-and-functions.htm (last accessed on 27 January 2024).

[1283] Baker Mckenzie "Blockchain and Cryptocurrency in Africa - A comparative summary of the reception and regulation of Blockchain and Cryptocurrency in Africa", (2019) available online at https://www.bakermckenzie.com/-/media/files/insight/publications/2019/02/report_blockchainandcryptocurrencyreg_feb2019.pdf (last accessed on 27 January 2024).

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would be available to customers due to the unregulated nature of crypto asset-related transactions. The statement further stipulated that the Bank of Zambia does not oversee, supervise, or regulate the crypto asset landscape. In line with the Bank of Zambia's position, regulation should not constrain but enable innovation, and the Bank of Zambia will continue to monitor developments, therefore, it is submitted that at that stage, a wait-and-see approach was adopted.

The second Financial Regulator in Zambia is the Securities and Exchange Commission, which is responsible for the supervision and development of the Zambian Capital Markets; Licensing, registration, and authorization for financial intermediaries, issuers of debt and equity instruments, and collective investment schemes. This role is prescribed under the Securities Act No. 41 of 2016. The mission of the Securities and Exchange Commission in Zambia is to safeguard the interests of investors and to promote the growth of capital markets within the Zambian borders. In terms of its vision, the Security and Exchange Commission aims to be a dynamic regulator that protects investors and promotes the development of capital markets.[1284] The Security and Exchange Commission's values are set out on its website as an impartial and reliable supervisor of Zambian Capital markets, further to this, dependable at all times and in all circumstances. In terms of core functions, the Security Exchange Commission promotes high standards of investor protection, the integrity of the industry, self-regulation of industry players, orderly growth and development of the industry, and the operation of a free, orderly, and informed market.[1285] The Securities and Exchange Commission of Zambia regulates cryptocurrency in the country.

The Securities and Exchange Commission of Zambia has warned the public against investing in unregulated cryptocurrency schemes and has stated that it will take action against companies that violate the country's securities laws.[1286] Crypto

[1284] SEC Website "Mission and Vision" available online at https://www.seczambia.org.zm/mission/ (last accessed on 28 January 2024).

[1285] SEC Website "About us" available online at https://www.seczambia.org.zm/wp-content/uploads/2017/03/About-SEC.pdf (last accessed on 28 January 2024).

[1286] Kaponda, Kombe and Kaponda, Kombe, An Interrogation into the Regulatory Challenges of Virtual

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Tamanga, a Zambian virtual currency and blockchain blog, notes that the chief executive officer of the Securities and Exchanges Commission stated that:

> "The onus is upon the investors to understand the risks and benefits associated with virtual currencies before deciding to invest in them."

On 13 February 2018, the Securities and Exchange Commission issued a notice on Crypto Assets and related technologies. It is pronounced in this notice that the commission believes that the emergent technologies, such as the blockchain on which virtual currencies and other related digital assets transverse, are disruptive and will keep evolving in the near future. The evolving nature of the technologies could ultimately lead to an increased assortment of investible products/assets within financial markets and possibly make the investment process more efficient. However, as this process continues to develop, investors must observe caution.[1287] These two regulators, the Bank of Zambia and the Security Exchange Commission, worked together to complete tests that simulate real-world cryptocurrency usage by the end of June 2023.[1288] They are on their way to establishing regulations that balance citizens' safety with innovation.[1289] In terms of the simulation of real-world cryptocurrency use, Mr Felix Mutati stated that:

> "Our main goal in the area of cryptocurrency is to strike a balance between innovation in terms of digital payments … against citizens' safety, particularly given that cryptocurrency is very volatile. The central bank is simulating that to see what would happen in the real world. The results will assist us (in) the formulation of the regulation."

Currencies on the Zambian Economy (December 23, 2019). Available at SSRN: https://ssrn.com/abstract=3509503 or http://dx.doi.org/10.2139/ssrn.3509503.

[1287] SEC Zambia " WARNINGS AND ALERTS Notice on Cryptocurrencies And Related Digital Products/Assets" available online at https://www.seczambia.org.zm/notice-on-crytocurrencies/ (last accessed on 28 January 2024).

[1288] Satsdaily," Zambia to finish cryptocurrency regulation tests by June, Minister says", available online at https://satsdaily.io/4264/zambia-to-finish-cryptocurrency-regulation-tests-by-june-minister-says (last accessed on 28 January 2024).

[1289] Zambian Minister for Science and Technology Minister, Felix Mutati.

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The third financial regulator in Zambia is the Pensions and Insurance Authority (PIA), which regulates the country's pensions and insurance industry. It was established as a corporate body following the amendments to the Pension Scheme Regulation Act No. 28 of 1996 as amended by Act No. 27 of 2005. The Pensions and Insurance Authority regulates and supervises pension schemes, pensions, and insurance service providers through a combination of off-site analysis and on-site inspections. The supervisory process comprises the formulation and review of laws and Regulations.[1290] The Pensions and Insurance Authority falls under the Ministry of Finance National Planning and derives its mandate from the Pension Scheme Regulation Act No. 28 of 1996 (amended by Act No. 27 of 2005) (the Act) and the Insurance Act No. 27 of 1997 (As amended by Act No. 26 of 2005). The Pensions and Insurance Authority functions are vested in the Board, which is appointed by the Minister of Finance and National Planning per the provisions of the Act. The Board comprises nine members who are nominated from various institutions identified in the Act.

In terms of developing a position on crypto assets in Zambia, in February 2023, Mr Felix Mutati, the central financial institution in Zambia, will soon introduce legislation regulating crypto assets, particularly Central Bank Digital Currency (CBDC). The Zambian Minister for Technology and Science pointed out in the statement that:

> "There is a need for a policy framework that supports this revolutionary technology.[1291]"

Mr Mutati stated that it is seeking the opportunity to embrace this innovative finance technology and will use the regulatory framework:

[1290] Pension and insurance Authority Website available online at https://www.pia.org.zm/#:~:text=Welcome-,The%20Pensions%20and%20Insurance%20Authority%20(PIA)%20is%20the%20regulator%20of,27%20of%202005. (last accessed on 28 January 2024).

[1291] Government of Zambia Website available online at https://www.mots.gov.zm/?p=2309 (last accessed on 28 January 2024).

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> "The testing of the technology for regulating cryptocurrency will be upscaled in due course as part of deliberate measures to achieve an inclusive digital economy for Zambia.[1292]"

In February 2023, speaking to Reuters, Mutati also indicated that Zambia requires digital infrastructure, including digital identities, before cryptocurrencies can be introduced. Following the testing of digital currencies in Zambia, regulatory uncertainty remains since there is a cautious wait-and-learn approach. It is submitted that there is the potential for changes in Zambia's regulatory landscape. Looking at some of the factors that can be considered as possible driving forces to a comprehensive and clear regulatory framework, the following can be mentioned for relevance to the research: Globally, the regulatory frameworks are evolving regarding crypto assets. Zambia, like other nations, is influenced by these global regulatory trends. Monitoring international regulatory developments allows Zambia to align its policies with best practices while safeguarding its unique economic interests. In terms of international investment opportunities for Zambia, the Zambian crypto industry can benefit from global investment and partnerships. Foreign investors and blockchain companies may see opportunities in Zambia's emerging market, leading to increased capital inflow and expertise exchange. Collaboration with international stakeholders can stimulate innovation and growth. Regional integration is beneficial in a cross-border environment. Zambia's position within the SADC offers opportunities for regional collaboration in the crypto space. Harmonising regulatory frameworks and cross-border initiatives can facilitate seamless crypto transactions within the region, promoting economic integration and trade.[1293]

The increasing global focus on financial inclusion is another driver for adopting comprehensive regulation and providing certainty. In 2019, Zambia can leverage

[1292] Government of Zambia Website available online at https://www.mots.gov.zm/?p=2309 (last accessed on 28 January 2024).

[1293] Damilola Lawrence," Crypto Industry In Zambia: Opportunities For Cross-Border Transactions, Remittances, And Financial Inclusion" (2023) available online at https://www.cryptopolitan.com/the-crypto-industry-in-zambia-inclusion/ (last accessed on 29 January 2024).

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these initiatives to expand access to financial services through cryptocurrencies and blockchain technology, particularly in underserved areas.

3.7 Conclusion

It is submitted that looking at the comparative countries analysed in this chapter, the regulatory environment within Sub-Saharan Africa and the selected countries is certainly adapting to the growing demand for fintechs, and governments are starting to consider the benefits that may be unlocked. The regulatory frameworks that have already been developed aim to balance the growth of the sector whilst providing appropriate protection for consumers. However, at the end of 2022, only one-quarter of countries in Sub-Saharan Africa formally regulate crypto.[1294] A well-designed and clear transborder regulatory framework could provide the legal certainty to support the organization, operation, functioning, and authorisation of firms offering alternative means of access to finance and investment, issuance and management of electronic payment funds, and the exchange of crypto assets. Technological innovation can play a key role in transforming the African continent's demographic dividend into jobs, growth, and rising living standards for all. As seen from the comparator countries, there are large differences in the pace of the development of regulatory frameworks, where some jurisdictions formalise their frameworks more quickly to the evolving landscape, while others are very cautious about moving. It can be challenging for regulators to identify, measure, and manage the associated risks.[1295]

This chapter set out the local market activities of each of the chosen jurisdictions and also provided insights into the regulators that oversee, regulates, and supervise

[1294] Habtamu Fuje, Saad Quayyum, Tebo Molosiwa " IMF - Africa's Growing Crypto Market Needs Better Regulations" (2022) available online at https://www.imf.org/en/Blogs/Articles/2022/11/22/africas-growing-crypto-market-needs-better-regulations (last accessed on 31 January 2024).

[1295] Amadou N.R. Sy, R Maino, A Massara, H Perez -Saiz, P Sharma " Fintech in Sub-Saharan African Countries – A game changer" IMF (2029) available online at https://www.elibrary.imf.org/downloadpdf/journals/087/2019/004/087.2019.issue-004-en.pdf (last accessed on 31 January 2024).

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the crypto asset activities within their jurisdictions. The chapter also considered the approach the authorities have taken regarding crypto assets and how far they have progressed in their journey to build comprehensive and appropriate regulatory frameworks in line with the recommendations of the various international bodies. Some of the jurisdictions chosen as comparator countries, such as Mauritius, have progressed well with their regulatory frameworks. In this chapter, it was unpacked that the FSC in Mauritius has the mandate to regulate crypto assets from both a market conduct and a prudential perspective. Mauritius has a progressive approach to digital asset regulation through the Virtual Asset and Initial Token Offering Services Act. The VAITOS Act is a well-developed regulatory framework that offers a variety of suitable requirements to protect financial customers utilising crypto assets. The VAITOS Act provides a comprehensive legislative framework for virtual asset service providers (VASPs) and initial token offerings (ITOs) issuers. The VAITOS Act's invention signified the commitment to aligning with international standards in regulating blockchain technologies.[1296] In terms of Kenya, this chapter shed light on Kenya's unique approach to developing regulatory frameworks, where the Kenyan authorities are engaging directly with the Blockchain Association of Kenya to collaboratively draft legislation on crypto assets, a move driven by competition and the desire for regulatory innovation on the African continent. This collaborative and forward-thinking attitude exemplifies the adaptive nature of regulatory bodies in emerging markets, striving to keep pace with the rapid developments in the digital asset space.[1297]

The industry players have mostly well-received the market response in Sub-Saharan Africa to regulatory developments and certainty. This is, it is submitted, because of the growing realization that the market can recognise regulatory compliance as a recognition of credibility, recourse, and trustworthiness.

It can show that crypto asset providers are moving away from being novel

[1296] Ashveen Gopee, Partner and Managing Director at PwC Legal Mauritius.

[1297] Bradley Johnson – Metaco " Exploring the Regulatory Landscape for Digital Assets in South Africa, Kenya and Mauritius"(2023) available online at https://www.metaco.com/blog/regulatory-landscape-digital-assets-mauritius-southafrica/ (last accessed on 31 January 2024).

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technology-based digital assets to mature market players who will remain in the market for the long run. The analysis of Mauritius, Kenya, and South Africa's regulatory framework shows that the regulatory landscape of digital assets in Mauritius, South Africa, and Kenya is dynamic and increasingly sophisticated. In terms of the regulatory developments and journey of Namibia with respect to crypto assets, this chapter considers that Namibia is working hard to establish itself as a premier investment destination in Africa. This is also evident in the recent legislative acts and amendments aimed at fostering a safe, innovative, and attractive business environment. There is clearly a particular focus on crypto assets to broaden the scope of possible choices for investors/financial customers.[1298]

In terms of Zambia, it is submitted that from the analysis provided in this chapter, it can be concluded that the Zambian government aims to strike a balance between innovation in crypto assets and citizen security, given the high volatility of crypto assets and the existing risks associated with owning crypto assets. However, positive steps and developments are being taken to understand crypto assets and develop appropriate legislation. Zambia is exploring blockchain technology and undertaking country assessments of practices in the crypto asset space. Namibia, as we have seen from this chapter, has made strides towards regulating and supervising crypto assets, although the current framework may perhaps only be seen as a regulatory chassis, and much more needs to be added.[1299] Comprehensive laws will likely still be developed. The complete change in approach, from illegal crypto assets to developing frameworks, shows that Namibia is willing to allow crypto assets for the potential benefits they may bring. This chapter examines the South African crypto asset regulatory framework.

[1298] Diana Jesus Machado Vivo, DLA Piper "The Namibian Cryptocurrency Regime"(2023) available online at https://www.dlapiperafrica.com/en/namibia/insights/2023/the-namibian-cryptocurrency-regime.html#:~:text=The%20expansion%20of%20Namibia's%20regulatory,legislation%20specifically%20addressing%20virtual%20assets (last accessed on 31 January 2024).

[1299] Camomile Shumba, CoinDesk, "Namibia Sets the Stage for National Crypto Strategy With New Law"(2023) available online at https://www.coindesk.com/policy/2023/08/03/namibia-sets-the-stage-for-national-crypto-strategy-with-new-law/ (last accessed on 02 February 2024).

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It was explained that crypto asset services providers are now within the regulatory remit of the FSCA and also captured under the AML/CFT laws as they are considered accountable institutions. More developments are on the way from both a market conduct and a prudential perspective. Furthermore, bespoke requirements are being discussed and considered for specific types of crypto assets such as stablecoins, which may, through their characteristics, be widely adopted and bring certain financial stability risks.

The Financial Stability Board (FSB) Regional Consultative Group (RCG) for Sub-Saharan Africa met in Pretoria, South Africa, in October 2023, in a meeting hosted by the South African Reserve Bank. The FSB RCG for Sub-Saharan Africa meeting is co-chaired by Lesetja Kganyago, Governor of the South African Reserve Bank, and Denny Kalyalya, Governor of the Bank of Zambia. Membership includes financial authorities from Kenya, Mauritius, Namibia, South Africa, and Zambia. As can be seen, all of the comparator countries are part of the RCG and jointly meet to discuss coordination and share information on developments and plans in respect of crypto assets. Although at different stages of their journey, the RCG brings about a joint platform that can be utilised to open further discussions on cooperation and alignment to make Africa a Fintech Hub while protecting the customers. At this meeting, the members received an update on the FSB's work priorities for the rest of the year and its planned work for 2024. This includes taking forward the FSB's roadmap to ensure the effective implementation of recommendations to address risks posed by crypto-asset activities and markets. Members shared established and prospective plans to regulate crypto-asset activities with consideration of the financial stability, financial integrity, and market integrity implications, as well as some of the implementation challenges members are facing.[1300]

As this chapter demonstrates, existing supervisory frameworks are limited in their ability to respond to cross-border crypto asset risks in resource-constrained environments. This thesis, therefore, argues for the development of a technologically

[1300] FSB press release "FSB Sub-Saharan Africa group discusses vulnerabilities arising from high sovereign indebtedness and crypto assets" available online at https://www.fsb.org/wp-content/uploads/R061023.pdf (last accessed on 02 February 2024).

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embedded supervisory architecture in the concluding chapter as a scalable and context-appropriate alternative. This chapter showed that the comparator countries are all having discussions together through collective forums, although they are all at separate levels of maturity in their regulatory frameworks. At this juncture, it can be very helpful to deliberately have more joint conversations between these countries to learn from the countries with more mature and comprehensive frameworks and, while aligning the frameworks to the FSB recommendations, consider allowing certain types of entities/activities to do business across these aligned frameworks without duplicate efforts to comply with similar provisions across different countries. In Chapter 5, the research will unpack MiCA, considered a milestone in the crypto asset market since it is the first comprehensive regulation for the still-emerging technology that stretches across and harmonises regulatory frameworks across all 27 member countries that collectively represent nearly one-fifth of the global economy. But first, in Chapter 4, the research paper will consider the New Commonwealth Law that was published with respect to crypto assets.

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CHAPTER 4

THE COMMONWEALTH MODEL LAW ON VIRTUAL ASSETS

4.1 Introduction

4.2 Analysis of the substantive elements of the Commonwealth Model Law in respect of virtual assets

4.3 Conclusion

4.1 Introduction

On 09 July 2024, a New Commonwealth Model Law in respect of virtual assets (Model Law) to help Commonwealth countries regulate virtual assets, was published.[1301] Loretta Joseph, who is a founding member and part of the expert working group that spearheaded the development of this Model Law, stated the following:

> "Primarily, this Model Law serves as an example of how countries can adopt a VA (Virtual Asset) regime if they lack sufficient resources or guidance. Countries may also choose to develop their own framework based on their specific needs and circumstances".[1302]

[1301] New Commonwealth Model Law, Introduction section, Page 11.

[1302] M Edgar," The Commonwealth Passes Model Laws for the Digital Economy"(2024) available online at https://www.digit.fyi/the-Commonwealth-passes-model-laws-for-the-digital-economy/ (last accessed on 12 July 2024).

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The project on drafting the *Commonwealth Model Law (Model Law)* commenced in 2022, with a team of 14 experts across the globe coming together to draft a *Model Law* that aligns with the FATF[1303], mandating the regulation of VASPs for AML/CFT purposes. The team of experts was assembled from across the Commonwealth, bringing together the necessary legal and technological expertise to address the complexity of crafting a regulatory framework for this emerging asset class. The *Model Law* allows the members to adopt it at their own discretion.[1304]

The Commonwealth is a voluntary association of 56 independent and equal countries in Africa, Asia, the Americas, Europe, and the Pacific.[1305] One of the reasons for developing this law is because crypto assets or virtual assets are considered to be a relatively new part of the global financial sector, making it important for comprehensive and effective regulation in order to protect consumers of products and financial services in respect of crypto assets, address any illicit activity and also to maintain market stability. To the regulators in the Commonwealth who are still in the infancy of their journey to establish comprehensive and effective regulatory and supervisory frameworks, this *Model Law* may provide guidance on setting up a framework to address money laundering and terrorist financing risks and protect the consumer while also ensuring that the CASPS and those who interact with these entities have legal clarity and confidence.[1306]

[1303] See Chapter 2, 2.3.2.

[1304] New Commonwealth Model Law, Commentary on section 1, Page 17.

[1305] Commonwealth, "Who we are" available online at https://theCommonwealth.org/#:~:text=The%20Commonwealth%20is%20a%20voluntary,Americas%2C%20Europe%20and%20the%20Pacific; Member countries - Commonwealth Secretariat: Botswana, Cameroon, Gabon, Gambia, Ghana, Kenya, Eswatini, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Nigeria, Rwanda, Seychelles, Sierra Leone, South Africa, Togo, Uganda, Tanzania, Zambia, Bangladesh, Brunei Darussalam, India, Malaysia, Maldives, Pakistan, Singapore, Sri Lanka, Antigua and Barbuda, The Bahamas, Barbados, Belize, Canada, Dominica, Grenada, Guyana, Jamaica, Saint Lucia, Saint Kitts and Nevis, Saint Vincent and the Grenadines, Trinidad and Tobago, Cyprus, Malta, United Kingdom, Australia, Fiji, Kiribati, Nauru, New Zealand, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu. See Commonwealth," Member Countries-Commonwealth Secretariat", available online at https://thecommonwealth.org/our-member-countries (last accessed on 12 July 2024).

[1306] The Commonwealth," New Commonwealth Model Law to help countries regulate virtual

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The introductory section acknowledges that blockchain technology[1307], employed with crypto assets, is the inevitable future of the economy. The *Model Law* aims to provide the actors in the financial market, who utilise this technology, with much-needed clarity while also protecting consumers who obtain their financial products through this delivery system.[1308] It is clear from the introduction that a vital focus of this *Model Law* is mitigating the risks of money laundering, terrorism financing, and proliferation financing[1309] risk and ensuring that the FATF recommendations in respect of the use of new technologies are addressed through this *Model Law* when the member countries utilise this framework.[1310] The additional aim of proposing this framework, considering the introduction section and the writer's understanding, is that through the modernisation of regulatory frameworks of the member countries, there could be the opportunity to stimulate innovation and foster greater competition.

Five principles underpin the *Model Law* in respect of virtual assets (crypto assets).[1311] These are set out before the publication, which deals with the substantive sections and provisions of the *Model Law*.[1312] *The Model Law* is drafted in a principal manner as reflected in guiding principle one, and by using an outcome-based and flexible

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assets",(2024) available online at https://theCommonwealth.org/news/new-Commonwealth-model-law-help-countries-regulate-virtual-assets (last accessed on 12 July 2024).

[1307] See Chapter 1,1.1.

[1308] New Commonwealth Model Law, Introduction section, Page 11.

[1309] "Proliferation financing" refers to: the act of providing funds or financial services which are used, in whole or in part, for the manufacture, acquisition, possession, development, export, trans-shipment, brokering, transport, transfer, stockpiling or use of nuclear, chemical or biological weapons and their means of delivery and related materials (including both technologies and dual use goods used for non-legitimate purposes), in contravention of national laws or, where applicable, international obligations. See FATF," Combating Proliferation Financing – A Status Report on Policy Development and Consultation",(2010), available online at https://www.fatf-gafi.org/content/dam/fatf-gafi/reports/Status-report-proliferation-financing.pdf (last accessed on 19 February 2025).

[1310] New Commonwealth Model Law, Introduction section, Page 12.

[1311] New Commonwealth Model Law, Principles section, Page 13. The five principles are: Principle-Based; Protection-Focused; Balanced and Proportionate; Comprehensive and Flexible and Adaptable.

[1312] Commonwealth Model Law, Introduction section, Page 13.

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approach, it provides for regulation in a manner that attempts to be the least intrusive to the furtherance of positive innovation and the purported benefits thereof. It is further stipulated in the *Model Law* that this proposed regulatory framework is based on the principle of being "protection-focused" contained in principle two.[1313] The framework attempts to protect participants from counter-party risks and also covers market integrity, market surveillance, and fair pricing. The framework further covers custody, clearing, disclosure of conflicts of interest, and systems and business continuity planning. The guiding principle three of this *Model Law* states that it should be balanced and proportionate, striking a balance between the need for regulation and the need for protection. The aim is, therefore, to allow even nascent-stage innovative Fintech to succeed and comply with the regulatory frameworks imposed on them while still achieving financial stability and financial integrity in the markets.[1314] The fourth guiding principle is that the frameworks of the member countries should be comprehensive in nature in a way that considers the entire crypto asset ecosystem and its participants.[1315]

Notwithstanding the limited scope of the *Model Law* itself, which only focuses mainly on AML/CFT, licencing and powers of the regulator, it is recommended that the member countries should aim to implement comprehensive regulatory frameworks to address a variety of risks beyond the scope provided for. The final guiding principle, principle five provided in the *Model Law* highlights the aim of being flexible and adaptable.[1316] The *Model Law*, therefore, aims to be technology-neutral and flexible enough to be used in different ways, considering the regulatory readiness and the resources available in each of the member countries. It was drafted in a way that allows for customisation of the framework and allows the member countries implementing the Model Law to provide additional guidance in their delegated legislation.[1317] The value of this work that was conducted in respect of this *Model Law* on crypto assets in terms of the research in the thesis, is the fact that this is a further

[1313] Commonwealth Model Law, Principles section, Page 13.

[1314] New Commonwealth Model Law, Introduction section, Page 13, Principles 1 – 5.

[1315] Commonwealth Model Law, Introduction section, Page 13.

[1316] New Commonwealth Model Law, Introduction section, Page 13.

[1317] New Commonwealth Model Law, Introduction section, Page 13.

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step to harmonise legislation, thereby curbing the fragmented approach of the regulators in the member jurisdiction. Considering the comparative countries that were selected for this research and the membership of the Commonwealth in Africa[1318], the members in Africa include the comparative countries that were chosen and discussed in Chapter Three of this study. The next section of this chapter will delve into the details of the *Model Law* framework and explore the individual elements in more detail.

4.2 Analysis of the substantive elements of the Model Law in respect of virtual assets

In the introduction section of the *Model Law*, it is pointed out that the drafters are not prescriptive regarding the title of the law and provide for the flexibility that each jurisdiction chooses the name of the law to be implemented in its jurisdiction as it wishes.[1319] There is also further flexibility provided, as a member country can choose to draft a standalone law on virtual or crypto assets or incorporate the provisions of the new *Model Law* into their existing regulatory frameworks to provide the protections afforded herein.[1320] The interpretation section[1321] of the *Model Law* provides for several definitions in an attempt to streamline the terminology being used by different member countries and thereby facilitating a common understanding.

Specifically in relation to crypto assets, the four definitions brought into this *Model Law* are:

(a) “Initial Virtual Asset Offering”, which is defined to mean “the occurrence when an issuer makes a Virtual Asset publicly available for purchase or acquisition”;

[1318] The following African countries are members of the Commonwealth: Botswana, Cameroon, Gabon, The Gambia, Ghana, Kenya, Eswatini (formerly Swaziland), Lesotho, Malawi, Mauritius, Mozambique, Namibia, Nigeria, Rwanda, Seychelles, Sierra Leone, South Africa, Togo, Uganda, Tanzania, and Zambia. See The Commonwealth, “Member Countries”, available online at https://thecommonwealth.org/our-member-countries (last accessed on 16 April 2025).

[1319] New Commonwealth Model Law, Introduction section, Page 12.

[1320] New Commonwealth Model Law, Introduction section, Page 17.

[1321] New Commonwealth Model Law, Section 2.

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(b) "Issuer", which is defined to mean "a Person who issues Virtual Assets".

The definitions of these two terms are very simplistic and indicative, possibly to make sure there is a clear shared understanding. It is stated in the publication that the member countries can include further defined terms instead of using the ones in the *Model Law*.[1322]

(c) "Virtual Assets" which is defined to mean "a digital representation of value that may be digitally traded or transferred, and may be used for payment or investment purposes, but do not include a digital representation of fiat currencies, securities, and other financial assets to the extent that they are regulated by other laws of [the Jurisdiction]". The definition here closely resembles the definition of Virtual Assets by FATF.[1323]

(d) "Virtual Asset Service Provider" which is defined as "a Legal Person that, as a business, conducts one or more of the following activities or operations for or on behalf of another Person: i., exchange between Virtual Assets and Fiat Currencies; ii. exchange between one or more forms of Virtual Assets; iii. transfer of Virtual Assets".[1324] Notably, the scope of the *Model Law* definition includes both virtual-to-virtual and virtual-to-fiat transactions, financial activities or operations.[1325]

The *Model Law* does not attempt to regulate the products itself, but the provisions in the *Model Law* relate to the VASPs who render services with respect to these products. Section 3 of this *Model Law* sets out its objects.[1326] Its object is to provide the legal basis for establishing VASPs and issuers of Initial Virtual Asset Offerings (IVAO) in the members' jurisdictions.[1327] It also provides for the regulation of VASPs and issuers of IVAO by the regulatory authority in the member country.[1328] The third objective is to

[1322] New Commonwealth Model Law, Introduction section, Page 18.

[1323] See Chapter 1, 1.9.

[1324] New Commonwealth Model Law, Section 2 (m), Page 19.

[1325] FATF, "Guidance For A Risk-Based Approach Virtual Assets And Virtual Asset Service Providers" (2019) available online at https://www.fatf-gafi.org/content/dam/fatf-gafi/guidance/RBA-VA-VASPs.pdf (last accessed on 15 July 2024).

[1326] New Commonwealth Model Law, Section 3(1)(a) – (d), Page 21.

[1327] New Commonwealth Model Law, Section 3(1)(a), Page 21.

[1328] New Commonwealth Model Law, Section 3(1)(b), Page 21.

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provide for the licencing or registration of VASPs. Lastly, to provide regulation of any other matters ancillary or connected to Virtual Assets and VASPs.[1329]

Section 3(2) of this Model Law sets out what the *Model Law* does *not* cover and mentions four specific exclusions. The first is digital representations of value or rights that operate within a closed ecosystem of the Issuer, for instance, those that are non-transferable outside of the closed ecosystem[1330] and those non-exchangeable with real-world goods, services, discounts, and purchases outside a closed ecosystem[1331]; those that operate as non-tradeable onwards on the secondary market outside of a closed ecosystem[1332]; those non-saleable on a secondary market outside of the closed-loop system;[1333] and those that are non-usable for payment or investment purposes and non-exchangeable for fiat currency.[1334] What is also excluded from this *Model Law* is digital representations of fiat currencies, securities, and other financial instruments to the extent that they are regulated by other laws in the jurisdiction.[1335] The *Model Law* also excludes digital representations of fiat currencies issued by the Central Bank of the member country or, in fact, any other jurisdiction, irrespective of membership.[1336] The last of the exclusions set out in this section of the *Model Law* is that the *Model Law* excludes any other digital representations of value or rights sought to be expressly excluded by the regulatory authority of the members.[1337]

The intent of setting out the exceptions in this section of the *Model Law* is to provide legislative clarity on the digital assets that fall *outside* the ambit of the Model Law. To sum up what is actually excluded, the *Model Law* seeks to exclude tokens that are

[1329] New Commonwealth Model Law, Section 3(1)(a) – (d), Page 21.
[1330] New Commonwealth Model Law, Section 3(2)(a)(i), Page 22.
[1331] New Commonwealth Model Law, Section 3(2)(a)(ii), Page 22.
[1332] New Commonwealth Model Law, Section 3(2)(a)(iii), Page 22.
[1333] New Commonwealth Model Law, Section 3(2)(a)(iv), Page 22.
[1334] New Commonwealth Model Law, Section 3(2)(a)(v) & (vi), Page 22.
[1335] New Commonwealth Model Law, Section 3(2)(b), Page 22.
[1336] New Commonwealth Model Law, Section 3(2)(c), Page 22.
[1337] New Commonwealth Model Law, Section 3(2)(d), Page 22.

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conversationally referred to as utility tokens[1338] (under section 3(2)(a)), investment tokens[1339] (under section 3(2)(b)), stablecoins that are digital representations of any fiat currency (under Section 3(2)(b)) and CBDC[1340] under section 3(2)(c)). Additionally, section 3(2)(d) includes a discretionary provision authorising the regulatory authority in the member country to exclude any other digital representation of value or rights.[1341] In terms of this exclusion under section 3(2)(d), it is explained in the *Model Law* provides that, on a case-by-case basis, the regulators in the member countries may wish to exclude certain specific kinds (or types) of tokens from the scope of this *Model Law*. An example is given of a token that represents rights over a real-world asset (such as real estate, art, or antiques) that may require a different approach, distinct from other tokens that are regulated by that specific regulator.[1342]

The exclusion of closed-loop systems is also explained in the commentary on the *Model Law*.[1343] It is submitted that it makes logical sense to exclude closed-loop systems from this *Model Law*, due to the very specific type of application in this instance. Closed loop systems provide tailored functionality for particular applications within restricted ecosystems or within specified marketplaces, where tokens cannot be traded or used outside their intended context and outside of these controlled environments.[1344]

[1338] See Chapter 1, 1.2.4.

[1339] Investment tokens are considered in some ways equivalent to shares, bonds, or units in collective investment vehicles, as they promise investors future financial benefits and/or rights in relation to the project they are attached to. Typically, investment tokens are issued - in exchange of dollars/euros or other crypto-assets - in context of ICOs in order to raise initial capital for projects. Investors expect financial benefit from the increase in market price of the token/share but can also be promised distribution of future company's profits (similar to distribution of dividends) and/or voting rights. See Ferrari, V. (2020). "The regulation of crypto-assets in the EU – investment and payment tokens under the radar". *Maastricht Journal of European and Comparative Law*, 27(3), 325-342. https://doi.org/10.1177/1023263X20911538 (last accessed on 20 March 2025).

[1340] See Chapter 3, 3.4.2.

[1341] New Commonwealth Model Law, Page 22, Commentary.

[1342] New Commonwealth Model Law, Page 23, Commentary.

[1343] New Commonwealth Model Law, Section 3(2)(a).

[1344] Blockchain. News, R Wang, "Understanding Closed-Loop Tokens: Enhanced Security and Customization" (2024) available online at https://blockchain.news/news/understanding-closed-loop-

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Part Two of the *Model Law* speaks to the regulatory authority, which commences in section 4 with setting out its objectives.[1345] The first and second of the objectives speak to ensuring financial stability and the integrity of the virtual asset markets in the jurisdictional perimeter.[1346] The *Model Law* further proposes an objective of fostering and maintaining fairness, transparency, and efficiency in the virtual assets sector and enhancing and supporting consumer protection and fair treatment.[1347] Lastly, an objective is proposed of preventing, detecting, and restraining conduct that damages or may damage reputation.[1348] It is also set out in this section that in achieving its objectives, the regulator in the jurisdiction governing virtual assets must take into account the need for a primarily risk-based, pre-emptive, and outcomes-focused approach.[1349]

The next section, following the section on the objectives of the regulator, deals with the functions of the regulator in this *Model Law*. The functions that are provided in this *Model Law* commence with the function to register or licence VASPs and IVAO, monitor and regulate VASPs, and prepare and maintain a register of VASPs and issuers of IVAO.[1350] Subsequent to the registration or licencing function, the following function provided for in this *Model Law* is to identify and assess money laundering and terrorist financing risks, apply a risk-based approach, and regulate and monitor VASPs and IVAO, and ensure that VASPs comply with requirements to combat money laundering and terrorist financing. Further functions that are set out in this section of the *Model Law* include the issuance of subordinate legislation when needed[1351], the

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tokens-enhanced-security-customization (last accessed on 16 July 2024).

[1345] New Commonwealth Model Law, Page 27.

[1346] New Commonwealth Model Law, Page 27, Section 4(1)(a) and (b).

[1347] New Commonwealth Model Law, Page 27, Section 4(1)(d).

[1348] New Commonwealth Model Law, Page 27, Section 4(1)(a) – (e).

[1349] New Commonwealth Model Law, Page 27, Section 4(2).

[1350] New Commonwealth Model Law, Page 28, Section 5(1)(a) – (c).

[1351] New Commonwealth Model Law, Page 28, Section 5(1)(d).

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identification of unauthorised or unregistered activities[1352], and the promotion of consumer awareness with respect to virtual asset or crypto asset risks.[1353]

What is interesting from the perspective of this research, is the two functions that relate to supporting innovation found in section 5(1) (h) and (i). In the first of these functions of the regulatory authority that relate to supporting innovation, the regulator facilitates innovation and the development of the virtual assets sector.[1354] In the second of these functions, supporting innovation, the regulatory authority will perform the function of establishing a regulatory sandbox[1355] to provide a limited environment for emerging activities related to virtual assets that do not fall into the definitions of the existing VASPs.[1356]

There are also two purely enabling provisions within the *Model Law* functions to extend the limit of the *Model Law*. these are situated in section 5(1)(k) and 5(1)(l).[1357] Sections 5(1)(k) and (l) respectively provide enabling provisions for Commonwealth member countries to regulate emerging products and services with the virtual assets sector and allow Commonwealth member countries to decide the extent to which they may regulate the virtual assets sector, given their market readiness and regulatory preparedness.[1358] The next section of the *Model Law*, section 6, deals with the regulator's powers regarding virtual or crypto assets.

In terms of section 6, the regulator will have powers to the power to issue, suspend, revoke, or alter a VASP licence. The rest of the powers are all enabling under this section.[1359] What is provided here is the power to promulgate or create any delegated legislation or subordinate legislation supplementary to the requirements that have been

[1352] New Commonwealth Model Law, Page 28, Section 5(1)(g).

[1353] New Commonwealth Model Law, Page 28, Section 5(1)(j).

[1354] New Commonwealth Model Law, Page 28, Section 5(1)(h).

[1355] See Chapter 3, 3.2.2.

[1356] New Commonwealth Model Law, Page 28, Section 5(1)(h) and (i).

[1357] New Commonwealth Model Law, Page 28.

[1358] New Commonwealth Model Law, Page 28, Commentary.

[1359] New Commonwealth Model Law, Page 29, Section 6(1) (b) – (f).

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provided for in the *Model Law* and the power to exempt any person from any provisions of the *Model Law*. What this section also provides for is to enable the power to adopt any measures that it deems necessary, in its sole discretion, for or in connection with, or reasonably incidental to, performing its functions in accordance with this *Model Law*. Lastly, a very open-ended enabling provision is provided for, namely, "to give the power for any other powers as conferred, or expressed to be conferred, on it by or under the *Model Law* or any legislation that is in force".[1360]

One of the very relevant sections from the perspective of this research is the licencing section.[1361] The licencing section is crafted to accommodate different approaches; either a licencing approach or a registration approach similar to how it is provided for in the FATF requirements.[1362] Therefore, member countries may adopt either approach, depending on the regulatory appetite and market readiness in their jurisdiction.[1363] The licencing section comprises only of:

(a) a prohibition to the effect that a natural person shall not provide Virtual Asset services as a business in the jurisdiction where the *Model Law* is implemented and, (b) of a provision that a legal person shall not provide Virtual Asset services as a business in the member country where the *Model Law* is implemented unless the legal person is licenced from or registered with the regulatory authority as a VASP.

The following section in the *Model Law* sets out the virtual asset activities that may be provided. This part mirrors the main activities that are captured under the FATF definition of Virtual Asset Services Providers, with only one addition to those primary

[1360] New Commonwealth Model Law, Page 29, Section 6(1) (e) – (f).

[1361] New Commonwealth Model Law, Page 33, Section 7(1) and (2).

[1362] See Chapter 2, 2.3.2.

[1363] The amended FATF Recommendation 15 requires that VASPs be regulated for anti-money laundering and combating the financing of terrorism (AML/CFT) purposes, licenced or registered, and subject to effective systems for monitoring or supervision. See FATF (2019), Guidance for a Risk-Based Approach to Virtual Assets and Virtual Asset Service Providers, FATF, Paris, www.fatf-gafi.org/publications/fatfrecommendations/documents/Guidance-RBA-virtual-assets.htm (last accesses on 15 September 2024).

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activities. In addition to what is provided in the FATF[1364] recommendations regarding primary activities, the *Model Law* adds ”any other activities related to virtual assets that the regulatory authority may, from time to time, include”.[1365] The licencing process is set out in section 9 of the *Model Law* and requires that a legal person who proposes to carry on business as a VASP must apply to the regulatory authority and obtain a licence.[1366] It is submitted that there is already a provision in the form of a prohibition against unlicenced or unregistered businesses in section 7.[1367] The second requirement regarding the licence application is that each of an applicant's beneficial owners[1368] be fit and proper to perform duties as may be prescribed.

Section 10 of the *Model Law* sets out the provisions regarding the assessment, issuing, or refusal of a VASP licence application. The main provisions of this section stipulate that the regulator must, in a reasonable time, “either accept and licence or designate”, as the wording goes, the virtual asset services provider or, in the alternative, reject the application and provide reasons for such a rejection.[1369] It is submitted that providing reasons for such rejection is very much in line with the fair administrative justice process to give reasons for making a decision[1370], which enables the affected party to grasp the reasoning and empowers them to make an informed decision to challenge the decision because they understand the grounds of the rejection. In the alternative to granting or refusing the application, there is also a provision in respect of requesting the VASP to provide additional information within the time period stipulated by the regulator. The failure of the VASP to provide the requested information leads to an

[1364] See Chapter 1, 1.9.

[1365] New Commonwealth Model Law, Page 34, Section 8(1)(f).

[1366] New Commonwealth Model Law, Page 35, Section 9(1).

[1367] New Commonwealth Model Law, Page 35, Section 9(1)(a).

[1368] Beneficial Owner means the Natural Person(s) who ultimately owns or controls a consumer and/or the Natural Person on whose behalf a transaction is being conducted. It also includes those Persons who exercise ultimate effective control over a Legal Person or arrangement. See New Commonwealth Model Law, Page 18, Section 2(1)(a). (last accessed on 13 February 2025).

[1369] New Commonwealth Model Law, Page 36, Section 10(2)(a) –(b).

[1370] A reasonable opportunity to make representations implies that a person is properly advised of the information and reasons that underlie the impending decision. See Lawrence Baxter Administrative Law (1984) 546; Cora Hoexter *Administrative Law in South Africa 334*. (last accessed on 13 February 2025).

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automatic withdrawal of the licence application.[1371] The *Model Law* also sets out the grounds for refusal of such a licence in this section. The grounds for refusal include: an incomplete application; not furnishing the regulator with the requested information; the lack of financial viability of the business in the view of the regulator; inadequate capital; lack of fit and properness; and perceived lack of ability to comply with requirements when licenced. The remainder of the possible grounds for refusal are where the applicant has not paid the prescribed fee or if the services to be provided by the applicant will be provided in a manner that will or is likely to bring the jurisdiction implementing this *Model Law* into disrepute.[1372]

The following section in the *Model Law* prescribes the form of the licence issued and stipulates that the licence so issued shall state the name and address of the VASP, the fact that the licence has been issued, the services that the licence enables the VASP to provide and the licence number issued and if there is a certain period for which the licence is valid. It is further required that the licenced VASP prominently display its licence on, or at, all places where it provides its services as a VASP, including physical business premises and online.[1373]

In the commentary on section 11, it is stated that Commonwealth countries using the framework could impose conditions on issued licences. The regulator must provide reasons to the applicant for setting these conditions. The applicant is then allowed to respond and explain why the regulator should not issue the licence with the proposed conditions. In the licencing section, there is a provision for the term and renewal of the licence.[1374] It stipulates that a licence issued to a VASP remains valid until it expires, is revoked, or is suspended. The *Model Law*[1375] outlines various grounds for suspending a business licence if a breach continues. It mandates that a notice of non-compliance be issued to the VASP before suspension. This notice specifies the breached

[1371] New Commonwealth Model Law, Page 34, Section 10(2)(c).

[1372] New Commonwealth Model Law, Page 36, Section 10(3)(g) and (h).

[1373] New Commonwealth Model Law, Page 38, Section 11(2).

[1374] New Commonwealth Model Law, Page 39, Section 12.

[1375] New Commonwealth Model Law, Page 40, Section 13.

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provisions, the penalty payable, and the period for payment. It also details the time allowed for the VASP to rectify the breach before the licence may be suspended.[1376]

Such notice of non-compliance may be served on the VASP if there is a breach of any of the provisions of the *Model Law* or if the regulator administering the *Model Law* finds that the beneficial owners[1377] of the VASP are not fit and proper in the view of the regulator.[1378] Further actions triggering a notice of non-compliance are if the VASP provides information that is false, inaccurate, or misleading or if the VASP has obtained the VASP licence by making false statements or by any other irregular means.[1379] Further to the actions mentioned herein, the VASP could also be issued with a notice of non-compliance if it has been authorised to provide services, but fails to commence providing services after 12 months of receiving such authorisation by the regulator.[1380] Failure to rectify the non-compliance can lead to suspension of the licence or a request to provide reasons why the licence of the VASP should not be revoked.[1381]

[1376] New Commonwealth Model Law, Page 40, Section 13(2)(a) – (d).

[1377] Beneficial Owner means the Natural Person(s) who ultimately owns or controls a consumer and/or the Natural Person on whose behalf a transaction is being conducted. It also includes those Persons who exercise ultimate effective control over a Legal Person or arrangement. Commonwealth Model Law on Virtual Assets, 2024 available online at https://production-new-Commonwealth-files.s3.eu-west-2.amazonaws.com/s3fs-public/2024-04/Commonwealth-model-law-on-virtual-assets.pdf?VersionId=Mpvonk_fe1DW64Bo1.LqpmSvvxSe430o (last accessed on 15 September 2024).

[1378] It is essential that the significant shareholder(s) should have the qualities necessary to ensure that they will exercise their influence to promote sound and prudent management and continuity-oriented development of the institution. The Basel Committee on Banking Supervision's Core Principles address beneficial ownership and "fit and proper" assessments for bank ownership and management. These principles, especially Principle 5, require regulators to assess the suitability of major shareholders, including beneficial owners, ensuring they are transparent and fit for their roles. See Basel Core Principles for Effective Bank Supervision, available online at https://www.bis.org/publ/bcbs230.pdf (last accessed on 16 April 2025).

[1379] New Commonwealth Model Law, Page 40, Section 13(1)(c) and (d).

[1380] New Commonwealth Model Law, Page 40, Section 13(1)(e).

[1381] New Commonwealth Model Law, Page 40, Section 13(3)(a) – (c).

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This *Model Law* also provides that the regulator can consider the protection of consumers and decide to revoke or suspend a VASP licence to protect consumers or the public. Lastly, an enabling provision is also situated within this section, providing for any other reason determined by the regulator to be grounds for issuing such a notice of non-compliance.[1382] The consequences of a failure to adhere to the notice of non-compliance and rectify the source of this non-compliance or pay the penalty stipulated in such notice lead to the serving of a notice of suspension on the VASP, a *de facto* suspension of its licence. In this case, the VASP will be afforded an opportunity to provide reasons as to why its licence to provide services should not be revoked.[1383]

Another part of the *Model Law* that will be considered for its relevance to this thesis is contained in section 16, which deals with the obligations of a VASP. This section provides that the regulator implementing the *Model Law* can prescribe from time to time the manner in which the VASP should comply with the requirements in section 16 of the *Model Law*. The subsections[1384] of section 16 is a combination of conduct and prudential requirements, as well as operational requirements, operational continuity and disaster recovery on a very high level. It starts off by placing a general requirement on the VASP to provide its services honestly and fairly at all times.[1385] Other consumer risk mitigation requirements in the *Model Law* include the requirement that the VASP must at all times manage any actual and potential conflicts of interest related to its services and manage and mitigate any actual and potential risks associated with its services. Furthermore, consumers are protected by requiring that VASPS must ensure, at all times, that all marketing and promotional materials are fair, clear, transparent, and not misleading. Additionally, they must have a mechanism in place for handling consumer complaints.[1386]

Also included as requirements in this *Model Law* in this respect, are the requirements placed on VASPS to at all times take reasonable steps to prevent market abuse and

[1382] New Commonwealth Model Law, Page 40, Section 13(1)(f) and (g).

[1383] New Commonwealth Model Law, Page 40, Section 13(3)(a) and (b).

[1384] New Commonwealth Model Law, Page 43, Section 16(1)(a) and (l).

[1385] New Commonwealth Model Law, Page 43, Section 16(1)(a).

[1386] New Commonwealth Model Law, Page 43, Section 16(1)(l) and (k).

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ensure the integrity and transparency of financial markets, take reasonable steps to ensure its representatives (employees and those acting on its behalf) comply with the law, and maintain competence to provide the virtual asset services.[1387] This section of the *Model Law*, specifically addressing disclosure, requires that VASPS conduct due diligence on the virtual asset and its issuer at all times when offering a virtual asset, for sale taking into account the requirements outlined in a White Paper[1388], as set out in section 31(1)(a).[1389]

This section contains several provisions in respect of beneficial owners, as mentioned above. What is required in the *Model Law* is that VASPS, at all times, take reasonable steps to ensure its beneficial owners are fit and proper and also take reasonable steps to ensure its beneficial owners or any natural person employed by, or associated with, the VASP comply with the *Model Law* and all applicable laws in the jurisdiction using the *Model Law* as a baseline. There are three additional provisions concerning beneficial owners, wherein Virtual Asset Service Providers (VASPs) are mandated to take reasonable measures to ensure that their beneficial owners, as well as any natural person employed by or associated with the VASP, adhere to the code of conduct for VASPs as established by the regulator periodically.[1390] Furthermore, VASPs must ensure that their beneficial owners and any natural person employed by or associated with the VASP comply with the conditions stipulated in the licence issued by the regulator.[1391] The last of the beneficial ownership provisions in the *Model Law* provides that a VASP must at all times take reasonable steps to ensure that its beneficial owners or any natural person employed by, or associated with, the VASP are competent to provide the services of the VASP.[1392]

In terms of prudential and operational requirements, this section of the *Model Law* requires that the VASP always maintain and hold the prescribed capital specified by

[1387] New Commonwealth Model Law, Page 44, Section 16(1)(m), (n) and (o).

[1388] See Chapter 1, 1.2.4.

[1389] New Commonwealth Model Law, Page 44, Section 16(1)(p).

[1390] New Commonwealth Model Law, Page 44, Section 16(1)(s).

[1391] New Commonwealth Model Law, Page 44, Section 16(1)(r).

[1392] New Commonwealth Model Law, Page 44, Section 16(1)(u).

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the regulator, using the *Model Law* to ensure market integrity and operational resilience and have adequate technological, financial, and human resources to discharge its services.[1393] Furthermore, the VASP must always ensure that the recording, storage, protection, and transmission of the data processed by it are in accordance with the applicable laws in its jurisdiction.[1394] AML/CFT are dealt with at a high level by requiring that VASPS must, at all times, comply with the full range of AML/CFT preventive measures, including targeted financial sanctions obligations.[1395] This section also contains a general and high-level requirement on VASPS to, at all times, plan for business continuity and disaster recovery in the event of an incident or a disaster.[1396] It is clear that the scope is very high level and aimed at countries that do not have such laws to bring whistle-blower[1397] protection under the ambit of this *Model Law*, in the manner they deem fit.

Section 17 of the *Model Law* sets out the appointment of a director or authorised representative. These are presented as the baseline governance requirements on which the countries using the *Model Law* can elaborate on their own accord. The countries using the *Model Law* can also further prescribe eligibility criteria for directors, such as minimum experience in the domain of virtual assets. This section starts by requiring that the VASP must appoint a director responsible for its functioning.[1398] Further to the requirement for the appointment of a director, this section sets out that such a director must be fit and proper for this designation and can only be appointed if the appointment is approved by the regulator utilising the *Model Law*.[1399]

[1393] New Commonwealth Model Law, Page 43, Section 16(1)(b) and (e).

[1394] New Commonwealth Model Law, Page 43, Section 16(1)(h).

[1395] New Commonwealth Model Law, Page 43, Section 16(1)(f).

[1396] New Commonwealth Model Law, Page 43, Section 16(1)(j).

[1397] A whistleblower is a person who exposes or reports information about wrongdoing or illegal activities within an organisation or government entity. See, S Conmy, The Corporate Governance Institute, "What is a whistleblower?", https://www.thecorporategovernanceinstitute.com/insights/lexicon/what-is-whistleblower-meaning-examples/?srsltid=AfmBOorfufJYFpAqq7cJaeLF3GMpx5b-wCiBFnX4IjWKO7o6nEhXefPy (last accessed on 17 February 2025).

[1398] New Commonwealth Model Law, Page 47, Section 17(1).

[1399] New Commonwealth Model Law, Page 47, Section 17(2) and (3).

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Section 17 of the *Model Law* also contains two enabling provisions, which enable the regulator to prescribe from time to time the functions of an appointed director and to set out the criteria that must be met before a natural person can be appointed as a director to a VASP.[1400] Part Four of the *Model Law* deals specifically with the prevention of money laundering and terrorism financing by VASPs.[1401] It is one of the more extensive chapters that cover dedicated preventive measures for VASPs from an AML/CFT lens and contains a section with respect to a money laundering reporting officer[1402] and a section dedicated to risk assessment. The section dedicated to risk was inserted in alignment with the FATF's fifth round of mutual evaluations which commenced in 2024[1403], utilising a revised assessment methodology adopted in 2022, where countries will be expected to require VASPs to take appropriate steps to identify, assess, manage, and mitigate their AML/CFT and CPF risks.[1404]

There is also a section in this chapter dealing with AML/CFT that is dedicated to consumer due diligence.[1405] In terms of this section, every VASP is required to undertake Consumer Due Diligence (CDD) measures when opening an account for, or otherwise establishing a business relationship with, a consumer.[1406] VASPs must undertake CDD measures when establishing business relationships, conducting transactions, or when there are doubts about previously obtained consumer information. This includes identifying and verifying consumers and beneficial owners, understanding the purpose of the business relationship, and conducting ongoing due diligence.[1407] This section on due diligence allows for a variance to be applied

[1400] New Commonwealth Model Law, Page 47, Section 17(4) and (5).

[1401] European Data Protection Supervisor," Data Protection requirements must go hand in hand with the prevention of money laundering and terrorism financing," 2020 available online at https://www.edps.europa.eu/press-publications/press-news/press-releases/2020/data-protection-requirements-must-go-hand-hand_en (last accessed on 29 September 2024).

[1402] New Commonwealth Model Law, Page 51, Section 18.

[1403] FATF, "Global Assessment Calendar", available online at https://www.fatf-gafi.org/en/calendars/assessments.html#:~:text=In%202024%2C%20the%20FATF%20commenced,indicated%20are%20subject%20to%20change (last accessed on 16 April 2025).

[1404] New Commonwealth Model Law, Page 52, Commentary.

[1405] New Commonwealth Model Law, Page 53, Section 20.

[1406] New Commonwealth Model Law, Page 53, Section 20(1).

[1407] New Commonwealth Model Law, Page 53, Section 20(1) and (2).

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depending on the level of risk. It is required that VASPs perform Enhanced Due Diligence (EDD)[1408] where the AML/CFT risks are higher. In lower-risk cases, VASPs are required to apply simplified CDD measures, when low risks have been confirmed through an adequate analysis of risks by the country or the VASP. The simplified measures should be commensurate with the lower risk factors[1409] but are not acceptable whenever there is suspicion of AML/CFT risks, or specific higher-risk scenarios apply.[1410]

The next section in the *Model Law* under Part Four deals with recordkeeping.[1411] Under this section, VASPs must maintain records of transactions and CDD information for at least five years. It is further a specific requirement that all such records shall be kept in written form in the English language, or in a form readily accessible and convertible in written form into the English language. These records should be sufficient to reconstruct individual transactions and must be made available to regulatory authorities upon request.[1412] Section 22 of the *Model Law* considers Politically Exposed Persons.[1413] It requires that VASPs must have risk management systems to determine

[1408] The primary difference between Client Due Diligence (CDD) and Enhanced Due Diligence (EDD) lies in the level of investigation and the risk profile of the client. CDD is a standard process to assess the risk level of all clients, while EDD is a more thorough process used for high-risk clients to mitigate the risk of financial crimes like money laundering and terrorist financing. See Sanctions.io, "CDD vs EDD in Financial Compliance", available online at https://www.sanctions.io/blog/cdd-vs-edd#:~:text=The%20primary%20difference%20between%20CDD,not%20unknowingly%20facilitating%20illegal%20activities (last accessed on 16 April 2025).

[1409] Lower risk factors in the financial sector's anti-money laundering context typically involve entities or transactions with clear, transparent structures and operations, low-value transactions, or business relationships in well-regulated jurisdictions. See Alessa, "Top 10 Anti-Money Laundering Risk Scoring Factors Across All Industries", available online at https://alessa.com/blog/anti-money-laundering-risk-scoring-factors/ (last accessed on 17 April 2025).

[1410] New Commonwealth Model Law, Page 54 and 55, Section 20(13) and (14).

[1411] New Commonwealth Model Law, Page 53, Section 21.

[1412] New Commonwealth Model Law, Page 56, Section 21 (1), (4) and (5).

[1413] "Politically Exposed Person" mean: "

i. Natural Persons who are or have been entrusted with prominent public functions by a foreign country, including Heads of State or Government, senior politicians, senior government officials, judicial or military officials, senior executives of state-owned corporations and important political party officials;

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if a consumer or beneficial owner is a Politically Exposed Person. EDD measures are required for foreign Politically Exposed Persons, and reasonable measures must be taken for domestic Politically Exposed Persons and those with prominent functions in international organisations.[1414] In the cases of dealing with Politically Exposed Persons, the senior management of the VASP must provide approval to establish or continue a relationship with such a person.[1415] Section 23 of the *Model Law* sets out requirements with respect to the transfer of virtual assets aligned with the FATF requirements and allows for the insertion of a threshold amount, which will require compliance with this section. In summation of Part Four, section 23 of the *Model Law*, for transfers equal to or greater than a specified threshold, VASPs must obtain and hold accurate information about the originator and beneficiary.[1416]

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ii. Natural Persons who are or have been entrusted domestically with prominent public functions, including Heads of State or Government, senior politicians, senior government officials, judicial or military officials, senior executives of state-owned corporations and important political party officials;

iii. Natural Persons who are or have been entrusted with a prominent function by an international organisation, including members of senior management such as directors, deputy directors and members of the board or equivalent functions; and

iv. family members and close associates of Natural Persons set out in Limbs (i)–(iii).” See New Commonwealth Model Law, Page 19, Section 2.

[1414] Persons who are or have been entrusted with a prominent function by an international organisation, i.e. directors, deputy directors and members of the board or equivalent functions, have positions that can create opportunities for money laundering and terrorist financing. See FATF Guidance, “politically exposed persons (recommendations 12 and 22)”, available online at https://www.fatf-gafi.org/content/dam/fatf-gafi/guidance/Guidance-PEP-Rec12-22.pdf (last accessed on 17 April 2025).

[1415] New Commonwealth Model Law, Page 56, Section 22 (1) and (2).

[1416] Section 23 and the thresholds refer to what is contained in Recommendation 16 of FATF that talks about the “FATF Travel Rule.” In essence, the Travel Rule requires that any transaction that crosses a de minimis threshold of the equivalent of US$/€1,000 must be accompanied by the personal information of the consumer. See New Commonwealth Model Law, Page 60, Commentary section, Available online at https://production-new-Commonwealth-files.s3.eu-west-2.amazonaws.com/s3fs-public/2024-07/Commonwealth-model-law-on-virtual-assets_d19821.pdf (last accessed on 17 February 2025).

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It is required that the originator VASPs[1417] must obtain and hold the required and accurate originator information and the needed information of the beneficiary and submit the required information to the beneficiary VASP or financial institution immediately and securely.[1418] With respect to the beneficiary VASP, the beneficiary VASPs, on transfer, must obtain and hold the required originator information and the required and accurate beneficiary information. This information must be submitted securely and made available to regulatory authorities upon request. Furthermore, measures must be put in place to identify and handle transfers that lack the required information.[1419]

Section 24 of the *Model Law* on virtual assets deals with scenarios where third parties are relied on to conduct the consumer's due diligence. In essence, this section stipulates that VASPs can rely on third parties to perform CDD measures, but the ultimate responsibility to meet the CDD requirements remains with the VASP.[1420] They must ensure that third parties are regulated and can provide necessary information without delay. This section also provides for specific lowered requirements in cases where the reliance placed is not outside of the group of companies that the VASP belongs to - where these are all met, it is sufficient to comply with section 24(1). In these cases, the *Model Law* stipulates that, firstly, when the VASP relies on a third party that is within the group, and the group applies consumer due dilligence and recordkeeping requirements and programmes against money laundering and terrorist financing, in accordance with Part Four of the *Model Law*, this is sufficient as a first element.[1421] The second requirement is that the VASP, in its implementation of those

[1417] Originator with respect to a transfer of a Virtual Asset, means the account holder who allows the transfer from that account, or, where there is no account, the Natural Person or Legal Person that places the order with the originating VASP to perform the transfer. Commonwealth Model Law on Virtual Assets, 2024 available online at https://production-new-Commonwealth-files.s3.eu-west-2.amazonaws.com/s3fs-public/2024-04/Commonwealth-model-law-on-virtual-assets.pdf?VersionId=Mpvonk_fe1DW64Bo1.LqpmSvvxSe430o (last accessed on 15 September 2024).

[1418] New Commonwealth Model Law, Page 58, Section 23(1)(a).

[1419] New Commonwealth Model Law, Page 58, Section 23(14).

[1420] New Commonwealth Model Law, Page 62, Section 24(1).

[1421] New Commonwealth Model Law, Page 62, Section 24(2)(a).

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CDD and recordkeeping requirements and AML/CFT programmes, is supervised at a group level by a competent authority in the relevant jurisdiction.[1422] In terms of the last requirement, the VASP adequately mitigates any higher risk in the country by the AML/CFT policies at a group level.[1423]

Section 25 of the *Model Law* considers the monitoring of suspicious transactions and sets out requirements in this respect. In summary, section 25 of the *Model Law* requires that Virtual Asset Service Providers must report any suspicious transactions, including attempted transactions, to the Financial Intelligence Unit of their jurisdiction, regardless of the amount of the transaction.[1424] In interpreting these requirements, the reference to funds or value-based terms, such as "property," "proceeds," "funds," "funds or other assets" and "corresponding value" contained in any financial services legislation or any other enactment relating to ML, CFT shall be construed to include virtual assets with such modifications as may be necessary. The section further provides that the transactions included in this reporting requirement include transactions suspected to be related to ML or CFT.[1425]

Section 26 of the *Model Law* considers counterparty VASP relationships. To summarise the requirements in this section, it provides that VASPs must gather sufficient information about counterparty VASPs to understand their business nature and reputation and assess the counterparty's AML/CFT controls.[1426] Further requirements in terms of this section require that senior management provide prior approval before establishing new counterparty relationships and that VASPs must ensure that their counterparties do not permit their accounts to be used by shell banks.[1427] In terms of dealings with shell banks, the Model Law also provides that the

[1422] New Commonwealth Model Law, Page 62, Section 24(2)(b).

[1423] New Commonwealth Model Law, Page 62, Section 24(2)(c).

[1424] New Commonwealth Model Law, Page 63, Section 25(1).

[1425] New Commonwealth Model Law, Page 63, Section 25(2).

[1426] New Commonwealth Model Law, Page 64, Section 26(1).

[1427] A shell bank is a financial institution that does not have a physical presence in any country. See BIS, "Basel Committee on Banking Supervision - Shell banks and booking offices", (2003), available online at https://www.bis.org/publ/bcbs95.pdf (last accessed on 15 September 2024).

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VASP under the *Model Law* shall not enter, or continue, relationships similar to correspondent banking with shell banks.[1428]

Section 27 of the *Model Law* deals with "high-risk countries", requiring that VASPs must apply EDD to business relationships and transactions involving persons from countries identified by FATF as high-risk.[1429] In section 28, the focus is on "tipping off" and confidentiality issues. In summary, what is provided for is that VASPs, their directors, and their employees must be protected from liability if they report suspicions about AML/CFT activities in good faith. This protection must be established in law and consist of protection from both criminal and civil liability for breach of any restriction on disclosure of information imposed by contract or by any legislative, regulatory, or administrative provision if they report their suspicions in good faith to the regulatory authority.[1430] Further protection is then provided by prohibiting VASPS, its directors, or employees from disclosing that a suspicious transaction report or related information is being filed.[1431]

There are also requirements related to internal controls, foreign branches, and subsidiaries contained in the *Model Law*, in section 29. The main elements of section 29 of the *Model Law* are: a requirement that VASPs must develop and implement procedures to prevent money laundering and terrorist financing activities, and that these procedures must be approved by senior management and include internal policies; employee screening; ongoing training; and independent audits. These procedures and policies are required to be applied to all branches and subsidiaries, therefore, group-wide.[1432] Section 29 also sets out some details as to what these procedures should consist of, at minimum, with respect to the prevention of activities

[1428] New Commonwealth Model Law, Page 64, Section 26(3).

[1429] The Financial Action Task Force classifies high-risk jurisdictions as having significant strategic deficiencies in their regimes to counter money laundering, terrorism financing, and proliferation financing. See FATF, 2019, "Topics - High-risk and other monitored jurisdictions" available online at https://www.fatf-gafi.org/en/topics/high-risk-and-other-monitored-jurisdictions.html (last accessed on 15 September 2024).

[1430] New Commonwealth Model Law, Page 66, Section 28(1).

[1431] New Commonwealth Model Law, Page 66, Section 28(2).

[1432] New Commonwealth Model Law, Page 67, Section 29(1), (3) and (4).

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related to identified risks.[1433] In terms of these procedures, the *Model Law* provides for proportionality by stipulating that the procedure can be developed considering the nature and size of the VASP's business.[1434]

The minimum that is set out comprises of internal policies, procedures, and controls to fulfil the obligations pursuant to the *Model Law* and adequate screening procedures to ensure appropriate and high standards when hiring employees.[1435] It further continues by requiring, at minimum, that there is ongoing training for all directors, officers, and employees to maintain awareness of the laws and regulations relating to identified risks, to assist in recognising transactions and actions that may be linked to identified risks and to instruct them in the procedures to be followed in such cases and that independent audit arrangements are established to review and verify compliance with, and effectiveness of, the measures taken in accordance with the *Model Law*.[1436]

The next four sections, which are contained in Part Five and Part Six of the *Model Law*, set out some relevant provisions that can be considered for the trans-border regulatory framework that is proposed in this thesis. Section 30 deals with issuers of IVAO.[1437] Within this section, there is a prohibition on the issuance, which provides that only legal persons (not natural persons) can offer or issue virtual assets to the public.[1438] The other provision in this section stipulates that issuers must comply with the requirements set out in the law.[1439] The obligations of issuers of IVAO are set out in section 31. It is provided that issuers must compile a White Paper[1440] publicly available online, detailing information about the issuer, the virtual asset, risks, fees, and other relevant details.

[1433] New Commonwealth Model Law, Page 67, Section 29(1), (3) and (4).

[1434] New Commonwealth Model Law, Page 67, Section 29(2(c) (i) – (iv).

[1435] New Commonwealth Model Law, Page 67, Section 29(2(c) (i) and (ii).

[1436] New Commonwealth Model Law, Page 67, Section 29(2(c) (iii) and (iv).

[1437] Issuer means a Person who issues Virtual Asset. See R Fulton, Commonwealth, 2024, "The Commonwealth Model Law on Virtual Assets" available online at https://production-new-Commonwealth-files.s3.eu-west-2.amazonaws.com/s3fs-public/2024-07/Commonwealth-model-law-on-virtual-assets_d19821.pdf (last accessed on 15 September 2024).

[1438] New Commonwealth Model Law, Page 71, Section 30(1).

[1439] New Commonwealth Model Law, Page 71, Section 30(2).

[1440] See Chapter 1, 1.2.4.

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The issuers of IVAO are also required to notify the regulatory authority if the total amount of virtual assets exceeds a certain threshold. They must provide services honestly, not communicate false information, and manage conflicts of interest.[1441] Within the conduct-related requirements in section 31 is also a requirement that the issuer of the IVAO shall not communicate anything in connection with the sale or issue of a virtual asset that is false, misleading, or deceptive and that the issuer shall not receive or pay any commission or fee that is not fully and prominently disclosed.

All the above are important provisions with respect to traditional financial products generally but also specifically important with respect to crypto or virtual assets since many of the mediums used to promote these products, e.g., social media, provide for short messages that could be misleading marketing where the upside is provided in a way that is not balanced in respect of the risks. There are also different types of fees with respect to these types of assets that consumers may not fully be aware of, for example processing costs, such as transaction fees, e.g., gas fees, and network fees.[1442]

Lastly, section 31 ends with a provision that requires that VASPS must comply with the same market conduct obligations (relating to misuse of non-public information, market manipulation, or related market conduct rules) as if the virtual assets were tradeable securities on a licenced market.[1443] In the commentary section following section 31 of the *Model Law*, it is explained that VASPs should also be responsible for ensuring that White Papers are robust and should not offer liquidity or secondary market services for virtual assets without being satisfied with the contents of the White Paper. In terms of investigation and examination requirements, section 32 stipulates that VASPs, and issuers are subject to investigation and examination by the regulatory authority at any

[1441] New Commonwealth Model Law, Page 73, Section 31(2).

[1442] These fees serve as a form of remuneration for validators who maintain and secure the network. Gas fees fluctuate based on supply, demand, and network capacity, and may increase during periods of network congestion. See Kvarn,2024," Understanding Crypto Gas Fees" available online at https://www.kvarnx.com/content/understanding-crypto-gas-fees (last accessed on 15 September 2024).

[1443] New Commonwealth Model Law, Page 73, Section 31(2)(h).

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time or in any way deemed necessary by the regulatory authority for the purposes of exercising its powers, performing its functions or fulfilling its objectives and that they must cooperate and provide requested information.[1444] Section 33 contains the enforcement provisions. In summary, this section provides for the regulatory authority to take enforcement actions against those who violate the law, including issuing reprimands, suspending or revoking licences, and imposing fines. The factors considered in enforcement include the nature of the violation, the conduct of the person, and previous compliance history.

Section 34 deals with appeals, stipulating that persons can appeal decisions of the regulatory authority to an appellate body within a specified time and that the appellate body can confirm, vary, or revoke the decision and make further orders.[1445] In the commentary section on section 34 of the *Model Law*, it is stipulated that the Commonwealth member countries may determine the appellate process and timelines based on their market readiness and applicable judicial systems.

The purpose of setting out the object and sections of the *Model Law* in this chapter is to familiarise the reader with the way that this *Model Law* is structured and what it covers. In Chapter Six of this thesis, it is submitted that some of the content of the *Model Law* could be useful for the proposed framework that will be set out, for instance, the licencing sections, although the *Model Law* is very high-level and creates a very thin skeleton example for countries that may not yet have any foundation in terms of regulatory frameworks. Some other reasons for not importing many of the aspects of this *Model Law* into the proposed framework is that the *Model Law* is very thin on important market conduct-related aspects and also does not deal with important overarching matters, for instance, governance and risk management, in detail, which are high priority items in some of the policy recommendations from international bodies - for instance the *Financial Stability Board recommendations for the Regulation, Supervision and Oversight of Crypto-asset Activities and Markets – Final Report* where governance (recommendation 4)[1446] and risk management (recommendation 5)[1447] is

[1444] New Commonwealth Model Law, Page 77, Section 32(1) (a) – (c).

[1445] New Commonwealth Model Law, Page 83, Section 34(1), (2) and (3).

[1446] See Chapter 2,2.4.2.

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pronounced as important topics. The *Model Law* is also silent on cyber risk and resilience, a very important issue in the virtual asset context when considering appropriate requirements in terms of regulatory frameworks, from the writer's point of view.

4.3 Conclusion

This chapter of the research analysed the construct and details of the Commonwealth *Model Law* with respect to virtual assets. This project aims to assist countries in regulating the rapidly growing virtual asset industry, helping to protect consumers, tackle illicit activity, and maintain market stability.[1448]

The relevance of this *Model Law* with respect to the research undertaken in this thesis, is that the *Model Law* produced is another positive action in progressing regulatory frameworks in terms of virtual assets or crypto assets and aligning the regulatory frameworks of different jurisdictions to address risks emanating from virtual assets effectively and with similar provisions to avoid regulatory arbitrage. The comparative countries that were chosen and discussed in Chapter Three in this research are also members of the Commonwealth, namely Zambia, Mauritius, South Africa, Kenya, and Namibia. It is submitted that their Commonwealth membership is another way through which the idea proposed in this research of a trans-border regulatory licence could be facilitated, or the conversation in this respect could be started.

The Commonwealth's priorities and the policies it adopts are shaped by the leaders of member countries, who meet every two years at the Commonwealth Heads of Government Meeting. This meeting is hosted by different member countries on a

[1447] See Chapter 2,2.4.2.

[1448] The Commonwealth, “New Commonwealth Model Law to help countries regulate virtual assets”,(2024) available online at https://theCommonwealth.org/news/new-Commonwealth-model-law-help-countries-regulate-virtual-assets#:~:text=The%20model%20law%20seeks%20to,request%20from%20Commonwealth%20law%20ministers (last accessed on 04 September 2024).

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rotating basis. The previous meeting was held in Rwanda in 2022, and the last meeting at the time of writing took place in Apia, Samoa, from 21-26 October 2024.[1449] It is submitted that these meetings could, in the future, be a vehicle where a trans-border crypto asset licence could be discussed and possibly considered as a future priority to boost economic growth and assist with deepening financial inclusion in the member countries. Since the *Model Law* helps to harmonise legislation across member countries, it is relevant to this research, which aims to make recommendations to further harmonise regulatory and supervisory approaches to ease the compliance burden of CASPS operating on a multinational level within the African Continent.

Notably, commenting on the *Model Law*, the Commonwealth Secretary-General, the Rt Hon Patricia Scotland KC, stated:

> "The Commonwealth is committed to helping its member countries take full advantage of the technological revolution, including virtual assets. This necessitates developing a regulatory framework. Approaching this country-by-country can be costly and time-consuming. By pooling our knowledge and expertise, we can create robust frameworks more quickly, affordably, and effectively."

The words of the Commonwealth Secretary-General above resonate with the aims of this thesis in that this study seeks to allow for the scalability of CASPS, which in turn will allow the countries in the African Continent to take full advantage of the possible benefits that the technology can bring in terms of boosting economic growth and deepening financial inclusion. Further to this, this study also facilitates the pooling of knowledge by the different countries that partake in the licence panel to support each other in effectively regulating and supervising the entities that operate under the trans-border licence.

[1449] The Commonwealth, "New Commonwealth Model Law to help countries regulate virtual assets",(2024) available online at https://theCommonwealth.org/news/new-Commonwealth-model-law-help-countries-regulate-virtual-assets#:~:text=The%20model%20law%20seeks%20to,request%20from%20Commonwealth%20law%20ministers (last accessed on 04 September 2024).

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CHAPTER 5

MARKETS IN CRYPTO ASSETS REGULATION(MiCA) ARCHITECTURE

5.1 Introduction

5.2 Development and high level architecture

5.3 Relevant Detailed Provisions of Markets in Crypto Assets Markets Regulation

5.4 Conclusion

5.1 Introduction

On 25 March 1957, the European Economic Community (EEC) was established pursuant to the Treaty of Rome[1450], with the overarching objective of fostering harmony and unity among the European Member States and creating a common market.[1451] The EEC created a new legal order to which the Member States of Europe[1452] could adhere.[1453] This framework created an institutional system and enabled the EEC to

[1450] Treaty establishing EEC (1957) 298 *U.N.T.S.* 11, available online at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:11957E (last accessed on 20 April 2025).

[1451] European Parliament, Page 3, "The historical development of European integration - PE 618.969", available online at https://www.europarl.europa.eu/RegData/etudes/PERI/2018/618969/IPOL_PERI(2018)618969_EN.pdf (last accessed on 20 April 2025).

[1452] The initial members were Belgium, France, Italy, Luxembourg, the Netherlands, and West Germany. See Gerald L. Greengard, Obstacles to the Implementation of the Treaty of Rome Provisions for Transnational Legal Practice, 7 MICH. J. INT'L L. 113 (1985), available online at https://repository.law.umich.edu/mjil/vol7/iss1/8 (last accessed on 20 April 2025).

[1453] Utz P. Toepke, *The European Economic Community -- A Profile*, 3 Nw. J. Int'l L. & Bus. 640 (1981),

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exert a degree of legal oversight over these states by creating a cohesive legal system within which they could operate. Subsequently, the *Maastricht Treaty of 1992* formalised the establishment of the European Union.[1454]

The establishment of the eurozone[1455] in 1999, pursuant to the *Maastricht Treaty of 1992*, represented a significant milestone within the broader context of the European Union (EU).[1456] This development profoundly influenced the role of national central banks in EU Member States, particularly in the realm of monetary policy, and had substantial implications for the role of European central banks in maintaining financial stability. The EU-level decision to adopt the euro as the single monetary currency led to the creation of the European Central Bank (ECB)[1457] and the European System of Central Banks (ESCB) on 1 June 1998, as stipulated by the Statute of the European System of Central Banks and of the ECB, in preparation for the transition to a eurozone.[1458] On 1 January 1999, the ECB assumed responsibility for monetary policy

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available online at https://scholarlycommons.law.northwestern.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1108&context=njilb (last accessed on 20 April 2025).

[1454] Franz C Mayer, Simon P Thies, European Union, Historical Evolution, (2019), available online at https://opil.ouplaw.com/display/10.1093/law:epil/9780199231690/law-9780199231690-e642 (last accessed on 20 April 2025).

[1455] The Eurozone refers to a geographical system comprising countries like Belgium, France, Germany, Luxembourg, and the Netherlands, where a common currency, the Euro, is used for economic transactions. See Corporate Finance Institute, " What is the eurozone?", available online at https://corporatefinanceinstitute.com/resources/economics/eurozone/ (last accessed on 20 April 2025).

[1456] Wim F.V Vanthoor, "The Euro: its operational success", *Journal of Asian Economics*, Volume 11, Issue 2, 2000, Pages 119-131, ISSN 1049-0078, available online at https://doi.org/10.1016/S1049-0078(00)00048-8 (last accessed on 20 April 2025).

[1457] The European Central Bank manages the euro, keeps prices stable and implements EU economic and monetary policy. See European Union, "European Central Bank (ECB)", available online at https://european-union.europa.eu/institutions-law-budget/institutions-and-bodies/search-all-eu-institutions-and-bodies/european-central-bank-ecb_en (last accessed on 23 April 2025).

[1458] Andreas G. Georgantopoulos, Anastasios D. Tsamis, Maria-Eleni K. Agoraki, "The Euro-adoption effect and the bank, market, and growth nexus: New evidence from EU panels", *The Journal of Economic Asymmetries*, Volume 12, Issue 1, 2015, Pages 41-51, ISSN 1703-4949, https://doi.org/10.1016/j.jeca.2015.01.002 (last accessed on 20 April 2025).

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at the supranational level, with a primary objective of ensuring price stability.[1459] The ECB is directly held responsible by the European Parliament and Council for carrying out its supervisory role and has to provide an annual report to the European Parliament.[1460]

One of the most important institutional and legal transformations took place in the form of the formation of the European Banking Union.[1461] The European Banking Union consolidates the responsibilities for the supervision, recovery, and resolution of banks. Furthermore, it mandates that banks operating within the euro area adhere to the regulations applicable in the EU, which stipulate that banks must address any errors they commit.[1462] The European Commission[1463] plays a crucial role in the European Banking Union by initiating and proposing legislation for the union, as well as managing the EU budget and implementing decisions.[1464] The European Commission's role is vital in ensuring the banking union's objectives are met, including stronger bank

[1459] European Central Bank," The Monetary Policy of the ECB 2011", available online at https://www.ecb.europa.eu/pub/pdf/other/monetarypolicy2011en.pdf (last accessed on 20 April 2025).

[1460] Alexander, Kern. (2015). European Banking Union: A Legal and Institutional Analysis of the Single Supervisory Mechanism and the Single Resolution Mechanism. European law review. 40. 154-187. (last accessed on 20 April 2025).

[1461] Alexander, Kern 2015 154. For a comprehensive overview of the historical development of the European Banking Union see Alexander, Kern 2015 154-155, 161-162. According to Alexander, the European Banking Union can be regarded as an "unprecedented transfer of sovereignty from participating Member States to an EU institution".

[1462] Barbara MAJEWSKA-JURCZYK, WSB University in Wroclaw, Poland, European Banking Union – an institutional analysis, Page 60, http://dx.doi.org/10.29015/cerem.896 (last accessed on 20 April 2025).

[1463] The European Commission is part of the executive of the European Union. It operates as a cabinet government, with 27 members of the Commission headed by a President. See European Union, "EU institution - European Commission" available online at https://european-union.europa.eu/institutions-law-budget/institutions-and-bodies/search-all-eu-institutions-and-bodies/european-commission_en (last accessed on 15 September 2024).

[1464] The European Commission is responsible for planning, preparing and proposing new European legislation. This is called the 'right of initiative'. See European Commission, "Planning and proposing law", available online at https://commission.europa.eu/law/law-making-process/planning-and-proposing-law_en (last accessed on 20 April 2025).

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supervision and efficient resolution of failing banks. Besides proposing new EU laws and policies and monitoring their implementation, the European Commission helps to shape the EU's overall strategy and manages the European Union budget.[1465]

Based on broad public consultations and the *Digital finance outreach*[1466], the European Commission adopted, on 24 September 2020, a *digital finance package*, including a *Digital Finance Strategy* and legislative proposals on crypto assets and digital resilience, for a competitive EU financial sector that gives consumers access to innovative financial products, whilst ensuring consumer protection and financial stability. Also, on 24 September 2020, as part of the *Digital Finance Package*, the European Commission published the *Digital Finance Strategy* for the EU.[1467] One of the focal points of this *Digital Finance Strategy* is the *Markets in Crypto Assets* Regulation, as discussed hereinafter.[1468]

In its opening paragraph, the *Digital Finance Strategy* states that the future of finance is digital, that new technologies are being deployed, and that these technologies are transforming existing business models. There is also an acknowledgement that while

[1465] European Commission, "Role of the European Commission", available online at https://commission.europa.eu/about/role_en#:~:text=Role%20of%20the%20European%20Commission,and%20manages%20the%20EU%20budget (last accessed on 20 April 2025).

[1466] The digital finance outreach is a series of events focusing on Fintech and digital innovation in the financial sector. See UN Trade & Development, 2022," Digital Finance outreach" available online at https://gsfo.org/resource/digital-finance-outreach (last accessed on 14 September 2024).

[1467] The European Union is a supranational political and economic union of 27 member states that are located primarily in Europe. The EU's members are Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, and Sweden. See European Union, 2021," ABOUT US - Who we are" available online at https://www.eeas.europa.eu/paraguay/who-we-are_en?s=193 (last accessed on 15 September 2024).

[1468] PWC, "A brief run-through of the European Union's Digital Finance Package",(2024) available online at https://pwc.to/3YtTTWO (last accessed on 10 September 2024).

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many opportunities arise from the digital shift, users of financial services must be protected against risks stemming from increased reliance on digital finance.[1469]

It is trite that appropriate and proportionate legislative frameworks protect financial consumers from market conduct and prudential risks that may arise or be heightened with the shift toward digital finance. The European Commission thus points out that the broad strategic objective of this EU *Digital Finance Strategy* is to aptly embrace digital finance for the good of consumers and businesses, and that this can only be achieved with the needed protections in place.[1470]

The stakeholders supported this objective on the grounds that a strong and vibrant digital financial sector would strengthen the ability to retain and reinforce open strategic autonomy in financial services in the EU and, by extension, the capacity to regulate and supervise the financial system to protect financial stability.[1471] Another ground that is most relevant to this research is that promoting and embracing digital finance would unleash innovation and create opportunities to develop better financial products for

[1469] Communication from the Commission to the European Parliament, the Council, the European Economic And Social Committee and The Committee of the Regions on a Digital Finance Strategy for the EU available online at https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0591&from=EN (last accessed on 04 February 2024).

[1470] European Commission, "Questions and Answers: Digital Finance Strategy, legislative proposals on crypto-assets and digital operational resilience, Retail Payments Strategy", (2020), available online at https://ec.europa.eu/commission/presscorner/detail/it/qanda_20_1685 (last accessed on 19 March 2025).

[1471] During the consultation phase of the Digital Finance Strategy the European Commission stated that it was interested in hearing the views of a wide range of stakeholders, in particular, from Member States, national competent authorities, the European Supervisory Authorities, the European Central Bank, EU financial industry (incumbent financial institutions; start-ups; technology companies…), FinTech organisations, organisations representing the interests of consumers and investors, technology experts, academics and EU citizens. See European Commission, "Consultation on a new digital finance strategy for Europe / FinTech action plan", available online at https://finance.ec.europa.eu/regulation-and-supervision/consultations/2020-digital-finance-strategy_en#:~:text=In%20this%20consultation%2C%20the%20Commission,institutions%3B%20start%2Dups%3B%20technology (last accessed on 20 April 2025).

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consumers, including those consumers currently unable to access financial services.[1472]

The *Digital Finance Strategy* sets out four priorities for the digital transformation of the EU financial sector. The four priorities are: tackling fragmentation in the Digital Single Market for financial services; ensuring that the EU's regulatory framework facilitates digital innovation in the interest of consumers and market efficiency; creating a European financial data space to promote data-driven innovation; and addressing challenges and risks associated with the digital transformation, in particular to promote resilience, data protection and appropriate prudential supervision. The first two priorities of this strategy will initiate the discussion in this chapter of the research.[1473] The first priority is to tackle fragmentation in the Digital Single Market for financial services[1474], thereby enabling European consumers to access cross-border services and helping European financial firms scale up their digital operations.[1475] This is very much a topical foundational motivation for this thesis in the context of Africa as a continent. It is submitted that allowing Fintechs in Africa to scale by tackling fragmented approaches within the different African countries can broaden participation in the financial sector. This scaling across borders is set as a priority because a larger potential market across borders can lead to better quality products and services at lower costs.

The development of the *Markets in Crypto Assets Regulation*, as discussed below, emanates from the second priority in the *Digital Finance Strategy*, which is to ensure

[1472] Communication from the Commission, Digital Finance Strategy Page 4.

[1473] Communication from the Commission, Digital Finance Strategy Page 2.

[1474] The Digital Single Market (DSM) for financial services aims to create a unified, seamless digital environment within the EU, removing barriers to cross-border financial transactions and promoting innovation, competition, and consumer choice. See European Union, “The ubiquitous digital single market”, available online at https://www.europarl.europa.eu/factsheets/en/sheet/43/the-ubiquitous-digital-single-market (last accessed on 22 March 2025).

[1475] European Commission, “Questions and Answers: Digital Finance Strategy, legislative proposals on crypto assets and digital operational resilience, Retail Payments Strategy”,(2020, available online at https://ec.europa.eu/commission/presscorner/detail/en/qanda_20_1685 (last accessed on 02 October 2024).

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that the EU regulatory framework facilitates digital innovation in the interest of consumers and market efficiency.[1476] It is acknowledged in this section of the *Digital Finance Strategy* that innovations that are created in the market based on, or using distributed ledger technology or artificial intelligence, have the potential to lead to improved financial products and services for financial consumers. This section of the *Digital Finance Strategy* stipulates that financial services legislation, and supervisory practices must be regularly considered and examined to ensure that they support digital innovation and remain appropriate and relevant in evolving market environments.

In accordance with the *2020 Digital Finance Strategy,* the EU adopted a comprehensive legislative framework that regulates the issuing of crypto assets, and the services provided concerning crypto assets.[1477] *MiCA*[1478] was published on 9 June 2023 in the Official Journal of the European Union[1479]. It entered into force 20 days later, but the deadline for the application of its legislative provisions was 30 December 2024, however full implementation is still in process.[1480] Some provisions, mainly those

[1476] Communication from the Commission, Digital Finance Strategy Page 4.

[1477] European Commission," Crypto assets - A comprehensive framework for crypto assets and related services to ensure that the Union financial services are fit for the digital age" available online at https://finance.ec.europa.eu/digital-finance/crypto assets_en#:~:text=In%20accordance%20with%20the%202020,in%20respect%20of%20crypto%2Dassets (last accessed on 04 February 2024).

[1478] The European Markets in Crypto-Assets (MiCA) Regulation is a comprehensive EU framework that aims to harmonise regulations for crypto-assets across all member states, ensuring a unified and legally clear market. See ESMA," Markets in Crypto-Assets Regulation (MiCA)", available online at https://www.esma.europa.eu/esmas-activities/digital-finance-and-innovation/markets-crypto-assets-regulation-mica#:~:text=The%20Markets%20in%20Crypto%2DAssets,published%20sequentially%20in%20three%20packages (last accessed on 20 April 2025).

[1479] The Official Journal of the European Union is the official publication (gazette) for EU legal acts, other acts and official information from EU institutions. See European Union," Access the *Official Journal* - EUR-Lex", available at https://eur-lex.europa.eu/oj/direct-access.html (last accessed on 23 February 2025).

[1480] MiCA allows Member States the option of implementing transitional measures, including a grand-fathering provision that permits entities providing crypto-asset services in accordance with national

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relating to Stablecoins, came into force earlier, i.e., 30 June 2024. Because *MiCA* is a groundbreaking piece of legislation in terms of providing an aligned approach to crypto asset frameworks across a continent, considerable attention will be given to this topic to analyse how *MiCA* was conceptualised with the aim of, transferring some of the approaches pertaining to *MiCA* to the proposed trans-border framework for Africa. The next section will unpack the development and the high-level architecture of *MiCA* in more detail.

5.2 Development and high-level architecture

MiCA provides a very novel framework in the form of a "first-of-its-kind" multi-country homogenous and uniform regulatory framework for crypto assets.[1481] It sets out a European regulatory framework for crypto-asset issuance and services that are not covered by existing regulations on financial instruments and financial products, which aims to provide legal certainty while fostering financial innovation within the European Union. As explained in the previous section, *MiCA* is part of a set of measures for digital finance in Europe (the *Digital Finance Package*).[1482]

During the development of the *MiCA* framework, it was clear that the European Union paid significant attention to crypto assets offered to potentially less informed segments of the market. These assets pose serious risks to the interests and protection of users

applicable laws before 30 December 2024 to continue to do so until 1 July 2026, or until they are granted or refused a MiCA authorisation as set out in Article 143(3) of MiCA. See Hogan Lovells," The EUs Markets in Crypto-Assets MiCA Regulation a status update",(2025), available online at https://www.hoganlovells.com/en/publications/the-eus-markets-in-crypto-assets-mica-regulation-a-status-update (last accessed on 23 February 2025).

[1481] Annunziata, Filippo, An Overview of the Markets in Crypto assets Regulation (MiCA). (December 11, 2023). European Banking Institute Working Paper Series no. 158, Available at SSRN: https://ssrn.com/abstract=4660379 or http://dx.doi.org/10.2139/ssrn.4660379

[1482] Communication from the Commission to the European Parliament, the Council, the EuropEconomic and Social Committee and the Committee of the Regions on a Digital Finance Strategy for the EU available online at https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0591&from=EN (last accessed on 04 February 2024).

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and consumers, referred to as "retail holders"[1483] in *MiCA*. Additionally, the framework focuses on ensuring broader financial stability. It is also clear that the EU intended to become the standard-setter of the rules on crypto assets at a global level and to be at the forefront of their development, acting as a pole of attraction for operators in the sector.[1484] The purpose of this section is, consequently, to provide a general discussion of the structure of *MiCA*.

In line with a coordinated possible response and a response based on common principles as envisaged by international standard-setting bodies,[1485] the EU took a bold step by introducing comprehensive and organic legislation covering member states.[1486] Notably, *MiCA* covers crypto asset markets and not crypto assets or smart contracts that are used to execute transactions in predetermined conditions. In this context, the crypto asset market refers to the offer, negotiation, and exchange, as well as the provision of services related to crypto assets. In particular, *MiCA* replaces existing national frameworks following the expiration of their grandfathering periods.[1487] Providers authorised under *MiCA* will be able to benefit from the European “passport”

[1483] According to Article 3(1)(37), a 'retail holder' is defined as 'any natural person acting for purposes which are outside his trade, business, craft or profession' (last accessed on 12 July 2024).

[1484] Annunziata, Filippo, An Overview of the Markets in Crypto assets Regulation (MiCAR). (December 11, 2023). European Banking Institute Working Paper Series no. 158, Available at SSRN: https://ssrn.com/abstract=4660379 or http://dx.doi.org/10.2139/ssrn.4660379

[1485] See Financial Stability Board (FSB), High-level Recommendations for the Regulation, Supervision and Oversight of Crypto Assets and Markets Final report, 17 July 2023; BANK FOR INTERNATIONAL SETTLEMENTS (BIS), The crypto ecosystem: key elements and risks Report submitted to the G20 Finance Ministers and Central Bank Governors, July 2023. Also recent are the recommendations of the INTERNATIONAL ORGANIZATION OF SECURITIES COMMISSION (IOSCO), Policy Recommendations for Crypto and Digital Asset Markets - Final Report, 16 November 202 (last accessed on 15 September 2024).

[1486] The EU has 27 Member States. See European Commission, “Easy to read - The European Union”, available online at https://european-union.europa.eu/easy-read_en (last accessed on 15 September 2024).

[1487] A grandfather clause, also known as grandfather policy, grandfathering, or being grandfathered in, is a provision in which an old rule continues to apply to some existing situations while a new rule will apply to all future cases. See Wester G, Gibson Rand LZ, Lu C, Sheehan M. The ethics of grandfather clauses in healthcare resource allocation. Bioethics. 2021;35:151–160. https://doi.org/10.1111/bioe.12815 (last accessed on 14 September 2024).

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and provide their services in all EU countries, either via a physical branch or on a cross-border basis, without having to obtain separate authorisations in the other European member states. As indicated in Chapter One of this thesis, the trans-border "passport" to operate across multiple jurisdictions is also what is envisaged in this research with respect to Africa.

MiCA covers a broad range of entities, including both natural and legal persons, alongside several undertakings engaged in crypto asset services and activities, operating directly or indirectly.[1488] A key aspect of *MiCA* is its adaptability to the decentralised nature of the crypto world. To the extent that services are provided in a fully decentralised manner, without intermediaries, this will fall outside[1489] the regulatory scope of *MiCA*. In terms of the scope of application for this harmonised framework, *MiCA* applies to entities involved in the issuance, offering to the public, and admission to trading of crypto assets or providing services related to crypto assets in the EU.[1490] It also impacts non-EU entities seeking services with, or conducting crypto-asset activities within, the EU. It is important to note that under *MiCA*, CASPS and Asset Reference Tokens (ART)[1491] issuers must have a registered office in the EU.[1492] Furthermore, *MiCA* applies to various participants involved in the crypto-asset ecosystem, namely, custodial wallet providers[1493], crypto asset exchanges, brokers,

[1488] Pixelplex," MiCA Regulation Explained: New Framework for Regulating Crypto Assets," (2023), available online at https://pixelplex.io/blog/mica-regulation-explained/ (last accessed on 14 September 2024).

[1489] Author's emphasis.

[1490] Article 1(2) (a)–(b), MiCA; Sophie Brenard, Jérôme Dubois, Stibbe," The MiCA Regulation explained: What has changed since June 2024?",(2024), available online at https://www.stibbe.com/publications-and-insights/the-mica-regulation-explained-what-has-changed-since-june-2024 (last accessed on 14 September 2024).

[1491] Article (3)(1)(6), MiCA defines 'asset-referenced token' to mean a type of crypto-asset that is not an electronic money token and that purports to maintain a stable value by referencing another value or right or a combination thereof, including one or more official currencies.

[1492] L Lugnani, "A guide to the Markets in Crypto assets (MiCA) regulation"(2023), available online at https://www.bdbpitmans.com/insights/a-guide-to-the-markets-in-crypto_assets-mica-regulation/ (last accessed on 12 March 2024).

[1493] See Chapter 2,2.3.2.

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and advisors, as well as placing agents[1494] for crypto assets, Stablecoin issuers, and other EU service providers.[1495]

Regarding the timeline for compliance with the implementation of the *MiCA* framework, *MiCA* was officially enacted on June 29, 2023, and as mentioned, came into force on December 30, 2024. At the time of writing, seven final regulatory technical standards[1496] were published on 13th February 2025 in the Official Journal of the EU supplementing *Regulation (EU) 2023/1114*, which was developed collaboratively, involving the European Securities and Markets Authority (ESMA)[1497], the European Banking Authority (EBA)[1498], industry experts, and public stakeholders. These final

[1494] This means marketing crypto assets to purchasers on behalf of, or for the account of, the offeror or a person related to the offeror. See Kai Zhang, Philip J. Morgan, Jeremy M. McLaughlin,2022," MiCA – Overview of the New EU Crypto asset Regulatory Framework (Part 3)" available online at https://www.klgates.com/MiCA-Overview-of-the-New-EU-Crypto asset-Regulatory-Framework-Part-3-11-29-2022 (last accessed on 15 September 2024).

[1495] Article 2(1) MiCA.

[1496] The regulatory technical standards comprises of: *Commission Delegated Regulation (EU) 2025/292*- Establishes a template for cooperation arrangements between competent authorities and supervisory authorities of third countries; *Commission Delegated Regulation (EU) 2025/294*- Outlines the process for handling complaints related to crypto-asset service providers; *2025/296*- Defines the procedure for approving crypto-asset white papers by competent authorities; *2025/297*– Specifies the conditions for the establishment and functioning of consultative supervisory colleges; *2025/298*– Focusses on the methodology to estimate transaction numbers and values for asset-referenced and e-money tokens in non-EU currencies used as a means of exchange; *2025/299*- Addresses continuity and regularity in the performance of crypto-asset services. See CMS Law-Now, "EU Final Regulatory Technical Standards on MiCA Published", available online at https://cms-lawnow.com/en/ealerts/2025/02/eu-publishes-final-regulatory-technical-standards-supplementing-regulation-on-crypto-asset-markets (last accessed on 21 April 2025).

[1497] The European Securities and Markets Authority is an independent European Union Authority located in Paris. ESMA replaced the Committee of European Securities Regulators on 1 January 2011. See Thomas Reuters – Practical Law, "Glossary - European Securities and Markets Authority (ESMA)" available online at https://uk.practicallaw.thomsonreuters.com/Glossary/UKPracticalLaw/I9fb41d8d1cac11e38578f7ccc38dcbee?transitionType=Default&contextData=(sc.Default)&firstPage=true#:~:text=ESMA%20is%20an%20independent%20EU,of%20Financial%20Supervision%20(ESFS) (last accessed on 15 September 2024).

[1498] The European Banking Authority is the European Union agency tasked with implementing a

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regulatory standards focusing on record-keeping, White Papers[1499], operational resilience, complaint handling, and notification procedures for crypto-asset service providers entered into force on 05 March 2025.[1500] As mentioned above, specific provisions concerning asset-referenced tokens and electronic money tokens came into effect in June 2024, with the remainder becoming applicable in December 2024.

The *MiCA* framework, although comprehensive and capturing many ecosystem participants within the scope of its regulatory framework, however, provides some notable exceptions that are excluded from its operation.[1501] These exceptions include Non-Fungible Tokens[1502], which are exempt unless they are not unique or fungible with other crypto assets. Furthermore, tokens structured in a way that represents rights, such as rights applicable to financial instruments, fall outside *MiCA's* scope, as other EU legal frameworks already oversee them.[1503]

These excluded financial instruments fall within the scope of the *Markets in Financial Instruments Directive (MiFID II)*[1504], while *MiCA* applies to most of the crypto assets

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standard set of rules to regulate and supervise banking across all European Union countries. See European Union, "Decentralised agency - European Banking Authority (EBA)" available online at https://european-union.europa.eu/institutions-law-budget/institutions-and-bodies/search-all-eu-institutions-and-bodies/european-banking-authority-eba_en#:~:text=The%20EBA%20is%20the%20EU,market%20in%20EU%20banking%20products (last accessed on 15 September 2024).

1499 Chapter 4,4.2.

1500 Hogan Lovells, "EU MARKETS IN CRYPTO-ASSET REGULATION (MICAR),Level 2 and 3 texts - Status Tracker",(2025), available online at https://www.hoganlovells.com/-/media/project/english-site/our-thinking/publication-embedded-media/pdfs/2025/mica--level-2-tracker-last-updated-19032025.pdf (last accessed on 22 March 2025).

1501 Art. 142(2) and recital 10 MiCA; Art. 2(2)(a), (3) and (4) as well as recital 3 MiCA.

1502 See Chapter 1,1.2.6.

1503 Page 1, MiCA.

1504 Markets in Financial Instruments Directive 2014, commonly known as MiFID 2, is a legal act of the European Union. Together with Regulation No 600/2014 it provides a legal framework for securities markets, investment intermediaries, in addition to trading venues. See Grady P, ITIF,2023," The AI Act Should Be Technology-Neutral" available online at https://itif.org/publications/2023/02/01/the-ai-act-should-be-technology-neutral/ (last accessed on 14 September 2024).

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that are not already covered by existing EU legislation and, in particular, by *MiFID II*. Financial instruments are defined in MiFID II mainly through a list of instruments that should be regarded as financial instruments. These are: (i) transferable securities; (ii) money-market instruments; (iii) units of collective investment undertakings; (iv) various derivative contracts; and (v) emission allowances.[1505] Thus, to assess whether a crypto asset will be classified as a "financial instrument" under MiFID II and be subject to the MiFID II Directive or, alternatively, captured under *MiCA*, it is necessary to assess the legal nature of the specific digital asset that is being considered.[1506]

This can be a complex matter, thus the ESMA[1507] published *guidelines*, titled "*Guidelines on the conditions and criteria for the qualification of crypto assets as financial instruments*"[1508], in 2024 to help the market make this distinction. Of course, the classification of whether the crypto assets should be designated as "financial instruments" is pinned on whether they align with MiFID II's definition of financial instruments. The *guidelines* published by the ESMA provide for overarching principles and criteria that need to be considered in the classification into a specific type of

[1505] Section C (1 to 11) of Annex I of MiFID II.

[1506] Unlike a regulation, which is directly applicable in Member States after its entry into force, a directive is not directly applicable in Member States, it must first be transposed into national law before it is applicable in each Member State; unlike a decision, the directive has general application. See European Union directives | EUR-Lex, available online at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=legissum:l14527#:~:text=unlike%20a%20regulation%2C%20which%20is,the%20directive%20has%20general%20application (last accessed on 28 February 2025).

[1507] The European Securities and Markets Authority is an independent European Union Authority located in Paris. ESMA replaced the Committee of European Securities Regulators on 1 January 2011. See Thomas Reuters – Practical Law, "Glossary - European Securities and Markets Authority (ESMA)" available online at https://uk.practicallaw.thomsonreuters.com/Glossary/UKPracticalLaw/I9fb41d8d1cac11e38578f7ccc38dcbee?transitionType=Default&contextData=(sc.Default)&firstPage=true#:~:text=ESMA%20is%20an%20independent%20EU,of%20Financial%20Supervision%20(ESFS) (last accessed on 15 September 2024).

[1508] ESMA, Guidelines on the conditions and criteria for the qualification of cryptoassets as financial instruments,(2024), available online at https://www.esma.europa.eu/sites/default/files/2024-12/ESMA75453128700-1323_Final_Report_Guidelines_on_the_conditions_and_criteria_for_the_qualification_of_CAs_as_FIs.pdf (last accessed on 16 March 2025).

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financial instrument if the overriding principles are met. The overriding principle includes conducting a proper assessment, which means that the assessor should consider the particular features, design, and rights attached to it, in other words, it is really a case-by-case assessment. Similar to the approach taken by many regulators, the approach to such an assessment is done on a technology-neutral basis and looks, therefore, at the economic functions of the crypto assets instead.[1509] This entails that an asset's technological structure is irrelevant to this assessment's purpose. If an asset is issued using a distributed ledger technology[1510] such as blockchain, this does not make it a crypto asset under *MiCA* by default.

Tokenised financial instruments (in a MiFID II sense, with the only difference being that these are issued on a digital ledger) continue to be considered financial instruments for all regulatory purposes. Another overarching principle is that the assessor should approach the assessment on a "substance-over-form" basis, which means that the classification of a digital asset should be guided by its *actual*[1511] features rather than sole reliance on the label given by the issuer or offeror.[1512] The last of these overarching principles stipulates that the assessor should take a hierarchical approach to such an assessment. This entails that, if a digital asset displays features of a "financial instrument", this characteristic should take precedence in its classification. Hence, questioning whether it is a financial instrument should be prioritised. Only when

[1509] Policymakers have long valued the principle of technology neutrality, which holds that laws and regulations should avoid privileging or penalizing one set of technologies over another. Technology neutrality does not necessarily demand that the exact same rules apply to different technologies. See Grady P, ITIF,2023," The AI Act Should Be Technology-Neutral" available online at https://itif.org/publications/2023/02/01/the-ai-act-should-be-technology-neutral/ (last accessed on 14 September 2024).

[1510] See Chapter 1, 1.2.4.

[1511] Author's emphasis.

[1512] European Securities and Markets Authority, ESMA75-453128700-52," Consultation paper: On the draft Guidelines on the conditions and criteria for the qualification of crypto assets as financial instruments" available online at https://www.esma.europa.eu/sites/default/files/2024-01/ESMA75-453128700-52_MiCA_Consultation_Paper_-_Guidelines_on_the_qualification_of_crypto_assets_as_financial_instruments.pdf (last accessed on 14 September 2024).

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a digital asset does not meet this criterion should alternative classifications be considered, such as being classified as a "crypto asset" (e.g., a utility token).[1513]

Before making the decision to deem the token being assessed a crypto asset that is not considered a security, each type of security regulated under MiFID II should be excluded through the assessment. The types of securities dealt with in MiFID II are transferable securities, money-market instruments, units of collective investment undertakings, derivatives, and emission allowances. Considering firstly a "transferable security", its characteristics are that it confers to its holders' similar rights to those attached to securities (e.g., dividend rights, voting rights on the issuer's decision-making process, right over a portion of the company's assets, or rights to liquidation proceeds.[1514] Another characteristic that should be tested is whether the digital representation is transferable or tradable on capital markets. "Transferable or tradable on capital markets" does not mean tradable on online platforms. What is meant here is that the digital asset can be transferred or traded at "trading venues".[1515]

Under MiFD II a "trading venue" has the following characteristics: it has the characteristics of a trading system or facility; it comprises multiple third-party buying and selling trading interests; it allows trading interests to interact in the system; and

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[1513] Laurent Collet, Thibault Cholett, Deloitte," ESMA clarifies which crypto assets might qualify as financial instruments in the EU," (2024), available online at https://www.deloitte.com/lu/en/Industries/investment-management/perspectives/ESMA-clarifies-which-crypto assets-might-qualify-as-financial-instruments-in-the-EU.html (last accessed on 14 September 2024).

[1514] Financial rights that are unrelated to company profits or liquidation surpluses might exclude financial instrument classification. A difference between voting rights on the company's decision-making process and other voting rights on a project (without participating in the company's decision-making processes) should be also made. In other words, rights should replicate the rights attached to securities in order to classify a crypto asset as a financial instrument. See Deloitte, Collet L and Chollet T,2024, "ESMA clarifies which crypto assets might qualify as financial instruments in the EU" available online at https://www.deloitte.com/lu/en/Industries/investment-management/perspectives/ESMA-clarifies-which-crypto assets-might-qualify-as-financial-instruments-in-the-EU.html (last accessed on 14 September 2024).

[1515] MiFID II's Article 4(1)(44).

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those trading interests are in financial instruments.[1516] A transferable security does not have the characteristic of being used as an instrument of payment. Lastly, the digital asset, to be classified as a transferable security, should be fungible[1517], therefore, not a non-fungible token.[1518]

Moving to "money market instruments", they have a predefined, short maturity period as required in the *Money Market Funds Regulation*[1519] that was issued in 2017.[1520] Money market instruments[1521] specifically exhibit stable value and minimal volatility, and they align returns with short-term interest rates. Some crypto-asset platforms provide for savings arrangements, and if these savings arrangements have maturity and provide returns to users, they might be seen as analogous to traditional money-

[1516] MiFID II's Article 4

[1517] See Chapter 1, 1.2.3.

[1518] MiFID II, definition of 'transferable securities' means "those classes of securities which are negotiable on the capital market, with the exception of instruments of payment, such as:
(a) shares in companies and other securities equivalent to shares in companies, partnerships or other entities, and depositary receipts in respect of shares;
(b) bonds or other forms of securitised debt, including depositary receipts in respect of such securities;
(c) any other securities giving the right to acquire or sell any such transferable securities or giving rise to a cash settlement determined by reference to transferable securities, currencies, interest rates or yields, commodities, or other indices or measures;"

[1519] Regulation (EU) 2017/1131 of the European Parliament and of the Council of 14 June 2017 on money market funds , available online at https://eur-lex.europa.eu/eli/reg/2017/1131/oj (last accessed on 12 July 2024).

[1520] Regulation (EU) 2017/1131 of the European Parliament and of the Council of 14 June 2017 on money market funds. See European Union, EUR-Lex, available online at https://eur-lex.europa.eu/eli/reg/2017/1131/oj (last accessed on 12 July 2024).

[1521] Money market instruments include Treasury bills, commercial paper, banker's acceptances, deposits, certificates of deposits, bills of exchange, repurchase agreements, federal funds, and mortgage- and asset-backed securities. See Rajesh Kumar, Chapter 4 - Money Markets, Bond Markets, and Mortgage Markets, Editor(s): Rajesh Kumar, Strategies of Banks and Other Financial Institutions, Academic Press, 2014, Pages 95-123, ISBN 9780124169975, https://doi.org/10.1016/B978-0-12-416997-5.00004-X; 'money market instruments' means money market instruments as defined in Article 2(1)(o) of Directive 2009/65/EC, and instruments as referred to in Article 3 of Commission Directive 2007/16/EC (last accessed on 21 April 2025).

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market instruments.[1522] To establish whether a digital asset offering falls to be classified as such, it must be established whether a crypto project involves the pooling of capital from a number of investors. In addition, it must be analysed whether there is a view to investing in accordance with a defined investment policy for the benefit of those investors. Lastly, the assessor must consider the control element, namely whether the control is with a third party or executed by a smart contract on a blockchain or through some algorithm, or whether the investors have control over the daily management of the assets included in the pool.[1523]

In terms of "derivatives"[1524] as a financial instrument, the digital asset arrangement must culminate in some kind of agreement or digital contract between involved parties, detailing the terms, maturity (if any), price, and other conditions of the contract. There must also be an underlying reference, which determines its value (this could be an asset, an index, or a commodity), based on which the value fluctuates based on changes in this reference asset. Derivatives typically involve financial settlement. In other words, payments are made by the parties to each other based on the difference between the contract price and the market value of the underlying reference.[1525]

[1522] European Securities and Markets Authority, ESMA75-453128700-52," Consultation paper: On the draft Guidelines on the conditions and criteria for the qualification of crypto assets as financial instruments" available online at https://www.esma.europa.eu/sites/default/files/2024-01/ESMA75-453128700-52_MiCA_Consultation_Paper_-_Guidelines_on_the_qualification_of_crypto assets_as_financial_instruments.pdf (last accessed on 14 September 2024).

[1523] Deloitte, Collet L and Chollet T,2024, "ESMA clarifies which crypto assets might qualify as financial instruments in the EU" available online at https://www.deloitte.com/lu/en/Industries/investment-management/perspectives/ESMA-clarifies-which-crypto assets-might-qualify-as-financial-instruments-in-the-EU.html (last accessed on 14 September 2024).

[1524] 'derivative' or 'derivative contract' means a financial instrument as set out in points (4) to (10) of Section C of Annex I to Directive 2004/39/EC as implemented by Article 38 and 39 of Regulation (EC) No 1287/2006, available online at https://eur-lex.europa.eu/eli/reg/2006/1287/oj/eng (last accessed on 21 April 2025).

[1525] L Collet, T Cholett, "ESMA clarifies which crypto assets might qualify as financial instruments in the EU"(2024) available online at https://www.deloitte.com/lu/en/Industries/investment-management/perspectives/ESMA-clarifies-which-crypto assets-might-qualify-as-financial-instruments-in-the-EU.html (last accessed on 07 April 2024).

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Notably, also falling outside, the scope of *MiCA* are crypto assets without an identifiable issuer, which means that genuinely decentralised offerings would fall outside of *MiCA's* scope, noting, however, that service providers in respect of such crypto assets will still fall within the scope of *MiCA*. Central Bank Digital Currencies[1526] and other digital assets issued by central banks or other public authorities are also not subject to the *MiCA* framework.[1527] Central Bank Digital Currency is not captured because, unlike most crypto assets, it is directly issued and controlled by a central bank, making it essentially a digital version of fiat currency with a stable value. The last of the exceptions concerns group entities; therefore, institutions that provide services internally within a group are not subject to *MiCA*, although safeguards against abuse of this provision are in place.[1528]

In unpacking the overarching *MiCA* framework, at this point, it is necessary to consider how crypto assets are being classified in *MiCA*. This is a foundational element of a regulatory framework that many jurisdictions struggle to grasp. Three distinct categories of crypto assets are defined in *MiCA*.[1529] The first of these is the so-called "asset-referenced tokens"[1530] that are, by design, structured in a way to maintain stable value by referencing other values or rights, including fiat currencies, commodities, or other crypto assets.[1531] Then, secondly, there are "electronic money tokens"[1532] that, in

[1526] See Chapter 3, 3.4.2.

[1527] D Ballon Ossio, "Crypto regulation: the introduction of MiCA into the EU regulatory landscape"(2022) available online at https://www.cliffordchance.com/insights/resources/blogs/talking-tech/en/articles/2022/12/crypto-regulation-introduction-of-mica-into-the-eu-regime.html (last accessed on 12 March 2024).

[1528] Chambers and Partners, "New Era of Crypto Regulation - Understanding MiCA's Comprehensive Framework", (2023), available online at https://chambers.com/articles/new-era-of-crypto-regulation-understanding-micas-comprehensive-framework (last accessed on 13 March 2025).

[1529] Article 3(1)(6, 7, 9) MiCA.

[1530] Article 3(1)(6), MiCA, defines 'asset-referenced token' to mean a type of crypto-asset that is not an electronic money token and that purports to maintain a stable value by referencing another value or right or a combination thereof, including one or more official currencies.

[1531] Dr. Kai-Uwe Steck, Dominic Rogger, Nadja Medler, Caroline Kern Pontinova," Navigating the Markets in Crypto assets Regulation (MiCA) – A Swiss Perspective," (2024), available online at https://www.pontinova.law/blog-posts/micar-factsheet (last accessed on 02 October 2024).

[1532] Article 3(1)(7), MiCA, defines 'electronic money token' or 'e-money token' to mean a type of crypto-

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some ways, are similar to asset-referenced tokens but specifically pegged to the value of a single official currency instead of baskets of currency. The last of the three distinct categories are "other crypto assets". This category includes crypto assets (such as Bitcoin and Ethereum), as well as types of investment and utility tokens that do not qualify as transferable securities under existing EU financial regulations.[1533] In particular, utility tokens[1534] do not qualify as transferable securities due to their nature and because their purpose is to provide access to a good or service offered by the issuer, utility tokens, therefore, do not satisfy the requirements.[1535]

In terms of providing definitions, *MiCA* seeks to provide a uniform definition in respect of blockchain based digital assets for use across Europe. *MiCA* defines two terms; "crypto asset", as a principal term and "token" when distinguishing - electronic money tokens, asset-referenced tokens, and utility tokens.[1536] "Crypto assets" are broadly defined as "digital representations of value or rights that may be transferred and stored electronically using distributed ledger technology or similar technology." The main areas in this framework that can be highlighted in this chapter, which explores *MiCA* on a high level, are: authorisation; detailed White Papers; environmental impact; international cooperation; and potential fees. These will be considered in the next part of the discussion, which entails an in-depth consideration of the details in *MiCA* with respect to the proposed framework for a trans-border licence.

MiCA sets out what types of services are covered by crypto-asset service providers.[1537] On the list is the operation of a crypto-asset trading platform; custody, and

asset that purports to maintain a stable value by referencing the value of one official currency.

[1533] Tomasz Tomczak, "Crypto assets and crypto assets' subcategories under MiCA Regulation", *Capital Markets Law Journal*, Volume 17, Issue 3, (2022), Pages 365–382, available online at https://doi.org/10.1093/cmlj/kmac008 (last accessed on 02 October 2024).

[1534] Article 3(9), MiCA, defines 'utility token' to mean: "a type of crypto-asset that is only intended to provide access to a good or a service supplied by its issuer".

[1535] According to MiFID II's Article 4(1)(44), three criteria must be satisfied for a crypto-asset to be deemed as a transferable security, it: (i) should be part of a "class of securities", must be (ii) negotiable on the capital market and (iii) should not be an instrument of payment.

[1536] Article 1, MiCA.

[1537] Article 1, MiCA.

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administration of crypto assets on behalf of consumers; exchange of crypto assets for funds/other crypto assets; execution of orders for crypto assets on behalf of consumers; and receiving and transmitting orders for crypto assets on behalf of consumers. Also captured as services are the placing of crypto assets, providing transfer services for crypto assets to third parties, providing advice on crypto assets, and portfolio management on crypto assets on behalf of consumers. The practical effect of capturing these services is that at a high level, CASPS authorised under *MiCA* will be subject to organisational, conduct, and prudential requirements.[1538]

For the sake of comprehensiveness with respect to setting out the overarching structure and content of *MiCA*, the consequences faced in cases of non-compliance are set out briefly. The main types of fines or penalties that can be imposed are, firstly, administrative fines and penalties, which include fines for providing false, misleading, or incomplete information, as well as for failing to comply with obligations related to the issuance and operation of crypto assets.[1539] For natural persons, the maximum administrative fine is at least €700,000. For legal persons, the maximum is at least €5,000,000.[1540]

MiCA also enables periodic penalties to be imposed. Periodic penalties are imposed to prevent a person from persistent infringement, to force them to provide comprehensive information as requested, and to ensure cooperation with investigations. These payments are 3% of the average daily turnover for the previous business year for legal entities, or 2% of the average daily income for natural persons.[1541] In terms of

[1538] Central Bank of Ireland," Markets in Crypto assets Regulation (MiCAR)"(2024) available online at https://www.centralbank.ie/regulation/markets-in-crypto assets-regulation#:~:text=Act%20honestly%2C%20fairly%20and%20professionally,with%20transactions%20in%20crypto%2Dassets (last accessed on 13 March 2024).

[1539] Art 111, MiCA.

[1540] MiCA Regulation Explained: How It Will Change the Crypto Market,(2023), available online at https://pixelplex.io/blog/mica-regulation-explained/ (last accessed on 13 March 2024).

[1541] Nuala Doyle, Fahri Can Dogan, BSP," Markets in crypto assets (MICA) | Recent EU and Luxembourg developments",(2024), available online at https://www.bsp.lu/lu/publications/newsletters-newsflashes/markets-crypto assets-mica-recent-eu-and-luxembourg (last accessed on 13 March 2024).

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supervisory fees levied, the EBA charges supervisory fees to issuers of significant asset-referenced tokens, such as electronic money tokens. These fees fund the EBA's supervisory tasks and reimburse costs incurred by competent authorities.[1542] The fee amount is proportional to the significant asset-referenced or significant electronic money token issuer's scale, which is based on reserve assets for asset-referenced tokens and issuance size for electronic money tokens.[1543]

5.3 Detailed Provisions of Markets in Crypto Assets Markets Regulation

This section will commence with some of the main aspects of *MiCA* before delving deeply into the requirements and considering *MiCA's* alignment with the *Financial Stability Board's High-Level Recommendations* as well as other recommendations by international bodies. The analysis with respect to alignment with the *Financial Stability Board's High-Level Recommendations* and other international bodies is undertaken to determine if *MiCA* overall is a good starting point for a continent wide regulatory framework for Africa. As pointed out, in terms of *MiCA*, a CASP must be a legally recognised entity with a registered office in an EU member state and secure authorisation from the competent authority of that European state.[1544] Over and above this requirement, at least one Director of the said legal entity must be a resident of the EU. In terms of authorisation to offer to the public or seek admission to trading of

[1542] Article 93 of Regulation (EU) 2023/1114, Markets in Crypto-Assets Regulation provides in Article 93 (1) that member states shall designate the competent authorities responsible for carrying out the functions and duties provided for in this Regulation. Member States shall notify those competent authorities to EBA and ESMA. Article 93(3) stipulates that ESMA shall publish on its website a list of the competent authorities designated in accordance with Article 93, paragraphs 1 and 2. See MiCA, available online at https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32023R1114 (last accessed on 10 March 2025).

[1543] PixelPlex, "MiCA Regulation Explained: New Framework for Regulating Crypto Assets" (2023) available online at https://pixelplex.io/blog/mica-regulation-explained/ (last accessed on 13 March 2024).

[1544] Pierre E. Berger, Nicolas Kalokyris, DLA Piper, "MiCA & TFR: the two new pillars of the EU crypto assets regulatory framework",(2023), available online at https://www.dlapiper.com/en-za/insights/publications/2023/06/mica-tfr-the-two-new-pillars-of-the-eu-crypto assets-regulatory-framework (last accessed on 02 October 2024).

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asset-referenced tokens, there is a requirement to submit their application for an authorisation referred to in Article 16 of *MiCA* to the competent authority of their home Member State. For this type of authorisation, *MiCA* contains a list of information that needs to accompany any application for authorisation, which includes the address of the applicant, the articles of association, and the programme of operations.[1545] Other material aspects which must accompany the application for authorisation includes: a detailed description of the applicant issuer's governance arrangements as referred to in Article 34(1) of *MiCA;* a crypto-asset White Paper as referred to in Article 19 of *MiCA*; and a description of the internal control mechanisms and risk management procedures referred to in Article 34(10) of *MiCA*.

An interesting inclusion in this application is Article 18, paragraph 2 (e) of *MiCA*, which requires the submission of a legal opinion that the asset-referenced token does not qualify as either a crypto-asset excluded from the scope of *MiCA* pursuant to Article 2(4) or an electronic money token. Certain prescripts regarding the assessment of an application for authorisation are contained in *MiCA*.[1546] In terms of these prescripts, competent authorities[1547] have twenty-five working days to assess both the application and the White Paper in terms of whether it includes the required information and needs to notify the applicant issuer of any defects.[1548] It is also prescribed that the competent authority must make and prepare a draft decision on a complete application within sixty working days.[1549] The draft decision is then submitted to the EBA[1550], ESMA, and the ECB.[1551] Following this process, the ECB or, where applicable, the central bank referred to in Article 20 (4), must, within twenty working days of receipt of the draft

[1545] Article 18, paragraph 2 (a) – (r), MiCA.

[1546] Article 20, MiCA.

[1547] See MiCA "competent authority" means one or more authorities:

(a) designated by each Member State in accordance with Article 93 concerning offerors, persons seeking admission to trading of crypto assets other than asset-referenced tokens and electronic money tokens, issuers of asset-referenced tokens, or crypto asset service providers;

(b) designated by each Member State for the application of Directive 2009/110/EC concerning issuers of electronic money tokens.

[1548] Article 20, paragraph 1, MiCA.

[1549] Article 20, paragraph 2, MiCA.

[1550] European Banking Authority.

[1551] European Central Bank.

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decision and the application, issue an opinion as regards its evaluation of the risks that issuing a specific asset-referenced token might pose to financial stability, the smooth operation of payment systems, monetary policy transmission and monetary sovereignty, and it must transmit its opinion to the competent authority concerned. The next step in this comprehensive application process is that the competent authorities, within 25 working days after receipt of the opinions referred to in Article 20(5), have to make a fully reasoned decision granting or refusing authorisation to the applicant issuer and, within five working days of taking that decision, notify its decision to the applicant issuer.[1552]

Another main element in *MiCA* is that crypto asset issuers of crypto assets other than asset-referenced tokens or electronic money tokens must provide a detailed White Paper.[1553] The requirements regarding the White Paper are contained in Article 5, paragraph 1 (b)-(d) of *MiCA* and detail what the White Paper should contain for multilateral trading platforms. The requirements imposed in this respect apply to admission to trading, which refers to admission to a trading platform for crypto assets within the meaning of Article 3, paragraph 1(18) of *MiCA*.[1554] This provision refers to multilateral trading platforms bringing together multiple purchasing and selling interests in a pre-defined automated system. *MiCA* prescribes that the White Paper must outline the; nature and functionality of the crypto assets offered; the risks associated with investing in; purchasing; and owning these crypto assets; information about the issuer of the crypto assets; the project goals of the crypto asset project and the technology that is being employed within the project itself. In terms of the White Paper, it must include a summary providing key information about the offer to the public of the crypto asset or the intended admission to trading in an easily understandable manner and must be presented and laid out in a clear and comprehensive format, using characters of readable size, as well as a warning detailed in Article 6 (7) of *MiCA*.[1555] The warning

[1552] Article 21, paragraph 1, MiCA.

[1553] Page 6, (24), MiCA.

[1554] Osborne Clarke, "What are the EU's white paper requirements in MiCAR and do they apply to Bitcoin?"(2023) available online at https://www.osborneclarke.com/insights/what-are-eus-white-paper-requirements-micar-and-do-they-apply-bitcoin (last accessed on 13 March 2024).

[1555] In terms of Article 6 (7) of MiCA, the summary shall contain a warning that:
"(a) it should be read as an introduction to the crypto-asset white paper;

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referred to must make it clear that the summary should be read as an introduction to the crypto asset White Paper.[1556] The warning should, furthermore, be that the user must base decisions on the White Paper as a whole and not just the summary[1557], and that the offer to the public of the crypto asset does not constitute an offer or solicitation to purchase financial instruments or a prospectus.[1558] It is also required that the White Paper contains a statement by the management, offeror, or person seeking admission to trading that confirms that the crypto asset White Paper complies with the requirements and that, to the best of the knowledge of the management body, the information presented in the crypto-asset White Paper is fair, clear and not misleading and the crypto asset White Paper makes no omission likely to affect its import.[1559]

Another main element of *MiCA* is the provisions regarding transparency and disclosure, which require the issuance, offer to the public, and admission of crypto assets to trading on a trading platform for crypto assets.[1560] The first of these provisions relates to; disclosures in respect of conflicts of interest in respect of issuers of asset-referenced tokens between themselves and their shareholders or members; any shareholder or member; whether direct or indirect; that has a qualifying holding in the issuers; the members of their management body; their employees or the holders of asset-referenced tokens or any third party providing one of the functions as referred in

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(b) the prospective holder should base any decision to purchase the crypto-asset on the content of the crypto-asset white paper as a whole and not on the summary alone;

(c) the offer to the public of the crypto-asset does not constitute an offer or solicitation to purchase financial instruments and that any such offer or solicitation can be made only by means of a prospectus or other offer documents pursuant to the applicable national law;

(d) the crypto-asset white paper does not constitute a prospectus as referred to in Regulation (EU) 2017/1129 of the European Parliament and of the Council (36) or any other offer document pursuant to Union or national law."

[1556] Article 6, paragraph 7 of REGULATION (EU) 2023/1114 of the European Parliament and of the Council of 31 May 2023 on markets in crypto assets and amending Regulations (EU) No 1093/2010 and (EU) No 1095/2010 and Directives 2013/36/EU and (EU) 2019/1937.

[1557] Article 6, paragraph 7(b),MiCA.

[1558] Article 6, paragraph 7(c) and (d), MiCA.

[1559] Article 6, paragraph 6, MiCA.

[1560] Article 1, paragraph 2(a), MiCA.

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Article 34(5)(h).[1561] The disclosure requirements applicable to issuers of asset-reference tokens in respect of conflict of interest consist of the prominent placement on their website of a disclosure to the holders of their asset-referenced tokens, the general nature, and sources of conflicts of interest in a sufficiently precise manner to enable the prospective holders of their asset-referenced tokens to take an informed purchasing decision about the asset-referenced tokens.[1562]

MiCA requires crypto asset issuers to also disclose conflicts of interest between themselves and their shareholders or members, or any person directly or indirectly linked to the crypto-asset service providers or their shareholders or members by control, members of their management body, their employees or their consumers, or two or more consumers whose mutual interests conflict.[1563] Crypto-asset service providers are required to, in a prominent place on their website, disclose to their consumers and prospective consumers the general nature and sources of conflicts of interest. The disclosure must be made in an electronic format and must include sufficient detail, taking into account the nature of each consumer, in order to enable each consumer to make an informed decision about the crypto-asset service in the context in which the conflicts of interest arise.[1564]

Further disclosure requirements, for instance, relate to the public disclosure of inside information. In terms of the *MiCA*, issuers, offerors, and persons seeking admission to trading are required to inform the public as soon as possible of inside information referred to in Article 87(1)[1565] that directly concerns them in a manner that enables fast

[1561] Article 1, paragraph 1 (a) – (f); Article 34(5(h) states: "(h) arrangements with third-party entities for operating the reserve of assets, and for the investment of the reserve assets, the custody of the reserve assets and, where applicable, the distribution of the asset-referenced tokens to the public" .

[1562] Article 32, paragraph 1(a) – (f) and paragraphs 2 and 3, MiCA.

[1563] Article 72, paragraph 1(a) & (b), MiCA.

[1564] Article 72, MiCA.

[1565] Article 87(1), MiCA: "1. For the purposes of this Regulation, inside information shall comprise the following types of information:

(a) information of a precise nature, which has not been made public, relating, directly or indirectly, to one or more issuers, offerors or persons seeking admission to trading, or to one or more crypto-assets, and which, if it were made public, would likely have a significant effect on the prices of

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access as well as complete, correct and timely assessment of the information by the public. Issuers, offerors, and persons seeking admission to trading are not allowed to combine the disclosure of inside information to the public with the marketing of their activities.[1566] There are certain instances where delayed disclosure is allowed on their own responsibility, but the conditions under which this is allowed are clearly articulated. These conditions are that: immediate disclosure is likely to prejudice the legitimate interests of the issuers, offerors, or persons seeking admission to trading, the delay of disclosure is not likely to mislead the public, and the last condition for a delay is that issuers, offerors, or persons seeking admission to trading are able to ensure the confidentiality of that information.[1567]

In any instance where there is a delay, it is a requirement to inform the competent authority that the disclosure of the information was delayed, and the issuer must provide a written explanation of how the conditions set out above were met.[1568] In terms of disclosure, *MiCA* contains an interesting provision stemming from the borderless nature of crypto assets. The specific requirement deals with the disclosure of information from third countries. The provision states that the EBA may disclose information received from supervisory authorities of third countries only where the EBA or the competent authority that provided the information to the EBA has obtained the express agreement of the supervisory authority of a third country. It further states that, where applicable, the information is disclosed only for the purposes for which that supervisory authority gave its agreement or where such disclosure is necessary for judicial proceedings.[1569]

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those crypto-assets or on the price of a related crypto-asset;

(b) for persons charged with the execution of orders for crypto-assets on behalf of clients, it also means information of a precise nature conveyed by a client and relating to the client's pending orders in crypto-assets, relating, directly or indirectly, to one or more issuers, offerors or persons seeking admission to trading or to one or more crypto-assets, and which, if it were made public, would likely have a significant effect on the prices of those crypto-assets or on the price of a related crypto-asset."

[1566] Article 88, paragraph 1, MiCA.

[1567] Article 88, paragraph 2 (a) –(c), MiCA.

[1568] Article 88 (2) (3), MiCA.

[1569] Article 127 paragraph 1, MiCA.

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Besides the disclosure requirements for White Papers, as mentioned earlier in this discussion, there are disclosure requirements for penalties and fines.[1570] The requirement in this respect states that the EBA shall disclose to the public every fine and periodic penalty payment that has been imposed pursuant to Articles 131[1571] and 132[1572] of *MiCA*, unless such disclosure to the public would seriously jeopardise financial stability or cause disproportionate damage to the parties involved. Such disclosure must also not contain personal data.[1573]

In terms of transparency provisions, *MiCA* stipulates in the introductory text that in order to ensure the orderly functioning of markets in crypto assets, crypto-asset service providers operating a trading platform for crypto assets, should be subject to pre-trade and post-trade transparency requirements adapted to the markets in crypto assets, and should set transparent and non-discriminatory rules, based on objective criteria, governing access to their platforms. Furthermore, they should also have a transparent fee structure for the services provided to avoid the placing of orders that could contribute to market abuse or disorderly trading conditions. Turning the focus to supervision, *MiCA* makes it clear that enabling effective supervision means that crypto-asset services should only be provided by legal persons who have a registered office in a Member State in which they carry out substantive business activities, including the provision of crypto-asset services and that undertakings that are not legal persons, such as commercial partnerships, should under certain conditions also be permitted to provide crypto-asset services.[1574] Furthermore, to ensure the proper supervision and monitoring of offers to the public of asset-referenced tokens, issuers of asset-referenced tokens should have a registered office in the Union.[1575]

[1570] Article 133 paragraph 1, MiCA.

[1571] This Article deals with fines.

[1572] This Article deals with periodic penalty payments.

[1573] Article 133 paragraph 1, MiCA.

[1574] Pierre E. Berger, Nicolas Kalokyris, DLA Piper, “MiCA & TFR: the two new pillars of the EU crypto assets regulatory framework”,(2023), available online at https://www.dlapiper.com/en-za/insights/publications/2023/06/mica-tfr-the-two-new-pillars-of-the-eu-crypto assets-regulatory-framework (last accessed on 02 October 2024).

[1575] L 150/48, MiCA.

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MiCA provides that in instances where an asset-referenced token has been classified as "significant" in accordance with Article 43(1)[1576] or 44(1)[1577], the issuer of such asset-referenced token shall carry out its activities under the supervision of the EBA.[1578] In the cases where an issuer of a significant asset-referenced token also provides crypto-asset services or issues crypto assets that are not significant asset-referenced tokens, those services and activities remain under the supervision of the competent authority of the home Member State.[1579]

[1576] Article 43(1), MiCA, "The criteria for classifying asset-referenced tokens as significant asset-referenced tokens shall be the following, as further specified by the delegated acts adopted pursuant to paragraph 11:

(a) the number of holders of the asset-referenced token is larger than 10 million;

(b) the value of the asset-referenced token issued, its market capitalisation or the size of the reserve of assets of the issuer of the asset-referenced token is higher than EUR 5 000 000 000;

(c) the average number and average aggregate value of transactions in that asset-referenced token per day during the relevant period, is higher than 2,5 million transactions and EUR 500 000 000 respectively;

(d) the issuer of the asset-referenced token is a provider of core platform services designated as a gatekeeper in accordance with Regulation (EU) 2022/1925 of the European Parliament and of the Council (43);

(e) the significance of the activities of the issuer of the asset-referenced token on an international scale, including the use of the asset-referenced token for payments and remittances;

(f) the interconnectedness of the asset-referenced token or its issuers with the financial system;

(g) the fact that the same issuer issues at least one additional asset-referenced token or e-money token, and provides at least one crypto-asset service."

[1577] Article 44(1),MiCA, "1. Applicant issuers of asset-referenced tokens may indicate in their application for authorisation pursuant to Article 18, or in their notification pursuant to Article 17, that they wish for their asset-referenced tokens to be classified as significant asset-referenced tokens. In that case, the competent authority shall immediately notify such request of the applicant issuer to EBA, to the ECB and, in the cases referred to in Article 43(4), to the central bank of the Member State concerned.

In order for an asset-referenced token to be classified as significant under this Article, the applicant issuer of the asset referenced token shall demonstrate, through a detailed programme of operations referred to in Article 17(1), point (b)(i), and Article 18(2), point (d), that it is likely to fulfil at least three of the criteria set out in Article 43(1)."

[1578] Article 117(1), MiCA.

[1579] Article 117(2), MiCA.

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Also, in terms of electronic money tokens, where an electronic money token issued by an electronic money institution has been classified as "significant" in accordance with Article 56(1)(a)–(b)[1580] or 57(1)[1581] of *MiCA*, the EBA shall supervise the compliance of the issuer of such significant electronic money tokens in line with Articles 55[1582] and 58(1)[1583] of *MiCA*.[1584] *MiCA* creates an EBA Crypto Asset Committee in Article 118, which is a permanent internal committee pursuant to Article 41[1585] of *Regulation (EU)*

[1580] Article 56(1)(a)-(b),MiCA,"1. EBA shall classify e-money tokens as significant e-money tokens where at least three of the criteria set out in Article 43(1) are met:

(a) during the period covered by the first report of information as referred to in paragraph 3 of this Article, following the offer to the public or the seeking admission to trading of those tokens; or

(b) during the period covered by at least two consecutive reports of information as referred to in paragraph 3 of this Article."

[1581] Article 57(1), MiCA,"An issuer of an e-money token, authorised as a credit institution or as an electronic money institution, or applying for such authorisation, may indicate that it wishes for its e-money token to be classified as a significant e-money token. In that case, the competent authority shall immediately notify such request of the issuer to EBA, to the ECB and, in the cases referred to in Article 56(3), second subparagraph, to the central bank of the Member State concerned. In order for the e-money token to be classified as significant under this Article, the issuer of the e-money token shall demonstrate, through a detailed programme of operations, that it is likely to meet at least three of the criteria set out in Article 43(1)."

[1582] Article 55, MiCA, "Title III, Chapter 6 shall apply mutatis mutandis to issuers of e-money tokens. By way of derogation from Article 46(2), the date by which the recovery plan is to be notified to the competent authority shall, in respect of issuers of e-money tokens, be within six months of the date of the offer to the public or admission to trading. By way of derogation from Article 47(3), the date by which the redemption plan is to be notified to the competent authority shall, in respect of issuers of e-money tokens, be within six months of the date of the offer to the public or admission to trading"

[1583] Article 58(1), MiCA,"1. Electronic money institutions issuing significant e-money tokens shall be subject to:

(a) the requirements referred to in Articles 36, 37, 38 and Article 45, (1) to (4) of this Regulation, instead of Article 7 of Directive 2009/110/EC;

(b) the requirements referred to in Article 35(2), (3) and (5) and Article 45(5) of this Regulation, instead of Article 5 of Directive 2009/110/EC.

By way of derogation from Article 36(9), the independent audit shall, in respect of issuers of significant e-money tokens, be mandated every six months as of the date of the decision to classify the e-money tokens as significant pursuant to Article 56 or 57, as applicable."

[1584] Article 117, paragraphs 1,2,3 and 4, MiCA.

[1585] Article 41(1), MiCA,"1. The Board of Supervisors may establish internal committees or panels for

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No 1093/2010 of the European Parliament and of the Council of 24 November 2010 establishing a European Supervisory Authority (European Banking Authority), amending *Decision No 716/2009/EC* and repealing *Commission Decision 2009/78/EC*[1586], which committee also has the power to make decisions relating to the supervisory tasks that have been conferred on the EBA by this Regulation. Over and above the supervisory tasks mentioned, the crypto asset committee may also prepare decisions in relation to draft regulatory technical standards and draft implementing technical standards relating to supervisory tasks that have been conferred on the EBA by this Regulation.[1587]

Another very interesting supervisory process dealt with in *MiCA* is the establishment of supervisory colleges[1588] for issuers of significant asset-referenced tokens and significant electronic money tokens, which act as a vehicle for the coordination of supervisory activities.[1589] The supervisory colleges are established upon the classification of an asset-referenced token or electronic money token as significant, as per Article 43[1590], 44[1591], 56[1592], or 57[1593], as applicable. The EBA then establishes,

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specific tasks attributed to the Board of Supervisors, and may provide for the delegation of certain clearly defined tasks and decisions to internal committees or panels, to the Management Board or to the Chairperson."

1586 Regulation (EU) No 1093/2010 , available online at https://eur-lex.europa.eu/eli/reg/2010/1093/oj/eng (last accessed on 16 March 2025).

1587 Article 118, paragraphs 1 and 2,MiCA.

1588 A supervisory college is essentially a permanent, though flexible, structure comprised of an international bank's "home" and "host" supervisors. See ECB Banking Supervision, "What are supervisory colleges? - ECB Banking Supervision", available online at https://www.bankingsupervision.europa.eu/about/banking-supervision explained/html/supervisory_colleges.en.html (last accessed on 16 March 2025).

1589 Article 119, paragraph 1, MiCA.

1590 Article 43(1), MiCA sets out the criteria for classification as follows: "1. The criteria for classifying asset-referenced tokens as significant asset-referenced tokens shall be the following, as further specified by the delegated acts adopted pursuant to paragraph 11:
a) the number of holders of the asset-referenced token is larger than 10 million;
(b) the value of the asset-referenced token issued, its market capitalisation or the size of the reserve of assets of the issuer of the asset-referenced token is higher than EUR 5 000 000 000;
(c) the average number and average aggregate value of transactions in that asset-referenced token per day during the relevant period, is higher than 2,5 million transactions and EUR 500 000 000

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respectively;

(d) the issuer of the asset-referenced token is a provider of core platform services designated as a gatekeeper in accordance with Regulation (EU) 2022/1925 of the European Parliament and of the Council (43);

(e) the significance of the activities of the issuer of the asset-referenced token on an international scale, including the use of the asset-referenced token for payments and remittances;

(f) the interconnectedness of the asset-referenced token or its issuers with the financial system;

(g) the fact that the same issuer issues at least one additional asset-referenced token or e-money token, and provides at least one crypto-asset service".

[1591] Article 44, MiCA provides for the voluntary classification as follows: " 1. Applicant issuers of asset-referenced tokens may indicate in their application for authorisation pursuant to Article 18, or in their notification pursuant to Article 17, that they wish for their asset-referenced tokens to be classified as significant asset-referenced tokens. In that case, the competent authority shall immediately notify such request of the applicant issuer to EBA, to the ECB and, in the cases referred to in Article 43(4), to the central bank of the Member State concerned.

In order for an asset-referenced token to be classified as significant under this Article, the applicant issuer of the asset-referenced token shall demonstrate, through a detailed programme of operations referred to in Article 17(1), point (b)(i), and Article 18(2), point (d), that it is likely to fulfil at least three of the criteria set out in Article 43(1).

2. EBA shall, within 20 working days of the notification referred to in paragraph 1 of this Article, prepare a draft decision containing its opinion based on the programme of operations whether the asset-referenced token fulfils or is likely to fulfil at least three of the criteria set out in Article 43(1) and notify that draft decision to the competent authority of the applicant issuer's home Member State, to the ECB and, in the cases referred to in Article 43(4), second subparagraph, to the central bank of the Member State concerned.

Competent authorities of issuers of such asset-referenced tokens, the ECB and, where applicable, the central bank of the Member State concerned, shall have 20 working days from the date of notification of that draft decision to provide observations and comments in writing. EBA shall duly consider those observations and comments before adopting a final decision.

3. EBA shall take its final decision on whether to classify an asset-referenced token as a significant asset-referenced token within 60 working days of the notification referred to in paragraph 1 and immediately notify that decision to the applicant issuer of such asset-referenced token and its competent authority.

4. Where asset-referenced tokens have been classified as significant pursuant to a decision of EBA taken in accordance with paragraph 3 of this Article, the supervisory responsibilities with respect to issuers of those asset-referenced tokens shall be transferred from the competent authority to EBA on the date of the decision of the competent authority to grant the authorisation referred to in Article 21(1) or on the date of approval of the crypto-asset white paper pursuant to Article 17".

[1592] Article 56(1), MiCA, "1. EBA shall classify e-money tokens as significant e-money tokens where at least three of the criteria set out in Article 43(1) are met:

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manages and chairs a consultative supervisory college in respect of each issuer of a significant asset-referenced token or of a significant electronic money token so classified. This is done in order to facilitate the exercise of supervisory tasks and to act as a vehicle for the coordination of supervisory activities under *MiCA*. These supervisory colleges consist of several constituents, including: the ESMA[1594]; competent authorities of the home Member State where the issuer the issuer of the significant asset-referenced token or of the significant e-money token is established the ECB[1595]; and relevant supervisory authorities of third countries with which the EBA has concluded administrative agreements in accordance with Article 126 of *MiCA*. Many other constituents are listed in the paragraph setting out the members.[1596]

(a) during the period covered by the first report of information as referred to in paragraph 3 of this Article, following the offer to the public or the seeking admission to trading of those tokens; or

(b) during the period covered by at least two consecutive reports of information as referred to in paragraph 3 of this Article".

[1593] Article 57(1), MiCA, "1. An issuer of an e-money token, authorised as a credit institution or as an electronic money institution, or applying for such authorisation, may indicate that it wishes for its e-money token to be classified as a significant e-money token. In that case, the competent authority shall immediately notify such request of the issuer to EBA, to the ECB and, in the cases referred to in Article 56(3), second subparagraph, to the central bank of the Member State concerned. In order for the e-money token to be classified as significant under this Article, the issuer of the e-money token shall demonstrate, through a detailed programme of operations, that it is likely to meet at least three of the criteria set out in Article 43(1)."

[1594] See Chapter 5, 5.2.

[1595] See Chapter 5, 5.1.

[1596] "A college referred to in paragraph 1 shall consist of:

(a) EBA;

(b) ESMA;

(c) the competent authorities of the home Member State where the issuer of the significant asset-referenced token or of the significant e-money token is established;

(d) the competent authorities of the most relevant crypto-asset service providers, credit institutions or investment firms ensuring the custody of the reserve assets in accordance with Article 37 or of the funds received in exchange of the significant e-money tokens;

(e) where applicable, the competent authorities of the most relevant trading platforms for crypto-assets where the significant asset-referenced tokens or the significant e-money tokens are admitted to trading;

(f) the competent authorities of the most relevant payment service providers providing payment services in relation tothe significant e-money tokens;

(g) where applicable, the competent authorities of the entities ensuring the functions as referred to

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The members are allowed to contribute to the setting of the agenda and, by written agreement, determine the practical functioning of the college, which includes considerations such as: voting procedures, frequency of the meetings, and procedures for setting the agenda, amongst others.[1597] The supervisory colleges so established can issue non-binding opinions for issuers of significant asset-referenced tokens and significant electronic money tokens, which are submitted to serve as a strong motivation and guideline for formulating and implementing the recommendations to address shortcomings, amongst other things.

However, some critiques against the non-binding nature of opinions for issuers of significant asset-referenced tokens and significant electronic money tokens are that it may lead to situations where one competent authority will follow the non-binding opinions while the other(s) will not.[1598] For addressing this event, *MiCA* stipulates that when a competent authority or the EBA do not agree with the non-binding opinion, it must be communicated and should contain its reasons and an explanation for any

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in Article 34(5), first subparagraph, point (h);

(h) where applicable, the competent authorities of the most relevant crypto-asset service providers providing custody and administration of crypto-assets on behalf of clients in relation to the significant asset-referenced tokens or with the significant e-money tokens;

(i) the ECB;

(j) where the issuer of the significant asset-referenced token is established in a Member State whose official currency is not the euro, or where an official currency that is not the euro is referenced by the significant asset-referenced token, the central bank of that Member State;

(k) where the issuer of the significant e-money token is established in a Member State whose official currency is not the euro, or where an official currency that is not the euro is referenced by the significant e-money token, the central bank of that Member State;

(l) competent authorities of Member States where the asset-referenced token or the e-money token is used at large scale, at their request;

(m) relevant supervisory authorities of third countries with which EBA has concluded administrative agreements in accordance with Article 126"; Article 119, paragraph 2, MiCA.

[1597] Article 119, paragraph 6, MiCA.

[1598] European Digital Finance Association EDFA Position and Proposals for Amendments," Proposal for a Regulation On Markets In Crypto assets" available online at https://www.italiaFintech.org/wp-content/uploads/2022/10/EDFA_MiCA_position.pdf (last accessed on 17 March 2024).

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significant deviation from that opinion or recommendations.[1599] Of course, having adequate data on the supervised entities is of utmost importance for effective supervision. In this respect, *MiCA* enables the EBA to, through a simple request or alternatively by decision, require all information necessary to allow the EBA to carry out its duties under *MiCA*. Various persons are required to provide the information when requested, including a crypto-asset service provider, credit institution, or investment firm ensuring the custody of the reserve assets, third parties, or payment service providers.[1600]

In the event that the request for information follows the form of a simple request, *MiCA* sets out some requirements for this simple request. These requirements include a reference to Article 122 of *MiCA* titled "request for information" as the legal basis of such a request. It must also inform the recipient of the purpose of the request and the information that is being requested, inform the recipient that it is not obliged to adhere to the request, and provide a timeline for when the said information is to be provided.[1601] The more formal request is in the form of a "decision", which is a compulsory request to provide information. There is also a prescribed form for this decision, which includes many of the same elements that were conveyed regarding a simple request. In addition, the decision must indicate the periodic penalty payments provided for in Article 132 of *MiCA* titled "periodic penalty payments" where the production of information is required and indicate the right to appeal the decision before the EBA's Board of Appeal and to have the decision reviewed by the Court of Justice of the European Union[1602] in accordance with Articles 60[1603] and 61[1604] of

[1599] Article 120, paragraph 4, MiCA.

[1600] Article 122, paragraph 1 (a) – (i), MiCA.

[1601] Article 122, paragraph 2 (b), (c), (d) and (e), MiCA.

[1602] The Court of Justice of the European Union (CJEU) was first created in 1952. See Article 1, "Consolidated version of the Treaty on European Union - PROTOCOLS - Protocol (No 3) on the statute of the Court of Justice of the European Union" - *Official Journal 115*, 09/05/2008 P. 0210 – 0229, available online at https://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:12008M/PRO/03:EN:HTML (last accessed on 23 April 2025).

[1603] Article 60(1) and (2), Regulation (EU) No 1093/2010, "1. Any natural or legal person, including competent authorities, may appeal against a decision of the Authority referred to in Articles 17, 18 and 19 and any other decision taken by the Authority in accordance with the Union acts referred to in

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Regulation (EU) No 1093/2010 of the European Parliament and of the Council of 24 November 2010 establishing a European Supervisory Authority (European Banking Authority), amending Decision No 716/2009/EC and repealing Commission Decision 2009/78/EC.[1605]

Article 130 of *MiCA* titled "*supervisory measures by EBA*" deals with supervisory measures of the EBA. Article 130 of *MiCA* provides various measures available to the EBA when an issuer of a significant asset-referenced token has committed an infringement as listed in Annexure Five of *MiCA*.[1606] Some of these measures include requiring that the issuer of the significant asset-referenced token cease the conduct constituting the infringement or that the EBA suspends an offer to the public of crypto assets for a maximum period of 30 consecutive working days on any single occasion where it has reasonable grounds for suspecting that *MiCA* has been infringed.[1607] Other measures include the imposition of fines or periodic penalties;[1608] or requesting for supplementary information, issuing warnings, requiring changes in marketing communication, or suspending or prohibiting such marketing communication. The two most intrusive of these measures come in the form of a withdrawal of the authorisation

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Article 1(2) which is addressed to that person, or against a decision which, although in the form of a decision addressed to another person, is of direct and individual concern to that person.

2. The appeal, together with a statement of grounds, shall be filed in writing at the Authority within 2 months of the date of notification of the decision to the person concerned, or, in the absence of a notification, of the day on which the Authority published its decision."

[1604] Article 61(1) and (2), Regulation (EU) No 1093/2010, "1. Proceedings may be brought before the Court of Justice of the European Union, in accordance with Article 263 TFEU, contesting a decision taken by the Board of Appeal or, in cases where there is no right of appeal before the Board of Appeal, by the Authority.

2. Member States and the Union institutions, as well as any natural or legal person, may institute proceedings before the Court of Justice of the European Union against decisions of the Authority, in accordance with Article 263 TFEU."

[1605] Article 122, paragraph 3 (a) – (g), MiCA.

[1606] What constitutes an infringement is listed in Annex V.

[1607] Article 130, paragraph 1(a) and (d), MiCA.

[1608] Pursuant to Articles 131 and 132, MiCA.

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of the issuer or adopting a decision requiring the removal of a natural person from the management body of the issuer.[1609]

When it comes to infringement by issuers of significant electronic money tokens, similar powers are bestowed upon the EBA by Article 130 of *MiCA*.[1610] In terms of imposing these measures, *MiCA* prescribes that the EBA must take into account the nature and seriousness of the infringement and consider several factors when determining the nature and seriousness thereof. Some of the factors include the duration and frequency of the infringement, whether the infringement has been committed intentionally or negligently, the impact of the infringement, and the history of any previous infringements.[1611]

[1609] Article 130, paragraph 1(l) and (m), MiCA.

[1610] Article 130, paragraph 2(a) to (j), MiCA.

[1611] Article 130 (3) (a) – (k) stipulates all of the factors, which are: "3. When taking the measures referred to in paragraph 1 or 2, EBA shall take into account the nature and seriousness of the infringement, having regard to:

(a) the duration and frequency of the infringement;

(b) whether financial crime has been occasioned, facilitated or is otherwise attributable to the infringement;

(c) whether the infringement has revealed serious or systemic weaknesses in the procedures, policies and risk management measures of the issuer of the significant asset-referenced token or the issuer of the significant e-money tokens;

(d) whether the infringement has been committed intentionally or negligently;

(e) the degree of responsibility of the issuer of the significant asset-referenced token or the issuer of the significant e-money token responsible for the infringement;

(f) the financial strength of the issuer of the significant asset-referenced token, or of the issuer of the significant e-money token, responsible for the infringement, as indicated by the total turnover of the responsible legal person or the annual income and net assets of the responsible natural person;

(g) the impact of the infringement on the interests of holders of significant asset-referenced tokens or significant e-money tokens;

(h) the importance of the profits gained, losses avoided by the issuer of the significant asset-referenced token or significant e-money token responsible for the infringement or the losses for third parties caused by the infringement, insofar as they can be determined;

(i) the level of cooperation of the issuer of the significant asset-referenced token or of the issuer of the significant e-money token responsible for the infringement with EBA, without prejudice to the need to ensure disgorgement of profits gained or losses avoided by that person;

(j) previous infringements by the issuer of the significant asset-referenced token or by the issuer of

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MiCA also contains procedural rules for taking supervisory measures that are set out in Article 134 titled *"Procedural rules for taking supervisory measures and imposing fines".*[1612] The article provides that if, in carrying out its supervisory responsibilities, there are both clear and demonstrable grounds to suspect that there have been infringements[1613], the EBA must then appoint an independent investigation officer, who, while being independent, is still an officer of the EBA. The requirement of independence is described in this Article, which stipulates that the investigation officer to be appointed must not have been directly or indirectly involved in the supervision of the issuers of significant asset-referenced tokens or issuers of significant electronic money tokens concerned and shall perform their functions independently from the EBA. It is submitted that it is unclear how the functions would be considered independently performed by the EBA in practice.[1614] It is submitted that perhaps a distinction should have been drawn between independence and impartiality of the investigation officer, as it seems the requirements set out in this article relate to the investigation officer working independently and being impartial, but not necessarily being independent from the EBA.

MiCA further sets out how the investigation will be conducted and the power of the investigator so appointed. It is stipulated that the investigation officer will take into account any comments submitted by the persons subject to the investigation and is required to submit a complete file with his or her findings to the EBA.[1615] The powers that are bestowed on the investigation officer consist of the power to request information in accordance with Article 122[1616] and the power to conduct investigations

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the e-money token responsible for the infringement;

(k) measures taken by the issuer of the significant asset-referenced token or by the issuer of the significant e-money token after the infringement to prevent the repetition of such an infringement".

[1612] Article 134, paragraph 1 – 11, MiCA.

[1613] As listed in Annex V or V, MiCA.

[1614] Article 134, paragraph 1, MiCA.

[1615] Article 134, paragraph 2, MiCA.

[1616] Article 122(1), MiCA specifies the type of persons information can be requested from, it states: " In order to carry out its supervisory responsibilities under Article 117, EBA may by simple request or by decision require the following persons to provide all information necessary to enable EBA to carry

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and on-site inspections in accordance with Articles 123[1617] and 124[1618] and are tempered by the limitation[1619] that such powers shall not be used to require the disclosure of information which is subject to legal privilege.

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out its duties under this Regulation:

(a) an issuer of a significant asset-referenced token or a person controlling or being directly or indirectly controlled by an issuer of a significant asset-referenced token;

(b) a third party as referred to in Article 34(5), first subparagraph, point (h), with which an issuer of a significant asset referenced token has a contractual arrangement;

(c) a crypto-asset service provider, credit institution or investment firm ensuring the custody of the reserve assets in accordance with Article 37;

(d) an issuer of a significant e-money token or a person controlling or being directly or indirectly controlled by an issuer of a significant e-money token;

(e) a payment service provider that provides payment services in relation to significant e-money tokens;

(f) a natural or legal person in charge of distributing significant e-money tokens on behalf of an issuer of significant e-money tokens;

(g) a crypto-asset service provider providing custody and administration of crypto-assets on behalf of clients in relation to significant asset-referenced tokens or significant e-money tokens;

(h) an operator of a trading platform for crypto-assets that has admitted to trading a significant asset-referenced token or a significant e-money token;

(i) the management body of the persons referred to in points (a) to (h).”

[1617] Article 123, MiCA sets out the following powers:”1. In order to carry out its supervisory responsibilities under Article 117, EBA may conduct investigations into issuers of significant asset-referenced tokens and issuers of significant e-money tokens. To that end, the officials and other persons authorised by EBA shall be empowered to:

(a) examine any records, data, procedures and any other material relevant to the execution of its tasks irrespective of the medium on which they are stored;

(b) take or obtain certified copies of or extracts from such records, data, procedures and other material;

(c) summon and ask any issuer of a significant asset-referenced token or issuer of a significant of e-money token, or their management body or staff, for oral or written explanations of facts or documents relating to the subject matter and purpose of the investigation and to record the answers;

(d) interview any other natural or legal person who consents to be interviewed for the purposes of collecting information relating to the subject matter of an investigation;

(e) request records of telephone and data traffic.”

[1618] Article 124(1), MiCA, provides for the power to perform onsite inspections, it states: “In order to carry out its supervisory responsibilities under Article 117, EBA may conduct all necessary on-site inspections at any business premises of the issuers of significant asset-referenced tokens and

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The investigation officer is provided with full access to the information and documents that were obtained from supervisory activities and will provide an opportunity for the persons subject to the investigation to be heard before submitting any findings to the EBA.[1620] *MiCA* does not set out how the procedural fairness requirement, *Audi alteram partem*[1621] (let the other side be heard as well) will be observed. *Audi alteram partem* is a fundamental legal principle in which each party is entitled to a fair investigation and given the opportunity to respond to evidence of infringement against them. Article 134 does not, however, directly impose a requirement for notification to the persons subject to the investigation that they are being investigated and only places a requirement to allow the person/s to be heard, at the end of the investigation only before the investigation file is submitted to the EBA, without prescribing a format.[1622]

It is submitted that it is assumed that the persons subject to the aforesaid investigations would be informed of the substance of the details of the infringement, with sufficient detail to be able to respond adequately and in full to the investigation officer. When this process is completed and the report provided to the EBA, the persons subject to the investigation are entitled to have access to the file, subject to the legitimate interest of other persons in the protection of their business secrets.[1623] Lastly, to further secure the independence of the investigation officer, such investigation officer is prohibited from participating in the EBA's deliberations or from intervening in the EBA's decision-making process in any other way.[1624] Following the submission of the investigation officer's report, and before taking any decision, *MiCA* stipulates in Article 135 titled "*hearing of the persons concerned*" that the EBA gives

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issuers of significant e-money tokens."

[1619] Article 121, MiCA.

[1620] Article 134, paragraphs 4 and 5, MiCA.

[1621] Established rule of common law that anyone exercising a judicial function must hear both of the party's cases. See Kelly, J.M., 1964. Audi alteram partem. Nat. LF, 9, p.103. Available online at https://heinonline.org/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/ajj9&section=8 (last accessed on 23 February 2025).

[1622] Article 134(5), MiCA.

[1623] Article 134, paragraph 7, MiCA.

[1624] Article 134, paragraph 9, MiCA.

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the persons subject to an investigation the opportunity to be heard in respect of the findings of the investigation and respects the rights of the persons subject to the investigation at hand to defend themselves.[1625]

Supervisory fees are also set out in *MiCA*. The EBA will impose fees on issuers of significant asset-referenced tokens and significant electronic money tokens to cover the costs of its supervisory tasks as outlined in Articles 117 of *MiCA* titled *"Supervisory responsibilities of EBA with respect to issuers of significant asset-referenced tokens and issuers of significant e-money tokens*" and 119 titled *"Colleges for issuers of significant asset-referenced tokens and significant e-money tokens"*. These fees will also reimburse competent authorities for any costs incurred under *MiCA*, particularly from delegated tasks per Article 138.[1626] The fees for issuers of significant asset-referenced tokens will be proportional to their reserve assets, while fees for issuers of significant electronic money tokens will be based on the issuance size. Both fee structures aim to cover all supervisory costs.[1627]

The next area of discussion with relevance to this study is the reporting requirements required by *MiCA*. In terms of the *FSB's High-level Recommendations for the Regulation, Supervision and Oversight of Crypto-asset Activities and Markets: Final report*[1628], Recommendation 6 stipulates that Authorities, as appropriate, should require that CASPS have in place systems and processes for timely and accurate reporting of data.[1629]

[1625] Article 135, paragraphs 1 and 3, MiCA.

[1626] Article 138(1), MiCA,"1. Where necessary for the proper performance of a supervisory task in respect of issuers of significant asset-referenced tokens or issuers of significant e-money tokens, EBA may delegate specific supervisory tasks to a competent authority. Such specific supervisory tasks may include the power to carry out requests for information in accordance with Article 122 and to conduct investigations and on-site inspections in accordance with Article 123 or 124."

[1627] Article 137, paragraphs 1-3, MiCA.

[1628] See Chapter 3, 3.2.3.

[1629] Financial Stability Report, "High-level Recommendations for the Regulation, Supervision and Oversight of Crypto asset Activities and Markets" (2023) available online at https://www.fsb.org/wp-content/uploads/P170723-2.pdf (last accessed on 21 March 2024).

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In *MiCA*, there is a requirement on the issuer to report, on a quarterly basis, to the competent authority, specific information, if the asset-referenced token has an issue value that is higher than EUR 100 000 000.[1630] The data that needs to be reported to the competent authority include: the number of the holders; the value of the asset-referenced token issued and the size of the reserve of assets; the average number and average aggregate value of transactions per day during the relevant quarter; and an estimate of the average number and average aggregate value of transactions per day during that period that are associated to its uses as a means of exchange within a single currency area.[1631]

There is also a reporting requirement on the competent authority to, on an annual basis, provide ESMA and the EBA with aggregate information regarding all administrative penalties and other administrative measures imposed.[1632] Further to this, any competent authorities must also inform the EBA and ESMA of all administrative penalties or other administrative measures imposed but not published, including any appeal in relation thereto and the outcome thereof. In the case where the competent authority has disclosed administrative penalties, other administrative measures, or criminal penalties to the public, the competent authority must also simultaneously report these to ESMA.[1633]

Before proceeding to the concluding section of this chapter, it is prudent to consider briefly what has changed with respect to the regulatory framework for crypto assets following the 30th of June 2024, when the provisions pertaining to electronic money tokens and asset-referenced tokens took effect. What this implementation date meant in terms of electronic money tokens and asset-referenced tokens, is that any public offering or admission to trading of these tokens is subject to a strict regime that provides a similar level of protection with respect to financial instruments.[1634] ESMA

[1630] Article 22, paragraph 1, MiCA.

[1631] Article 22, paragraph 1(d), MiCA.

[1632] Article 115, paragraph 1, MiCA.

[1633] Article 115, paragraph 2, MiCA.

[1634] Regulation (EU) 2017/1129 of the European Parliament and of the Council of 14 June 2017 on the prospectus to be published when securities are offered to the public or admitted to trading on a

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published the third *Consultation Package*[1635] under *MiCA* on 25 March 2024, seeking input into specific sets of proposed rules and guidelines, covering: the detection and reporting of suspected market abuse in crypto assets; policies and procedures; including the rights of consumers for crypto-asset transfer services; suitability requirements for certain crypto-asset services and the format of the periodic statement for portfolio management and lastly, Information and Communication Technology operational resilience for certain entities under *MiCA*.[1636] Feedback on the consultation was due by 25 June 2024, and ESMA stated that it will publish a final report based on the feedback received and will submit the draft technical standards to the European Commission[1637] for endorsement by 30 December 2024 at the latest. ESMA submitted the final reports containing the technical standards to the European Commission on 25 March 2024, for endorsement by December 30, 2024.[1638] The standards are related to the *MiCA* regime, which regulates crypto-assets and crypto-asset service providers. The industry has also been proactive in preparing for full implementation and formed an industry group on 18 September 2024 called the *MiCA* Crypto Alliance, an industry group formed to "streamline and enhance" compliance.[1639] The *MiCA* Crypto Alliance fosters cooperation and compliance within the crypto industry, offering tools and

regulated market, and repealing Directive 2003/71/ECText with EEA relevance.

[1635] ESMA published the first of three consultation packages in July 2023. The first consultation package focused on Level 2 and Level 3 measures with shorter deadlines, including those related to authorization, governance, conflicts of interest, and complaint handling. The second consultation package, published on 05 October 2023, contains six sections (chapters 3 – 8) relating to (i) the content, methodologies and presentation of sustainability indicators and adverse impacts on climate; (ii) continuity and regularity in the performance of CASP services; (iii) offering pre- and posttrade data to the public; (iv) content and format of order book records and record keeping by CASPs; (v) machine readability of white papers and the register of white papers; and (vi) the technical means for appropriate public disclosure of inside information. See ESMA," ESMA75-453128700-438 Second Consultation Paper on MiCA", available online at https://www.esma.europa.eu/sites/default/files/2023-10/ESMA75-453128700-438_MiCA_Consultation_Paper_2nd_package.pdf (last accessed on 22 March 2025)

[1636] European Securities and Markets Authority, ESMA News," ESMA launches the third consultation under MiCA",(2024) available online at https://www.esma.europa.eu/press-news/esma-news/esma-launches-third-consultation-under-mica (last accessed on 02 October 2024).

[1637] See Chapter 5,5.1.

[1638] ESMA, "Final Report - Technical Standards on the European Green Bonds Regulation"

[1639] James Field, Coingeek,(2024), available online at https://coingeek.com/mica-crypto-alliance-formed-as-new-eu-regulations-loom/ (last accessed on 02 October 2024).

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resources to help firms navigate the new regulations and promote a more sustainable and compliant ecosystem.[1640]

Also, as part of the implementation process, and with the aim to provide clarity and certainty to the high-level rules found within *MiCA*, both the EU Commission, ESMA and the EBA are mandated to adopt a number of regulatory and implementing technical standards as well as level 3 guidelines.[1641] At the time of writing, three sets of drafts of level two and three Acts have been published in the form of three consultation packages. The first of these consultation packages[1642] was published, containing the draft Acts in July 2023 and the final report on 25 March 2024, following a consultation period provided, which came to a close on 20 September 2023. The second set of draft Acts came in consultation package two[1643], which was published in October of 2023, with the final report submitted to the EU Commission by 30 June 2024.

The last of these consultation packages, consultation package three, was published on 25 March 2024, and the European Securities and Markets Authority is due to submit the final report to the European Union Commission by 30 December 2024, following the closing of the consultation period closing on 25 June 2014.[1644] These Acts served to clarify, for instance, points of differentiation between regulated financial instruments, transferable securities, and crypto assets under the new framework. It also helped to

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[1640] MiCA Crypto Alliance, "Coordinating Compliance for a Sustainable Blockchain Future", available online at https://www.micacryptoalliance.com/ (last accessed on 20 March 2025).

[1641] M Duric, V Ritter-Doring,"Markets in Crypto assets (MiCA) Regulation: The way ahead"(2024) available online at https://www.taylorwessing.com/en/insights-and-events/insights/2024/04/markets-in-crypto assets-regulation (last accessed on 06 April 2024).

[1642] The first consultation package is available online at: https://www.esma.europa.eu/sites/default/files/2023-07/ESMA74-449133380-425_MiCA_Consultation_Paper_1st_package.pdf (last accessed on 22 March 2025).

[1643] The second consultation package is available online at: https://www.esma.europa.eu/sites/default/files/2023-10/ESMA75-453128700-438_MiCA_Consultation_Paper_2nd_package.pdf (last accessed on 22 March 2025).

[1644] ESMA," Markets in Crypto assets Regulation (MiCA)"(2024) available online at https://www.esma.europa.eu/esmas-activities/digital-finance-and-innovation/markets-crypto assets-regulation-mica (last accessed on 06 April 2024).

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provide some clarity in terms of the scope of the reverse solicitation concept, a minimal possibility for non-EU crypto businesses to get access to the lucrative European Union market. Two other important aspects of clarification that were provided through the level two and three Acts are organisational processes, policies, and procedures that prospective CASPS will need to prepare for the purposes of authorisation and the technical requirements and templates on crypto-asset White Papers for the public offering of crypto assets in the EU.

The European Commission, on 13 February 2025, enacted a series of Delegated Regulations that augment *MiCA*. These regulatory amendments impose significant responsibilities on CASPS functioning within the EU. The most notable and impactful *Commission Delegated Regulations* enacted consist firstly of *Commission Delegated Regulation (EU) 2025/294 of 1 October 2024 supplementing Regulation (EU) 2023/1114 of the European Parliament and of the Council with regard to regulatory technical standards specifying the requirements, templates and procedures for the handling of complaints by the crypto-asset service providers*[1645] which establishes clear and standardised procedures for handling consumer complaints to enhance transparency and fairness. The approach to standardisation of terminology and procedures across the EU is relevant to this thesis in respect of proposing a framework for a trans-border licence regime for Africa. The second impactful *Commission Delegated Regulations* that was enacted was the *Commission Delegated Regulation (EU) 2025/299 of 31 October 2024 supplementing Regulation (EU) 2023/1114 of the European Parliament and of the Council on markets in crypto-assets with regard to regulatory technical standards on continuity and regularity in the performance of crypto-asset services*[1646], which aims to enhance operational resilience by ensuring that CASPS have robust continuity measures in place.

[1645] European Union, "Access to European Union Law", available online at https://eur-lex.europa.eu/eli/reg_del/2025/294/oj/eng (last accessed on 23 April 2025).

[1646] European Union, "Access to European Union Law", available online at https://eur-lex.europa.eu/eli/reg_del/2025/299/oj/eng (last accessed on 23 April 2025).

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5.4 Conclusion

Jurisdictional equivalence is an important consideration for CASPS that wish to operate across different jurisdictions on a continent. Jurisdictional equivalence means that the regulatory requirements and burdens in one jurisdiction are comparable to those of another jurisdiction and not more stringent or laxer.[1647] It is submitted that this is an important consideration for a CASP to consider early in its development strategy, to benefit from a multi-jurisdictional strategy.

CASPS must navigate contradictory regulatory requirements and approaches between countries at different stages of regulatory maturity, which, it is submitted, creates a barrier to regional strategies and growth. Ultimately, looking through a wide lens, the intentions of the regulators are the same: to protect consumers and financial stability. The fragmentation of approaches and requirements, however, creates unnecessary complexity and barriers, which is why the alignment of regulatory approaches within a continent becomes an important topic.

MiCA provides a comprehensive and harmonised regulatory framework across the twenty-seven EU countries, and the full implementation thereof takes the form of two phases. The first is the part of *MiCA* comprising the specific rules applicable to the two types of Stablecoins, which consist of asset-referenced tokens and electronic money tokens, which applied as of 30 June 2024. The second phase of implementation comprises the harmonised rules that apply to crypto-asset service providers, which were in full effect as of 30 December 2024, subject to transitional arrangements. In summary, the compliance obligations consist of obligations placed on crypto asset issuers, CASPS, and specific requirements with respect to asset referenced tokens and electronic money tokens offerings. In terms of compliance obligations on issuers, the issuers have to meet several obligations before making an offer of crypto assets to

[1647] PWC," Navigating the Global Crypto Landscape with PwC: 2024 Outlook", (2023), available online at https://www.pwc.com/gx/en/industries/financial-services/assets/navigating-the-global-crypto-landscape-with-PwC-2024.pdf (last accessed on 02 October 2024).

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the general public in the EU or in order to request the admission of such crypto assets to trade on a crypto asset trading platform.[1648]

As pointed out in this chapter, an entity envisaging becoming a CASP and operating in multiple jurisdictions must have a registered office in an EU Member State and also have obtained an authorisation to provide one or more regulated crypto-asset services from a national competent authority.[1649] An authorisation obtained in one EU Member State allows the CASP to "passport" its regulated activities across other EU Member States. When it comes to asset referenced tokens and electronic money tokens, it was pointed out that authorisations are subject to additional and specific requirements. These include having a crypto-asset white paper as referred to in Article 19 of *MiCA*, as well as a legal opinion that the asset-referenced token does not qualify as either a crypto-asset excluded from the scope of *MiCA* pursuant to Article 2(4) or an e-money token.[1650]

As discussed in this chapter, national competent authorities may also set additional supervisory requirements. Crypto asset issuers of electronic money tokens are required to be authorised either as credit institutions (e.g., banks) or electronic money institutions.[1651] Further to these specific areas of regulatory requirements that are dealt with in *MiCA*, this EU Regulation that facilitates a harmonised regulatory framework for crypto assets also establishes a bespoke anti-market abuse regime.[1652] The regime

[1648] See Chapter 1,1.2.6.

[1649] National competent authorities are organisations that have the legally delegated or invested authority, or power to perform a designated function, normally monitoring compliance with the national statutes and regulations. See glossary available online at https://toolbox.eupati.eu/glossary/national-competent-authority/?print=pdf (last accessed on 14 September 2024).

[1650] Article 18(1), MiCA.

[1651] P Akiki," Countdown to MiCA -How Swiss firms need to prepare for a regulatory game changer" (2023) available online at https://www.pwc.ch/en/insights/fs/countdown-to-mica.html (last accessed on 18 April 2024).

[1652] Anti-market abuse regime refers to the prohibition on market abuse related to any type of crypto-asset transaction or service, including unlawful disclosure of inside information, insider trading, and actions that are likely to lead to disruption or manipulation of crypto-assets. See Central Bank of

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sets rules to prevent market abuse, including through surveillance and enforcement mechanisms. Through this anti-market abuse[1653] regime, there is clarity with respect to the definition of "inside information" as it applies to crypto assets, the parameters of the market abuse regulations, and the need for crypto asset issuers whose crypto assets are permitted to be traded on a crypto asset trading platform to disclose inside information and manipulation is prohibited.[1654]

It is submitted that a foundational element to creating a continent-wide crypto asset framework is to have a commonly accepted terminology for crypto assets. *MiCA* provides common EU definitions to clarify what constitutes crypto assets, asset-referenced tokens, utility tokens, and crypto-asset service providers. *MiCA* also provides agreed-upon definitions for "complaint" and "complainant" in the *Draft Regulatory Technical Standards specifying the requirements, templates and procedures for handling complaints under article 31 of Regulation (EU) 2023/1114 on Markets in Crypto – assets*.[1655] These two definitions will be suggested as a starting point in Chapter Six when it comes to the complaints section. Various obligations are imposed through *MiCA*, which are applicable to token issuers and CASPS, thereby addressing the fragmentation of legal frameworks in the EU.[1656] Of critical importance

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Ireland, "Markets in Crypto Asset Regulation", available online at https://www.centralbank.ie/regulation/markets-in-crypto-assets-regulation#:~:text=MiCAR%20also%20introduces%20new%20rules,or%20manipulation%20of%20crypto%2Dassets (last accessed on 23 February 2025).

[1653] See Chapter 1, 1.2.7.

[1654] Dr. M Huertas,"The EU's Markets in Crypto asset Regulation (MiCAR)" (2023) available online at https://legal.pwc.de/en/news/articles/the-eus-markets-in-crypto asset-regulation-micar (last accessed on 18 April 2024).

[1655] European Banking Association," Draft Regulatory Technical Standards to specify the requirements, templates and procedures for handling complaints under Article 31 of the Regulation (EU) 2023/1114 on Markets in Crypto-assets", available online at https://www.eba.europa.eu/sites/default/files/2024-03/22e7f584-a1d9-44eb-8b07-ab0bdbb3b4d2/Draft%20RTS%20on%20complaints%20handling%20under%20MiCAR.pdf (last accessed on 27 April 2025).

[1656] Watson Law " MiCA – Introduction to the Markets in Crypto assets Regulation"(2024) available online at https://watsonlaw.nl/en/mica-introduction-to-the-markets-in-crypto_assets-regulation/ (last accessed on 07 April 2024).

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is that *MiCA* provides certain critical foundational elements for a continent-wide regulatory framework. The first foundational element is that the framework establishes transparency and disclosure requirements for both the issuance as well as the admission to trading of crypto assets.[1657]

A second foundational element is that it also sets the rules with respect to authorisation or licencing, and also the supervision of CASPS and issuers of asset-referenced tokens and issuers of electronic money tokens.[1658] The third foundational element is the consumer protection rules for the issuance, trading, exchange, and custody of crypto assets, as well as measures to prevent market abuse to ensure the integrity of crypto asset markets. A last and very important foundational element in respect of *MiCA* is the requirement that issuers of asset-referenced tokens and electronic money tokens and providers of crypto asset services ensure segregation between their own assets and those of their consumers.[1659]

The absence of such a requirement with respect to the segregation of funds was one of the leading causes of the disruption following the collapse of FTX Trading Ltd[1660], and it remains an essential safeguard for consumer funds. Another protection element that *MiCA* brings into this continental framework is that it limits the issuance of electronic money tokens to only credit institutions or electronic money institutions.[1661] For systemic risks, *MiCA* requires that 60% of reserves for significant asset-referenced tokens be held in the form of bank deposits.[1662] The objective of *MiCA* is first to provide

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[1657] The European Supervisory Authorities define crypto assets as a 'digital representation of value or rights which may be transferred and stored electronically, using distributed ledger technology (DLT) or similar technology'. The distributed ledger technology (DLT) refers to the 'protocols and supporting infrastructure that allow computers in different locations to propose and validate transactions and update records in a synchronised way across a network'. See European Commission, “What the EU is doing and why: crypto assets” available online at https://finance.ec.europa.eu/digital-finance/crypto assets_en (last accessed on 14 September 2024).

[1658] See Chapter 2, 2.2.4.

[1659] Article 75(7), MiCA.

[1660] See Chapter 1, 1.8.

[1661] Article 48(1)(a) of MiCA.

[1662] Article 45(7)(b), MiCA.

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a legal framework for crypto assets and also to provide specific rules for crypto-assets and related services and activities that are not yet covered by EU legislative acts on financial services.[1663] Secondly, the objective is to set up a sound and transparent legal framework that would support innovation, promote crypto assets, and promote the broader use of distributed ledger technology.[1664] Thirdly, *MiCA* secures an appropriate level of consumer and investor protection and market integrity. Finally, it enhances financial stability, as some of the crypto assets may become widely accepted and potentially systemic.[1665] Prior to the harmonised framework set out in MiCA as recommended to be transposed into the domestic legislation of EU Member States in the form of *MiCA*, crypto asset companies that operated in the EU had to comply with the various national, fragmented crypto asset legislative provisions of the twenty-seven Member States. This is obviously not ideal, as it may present various challenges such as regulatory barriers and complex regulatory landscapes. Now, through *MiCA*, this arduous compliance burden is eliminated. There is no longer a need for fragmented national legislation, as the unified EU licencing and supervisory framework provides legal clarity for the appropriate regulation of the EU's crypto asset landscape.[1666]

Taking a look at the alignment between *MiCA* and the F*SB's High-level Recommendations for the Regulation, Supervision and Oversight of Crypto-asset Activities and Markets: Final report*, there are some points to note. First, it is submitted that both frameworks aim to create a safer and more transparent environment for crypto-asset activities, promoting innovation while safeguarding financial stability and consumer interests. When it comes to the regulatory approach taken, both frameworks

[1663] Pre-amble, MiCA.

[1664] European Parliament - EU Legislation in Progress, " Markets in crypto assets (MiCA)" available online at https://www.europarl.europa.eu/RegData/etudes/BRIE/2022/739221/EPRS_BRI(2022)739221_EN.pdf (last accessed on 07 April 2024).

[1665] European Parliament, " Briefing – EU legislation in progress", (2020) available online at https://www.europarl.europa.eu/RegData/etudes/BRIE/2022/739221/EPRS_BRI(2022)739221_EN.pdf (last accessed on 25 April 2025).

[1666] G Kaur, Coin telegraph " Markets in Crypto assets Regulation (MiCA) explained" (2024 updated) available online at https://cointelegraph.com/learn/markets-in-crypto_assets-regulation-mica (last accessed on 07 April 2024).

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take a technology-neutral approach and have some flexibility to remain appropriate when the technology evolves and progresses. It is further submitted that, in terms of supervision and oversight, the F*SB's High-level Recommendations for the Regulation, Supervision and Oversight of Crypto-asset Activities and Markets: Final report* promotes robust supervisory oversight mechanisms, mitigating risks while ensuring a safe environment in which to innovate. In turn, *MiCA* implements comprehensive supervision and oversight for crypto asset issuers and CASPS, including compliance with AML rules. With respect to consumer and investor protection, *MiCA* includes several measures that align with the F*SB's High-level Recommendations for the Regulation, Supervision and Oversight of Crypto-asset Activities and Markets: Final report*. Here are some key areas of alignment. For instance, with respect to transparency and disclosure, *MiCA* requires issuers of crypto assets to provide clear, comprehensive, and accurate information in their White Papers, including details about the project, the rights attached to the tokens, and the associated risks. This ensures that consumers and investors are well-informed before making investment decisions. The F*SB's High-level Recommendations for the Regulation, Supervision and Oversight of Crypto-asset Activities and Markets: Final report* on this topic emphasise the need for transparency and disclosure to protect consumers and investors from fraudulent activities and to promote market integrity.[1667]

In terms of risk management, which is such an important aspect when it comes to regulatory frameworks for crypto assets, *MiCA* requires asset referenced token issuers and CASPS to implement robust risk management frameworks to identify, assess, and mitigate risks associated with their activities. This includes safeguarding consumer funds and ensuring operational resilience. These requirements in *MiCA* align with the F*SB's High-level Recommendations for the Regulation, Supervision and Oversight of Crypto-asset Activities and Markets: Final report*, which advocate for comprehensive risk management practices to protect consumers and investors from potential losses and systemic risks.[1668] In respect of consumer complaints and redress, the F*SB's High-level Recommendations for the Regulation, Supervision and Oversight of Crypto-asset Activities and Markets: Final report* highlights the need for consumer protection

[1667] See Chapter 2, 2.4.2.

[1668] See Chapter 2, 2.4.2; FSB Recommendation 5, Page 7.

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frameworks that include mechanisms for addressing complaints and providing redress.[1669] *MiCA*, in its provisions, establishes mechanisms for consumer complaints and redress, ensuring that consumers have access to effective remedies in case of disputes or issues with CASPS.

To conclude, this research is able to take some important foundational constructs from *MiCA* and transform and tailor them for a unique market, which is Africa. Although some guidance can be taken from this harmonised regulatory framework that enables an EU crypto asset passport, the research in this thesis further builds a unique framework that fits into the local African landscape and allows for real-time supervision.

[1669] See Chapter 2, 2.4.2.

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CHAPTER 6

TRANS-BORDER CRYPTO ASSET LICENCING, REGULATORY AND SUPERVISION ARCHITECTURE

6.1 Introduction

6.2 Entity-based vs activity-based regulation

6.3 Licencing – crypto assets excluding Stablecoins

6.4 Licencing – Stablecoins

6.5 Financial soundness requirements for crypto asset service providers operating in multiple jurisdictions

6.6 Crypto Asset Safekeeping

6.7 Blockchain Governance and Risk Management

6.8 Complaints Management Framework

6.9 Embedded Supervision

6.10 Recommendations and conclusion

6.10.1 Findings from the recommendations from the relevant international bodies and standard setters

6.10.2 Findings from the analyses of the Commonwealth Model Law on virtual assets

6.10.3 Findings from the analyses of MiCA

6.10.4 Recommendations

6.10.5 Conclusion

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6.1 Introduction

The preceding chapters have delineated significant regulatory and supervisory deficiencies within both African and international frameworks governing crypto asset oversight. In response to these identified gaps, this chapter introduces a novel regulatory framework grounded in the concept of embedded supervision. This proposed model is designed to be contextually adaptive and forward-looking, offering a comprehensive approach to addressing the operational and technological constraints previously examined. As stated in Chapter Five, embracing digital finance would unleash innovation and create opportunities to develop better financial products for consumers, including those consumers currently unable to access financial services. The research in Chapter Two highlighted that there is a lot of good work that was done by international organisations and international standard-setting bodies through issuing policy guidance and recommendations with the aim of promoting consistent and effective regulation across the members of these organisations and even engaging outside of their membership to ensure that similar protections are afforded in the different jurisdictions. When jurisdictions adopt the recommendations and guidance from international bodies and standard-setting organisations, it naturally leads to regulatory alignment and reduces barriers to entry. This is because the legislative provisions incorporated into regulatory frameworks become more consistent for the industry while still effectively addressing the risks associated with crypto assets and their underlying technology across different regions globally. Decreasing the regulatory barriers to entry can help unleash innovation.

Some CASPS have already conducted business in multiple African countries. The Yellow Card company, headquartered in Atlanta, Georgia, USA, is an example of this.[1670] They are a crypto asset exchange that enables their consumers to buy and sell Stablecoins (and other coins) in 20 African countries using local mobile money and bank transfers directly from their business platform. The available statistics show that

[1670] Yellow Card, "What is Yellow Card", available online at https://help.yellowcard.io/article/464-what-is-yellow-card#:~:text=Yellow%20Card%20is%20currently%20headquartered,Republic%20of%20Benin%2C%20and%20Burkina (last accessed on 26 April 2025).

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they have 1.4 million users across the continent, have facilitated $1.75 billion in transactions since launching in 2019, and have about 220 employees, mostly in Africa.[1671] Another large crypto asset exchange, VALR[1672], has on its radar Nigeria, Kenya, Ghana, and Egypt and has stated that where there is regulatory clarity in African countries, they could have an interest in expanding into these countries; they are already operating in South Africa as a regulated entity.[1673] Binance[1674] headquartered in Malta, is also present in more than one African country, conducting business in both South Africa and Nigeria.[1675] Binance Holdings Ltd, branded "Binance", is a global company that operates the largest cryptocurrency exchange in terms of daily trading volume.[1676]

Complying with different sets of requirements from different jurisdictions in Africa and trying to address the same risks can be burdensome for CASPS with a multi-jurisdictional strategy, which may lead to serving as barriers to their expansion and scaling through the African continent and possibly optimising the potential benefits these products and services can bring to the continent. One of the reasons why the writer submits this approach amount to unnecessary and costly regulatory duplication, is because it results in the duplication of effort and resources to address similar risks that emanate from the CASPS activities arising in different jurisdictions. Further, as it stands, CASPS that operate across multiple jurisdictions in Africa must obtain separate regulatory licences or registrations in each of the jurisdictions that they operate in,

[1671] CNBC, M Sigalos," The African crypto exchange this 26-year-old launched in 2019 has done $1.75 billion in transactions",(2024), available online at https://www.cnbc.com/2023/03/25/how-this-26-year-old-created-yellow-card-top-crypto-exchange-in-africa.html (last accessed on 17 July 2024).

[1672] See Chapter 3, 3.2.1.

[1673] Reuters, N Dludla," South African cryptocurrency exchange VALR targets global expansion",(2024) available online at https://www.reuters.com/business/finance/south-african-cryptocurrency-exchange-valr-targets-global-expansion-2024-04-30/ (last accessed on 17 July 2024).

[1674] See Chapter 3, 3.2.1.

[1675] Binance, "Here are 7 facts about Binance", (2025), available online at https://www.binance.com/en-ZA/square/post/21758851670297 (last accessed on 26 April 2025).

[1676] Forbes Advisor, P McGimpsey, "Binance Review: Features, Pros And Cons",(2024) available online at https://www.forbes.com/advisor/au/investing/cryptocurrency/binance-review/ (last accessed on 17 July 2024).

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thereby incurring additional costs and legal fees and also resulting in a large administrative burden and it is submitted that this is an important issue that needs to be addressed.

What also flows from these multiple sets of regulatory requirements is distinct reporting and disclosure obligations in each jurisdiction, which consume significant time and resources and are costly. It may even end up being largely a duplication, but the CASP, as a regulated entity in those jurisdictions, needs to comply with differing approaches or formats. In addition to what has been mentioned, it is submitted that this can lead to an intensification of compliance resources, meaning that CASPS require a significant allocation of resources, including personnel, technology, and budget, as they attempt to scale across different jurisdictions.

Another fallout from the multiple sets of requirements pertaining to a Fintech company operating in multiple jurisdictions is the onset of regulatory fatigue, and this is due to the need to comply with multiple sets of requirements that may largely be similar in nature. This increases the risk of non-compliance and decreases the effectiveness of the compliance programs of the CASPS. It is submitted that the multiple sets of requirements may also be a barrier to continent-wide growth for the CASP, since the cumulative burden of complying with similar sets of requirements from multiple regulators on the African continent can hinder growth and expansion. To summarise: it is submitted that the burdens that may be created by addressing similar risks in a fragmented way across Africa, can lead to regulatory duplication, variation in regulatory interpretation, and resource intensification, which can ultimately hinder the ability of the CASP to operate optimally and scale across the continent.

In the preceding discussions, this thesis attempted to build within the reader's mind, a structural foundation of understanding what the possibilities are to bolster economic growth and deepening financial inclusion in Africa, what the international steer is in respect of the call for alignment of regulatory frameworks, and the importance thereof. The research further attempted to create excitement, interest and momentum regarding the possibility of furthering the notion of Africa as a Fintech hub, where the

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inflow of new technologies and investments can invigorate economic growth and deepen financial inclusion, and how a harmonised regulatory framework for the African continent could be one of the very important and enabling puzzle pieces to facilitate the journey to this reality. Cooperation between different jurisdictions to the extent that a harmonised framework is adopted is indeed a difficult and complex task.

In the case of crypto assets, the international steer and call for alignment takes us a little bit in that direction, the development of coordinated African strategies in other areas, for instance, the *African Union's Continental AI Strategy*,[1677] work also edges us slightly closer. Further to this, the *African Continental Free Trade Area's Digital Trade Protocol*[1678] aims to establish harmonised rules and common principles that enable and support digital trade across Africa. It focuses on promoting intra-African digital trade, enhancing cooperation on digital matters among state parties, and creating a transparent, secure, and trusted digital trade ecosystem. *The African Continental Free Trade Area's Digital Trade Protocol* also opens up conversations that may be progressed, which include certain proposals from this research, for instance, a centralised panel for regulation and the use of embedded supervision in a trans-border framework. There are other developments in African countries that can also assist in facilitating conversations about close cooperation and harmonised approaches[1679], for

[1677] The Continental AI Strategy for Africa will set out how the potential benefits of AI for African social and economic development can be harnessed and the legal and regulatory safeguards needed to protect users and societies at large. See African Union,(2024), "Multistakeholder Consultative Sessions on the Development of a Continental Strategy on Artificial Intelligence (AI)" available online at https://au.int/en/newsevents/20240419/multistakeholder-consultative-sessions-development-continental-strategy (last accessed on 14 September 2024).

[1678] International Trade Administration,"AfCFTA Digital Protocol", available online at https://www.trade.gov/market-intelligence/afcfta-digital-trade-protocol#:~:text=The%20Digital%20Protocol%20includes%20transparency,electronic%20invoicing%20and%20paperless%20trading (last accessed on 13 March 2025).

[1679] In the context of cross-border financial regulations, harmonization refers to the process of aligning or coordinating regulatory frameworks, rules, and standards across different jurisdictions or countries. See Challapalli, Surendra, "Benefits and Constraints Associated with the Harmonization of Financial Regulations: An Overview", (June 7, 2023). *Asian Journal of Economics*, Business and Accounting, Volume 23, Issue 15, Page 49-56, 2023, Available at SSRN: https://ssrn.com/abstract=4473299. (last accessed on 20 March 2025).

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example, the BRICS[1680] grouping aiming to create a payment system based on blockchain and as an evolution of the BRICS *Contingent Reserve Arrangement*[1681] as part of an effort to increase the role of BRICS in the international monetary system.[1682]

It is submitted that all of the aforementioned developments strengthen the collective understanding and openness to consider closer cooperation and new harmonised ways to approach technologies to allow for the possible benefits to come to full fruition and not create an environment where innovation is stifled through duplication in the regulatory frameworks without necessarily addressing the risks better. This section of the research is at the heart of this thesis as it attempts to spark conversations on how a trans-border continental-wide regulatory framework could form part of a strategy to make Africa a Fintech hub and foster the benefits to be gained from such an initiative. The main benefit for a CASP to obtain this multi-jurisdiction "passport" or licence is that they would not be subjected to multiple sets of prudential requirements, such as for example, capital requirements[1683] for each country. They would only have to have one regional office that fulfills the operational requirements in one of the countries granting the licence, where only a registered representative office[1684] is required for other countries. They would also benefit from embedded supervision techniques as the burden for reporting in multiple jurisdictions would be minimised, and on-site

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[1680] BRICS is an intergovernmental organization comprising Brazil, Russia, India, China, South Africa, Egypt, Ethiopia, Iran, and the United Arab Emirates that was founded on 16 June 2009.

[1681] The Contingent Reserve Arrangement (CRA) is an agreement by the BRICS countries to make available foreign exchange resources to each other should the need arise, for example, in case of a balance of payment problems. The CRA is similar to the Chiang Mai Initiative Multilateralisation established by the Asian countries that participate in the Asean +3 group. See National Treasury, "Frequently asked questions on the BRICS summit", available online at https://www.treasury.gov.za/brics/News/2014072301%20-%20FAQs%20on%20BRICS%20Summit.pdf (last accessed on 20 March 2025).

[1682] DailyCoin," BRICS Unveil Blockchain Payment System to Rival US Dollar", (2024) available online at https://infobrics.org/post/40741/ (last accessed on 18 April 2024).

[1683] See Chapter 1, 1.1.

[1684] "representative office" means a representative office as defined in paragraph (a) of the definition of a "representative office" in section 1(1) of the Banks Act, 1990 (Act No. 94 of 1990). Available online at https://www.resbank.co.za/en/home/publications/prudential-authority/legislation/banks-act-1990-act-no-94-of-1990 (last accessed on 13 March 2025).

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inspections would be limited to a multi-regulator inspection at the operational regional office.

The discussion in this chapter of the thesis will be approached by providing the design features of an optimal "single point of entry" proposed regulatory framework with respect to crypto assets with two subparts on licencing: one for crypto assets generally and the other in respect of Stablecoins, which touches on the specific licencing requirements in terms of the regulatory architecture and structure that will be required to obtain approval to conduct business. The first part, as stated, will deal with crypto assets generally and align with the recommendations emanating from the international bodies and will attempt to provide for consistent and effective regulation and supervision, throughout the countries. The second part will provide a proposed framework with respect to Stablecoins. The reason for proposing two separate frameworks is because the existence of a stabilisation mechanism[1685] and usability as a means of payment and/or store of value when it comes to this type of crypto asset, justifies distinguishing between the two types. It is submitted that the unique risks that these characteristics pose distinguish Stablecoins from other crypto assets.

It is also clear that their characteristics mean that the use of Stablecoins could see broad adoption and the creation of new marketplaces where they are solely used within the ecosystem for payment from a consumer-to-business perspective and business-to-business perspective. The proposed regulatory framework will set out the core elements of the framework in a principal way and follow an activity-based approach as well as a principle-based approach. The proposed framework will also suggest common definitions that can be used, since agreed-upon terminology and understanding are an important foundation. There will also be consideration for regulatory proportionality with respect to the risks the CASP may introduce. Therefore, a risk-based approach will be followed. There will only be one combined supervisor made up of the participating regulators that will apply to both of the frameworks, since the embedded supervision technology approach that is proposed would equally explore

[1685] See Chapter 2, 2.4.2.

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embedded supervision techniques that can be used with respect to both crypto assets generally, and also with respect to Stablecoins.

It is submitted that a harmonised and effective regulatory framework across African countries can help provide a landscape with order in the markets where CASPS are present. It can further help instill consumer confidence through proactive supervision and provide transparency in the market with respect to the limits of what is permissible, and also provide a safe space for useful innovation to continue to rise. It is submitted that a good regulatory framework on a very high level would require the licencing of CASPS and ensure baseline transparency, including effective disclosures and ensure that consumer funds are protected, to ensure that redemption or withdrawals can take place when requested. It will also ensure that there are sufficient risk management and effective harmonised enforcement measures in support of the framework objectives.

Such an effective framework will consider the entire ecosystem that is involved; in the case of unbacked crypto assets, this includes the issuers of the crypto assets, the crypto asset exchanges, and the wallet providers. Furthermore, it is submitted that there should be consideration of the regulated financial institutions in this ecosystem as well as validators[1686], miners[1687], and the underlying technology (not technology blind)[1688] and multiple function intermediaries, as well as the particular market infrastructure.

The proposed framework will also provide for different levels of authority, where the regulator in a country where a violation took place has the power to impose the necessary sanctions as the host authority. When it comes to more serious contraventions, that may result in the termination of the trans-border licence of the

[1686] See Chapter 1, 1.2.4

[1687] See Chapter 1, 1.2.4

[1688] The concept refers to the need for regulators to stay informed about technological advancements to effectively manage risks and challenges in the financial sector. See Omarova, S. T. (2020). "Technology v Technocracy: Fintech as a Regulatory Challenge". *Journal of Financial Regulation*, 6(1), 75-124. DOI: 10.1093/jfr/fjaa004 : Barefoot, J. A. (2020). (last accessed on 22 March 2025).

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entity, it is submitted that the power to suspend or withdraw this licence, should be in the hands of the panel of regulators that approved the licence and should not lie within the hands of a single regulator, considering the effects this action may have on business in the other countries where the multi-jurisdiction entity operates.

The proposed high-level framework that will be set out hereinafter attempts to ensure that prospective consumers and holders of crypto assets are sufficiently informed about the characteristics, functions, legal rights, and risks related to the crypto assets that they intend to purchase or have purchased. It is also important that a good regulatory framework provides for strong enforcement to support such a framework, which means that the regulatory authorities need sufficient and effective powers. The high-level framework that will be set out in this chapter will attempt to provide common ground between different African countries and their regulators and their regulatory frameworks.

Although the regulatory frameworks of different jurisdictions can vary quite a bit due to variance in legal systems, it is submitted that, upon scrutiny, they all share certain common attributes. For purposes of this research, it is submitted that the key components that need to be considered in main are: First, who the regulator is in the different African Countries that will share this framework and who the enforcer would be, and under which circumstances enforcement will take place. The second would be which type of use cases or entities the requirements in this trans-border regulatory framework should apply to, and what consequences should be imposed for any violations. The third component is to decide whether, in the design, the proposed framework will mostly provide commands or rules to engage or avoid specific actions, or focus on achieving certain outcomes. The last of the components will be to decide whether the consequences for non-compliance would take the form of negative consequences such as penalties or fines, and whether these would be binary in nature, or alternatively, if there would be other types of approaches to limit non-compliance, for instance, through product approval processes. An *ex-ante* regulatory control measure, like a product pre-approval process, allows a regulator to evaluate and potentially authorise new financial products prior to their public release. Regulators frequently

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employ this method to safeguard consumers and maintain financial stability by assessing the risks associated with a product and its potential market impact.[1689]

Beyond the design elements, what the proposed regulatory framework seeks to achieve is: that it gains high public trust; that it is seen that the panel of regulators overseeing the framework have the technical understanding to grasp the intricacies of distributed ledger technology, have the legal expertise required and competent; that the framework enables strong monitoring and enforcement powers, but also uses a collaborative approach instead of a pure single enforcement approach; and that it is built with strong international engagement and alignment. The strong international engagement and alignment approach ensures that the existing global standards regarding crypto assets, which can be mapped to the scope of this proposed framework, will be incorporated into this proposed framework.

6.2 Entity-based versus activity-based regulation

In considering a proposed framework that can be applied to CASPS that obtain the proposed trans-border licence, which will enable them to conduct business across multiple jurisdictions, it was contemplated whether the best regulatory approach would be an activity-based approach to regulation or an entity-based approach. An activity-based regulatory approach brings in an activity on a stand-alone basis into the regulatory perimeter and makes that a regulated activity to which requirements apply in law. On the other hand, an entity-based regulatory approach measures a combination of activities at an entity level.[1690]

[1689] Omarova, Saule. (2012). “Licence to Deal: Mandatory Approval of Complex Financial Products”. *SSRN Electronic Journal*. 10.2139/ssrn.1996755, Page 6 (last accessed on 26 April 2025).

[1690] C Borio, S Claessens and NTarashev, Bank of International Settlements, SUERF Policy Brief No 404,” Entity-based vs activity-based regulation: a framework and applications to traditional financial firms and big techs”(2022) available online at https://www.suerf.org/wp-content/uploads/2023/12/f_059cbc008595673b572c07c7293cad76_51573_suerf.pdf (last accessed on 16 July 2024).

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An activity-based approach thus means certain activities, such as providing advice on financial products, are regulated and require licencing by a regulator. Certain requirements are then imposed when conducting the activity, for instance, the person or entity conducting such activity must meet specific operational requirements and competence requirements. Bains, Sugimoto, and Wilson observe that it is very important for the regulator that uses the activity-based approach to define the regulated activities very precisely so as to avoid creating regulatory arbitrage opportunities. They remark that the risk here is that in a fast-evolving landscape like the Fintech landscape, activities may evolve quickly, and this can place a significant burden on the regulators to keep up to date with developments and often try to amend the legislation that hosts the requirements in respect of activities.[1691] This type of regulation reaches market-wide.

Considering an entity-based approach to regulation, an example of such regulation is where compliance with minimum capital requirements is imposed upon a licenced bank. The entity-based approach entails applying regulations to licenced entities or groups that engage in regulated activities, such as deposit taking, payment facilitation, lending, and securities underwriting, at the entity level. To further clarify, the requirements in an entity-based approach are imposed on institutions with a specific licence or charter.[1692] What is commonly understood as "entity-based rules" consists of requirements to be satisfied by entities holding a licence that allows them to undertake a particular activity or combination of activities. The relevance of any distinction is limited to circumstances in which regulated entities conduct regulated activities that are different. Where the regulated entities all perform one service only, and it is the same service, this distinction becomes irrelevant, as the requirements applicable to the

[1691] IMF, P Bains, N Sugimoto, and C Wilson, Volume 2022: Issue 002," BigTech in Financial Services: Regulatory Approaches and Architecture"(2022) available online at https://www.elibrary.imf.org/view/journals/063/2022/002/article-A001-en.xml (last accessed on 16 July 2024).

[1692] Bank for International Settlements, F Restoy, "Fintech regulation: how to achieve a level playing field", (2021), available online at https://www.bis.org/fsi/fsipapers17.pdf (last accessed on 08 March 2025).

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entities would be the same because the requirements governing entities would impose would coincide with the requirements governing the specific service or activity.[1693]

Arguments have been made that crypto assets and their ecosystem do not always fit squarely into the existing activity-based, intermediary-focused approach to regulation, even where crypto-asset activities mirror those of the traditional financial sector.[1694] Some of the reasons that have been proposed for this view include the inability of regulators to classify various tokens under existing definitions easily and the difficulty intermediaries face in providing services to users. As pointed out by the World Economic Forum, this is more so in decentralised ecosystems using automatic execution protocols and leveraging peer-to-peer transaction capabilities, which remove identifiable intermediaries.[1695]

There is also a third type of approach, which combines the activity-based approach and the entity-based approach, namely the hybrid approach to regulation. The hybrid approach to regulation combines portions of both activity- and entity-based regulation, conditional on the nature of each jurisdiction's regulatory construction and whether the jurisdiction has, within its borders, the headquarters of a firm or hosts its activities.[1696] It has been argued that if a regulator applies the same activity, same risks, and same rules approach, it is achieved by prescribing to the hybrid approach.

[1693] Bank for International Settlements, F Restoy, "Fintech regulation: how to achieve a level playing field", (2021), available online at https://www.bis.org/fsi/fsipapers17.pdf (last accessed on 17 July 2024).

[1694] World Economic Forum, A Goel," Pathways to the Regulation of Crypto assets: A Global Approach"(2023), Page 7, available online at https://www3.weforum.org/docs/WEF_Pathways_to_the_Regulation_of_Crypto_Assets_2023.pdf (last accessed on 17 July 2024).

[1695] World Economic Forum, A Goel," Pathways to the Regulation of Crypto assets: A Global Approach"(2023). available online at https://www3.weforum.org/docs/WEF_Pathways_to_the_Regulation_of_Crypto_Assets_2023.pdf (last accessed on 17 July 2024).

[1696] IMF - BigTech in Financial Services: Regulatory Approaches and Architecture, Page 10.

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Activity-based approaches to regulation could be said to be simpler and, in some ways, more prescriptive, which provides regulatory clarity and helps to achieve a level competitive playing field. On the other hand, entity-based approaches can be more flexible and principle-based, which casts a wider net and allows the regulator to capture the evolving landscape within existing principles without the need to amend the legislation time and time again to keep up with the changes in the specific regulated landscape. The challenge, however, is at a supervisory level for the supervisors to identify clear breaches of principle based legislation and rely on broad principles instead of specific carved-out rules, which may be clearer and easier to enforce. There is, therefore, always a trade-off with respect to which type of approach a regulator takes. Notably, the IMF points out that the hybrid approach could provide supervisors with additional flexibility in tailoring the regulatory framework.[1697]

This study proposes that a hybrid approach to regulation be taken, combining specific rules in some areas with a more principle-based approach in other areas to provide some flexibility. The advice activity and intermediary services provided regarding crypto assets would be the foundation for attaching the regulatory requirements; however, with respect to Stablecoins, the issuance activity will also be considered a regulated activity.

The next part of the discussion will commence by dealing with the constituents of the licencing panel that will approve or deny the applicant CASP the licence to operate under a single licence across the agreed-upon countries, thereby allowing for a multi-jurisdictional operating strategy to be followed within Africa. For this purpose, the details on the licencing, authorisation, or registration of CASPS will be further unpacked, setting out the licencing criteria and the functions or permitted activities that will be covered under this proposed licence and clearly designating the proposed responsible authorities that will be involved in the licencing process.

[1697] IMF - BigTech in Financial Services: Regulatory Approaches and Architecture, Page 10.

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6.3 Licencing – crypto assets excluding Stablecoins

The *FSB's Final Report* issued in July of 2023 in respect of its *High-level Recommendations for the Regulation, Supervision, and Oversight of Crypto-Asset Activities and Markets*[1698] stipulates in Recommendation 1[1699] that regulators should either independently or collectively, have and utilise the appropriate powers and tools and adequate resources to regulate, supervise, and oversee crypto-asset activities and markets as appropriate.[1700] It also states that regulators should require that the regulatory requirements are met prior to commencing any operations in a relevant jurisdiction; in other words, crypto asset providers need to be subjected to a licencing process. It is further recommended that adequate powers should also be available to continue monitoring ongoing compliance with requirements imposed on such entities.[1701]

In the IMF's policy paper titled "*Elements of Effective Policies for Crypto Assets*"[1702], issued in 2023, Element Five suggests that where an entity provides functions such as storage, transfer, exchange, and custody of reserves and assets, they should be subject to rules similar to those applied to financial service providers, with additional requirements to reflect their new business models (such as combined exchanges and wallets). Therefore, if such an entity performs the said activities, such entity should be licenced and subjected to appropriate requirements in terms of this activity-based

[1698] High-level Recommendations for the Regulation, Supervision and Oversight of Crypto-Asset Activities and Markets - Final report, available online at https://www.fsb.org/2023/07/high-level-recommendations-for-the-regulation-supervision-and-oversight-of-crypto-asset-activities-and-markets-final-report/ (last accessed on 18 March 2025).

[1699] Recommendation 1 – FSB, Page 4 available online at https://www.fsb.org/wp-content/uploads/P170723-2.pdf (last accessed on 06 May 2024).

[1700] Author's emphasis.

[1701] Recommendation 1 – FSB, Page 4 available online at https://www.fsb.org/wp-content/uploads/P170723-2.pdf (last accessed on 06 May 2024).

[1702] IMF Policy Paper PR23/51, Page 22 available online at https://www.imf.org/en/Publications/Policy-Papers/Issues/2023/02/23/Elements-of-Effective-Policies-for-Crypto_assets-530092 (last accessed on 06 May 2024).

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approach. The *FATF's Recommendations*, issued in 2019[1703], including the amended FATF Recommendation 15, require that VASPs be regulated for AML/CFT, licenced or registered, and subjected to effective systems for monitoring or supervision.[1704] According to the recommendations by FATF, an entity performing any of the following functions is a crypto asset or virtual asset service provider and should be licenced or registered:

(a) exchange between virtual assets and fiat currencies;

(b) exchange between one or more forms of virtual assets;

(c) transfer of virtual assets (In this context of virtual assets, "transfer"means to conduct a transaction on behalf of another natural or legal person that moves a virtual asset from one virtual asset address or account to another);

(d) safekeeping and/or administration of virtual assets or instruments enabling control over virtual assets; and

(e) participation in, and provision of, financial services related to an issuer's offer and/or sale of a virtual asset.[1705]

It is submitted that in terms of a licencing panel for the consideration and approval of a licence, in terms of the framework proposed in this thesis, that two representatives from each country participating in the trans-border licence applications may consider and deliberate on the licencing approval or rejection of the application. However, only one vote per country should be permitted to improve the efficiency of decision making. Therefore, a consensus should be reached between the aforesaid two representatives. The designation of two representatives to determine the outcome of the licence application aims to allow for sufficient consideration and expertise to be involved in the decision-making process: one representative may, for instance, be more involved in the policy views of the country, while the other may be more of a technical specialist

[1703] See Chapter 2, 2.3.2.

[1704] FATF – Updated Guidance for a risk based approach, Page 4 available online at https://www.fatf-gafi.org/content/dam/fatf-gafi/guidance/Updated-Guidance-VA-VASP.pdf.coredownload.inline.pdf (last accessed on 06 May 2024).

[1705] FATF - Guidance for a risk based approach, Page 13 available online at https://www.fatf-gafi.org/content/dam/fatf-gafi/guidance/RBA-VA-VASPs.pdf (last accessed on 06 May 2024).

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amongst the financial regulators. In the proposed framework, the panelists will have a full overview of not just the comprehensive application form and the evidence supporting the application, but will also have sight of a specialist report on the possible impact and benefits of allowing this type of crypto asset provider to operate in multiple jurisdictions and any White Papers[1706] available from the applicant. They will also have a report compiled from a pre-inspection conducted on the entity as part of the application process, which will be compiled by a team of specialists in the supervision or licencing of these entities and a blockchain data scientist. Such a pre-licencing inspection would assess whether the information on the application submitted by the applicant is indeed correct and complete. Adherence to AML/CFT requirements such as "Know-Your Consumer"[1707] and the screening process that will be followed to identify all consumers on an ongoing basis will be assessed during the process that will apply to the application for licencing.

The pre-onsite inspection also ensures that all entities applying to be CASPS have the necessary systems, policies, procedures, and processes in place to assess and report on their risks, report on suspicious transactions, and have the knowledge and experience to advise on crypto assets and service the consumer effectively. It is suggested that three types of licences can be considered. The first type of licence is where the applicant is present in one or more countries already and wishes to extend its operations. In such a case, there will be an existing history of the CASPS business operations and regulatory compliance in one or more participating countries. This will be beneficial as the applicant will have a compliance maturity, and the regulators where the CASP operates already have some insights into the conduct of the applicant. The second type of licence is where the applicant is a new entrant and wishes to provide multiple activities and do so in multiple jurisdictions. The third type of licence is where the applicant wishes to operate in multiple jurisdictions but will only

[1706] Chapter 4,4.2.

[1707] “Know Your Client" (KYC) is a set of processes that financial institutions use to verify the identity of their clients and ensure they are acting legally, helping to prevent financial crimes like money laundering and terrorist financing. See Swift, “Know Your Client (KYC)”, available online at https://www.swift.com/risk-and-compliance/know-your-client-kyc#:~:text=What%20is%20KYC?,laundering%20risks%20associated%20with%20clients (last accessed on 17 March 2025).

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perform limited functions with respect to crypto assets. The premise of all of the proposed three types of licence applications is that granting such a licence could contribute to economic growth and/or the deepening of financial inclusion with respect to the countries the CASPS would be operating in.

It is recommended that the activities that would require licencing would consist of: the issuance of crypto assets; providing custody for the financial consumer; and advisory services in respect of crypto assets on behalf of the consumer or the product supplier (whether it is in respect of the sale or investment or in respect of varying of any terms or conditions in respect of crypto assets and would include guidance or recommendations of a financial nature to one financial consumer or to a group of financial consumers).[1708] In terms of the proposed framework, licencing will also be required when a crypto asset is serviced by the provision of a software application or other mechanism or medium to keep the private keys of financial consumers or to enable a financial consumer to transfer crypto assets. Furthermore, a licencing activity is recommended to include situations where a CASP provides administration services, management services, or services related to the buying or selling of crypto assets, thereby facilitating these transactions in line with what is captured in the *FAIS Act* in the definition of "intermediary services".[1709] As indicated by La Sala *et al*, the licencing activities should also include operating a trading platform, providing portfolio management services, placing crypto assets, and receiving and transmitting orders for crypto assets on behalf of financial consumers.[1710]

[1708] Definition of "advice" in the Financial Advisory and Intermediary Services Act, 2002 (Act No.37 of 2002).

[1709] Definition of "intermediary services" in the Financial Advisory and Intermediary Services Act, 2002 (Act No.37 of 2002).

[1710] E La Sala,S R Bachs,M Dassas, Dr A Behrens,B Aubry,R Copeland,R Coomans,G Ghiandai,A - Martinez, A&O Shearman, "MiCAR under the microscope - Part 4: The CASP licencing regime" available online at https://www.aoshearman.com/en/insights/micar-under-the-microscope-part-4-the-casp-licencing-regime (last accessed on 06 May 2024).

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(a) Licencing requirements – crypto asset service provider performing advisory services and intermediary services[1711]

It is proposed that the applicant to such a licence would need to submit a detailed business plan, which sets out the background of the applicant, including the name of the applicant and its trading names, details about which country the regional head office will be, and details of the registered offices in each country that it will operate in (a registered office is required). The regional head office must satisfy the legal substance requirement, i.e., have a fully operational office with local staff on a full-time basis. Depending on the type of business conducted and its scale, the regulators may require a certain minimum number of personnel for this regional office.

It is submitted that the applicant would also need to provide details about the key individuals who will manage and oversee the activities relating to the rendering of any financial service in the countries and the associates or affiliates of the applicant. It would also need to provide a description of the proposed activities and the countries that the applicant wishes to operate in, as well as the objectives and strategies that will direct the business and how it aligns with growing the local economy where it will operate and/or will assist in deepening financial inclusion. The applicant would further need to provide details in the application form about the type of crypto assets with respect to which it would render these services, what type of financial consumers it would target, and also provide details regarding the proposed arrangement, dependencies, and include an organisational chart depicting operations in all the countries. Further to this, it is submitted that the applicant would need to provide audited financial statements and financial forecasts, which include balance sheets, profit and loss accounts, and cash flow statements. Obviously, there needs to be a caveat through an enabling provision that the panel of regulators would be able to ask for other additional information if needed. It is also suggested that the panel of regulators should be empowered to consider international standards and other

[1711] Intermediary services exclude advice but include performing custodial services, administration, management of crypto assets, and the servicing of crypto assets that a financial client has purchased. See Section 1, Financial Advisory and Intermediary Services Act (37 of 2002), available online at https://www.fsca.co.za/Regulatory%20Frameworks/Pages/legislation.aspx (last accessed on 06 May 2024).

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information from a competent authority or comparable entity. The licencing requirements set out in this section would need to be incorporated into the regulatory framework or enabled within each participating country to follow this proposed trans-border model law.

In terms of a licence application, the applicant would also need to submit further information with respect to operational requirements, fitness and properness of the members of the management body, and details of shareholding and beneficial owners, as well as details of a money laundering reporting officer[1712] (compulsory) and a compliance officer. In terms of operational ability to apply for a licence, the applicant requires a fixed business address of its regional office from which business is conducted and which can also serve as a *domicilium citandi et executandi* for purposes of entry into the contract and any judicial or quasi-judicial proceedings. Since the applicant will be operating across multiple jurisdictions, if a license is approved in the proposed framework, the applicant should also provide a dedicated digital *Domicilium* where legal notices and processes can be delivered.[1713] The applicant would further require adequate communication facilities and adequate storage and filing systems for the safe-keeping of records, business communications, and correspondence and

[1712] Money Laundering Reporting Officer (MLRO) is a designated individual within a financial institution (or other AML-obliged company) responsible for overseeing and reporting suspicious financial activities to the panel of regulators overseeing the trans-border licence. See FullCircl, 2024, “Money Laundering Reporting Officer (MLRO)” available online at https://www.fullcircl.com/glossary/money-laundering-reporting-officer#:~:text=The%20MLRO%2C%20or%20Money%20Laundering,regulations%20within%20a%20financial%20institution.&text=MLROs%20must%20be%20approved%20by%20the%20FCA (last accessed on 14 September 2024).

[1713] A digital domicilium refers to a person's chosen address, whether physical or digital (like an email or mobile number), where they receive legal notices and processes. It's essentially a digital equivalent of the traditional "domicilium citandi et executandi" (Latin for "place of summons and execution"). See J Gilmour, Registered Communications, “Why A Digital Domicile Is Long Overdue”, (2017), available online at https://registeredcommunication.com/why-a-digital-domicile-is-long-overdue/#:~:text=Introducing:%20A%20Digital%20Domicile&text=I%20am%20referring%20to%20a,residence%20and%20intent%20to%20remain.&text=By%20declaring%20a%20Digital%20Domicile,on%20a%20%E2%80%9CDigital%20Domicile%E2%80%9D?&text=Cliffe%20Decker%20Hofmeyr%20Domicilium%20citandi,you%20really%20understand%20this%20term? (last accessed on 26 April 2025).

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would need to open a bank account within each of the jurisdictions it will operate in and keep the funds of consumers of that jurisdiction, which comprises of a statutory trust account. This will have the very important safeguarding result that the money of the financial consumers will be held separately from the operations and thus safe in cases of insolvency.

If the applicant intends to provide advice on the crypto assets it will be offering, it needs to meet the competency requirements (fit and proper) which will be based on the different types of products the applicant will deal with, and then meet the experience levels, academic and practical qualifications which the individual must hold to advise on such products. The list of qualifications will be approved by the panel of regulators, who would, before approval, commission an equivalence assessment in terms of the local competency requirements and academic qualifications in the countries of the panel of regulators and use the results of this equivalence assessment to set the competency minimum for each crypto asset product.

It is also further proposed that the applicant must submit proof of internal frameworks or policies with respect to complaints handling; information technology; conflict of interest management and resolution; consumer onboarding; risk management, including AML/CFT; and internal audit policy. Further to what has been articulated, the applicant will need to meet the honesty and integrity requirements and, therefore, must be of good character and integrity. The honesty and integrity requirements in this framework should require that the applicant must not, within a period of five years preceding the date of application, been found guilty in any civil or criminal proceedings by a court of law or other competent authority (in any one of the countries it wishes to operate in) of having acted fraudulently, dishonestly, unprofessionally, dishonourably or in breach of fiduciary duty.[1714]

Further to this, the applicant must not within a period of five years preceding the date of application; have been fined or censured by; or denied membership due to

[1714] Horizon Compliance, “Key Individual requirements”,(2024), available online at https://www.horizoncompliance.co.za/complianceblog/key-individual-requirements (last accessed on 02 October 2024).

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disqualification of, any professional or financial services industry; recognised by the regulators of any of the countries it wishes to operate in under the licence applied for, on account of any act of dishonesty, negligence, incompetence or mismanagement. Lastly, the applicant may not apply if, at any time prior to the date of application, the applicant has been disqualified or prohibited by any court of law (in the countries it is applying to operate in) from taking part in the management of any company or other statutorily created, recognised or regulated body. If the applicant will be running a platform, for instance, a crypto asset exchange, the applicant will have to submit to the licencing panel details of the technological platform through which the applicant intends to enable or provide its activities. The details required to be provided in terms of the technological platform will include confirmation as to whether the technological platform has been independently tested or audited for reliability and the types of access rights that the applicant and users will have on or through the platform. It is further submitted that the applicant will also need to provide evidence of the due diligence undertaken if there is reliance on a third party and will need to, in case of such reliance, submit a copy of the service agreement to be entered into with third parties.

6.4 Licencing – Stablecoins

In terms of the licencing process for Stablecoin issuers, the process and requirements remain materially the same as set out in paragraph 6.3 above. However, it is suggested that some architectural limitations and requirements are imposed, which must be met before a licence can be granted. As mentioned, Stablecoins are a type of crypto asset that attempts to maintain price stability (value) through collateralisation, i.e., pegging or tying their value to an external reference in the form of real-world assets, like fiat currencies (singular or a basket), or physical assets in the form of commodities like gold or to one or more crypto assets.[1715] Alternatively, price stability is sought through leveraging algorithmic formulas and smart contracts that control supply by buying and selling the reference asset or its derivatives. The FSB[1716] defines a

[1715] K Grobys, J Junttila, J W. Kolari, N Sapkota, “On the stability of Stablecoins”, *Journal of Empirical Finance*, Volume 64,(2021), Pages 207-223, ISSN 0927-5398, available online at https://doi.org/10.1016/j.jempfin.2021.09.002 (last accessed on 01 October 2024).

[1716] See Chapter 2,2.4.1.

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Stablecoin as "a crypto asset that aims to maintain a stable value relative to a specified asset, or a pool or basket of assets".[1717]

First, it is suggested that algorithmic Stablecoins[1718] be excluded in the proposed framework for CASPS conducting business in multiple jurisdictions. These coins use an on-chain computer algorithm or protocol together with smart contracts to adjust supply based on demand in an attempt to maintain price stability. The programmed algorithms enable a dynamic adjustment to the supply of tokens in reply to any demand changes. In cases where demand rises, the algorithm can mint or issue new tokens to maintain price stability. In turn, when demand decreases, it can burn or destroy tokens to reduce supply.[1719] TerraUSD[1720], for example, adjusted supply relative to another digital asset, its sister token called Terra Luna[1721], within the same Stablecoin arrangement.[1722] The pair of coins together formed an algorithmic Stablecoin that aimed to maintain a value of 1 USD for each UST by using a parallel floating rate crypto asset, Luna, to back up the target peg. Since algorithmic Stablecoins are

[1717] Financial Stability Board, "High-level Recommendations for the Regulation, Supervision and Oversight of Global Stablecoin Arrangements - Final report",(2023) available online at https://www.fsb.org/uploads/P170723-3.pdf (last accessed on 01 October 2024).

[1718] See Chapter 2,2.2.4.

[1719] GeeksforGeeks," Burn and Minting Equilibrium in Blockchain",(2024) available online at https://www.geeksforgeeks.org/burn-and-minting-equilibrium-in-blockchain/ (last accessed on 01 October 2024).

[1720] TerraUSD is an algorithmic Stablecoin pegged to USD but not backed by USD. See International Token Standardisation Association," DeFi Insight: The Meltdown of Terra UST Stablecoin", available online at https://my.itsa.global/blog/defi-insight-the-meltdown-of-terra-ust-Stablecoin (last accessed on 07 March 2025).

[1721] Terra was the network's staking and governance asset. See Cointelegraph, "What is Terra (LUNA)? A beginner's guide", available online at https://cointelegraph.com/learn/articles/terra-luna-beginners-guide-to-the-blockchain-for-Stablecoins (last accessed on 07 March 2025).

[1722] Herco Steyn, Hugh Campbell, Gerhard van Deventer and Bob Chibi," Financial Stability Department - A primer on Stablecoins", (2023), available online at https://www.resbank.co.za/content/dam/sarb/what-we-do/financial-stability/A%20Primer%20on%20Stablecoins.pdf (last accessed on 01 October 2024).

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generally unbacked assets, they are deemed much riskier than asset-linked Stablecoins.[1723]

In terms of structure, it is suggested that Stablecoin issuers who apply for a licence to do business in multiple African Countries should be prohibited from performing functions other than their primary business as defined in their licence while allowing separate entities within the same group to perform related business activities on the provision that conflicts of interest are sufficiently mitigated or managed.[1724] Regarding the architecture, it is recommended that the stabilisation mechanism[1725] should be that the applicant should have sufficient capital and liquidity to ensure adequate liquidity for outflows and that losses can be absorbed.[1726] From a prudential perspective, the panel of regulators should oversee both the creation and the transfer mechanisms employed in the Stablecoin arrangement (i.e. how value is transferred via the stablecoin) with the aim of ensuring safety, soundness, and efficiency.[1727] With respect to reserving of assets that act as collateral, it is recommended that the minimum requirements to be imposed are that the reserving assets are held in cash, cash equivalents, or conservative, high-quality, and highly liquid assets that face minimal credit and market

[1723] Financial Services Commission-Mauritius, "Fintech Series Guidance Notes on Stablecoins: Issued under section 7(1)(a) of the Financial Services Act and section 6(1)(d) of the Virtual Asset and Initial Token Offerings Services Act",(2023) available online at https://www.fscmauritius.org/media/159568/draft-guidance-notes-on-Stablecoins.pdf (last accessed on 01 October 2024).

[1724] Bank for International Settlements, "Stablecoins: regulatory responses to their promise of stability. FSI Insights on policy implementation No 27", available online at https://www.bis.org/fsi/fsisummaries/global_Stablecoins.pdf (last accessed on 01 October 2024).

[1725] See Chapter 2, 2.4.2.

[1726] Financial Stability Board, "Final Report and High-Level Recommendations for the Regulation, Supervision and Oversight of 'Global Stablecoin' Arrangements",(2023), available online at https://www.fsb.org/wp-content/uploads/P131020-3.pdf (last accessed on 02 October 2024).

[1727] Bains, P., Ismail, A., Melo, F., and Sugimoto, N," Regulating the crypto ecosystem - The case of Stablecoins and arrangements",(2022), International Monetary Fund (IMF), Fintech Note, Note/2022/08 available online at https://www.imf.org/en/Publications/Fintech-notes/Issues/2022/09/26/Regulating-the-Crypto-Ecosystem-The-Case-of-Stablecoins-and-Arrangements-523724 (last accessed on 02 October 2024).

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risk and are unencumbered and easily convertible to fiat currency.[1728] This approach is in line with the recommendations from the FSB with respect to global Stablecoins[1729].

It is further suggested that a licence holder that issues Stablecoins should have the reserve assets audited.[1730] Many jurisdictions have taken this approach. For instance, in the United States, the *Stablecoin Transparency of Reserves and Uniform Safe Transactions Act of 2022* was submitted to the Senate at the end of 2022.[1731] It proposes that US dollar-pegged Stablecoin issuers be subjected to a disclosure regime requiring them to secure regular audits, detail clear redemption policies, and specify how the Stablecoins they issue are backed. Therefore, it is recommended that the reserve assets be subject to an independent external audit at least annually to confirm that they match the disclosed reserves.[1732]

The last two recommendations relate to redemption rights and the peg of the Stablecoin to be issued. In terms of redemption rights, it is submitted that the issuer must guarantee timely redemption against the backing assets into the fiat currency of any of the participating countries where the Stablecoin issuer has been granted a licence to do business. With respect to the peg, it is recommended that the Stablecoin issuer be required to peg the token issued only to the fiat currencies of the participating countries. This limitation on pegging to foreign currencies is proposed to limit currency

[1728] Financial Stability Board, "Final Report and High-Level Recommendations for the Regulation, Supervision and Oversight of "Global Stablecoin" Arrangements",(2023), available online at https://www.fsb.org/wp-content/uploads/P131020-3.pdf (last accessed on 02 October 2024).

[1729] See Chapter 1,1.25.

[1730] Bank for International Settlements," Stablecoins: regulatory responses to their promise of stability",(2024), FSI Insights on policy implementation No 27. Financial Stability Institute, available online at https://www.bis.org/fsi/fsisummaries/global_Stablecoins.pdf (last accessed on 02 October 2024).

[1731] United States Senate Committee on Banking, Housing and Urban Affairs," Stablecoin TRUST Act Would Promote Competition and Protect Consumers",(2022), available online at https://www.banking.senate.gov/newsroom/minority/toomey-introduces-legislation-to-guide-future-Stablecoin-regulation (last accessed on 02 October 2024).

[1732] Bank for International Settlements," Basel Committee on Banking Supervision: Consultative Document - Cryptoasset standard amendments," (2023) available online at https://www.bis.org/bcbs/publ/d567.pdf (last accessed on 02 October 2024).

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substitution. As pointed out by the FSB, the macro-financial[1733] risks presented by the use of foreign currency pegged Stablecoins can increase financial stability risks by destabilising financial flows and straining fiscal resources, which can present itself more easily in developing economies.[1734]

6.5 Financial soundness requirements for crypto asset service providers operating in multiple jurisdictions

The financial soundness requirements with respect to CASPS vary across different jurisdictions in Africa, in those that regulate these providers. It is submitted, that for CASPS, complying with capital requirements in multiple jurisdictions can be burdensome for several reasons. For instance, diverse capital requirements are problematic, since each jurisdiction has its own capital requirements, making it challenging for CASPS to navigate and comply with the varying regulations within the continent.

Another issue is the fragmented regulatory landscape on the African continent. The lack of harmonisation amongst the African regulators results in a fragmented regulatory landscape in Africa, forcing CASPS to dedicate significant resources to understanding and meeting the distinct capital and other requirements that are set out in each of the jurisdictions in which they operate if they have a multi-jurisdictional strategy. It is further submitted that when a CASP is subjected to multiple capital requirements, it will have increased operational costs, including legal costs, audit expenses, and personnel costs. What also transpires in scenarios where CASPS have multi-jurisdictional strategies, is that these CASPS must allocate a portion of their capital to meet the capital requirements in each jurisdiction, which may potentially limit their ability to efficiently invest in growth and allocate their resources optimally. Another drawback for the CASP, which faces multiple capital requirements, is that stringent capital

[1733] See Chapter 2, 2.1.

[1734] Financial Stability Board, "Final Report and High-Level Recommendations for the Regulation, Supervision, and Oversight of "Global Stablecoin" Arrangements," (2023), available online at https://www.fsb.org/wp-content/uploads/P131020-3.pdf (last accessed on 02 October 2024).

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requirements in multiple jurisdictions can create barriers to entry for new and smaller market participants, thereby stifling innovation and reducing competition. Multiple requirements also have the potential to bring unnecessary complexities to the risk management of the CASPS. This is because they have to manage risks across multiple jurisdictions with varying capital requirements, which not only increases complexity but can also increase the risk of non-compliance.

Another drawback of varying capital requirements is that it brings about duplication of reports and disclosures that must be submitted in each and every jurisdiction, which naturally consumes both significant time and resources. From a business development and growth perspective, it is submitted that having multiple requirements in the African continent impedes the ability to achieve economies of scale, which reduces operational efficiency and inhibits global growth opportunities because of the cumulative burden of complying with capital requirements in each of the countries within the African continent if the CASPS are operating in multiple jurisdictions. Lastly, the requirements may evolve in different jurisdictions, and there may be various interpretations, which brings about regulatory uncertainty and a need for ongoing monitoring of the regulatory landscape of multiple countries. To summarise the impediments that various sets of capital requirements bring to the African continent: they bring about significant challenges, including increased costs; increased complexity; and regulatory uncertainty. These culminate in hindering their ability to operate efficiently, scale across the continent, and optimise the potential benefits within Africa.

The next part of this section on financial soundness requirements will highlight some of the different requirements that are currently applicable in some of the jurisdictions in Africa. In South Africa, for instance, a CASP is required, as an authorised FSP[1735], to ensure that they maintain the necessary financial resources and carry out their necessary activities at all times.[1736] This includes the ability to meet all liabilities as they fall due. The aforesaid requirements mean that, depending on what services are being

[1735] See Chapter 1, 3.2.3.

[1736] Financial Advisory and Intermediaries Services Act (FAIS Act)(Act 37 of 2002), Determination of fit and proper requirements for financial services providers, 2017 - BN 194/2017, section 44, available online at https://discover.sabinet.co.za/document/1167100 (last accessed on 09 March 2025).

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provided, a CASP must maintain adequate financial resources continuously. There are three sets of requirements, one being the liquidity requirement, a working capital requirement, and then, in certain cases, for instance, when consumer funds are being held, an additional asset requirement[1737], as further discussed below.

In this respect, a CASP that is a Category 1 FSP[1738] must have liquid assets[1739] equal to or greater than 4 out of 52 weeks of annual expenditure[1740], in terms of working capital[1741], the current assets must exceed current liabilities, but there are no additional

[1737] "*additional asset requirement*" means the additional asset requirement referred to in Table B of the Financial Advisory and Intermediaries Services Act (FAIS Act) (Act 37 of 2002), Determination of fit and proper requirements for financial services providers, 2017 - BN 194/2017.

[1738] A Category I FSP renders financial services other than the financial services mentioned in Categories II, IIA, III and IV. Indicate whether the applicant will be furnishing advice (A) and/or whether the applicant will be rendering intermediary services (B) in respect of the relevant subcategories of financial products.

[1739] Liquid assets are resources that are readily available, such as cash, checking and savings accounts, stocks, and other sources of savings. See Cambridge dictionary," LIQUID ASSET | English meaning - Cambridge Dictionary", (2025) available online at https://dictionary.cambridge.org/dictionary/english/liquid-asset (last accessed on 09 March 2025).

[1740] Section 47 of the Determination of the fit and proper requirements for financial services providers, 2017 defines "annual expenditure" to mean-

(a) the expenditure set out in the latest set of financial statements of an FSP; or

(b) in the case of an applicant commencing business, the budgeted expenditure as expressed in the budget or financial accounts, less-

(i) staff bonuses;

(ii) employees' and directors', partners' or members' share in profit;

(iii) emoluments of directors, members, partners or sole proprietor;

(iv) other appropriation of profits to directors, members and partners;

(v) remuneration that is linked to-

(aa) a percentage of the FSP's revenue; or

(bb) a percentage of the revenue generated by an employee or representative of the FSP; and that in the absence of such revenue the FSP has no obligation to pay the remuneration;

(vi) depreciation;

(vii) bad debts; and

(viii) any loss resulting from the sale of assets", available online at https://discover.sabinet.co.za/document/1167100 (last accessed on 27 April 2025).

[1741] Working capital is the difference between a company's current assets and its current liabilities on its balance sheet. See SAP," What is working capital and why does it matter?", (2024), available online

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asset requirements applicable to this category. A CASP that is a Category II FSP[1742] must have liquid assets equal to or greater than 8 out of 52 weeks of annual expenditure. In terms of working capital, current assets[1743] must exceed current liabilities. There should also be no additional asset requirements for this type of FSP.[1744]

In respect of a CASP that is a Category IIA FSP[1745], the liquid assets must be equal to or greater than 13 out of 52 weeks of annual expenditure, the current assets must exceed current liabilities, and there must be an additional asset requirement to the effect that the assets of the FSP must exceed the FSP's liabilities by at least R3 million.[1746] In terms of a CASP that is a Category III FSP[1747], there is a requirement of liquid assets equal to or greater than 13 out of 52 weeks of annual expenditure and a working capital requirement that current assets must exceed current liabilities, and there is also an additional asset requirement that assets of the FSP must exceed the

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at https://www.sap.com/resources/what-is-working-capital (last accessed on 09 March 2025).

[1742] Category II – Discretionary FSP 'Discretionary FSP' means a discretionary FSP as defined in the Notice of Codes of Conduct for Administrative and Discretionary FSPs, 2003. A discretionary FSP renders intermediary services of a discretionary nature as regards the choice of a particular financial product referred to in the definition of 'administrative FSP' but without implementing any bulking.

[1743] Current assets are all assets that a company expects to convert to cash within one year. See Corporate Finance Institute, "Know the Financial Ratios That Use Current Assets", available online at https://corporatefinanceinstitute.com/resources/accounting/current-assets/ (last accessed on 09 March 2025).

[1744] Section 45, Financial Advisory and Intermediaries Services Act (FAIS Act) (Act 37 of 2002), Determination of fit and proper requirements for financial services providers, 2017 - BN 194/2017.

[1745] Category IIA – Hedge Fund FSP 'Hedge Fund FSP' means a Hedge Fund FSP as defined in the Notice of Codes of Conduct for Administrative and Discretionary FSPs, 2003. A Hedge Fund FSP must also apply for a Category II licence.

[1746] Section 48, Table B, Financial Advisory and Intermediaries Services Act (FAIS Act) (Act 37 of 2002), Determination of fit and proper requirements for financial services providers, 2017 - BN 194/2017.

[1747] Category III – Administrative FSP 'Administrative FSP' means an administrative FSP as defined in the Notice of Codes of Conduct for Administrative and Discretionary FSPs, 2003. An administrative FSP renders intermediary services in respect of financial products referred to in paragraphs (a), (b), (c) (excluding any short-term insurance contract or policy), (d) and (e), read with paragraphs (h), (i) and (j) of the definition of 'financial product' in section 1(1) of the Act, on the instructions of a client or another FSP and through the method of bulking.

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FSP's liabilities by at least R3 million. The last category is the CASP[1748], which is classified as a Category IV FSP.[1749] In terms of this category, there is a liquidity requirement that liquid assets are equal to or greater than 4 out of 52 weeks of annual expenditure and a working capital requirement that current assets must exceed current liabilities. Considering other jurisdictions' financial soundness requirements, the *Financial Services Commission Rules* made by the FSC[1750] in Mauritius under sections 20 and 52 of the *Virtual Asset and Initial Token Offerings Services Act 2021 (Act No.21 of 2021) (FSC Rules)* provide for the financial soundness requirements.[1751]

Under these rules, there is a general requirement, which is principal-based, stating that a virtual asset service provider must, at all times, have sufficient unimpaired capital[1752] and liquidity resources of such nature, amount, and quality that results in the capital and liquidity resources of the virtual asset service provider, when taken as a whole, being adequate, taking into account the nature, scale, and complexity of its activities and the risks to which it is or could be exposed.[1753] The *FSC Rules* set out various

[1748] Crypto Asset Services Provider is a person rendering financial services, as defined in section 1 of the Financial Advisory and Intermediaries Services Act (FAIS Act) (Act 37 of 2002) in respect of crypto assets. See Financial Advisory and Intermediaries Services Act (FAIS Act) (Act 37 of 2002), available online at https://discover.sabinet.co.za/document/1167125 (last accessed on 09 March 2025).

[1749] Category IV – Assistance Business FSP 'Assistance Business FSP' means an FSP that renders intermediary services in relation to the administration of assistance policies on behalf of the Insurer to the extent agreed to in terms of a written mandate between the insurer and the Assistance Business FSP.

[1750] See Chapter 3, 3.3.2.

[1751] Virtual Asset and Initial Token Offerings Services (Capital and Other Financial Requirements) Rules 2022, available online at https://www.fscmauritius.org/media/130477/a1-virtual-asset-and-initial-token-offerings-services-capital-and-other-financial-requirements-rules-2022.pdf (last accessed on 09 March 2025).

[1752] Unimpaired capital means the total of shares, undivided earnings, and appropriated undivided earnings, net of any income or loss for the accounting period and does not include the regular reserve or unrealized gains or losses for changes in market values of available-for-sale investments. See Law Insider, "Unimpaired capital and surplus definition", available online at https://www.lawinsider.com/dictionary/unimpaired-capital-and-surplus (last accessed on 09 March 2025).

[1753] FSC Rules – Part II: The General Requirements, Section 4(1).

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factors that must be taken into account to determine whether the virtual asset services provider indeed has adequate capital and liquidity resources. Some of the factors set out to determine this adequacy include: the business activities of the virtual asset service provider; the risks to the continuity of the services provided by, or to be provided by, the virtual asset service provider, including any outsourced services; the level of exposure in terms of liabilities and have regard to the way the business is managed and the level of risk exposure, determined by a risk management assessment that was conducted by the virtual services provider (this risk management assessment is a compulsory requirement).[1754]

Regarding the capital requirements, there are two ways in which the virtual asset services provider could approach this requirement. The *FSC Capital and Other Financial Requirements Rules* stipulate that a VASP must, as a minimum, have unimpaired capital and liquidity resources at all times, which is greater than its own funds requirement and the prudential requirement.[1755] The calculation to determine the adequacy of capital does not include any intangible assets, including that of goodwill[1756]. The own fund requirement considers the different types of activities that the virtual asset services provider will be engaged in. The activities that are listed in the own fund requirement consist of; issuing of initial token offerings; the provision of virtual asset advisory services; virtual asset broker-dealer services; wallet services; custodian services; and operating of a virtual asset market. In terms of the initial token offering issuer, the own fund's requirement is sufficient working capital to be capable of meeting its debts as they fall due.[1757]

In terms of virtual asset advisory services, the own fund's requirement is also sufficient working capital to be capable of meeting its debts as they fall due. In respect to a

[1754] FSC Rules – Part II: The General Requirements, Section 4(2) (a) – (d).

[1755] FSC Rules – Part II: The General Requirements, Section 4(1) (a) & (b).

[1756] An intangible asset, generally described as the benefit and advantage of a good name, reputation and connection of a business. See Practical Law, “Goodwill | Practical Law - Thomson Reuters”, available online at https://uk.practicallaw.thomsonreuters.com/6-107-6661?transitionType=Default&contextData=(sc.Default) (last accessed on 09 March 2025).

[1757] FSC Rule – Part III, Section 6.

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virtual asset broker-dealer[1758], in Mauritius, for example, the own fund requirement is 2,000,000 Mauritian Rupees.[1759] Virtual asset wallet services[1760] have their own fund requirement of sufficient working capital in fiat currency to continue business for a period of 12 months, based on realistic forecasts for the business in different market conditions (both negative and positive scenarios).[1761] In the case of a virtual asset custodian[1762], the fund requirement is 5,000,000 Mauritian rupees, and lastly, with respect to a virtual asset marketplace, the fund requirement is 6,500,000 Mauritian rupees. If the option is chosen to opt for the prudential requirements, it is submitted that the VASP must then, at all times, have in place prudential safeguards equal to an amount of capital which is at least the higher of the following: one-quarter of the fixed overheads of the virtual asset service provider over the preceding year, reviewed annually; or the financial resources requirements as determined under the *Virtual Asset and Initial Token Offerings Services (Risk Management) Rules*.[1763]

The examples above of the different types of requirements aim to highlight some of the approaches taken to manage financial soundness of CASPS. This research will not necessarily explicitly propose a set of financial soundness requirements that could be used in a framework that allows for a single licence across multiple African jurisdictions, but rather proposes that theoretically, an internationally accepted reserve, for instance, the *IMF Special Drawing Rights(SDR),*[1764] could potentially serve as a tool

[1758] Virtual Asset Broker-Dealer performs business activities in respect of exchange between virtual assets and fiat currencies; or exchange between one or more forms of virtual assets. See Virtual Asset and Initial Token Offering Services Act 21 of 2021, Section 2, available online at https://www.fscmauritius.org/media/119928/the-virtual-asset-and-initial-token-offering-services-act.pdf (last accessed on 09 March 2021).

[1759] FSC Capital and Other Financial Requirements Rules, Page 11.

[1760] Section 2, VAITOS Act: "virtual asset wallet services" means the provision of a software application or other mechanism or medium to enable a person to transfer virtual assets.

[1761] FSC Capital and Other Financial Requirements Rules, Page 11.

[1762] Schedule 2, VAITOS Act, Virtual Asset Custodian is defined as an entity performing the business activities of safekeeping of virtual assets or instruments enabling control over virtual assets or administration of virtual assets or instruments enabling control over virtual assets.

[1763] FSC Rules – Part II: The General Requirements, Section 7(1) (a) & (b).

[1764] The SDR is an international reserve asset. The SDR is not a currency, but its value is based on a

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to utilise one capital commitment in this form that is acceptable to all participating jurisdictions. From the start, it should be noted that, what is proposed in terms of SDR to fulfill capital requirements is purely theoretical and suggests potential applications. The use of SDRs for private capital issuance has never been done before, and such a consideration in practical terms would require the IMF Board[1765] to approve this use.[1766] Why the SDR is suggested as a way to meet the capital requirements imposed by the panel of regulators in the proposed framework, is because it is a way to avoid duplication of requirements and the burden that is imposed on the licenced entity - as explained in previous paragraphs of this research through an international reserve asset that which is accepted by all the members of the proposed panel of regulators and protected against fluctuations of local currencies.

The SDR is an interest-bearing international reserve asset created by the IMF in 1969 to supplement member countries' reserve assets. It is based on a basket of international currencies, including the U.S. dollar, Japanese yen, euro, pound sterling, and Chinese renminbi. Although not a currency or a claim on the IMF, the SDR can be a claim on freely usable currencies of IMF members. Its value is determined daily by the IMF based on fixed currency amounts and market exchange rates. SDRs are allocated to IMF members participating in the SDR Department, and can be held by member countries, the IMF, and certain designated official entities, but not by private entities or individuals. The SDR's status as a reserve asset is supported by members'

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basket of five currencies—the US dollar, the euro, the Chinese renminbi, the Japanese yen, and the British pound sterling. The SDR serves as the unit of account of the IMF and other international organizations. See IMF, "What is SDR", available online at https://www.imf.org/en/About/Factsheets/Sheets/2023/special-drawing-rights-sdr (last accessed on 18 March 2025).

[1765] The Executive Board (the Board) is responsible for conducting the day-to-day business of the IMF. It is composed of 25 Directors, who are elected by member countries or by groups of countries, and the Managing Director, who serves as its Chairman. See IMF, "IMF Executive Directors and Voting Power", (2025), available online at https://www.imf.org/en/About/executive-board/eds-voting-power (last accessed on 27 April 2025).

[1766] Brettonwoodsproject," The future of Special Drawing Rights as a development finance tool: What's next?",(2024), available online at https://www.brettonwoodsproject.org/2024/04/the-future-of-special-drawing-rights-as-a-development-finance-tool-whats-next/ (last accessed on 01 October 2024).

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commitments to hold and exchange SDRs, and it also serves as the unit of account for the IMF and some other international organisations.[1767]

Allocated SDR's to African Countries have mainly been used for monetary and fiscal purposes. These include; supplementing their national budgets; bolstering their foreign reserves; pandemic expenditure; debt servicing; social measures; public investment; and economic recovery.[1768] Notably, the IMF does not prescribe the use of SDRs.[1769] This is a prerogative and sovereign decision of recipient member countries. Countries can exchange their SDRs for freely usable currencies or in operations authorised by the IMF.[1770] The proposal in this research is, consequently, that a new use case be defined and approved for the use of SDR in developing economies. This new use case of the SDR could then be employed to be used to meet the capital requirements and therefore be used for longer development goals in Africa to improve economic growth and deepen financial inclusion by allowing approved CASPS to scale by doing business through multiple African Countries without unnecessary regulatory burdens, in this case the duplication of capital requirements held in separate currencies.

[1767] International Monetary Fund," Questions and Answers on Special Drawing Rights",(2021) available online at https://www.imf.org/en/About/FAQ/special-drawing-right#:~:text=The%20Special%20Drawing%20Right%20(SDR,pound%20sterling%20and%20Chinese%20Renminbi (last accessed on 01 October 2024).

[1768] Tirivangani Mutazu & Adrian Tanyaradzwa Chikowore," An African Perspective on IMF Special Drawing Rights Rechanneling - Proposals: Opportunities and Challenges",(2023) available online at https://sustainablefinancelab.nl/wp-content/uploads/sites/334/2023/12/An-African-Perspective-on-IMF-Special-Drawing-Rights-Rechanneling-Proposals-Opportunities-and-Challenges.pdf (last accessed on 01 October 2024).

[1769] Tirivangani Mutazu & Adrian Tanyaradzwa Chikowore, "An African Perspective on IMF Special Drawing Rights Rechanneling - Proposals: Opportunities and Challenges", (2023), Page 2, available online at https://sustainablefinancelab.nl/wp-content/uploads/sites/334/2023/12/An-African-Perspective-on-IMF-Special-Drawing-Rights-Rechanneling-Proposals-Opportunities-and-Challenges.pdf (last accessed on 27 April 2025).

[1770] IMF. 2021a. 2021 General SDR Allocation. IMF available online at https://www.imf.org/en/Topics/special-drawing-right/2021-SDR-Allocation (last accessed on 01 October 2024).

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6.6 Crypto asset safekeeping and custody

It is evident that the safekeeping and custody of a consumer's crypto assets is an important segment of crypto assets, and it is crucial that comprehensive protection is afforded to the consumers. For this reason, the discussion that follows provides some proposals on what type of protections should be captured in a regulatory framework that allows for a CASP to do business in multiple jurisdictions under one licence. Firstly, the private key that is stored when a CASP offers custody, is used to transfer ownership of the crypto-asset and cannot be recovered if lost. There is no central authority that can be contacted to recover or reset the private key.[1771] Custody can take many forms. One such form is the use of centralised public keys. This is done by pooling the crypto assets of multiple consumers into a single public key, which limits the number of private keys the custodian is responsible for. Through the use of specialised software, the custodian keeps a separate ledger to track and reconcile the crypto assets held by or on behalf of each investor.[1772]

No common and uniform process is adopted for crypto asset custody. When analysing the bigger exchanges, different approaches are taken when compared to centralised crypto asset exchanges.[1773] Some of the areas where impairment could occur and

[1771] Forvis Mazars, "Crypto asset: custodian accounting" available online at https://www.forvismazars.com/za/en/services/audit-assurance/audit-of-cryptocurrency/crypto asset-custodian-accounting#:~:text=The%20safekeeping%20of%20the%20private,or%20reset%20the%20private%20key (last accessed on 20 September 2024).

[1772] Forvis Mazars, "Crypto asset: custodian accounting" available online at https://www.forvismazars.com/za/en/services/audit-assurance/audit-of-cryptocurrency/crypto asset-custodian-accounting#:~:text=The%20safekeeping%20of%20the%20private,or%20reset%20the%20private%20key (last accessed on 20 September 2024).

[1773] Centralized cryptocurrency exchanges act as an intermediary between a buyer and a seller and make money through commissions and transaction fees. See Corporate Finance Institute," Cryptocurrency Exchanges - Overview, Advantages, Top 10", available online at https://corporatefinanceinstitute.com/resources/cryptocurrency/cryptocurrency-exchanges/ (last accessed on 18 March 2025); Nabilou, Hossein, The Law and Macroeconomics of Custody and Asset Segregation Rules: Defining the Perimeters of Crypto-Banking (March 30, 2022). Available

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impact the consumer result entail the lack of segregation of consumer funds and a lack of segregation of duties, as well as a lack of oversight. Some of the exchanges have detailed and clear rules with respect to holding crypto assets on behalf of their consumers. For example, Coinbase[1774] and Kraken's[1775] approaches could be unpacked, and they have very similar rules for how this aspect is approached. With respect to Coinbase, their Coinbase User Agreement states that their consumers' crypto assets will be held on a group level.[1776] This approach has the effect that the ownership title remains with the consumer at all times, is not considered to be the property of Coinbase, and is not loaned to Coinbase. Therefore, the crypto assets are segregated at a company level but not at a consumer level.

Kraken approaches custody by first segregating consumer funds from operational funds. The funds are held by a separate entity called Kraken Financial, which houses Kraken custody. Crypto assets held in this entity will be protected by cutting-edge security protocols built in-house by Kraken's cybersecurity team.[1777] The proposed regulatory framework envisaged in this research will provide some of the following considerations: First, it is suggested that any custodian of crypto assets must sufficiently address the ownership of crypto assets held on behalf of a consumer. In

online at SSRN: https://ssrn.com/abstract=4070708 or http://dx.doi.org/10.2139/ssrn.4070708 (last accessed on 21 September 2024).

[1774] Coinbase is a cryptocurrency exchange and digital wallet platform that allows users to buy, sell, store, and manage various cryptocurrencies. It's a popular choice for both beginners and experienced traders, offering a user-friendly interface and a wide range of features. See Coinbase, "What is Coinbase?", available online at https://help.coinbase.com/en/coinbase/getting-started/crypto-education/what-is-coinbase (last accessed on 18 March 2025).

[1775] Kraken is a United States–based cryptocurrency exchange, founded in 2011. It was one of the first bitcoin exchanges to be listed on Bloomberg Terminal. See Kraken, "What is Kraken.com?", available online at https://support.kraken.com/hc/en-us/articles/360030651871-What-is-Kraken-com- (last accessed on 18 March 2025).

[1776] Coinbase, "Coinbase User Agreement", 2024 available online at https://www.coinbase.com/legal/user_agreement/united_states (last accessed on 21 September 2024).

[1777] Kraken,"Kraken Unveils Qualified Custody Solution for Crypto in the US", available online at https://www.kraken.com/press/releases/kraken-unveils-qualified-custody-solution-for-crypto-in-the-us (last accessed on 01 October 2024).

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that respect, the CASP must record ownership or legal entitlement that can be asserted against the service provider as a "custodian" per se. Therefore, it should be required that the protocol employed by the custody provider should ensure that it confers to the consumer the exclusive ability to prevent others from obtaining substantially all of the benefit from the digital asset, the ability to obtain substantially all the benefit from the digital asset and the ability alone to change control.[1778] Since crypto asset segregation is a vital control process, it is suggested that particular attention be paid to this aspect.

As a starting point, it should be required in a trans-border licence regime that any CASP that provides custody on behalf of consumers should have clear policies and procedures in place to manage the risks in respect of custody services and in the event that incidents take place that compromise the crypto assets held. The incidents that may compromise the crypto assets include fraud, cyber-attacks, or theft, and these policies and procedures required should detail the steps that will be taken to protect the consumer assets in such an event.[1779] It is thus proposed that there should be no co-mingling of consumer crypto assets with operational funds or with intermediaries. Further, crypto assets held on behalf of the consumer are separated not just on the business level but also on the consumer level. The requirement is, therefore, that the crypto assets are not aggregated into a single wallet but held in fully segregated individual on-chain accounts[1780] on behalf of consumers. This will enable the consumers to view their positions by querying the on-chain account balance of their dedicated wallet.[1781] It is suggested that additional controls be required so that the custody provider maintains accurate consumer accounts and positions data at all times

[1778] GDF, ISSA, and DELOITTE report," Digital Asset Custody Deciphered: A Primer to Navigating the Challenges of Safeguarding Digital Assets",(2023), available online at https://www.gdf.io/wp-content/uploads/2020/12/GDFISSADeloitte_DACDeciphered_Report.pdf (last accessed on 01 October 2024).

[1779] Central Bank of Bahrain Volume 4—Investment Business, CBB Rule Book, Rule 19.

[1780] An onchain account has its vault saved onchain, and all balance instructions arrive as L1 transactions. See Starkware,"Onchain accounts overview - StarkEx – StarkWare", available online at https://docs.starkware.co/starkex/spot/on-chain_accounts/README-flows-for-on-chain-accounts.html (last accessed on 10 March 2025).

[1781] GDF, ISSA, and DELOITTE report, Page 30.

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with respect to both on- and off-chain records.[1782] To further ensure the protection of consumer assets, specifically with respect to cybersecurity threats, it is further suggested that the custody provider should hold a sufficiently high proportion in cold storage[1783], where appropriate, and therefore minimise the risk of loss of and delay in access to these assets.[1784]

It is recommended that certain restrictions be placed on the CASP, who is a custodian. In particular it is suggested that a custodian under this proposed framework is prohibited from "selling, transferring, assigning, lending, hypothecating, pledging, or otherwise using, or encumbering crypto assets stored, held, or maintained by, or under the custody or control of, such custodian on behalf of a consumer except for the sale, transfer, or assignment of such crypto-asset at the sole instruction of the consumer".[1785]

The next protection method or control that must be required is that the custodian use a multi-signature wallet[1786] for consumer assets, also known as a "multi-sig wallet", which utilises multiple private keys to access crypto assets or transfer them. Multi-sig wallets are also known as "*M-of-N transactions*", with M being the required number of signatures or keys and N being the total number of signatures or keys involved in the transaction.[1787] This control minimises the key person risk, where one person in control

[1782] GDF, ISSA, and DELOITTE report, Page 30.

[1783] See Chapter 2, 2.2.4.

[1784] Global Digital Finance, "Crypto Asset Safekeeping and Custody Key Considerations and Takeaways" available online at https://www.gdf.io/wp-content/uploads/2019/02/GDF-Crypto_asset-Safekeeping_20-April-2019-2-cust-providers-additions-1-2.pdf (last accessed on 01 October 2024).

[1785] Central Bank of Bahrain Volume 4—Investment Business, CBB Rule Book, Rule 14.

[1786] Multisig wallets, short for multi-signature wallets, are a type of crypto wallet that requires multiple signatures to authorize and execute transactions. See Trustwallet,"What Are Multisig Wallets And How Do They Work?", available online at https://trustwallet.com/blog/security/what-are-multisig-wallets-and-how-do-they-work#:~:text=Are%20Multisig%20Wallets%3F-,Multisig%20wallets%2C%20short%20for%20multi%2Dsignature%20wallets%2C%20are%20a,to%20access%20and%20transfer%20funds (last accessed on 14 March 2025).

[1787] TechTarget, Rahul Awati,Mary K.Pratt," What is multisig (multisignature)?", available online at https://www.techtarget.com/searchcio/definition/multisig-multisignature (last accessed on 01 October 2024).

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of the consumer's private keys can exercise authority to move the crypto assets that belong to the consumer.[1788] To ensure that the consumer has recourse in the event that the custodian, through lack of proper controls, causes harm, it is further recommended that a requirement be imposed on the licence holder that to the extent a custodian store, holds, or maintains custody or control of crypto assets on behalf of a consumer, such custodian must hold crypto assets of the same type and amount as that which is owed or obligated to such other consumer.[1789]

It is also critical to have adequate requirements in place, such as the CASP being licenced to conduct business in multiple countries and outsourcing this important service of custodianship to a third party. The reason why it is critical is that using a third-party custodian for crypto assets carries risks like potential loss due to custodian insolvency, hacking, or theft, as well as the risk of the custodian mismanaging or losing the consumer's private keys, leading to asset loss.[1790] In this respect, due diligence should be required; the CASP should satisfy itself with the operational ability and overall appropriateness of the third-party provider to render the service. The CASP should also, on a continuous basis, be able to demonstrate that the appointment and use of the third party in this regard do not result in detriments and increased risk to the consumers.[1791] In the case of the CASP outsourcing the custody service, the CASP remains responsible and should ensure that the third-party provider has adequate safeguards and controls to facilitate the handling and timely withdrawal of crypto assets in accordance with consumer instructions.[1792]

[1788] TechTarget, Rahul Awati,Mary K.Pratt," What is multisig (multisignature)?", available online at https://www.techtarget.com/searchcio/definition/multisig-multisignature (last accessed on 01 October 2024).

[1789] Central Bank of Bahrain Volume 4—Investment Business, CBB Rule Book, Rule 12 available online at https://cbben.thomsonreuters.com/rulebook/crypto_asset-custody (last accessed on 01 October 2024).

[1790] World Federation of Exchanges, "Crypto-Asset Custody: A Blueprint for Regulatory and Operational Excellence", (2024), Page 6, available online at https://www.world-exchanges.org/storage/app/media/Cally%20Billimore/Custody%20of%20Crypto%20-%20Final.pdf (last accessed on 18 March 2025).

[1791] Central Bank of Bahrain Volume 4—Investment Business, CBB Rule Book, Rule 15.

[1792] Central Bank of Bahrain Volume 4—Investment Business, CBB Rule Book, Rule 19.

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Another important consideration regarding possible requirements for the custody of crypto assets is appropriate cybersecurity safeguards. We have seen many incidents of cyber security breaches. One such incident during 2022 and 2023, left a "crypto whale"[1793] with a loss of $32 million in what seemed to be a phishing attack. The media article about this incident conveyed that the Inferno Drainer, which is a "scam-as-a-service", powered the malicious transaction.[1794] Many of these incidents[1795] highlight the importance of cybersecurity safeguards. What is suggested in terms of the level of cybersecurity is that the CASP providing custody of private keys should employ advanced cybersecurity standards, including penetration testing[1796], data encryption, protection against distributed denial of service (DDoS)[1797], and 24/7 monitoring to prevent breaches and data loss. Insurance coverage can also be considered as an additional level of security.[1798]

[1793] Crypto whales are individuals or entities that hold large amounts of cryptocurrency. See Coinbase," What are crypto whales?" available online at https://www.coinbase.com/learn/crypto-basics/what-are-crypto-whales (last accessed on 01 October 2024).

[1794] The Block, Zack Abrams,(2024), "Crypto whale loses over $32 million in apparent phishing attack" available online at https://www.theblock.co/post/318574/crypto-whale-loses-over-32-million-in-apparent-phishing-attack?utm_source=rss&utm_medium=rss&modal=newsletter (last accessed on 01 October 2024).

[1795] The historical incidents involving crypto assets include; Mt. Gox (2011): the first major breach in the crypto world; KuCoin a crypto exchange based in Singapore; Upbit (2019) – the hack that made use of a single transaction. See Crystal intelligence, "The 10 Biggest Crypto Hacks in History", (2021), available online at https://crystalintelligence.com/investigations/the-10-biggest-crypto-hacks-in-history/ (last accessed on 18 March 2025).

[1796] A penetration test, or "pen test," is a security test that launches a mock cyberattack to find vulnerabilities in a computer system. See IBM, "What is Penetration Testing?", available online at https://www.ibm.com/think/topics/penetration-testing (last accessed on 17 March 2025).

[1797] A denial-of-service (DoS) attack occurs when legitimate users are unable to access information systems, devices, or other network resources due to the actions of a malicious cyber threat actor. Services affected may include email, websites, online accounts (e.g., banking), or other services that rely on the affected computer or network. A denial-of-service condition is accomplished by flooding the targeted host or network with traffic until the target cannot respond or simply crashes, preventing access for legitimate users. See Cybersecurity and Infrastructure Security Agency," Understanding Denial-of-Service Attacks", (2021), available online at https://www.cisa.gov/news-events/news/understanding-denial-service-attacks (last accessed on 18 March 2025).

[1798] Adam Hayes, "What to Know When Selecting a Qualified Crypto Custodian",(2024), available online

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The last aspect covered under this part is the need to impose requirements regarding conflicts of interest. In this regard, the CASP must ensure that adequate controls, in the form of strong governance measures, ethical walls[1799], and policies and procedures addressing and where possible, minimising potential conflicts of interest, are undertaken.

6.7 Blockchain governance and risk management

Governance and risk management of crypto assets are crucial for ensuring that CASPS have adequate protections when conducting business across multiple jurisdictions under a single regulatory licence, as proposed in this research. This subsection will, therefore, cover risk management principles, governance of CASPS, and technical considerations of blockchain technology governance. The starting point is to consider what the FSB's final report, *High-level Recommendations for the Regulation, Supervision, and Oversight of Crypto-Asset Activities and Markets (CDA Recommendations)*, recommends with respect to governance. The *CDA Recommendations* stipulate in *CDA Recommendation* Four that financial regulators should ensure that crypto asset issuers, as well as CASPS, have comprehensive governance frameworks in place and that they must make needed disclosures in respect of this framework.[1800] What is covered in the *CDA Recommendations*, in summary, is that financial regulators should mandate that crypto-asset issuers and service providers implement a robust governance framework tailored to their risk, size,

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at https://www.investopedia.com/selecting-a-qualified-crypto-custodian-8400929 (last accessed on 01 October 2024).

[1799] An ethical wall, sometimes called a "Chinese wall," is a framework of policies and practices designed to create a virtual or physical separation between teams or individuals within an organization. The goal is to restrict the flow of sensitive information to those who need it while shielding it from those who don't. See Leap Expert, "Ethical Wall", available online at https://www.leapxpert.com/glossary_term/ethical-wall/ (last accessed on 11 March 2025).

[1800] Financial Stability Board," High-level Recommendations for the Regulation, Supervision and Oversight of Crypto asset Activities and Markets - Final report" (2023) available online at https://www.fsb.org/uploads/P170723-2.pdf (last accessed on 30 September 2024).

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complexity, and systemic importance. This framework should ensure financial stability by clearly defining roles, responsibilities, and decision-making processes, including conflict of interest management. Even in cases where activities are conducted through decentralised finance (DeFi) protocols[1801] or complex corporate structures, these governance and accountability standards must be upheld. Compliance with governance rules and regulations should be enforced regardless of the activity structures or technologies used.[1802]

Notably, *CDA Recommendation* Five sets out the recommendations with respect to risk management. It stipulates that financial regulators should require crypto-asset service providers to implement an effective risk management framework that addresses all material risks proportionate to their risk, size, complexity, and systemic importance. This framework should ensure financial stability and be comparable to traditional finance. Authorities should ensure that management is qualified, allocate adequate resources to risk management, and maintain independent control functions. The *CDA Recommendation Five,* which sets out the risk management recommendation, also stipulates that compliance functions should monitor activities, address non-compliance, and ensure adherence to laws. Further, CASPS should act honestly, manage conflicts of interest, and communicate clearly. Also, in terms of enforcement, financial regulators should not engage in forbearance but should enforce rules to manage risks, including technological risks, and require contingency plans and AML/CFT measures. Lastly, ownership rights should be protected, and trading operations should be resilient and transparent.[1803]

[1801] DeFi protocols consist of standards, codes, and procedures that govern decentralized financial applications. These protocols enable trading, lending, yield farming, and more. See Hedera, "DeFi Protocols: What Can We Learn From the Top 10 – Hedera", available online at https://hedera.com/learning/decentralized-finance/defi-protocols#:~:text=DeFi%20protocols%20work%3F-,DeFi%20protocols%20consist%20of%20standards%2C%20codes%2C%20and%20procedures%20that%20govern,%2C%20yield%20farming%2C%20and%20more (last accessed on 17 March 2025).

[1802] Financial Stability Board, CDA Recommendations, Page 11.

[1803] Financial Stability Board, CDA Recommendations, Page 11,12 and 13.

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Some of the failures of CASPS have highlighted the importance of appropriate governance frameworks, clear lines of responsibility, and accountability while maintaining the necessary flexibility to support innovation in these technologies.[1804] An apposite example was the Ethereum DAO[1805] incident that occurred in 2016, where a token holder used a software bug to funnel about one-third of the total value in the network into their own account. Another example of the importance of governance requirements was the Coincheck[1806] exchange in Japan, where the heist of more than half a billion dollars' worth of crypto assets in 2018 was caused mainly by governance failures.[1807] More recent examples include the collapse in 2022 of FTX, a crypto asset exchange that has served as a case study of bad governance and its enormous consequences.[1808]

[1804] Hacker, Philipp, 'Corporate Governance for Complex Cryptocurrencies? A Framework for Stability and Decision Making in Blockchain-Based Organizations', in Philipp Hacker, and others (eds), *Regulating Blockchain: Techno-Social and Legal Challenges* (Oxford, 2019; online edn, Oxford Academic, 22 Aug. 2019), available online at https://doi.org/10.1093/oso/9780198842187.003.0008 (last accessed 30 September 2024).

[1805] In spring 2016, the Distributed Autonomous Organization (The DAO) was created on Ethereum. As with Bitcoin, Ethereum uses a P2P network, where distributed ledgers are implemented as daisy-chained blocks of data. See Mehar, Izhar & Shier, Charles & Giambattista, Alana & Gong, Elgar & Fletcher, Gabrielle & Sanayhie, Ryan & Kim, Henry & Laskowski, Marek, (2019)," Understanding a Revolutionary and Flawed Grand Experiment in Blockchain: The DAO Attack", *Journal of Cases on Information Technology*, 21. 19-32. 10.4018/JCIT.2019010102 available online at https://www.researchgate.net/publication/330050874_Understanding_a_Revolutionary_and_Flawed_Grand_Experiment_in_Blockchain_The_DAO_Attack (last accessed on 30 September 2024).

[1806] Coincheck is one of Asia's biggest cryptocurrency exchanges and processed the highest volumes of Bitcoin trading in Japan over the course of 2017. See FXEmpire, "CoincheckReview" available online at https://www.fxempire.com/crypto/exchange/coincheck/review (last accessed on 30 September 2024).

[1807] Organisation for Economic Co-operation and Development," Blockchain Technology and Corporate Governance",(2018), DAF/CA/CG/RD(2018)1/REV1 available online at https://one.oecd.org/document/DAF/CA/CG/RD(2018)1/REV1/En/pdf (last accessed on 30 September 2024).

[1808] Dan Byrne, Corporate Governance Institute," FTX collapse is a case study in bad governance" available online at https://www.thecorporategovernanceinstitute.com/insights/news-analysis/governance-causes-ftx-collapse/?srsltid=AfmBOooJLzWCkjqsVh0XSqzrLn_eqsBKwpl0HblLXv8cSx9rg25KKoZY (last accessed on 30 September 2024).

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Taking guidance from the ”lessons” regarding some of the failures that were mentioned in the paragraph above, it is submitted that a CASP operating under the trans-border regulatory licence envisaged in this research should have robust governance arrangements, including a clear organisational structure with well-defined, transparent, and reliable lines of responsibility and effective processes to identify, manage, monitor and also report the risks to which they are, or to which they might be, exposed. The required governance arrangements should be proportional with respect to the size, nature, and complexity of the CASP and the products for which it provides services. Where reliance is put on third parties to perform services on behalf of the CASP, the CASP remains accountable to the panel of regulators in the proposed framework, and the CASP must have policies that define the principles, responsibilities, and processes in relation to the use of those third-party entities.[1809]

As pointed out by the EBA[1810], internal control functions should consist of both compliance and risk management functions. The heads of these control functions should be established “at an adequate hierarchical level that provides them with the appropriate authority and stature needed to fulfill their responsibilities, which include access to and reporting to the chief executive officer”.[1811] As stated by the FATF, both internal control functions should be sufficiently staffed and have adequate systems, taking into consideration the proportionality principle[1812], and have a sufficient level of expertise.[1813]

[1809] European Banking Authority, EBA/GL/2024/06," EBA Guidelines on the minimum content of the governance arrangements for issuers of asset-referenced tokens”,(2024) available online at https://www.eba.europa.eu/sites/default/files/2024-06/611ef3d4-4d67-467f-bf0d-4c2b1dd0ef5e/Final%20report%20on%20draft%20Guidelines%20on%20internal%20governance%20of%20issuers%20of%20ARTs.pdf (last accessed on 30 September 2024).

[1810] See Chapter 5, 5.2.

[1811] European Banking Authority, Guidelines Page 35.

[1812] For these purposes, the term “proportionate” is defined as follows: “In the context of the risk-based approach adopted by the FATF Recommendations, a proportionate or commensurate measure or action is one that appropriately corresponds to the level of identified risk and effectively mitigates the risks”. See FATF,” Public Consultation on AML/CFT and Financial Inclusion – proposed changes to FATF Standards”, (2024), available online at https://www.fatf-

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In terms of risk management, the EBA indicates that the functions should have access to all the different areas of the CASP that can generate risk and should be in a position to provide the CASP with relevant independent information, analyses, and expert judgment on risk exposures, and advice on proposals and risk decisions made.[1814] Where appropriate, the CASP should also have an internal audit function that is independent of sufficient stature, which provides the CASP with independent review and provides objective assurance. As observed by Hsieh and Brennan, where consumer funds, including crypto assets, are held, the CASP should be subject to external audit. They emphasise that the external auditors appointed must have the ability to address the distinct risks, issues, and challenges arising from crypto assets and have a clear framework in place to deal with such matters.[1815]

With respect to overarching general technology and information-related principles, it is submitted that the governing body of a CASP must set the strategic direction for the use of technology and information, ensuring alignment with ethical standards, values, and consumer confidentiality. The governing body of the CASP must also oversee the use of these technologies, including third-party services, approve relevant policies, and delegate implementation to senior management.[1816] Additionally, the governing body must ensure periodic disclosure to stakeholders, including an overview of the strategy, reporting period focal points, governance activities, and future focus areas regarding

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gafi.org/en/publications/Fatfrecommendations/R1-INR1-INR10-INR15-Public-Consultation-Oct-24.html#:~:text=For%20these%20purposes%2C%20the%20term,and%20effectively%20mitigates%20the%20risks%E2%80%9D (last accessed on 17 March 2025).

[1813] Financial Action Task Force, "FATF (2021), Guidance on Risk-Based Supervision", Paris, available online at www.fatf-gafi.org/publications/documents/Guidance-RBA-Supervision.html (last accessed on 30 September 2024).

[1814] European Banking Authority, Guidelines Page 37.

[1815] Sheng-Feng Hsieh, Gerard Brennan," Issues, risks, and challenges for auditing crypto asset transactions", *International Journal of Accounting Information Systems*, Volume 46, 2022, 100569, ISSN 1467-0895 available online at https://doi.org/10.1016/j.accinf.2022.100569 (last accessed on 30 September 2024).

[1816] King IV Report on Corporate Governance for South Africa, Principle 12, Page 45.

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the use of technology and information. Blockchain governance can be defined by referring to the three dimensions of: decision rights, accountability, and incentives.[1817]

If the three dimensions are considered more closely, each of these could be unpacked further in terms of governance applicability. With respect to decision rights in terms of blockchain, the decision makers here are actors who have direct influence over the decision-making process of the blockchain system. These do not include the broader community, which may influence decision-making in an indirect way only. The identified decision-makers can make decisions either on or off-chain, depending on the blockchain system and its defined update processes.[1818] Incentivisation covers both intrinsic and extrinsic incentives, therefore encapsulating the gains from a direct reward for the participation in the decision-making in the blockchain ecosystem or indirectly by increasing the worth of the blockchain itself, which results in an increase in the token price.[1819]

In terms of blockchain-specific governance requirements, a paper presenting a comprehensive blockchain governance framework titled "*Information Systems, Volume 109, November 2022*"[1820], recommends that CASPS must ensure that their governance framework includes categorising governance structures based on the decentralisation level of governed blockchains. It is suggested that the governance framework should define the lifecycle of the data layer, application layer, and community layer of the ecosystem and establish inter-system interoperation policies between different platforms. It is further indicated that the framework should systematically map

[1817] Beck, R., Müller-Bloch, C., and King, J. (2018). Governance in the blockchain economy: a framework and research agenda. *J. Assoc. Inf. Syst.* 19 (10), 1020–1034. doi:10.17705/1jais.00518.

[1818] Pelt, R. V., Jansen, S., Baars, D., and Overbeek, S. (2021). Defining blockchain governance: a framework for analysis and comparison. *Inf. Syst. Manag.* 38 (1), 21–41. doi:10.1080/10580530.2020.1720046. (Last accessed on 14 March 2025).

[1819] Lukas Schädler, Michael Lustenberger, Florian Spychiger, Blockchain Economics, Volume 6 - 2023 | https://doi.org/10.3389/fbloc.2023.1256651 (Last accessed on 14 March 2025).

[1820] Yue Liu, Qinghua Lu, Guangsheng Yu, Hye-Young Paik, Liming Zhu, Defining blockchain governance principles: A comprehensive framework, Information Systems, Volume 109, 2022, 102090, ISSN 0306-4379, https://doi.org/10.1016/j.is.2022.102090.(Last accessed on 14 March 2025).

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blockchain stakeholders, detailing their decision rights, accountability, and incentives, which must be disclosed to stakeholders. Governance structures should also promote desirable behaviors and outcomes, such as participation in governance, and should resolve conflicts between stakeholders, such as finalising decisions.[1821] On-chain decisions should be conducted through identifiable governance structures within an incorporated entity. Additionally, off-chain decision-making should occur in formal channels open to relevant stakeholders.[1822]

Another governance aspect that, it is submitted, needs specific consideration when it comes to CASPS is the use of technology and information, considering the digital nature and risks that could arise with respect to weaknesses in cyber security. Unlike traditional financial institutions, the fact that private keys play a vital role in transactions and access and authority over crypto assets means there is a need to pay particular attention to cybersecurity.[1823] As pointed out by Gabriella Laatikainen *et al,* a very interesting approach to governance of the blockchains that CASPS use is to approach this from a systems-based view. This could be a potential way to ensure that the necessary governance tools are in a place where a licence is granted to a CASP to do business in multiple jurisdictions under one licence, as envisaged in this research, by encoding the governance rules on the blockchain itself.[1824] In this way, the panel of regulators can proactively act by requiring this encoding to put mechanisms in place to

[1821] Institute of Directors – Southern Africa,(2016),” KingIV Report on Corporate Governance for South Africa” available online at https://www.adams.africa/wp-content/uploads/2016/11/King-IV-Report.pdf (last accessed on 30 September 2024).

[1822] Page 8, Defining blockchain governance principles: A comprehensive framework, Information Systems, Volume 109. (last accessed on 17 March 2025).

[1823] Darktrace, “What is crypto cybersecurity?” available online at https://darktrace.com/cyber-ai-glossary/crypto-cybersecurity#:~:text=to%20threat%20actors.-,Why%20effective%20crypto%20cybersecurity%20is%20crucial%3F,cyber%20security%20for%20crypto%20indispensable (last accessed on 30 September 2024).

[1824] Gabriella Laatikainen, Mengcheng Li, Pekka Abrahamsson, A system-based view of blockchain governance, Information and Software Technology, Volume 157, 2023,107149, ISSN 0950-5849, available online at https://doi.org/10.1016/j.infsof.2023.107149 (last accessed on 30 September 2024).

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prevent ill-intended actors in the ecosystem and ensure that the system does not find itself in a state of crisis.[1825]

Without unpacking in this research all the technical aspects of on-chain governance embedment, it is necessary to touch on certain fundamental concepts in this regard to engage the reader as to the potential opportunity that can exist for a regulator to use this process of embedded supervision to provide certain crucial protections. The first of these technical aspects is architecture, which encompasses the architectural choices that can be made related to consensus and voting mechanisms (own systems or third-party systems), smart contracts, and oracles[1826], which are crucial. The panel of regulators in the proposed framework could prescribe certain aspects of the architectural design.[1827] The second technical aspect is the development work environment, which covers software repository management, versioning[1828], testing, and monitoring related to the tools and methods of developing the technical means of blockchain governance. The last of the technical aspects that will be mentioned for completeness's sake, is the information technology systems for social interactions, knowledge, and memory management, which include aspects such as coordination and other information technology systems.[1829]

[1825] P. De Filippi, M. Mannan, W. Reijers," Blockchain as a confidence machine: the problem of trust & challenges of governance", Technol. Soc., 62 (2020), Article 101284. (last accessed on 30 September 2024).

[1826] See Chapter 1, 1.2.4.

[1827] Gabriella Laatikainen, Mengcheng Li, Pekka Abrahamsson, A system-based view of blockchain governance, Information and Software Technology, 4.2.3.4. Technological aspects. (last accessed on 30 September 2024).

[1828] Versioning, in its broadest sense, is the practice of tracking and managing different versions of a product, whether it's software, documents, or data, to allow for improvements, upgrades, and easier collaboration and rollback to previous states. See TechTarget, A Zola, "What is versioning?", available online at https://www.techtarget.com/searchsoftwarequality/definition/versioning (last accessed on 16 March 2025).

[1829] Gabriella Laatikainen, Mengcheng Li, Pekka Abrahamsson, A system-based view of blockchain governance, Information and Software Technology, 4.2.3.4. Technological aspects. (last accessed on 30 September 2024).

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Turning the attention to blockchain risk management, it is suggested that the CASP needs to ensure that the new risks that they are exposed to, specific to the use of distributed ledger technology and crypto assets, are managed. Although the CASPS are exposed to risks similar to those of other FSPs, there are nuances to be aware of.[1830] Some of the standard risks that may be exacerbated are increased third-party risks since much of the technology may be sourced from third parties and, therefore, make CASPS reliant on those third parties. Another risk that may be heightened in these models is the increased information security risks in the form of account takeovers and security risks to the blockchain in the form of malicious actors taking over 51 per cent of the network nodes for a duration of time, especially in a closed permissions framework.[1831]

Some nuanced risks can be present with respect to, for instance, value transfer risk considerations or smart contract-specific risk considerations. To mention a couple, in terms of value transfer risk, there are key management risks in the form of theft of private keys, for instance. Also, there are specific risk considerations when it comes to choosing a consensus mechanism; each should be evaluated.[1832] A few examples with respect to smart contracts are contract enforcement risks emanating from uncertainty in terms of enforceability compared to more traditional contracts. Also, in a permissioned network[1833], the legal liability remains unclear for an improper, erroneous, or malicious administration of a smart contract, resulting in a transaction

[1830] Prakash Santhana, Abhishek Biswas, Deloitte," Blockchain risk management Risk functions need to play an active role in shaping blockchain strategy" available online at https://www2.deloitte.com/content/dam/Deloitte/us/Documents/financial-services/us-fsi-blockchain-risk-management.pdf (last accessed on 30 September 2024).

[1831] Prakash Santhana, Abhishek Biswas, Deloitte," Blockchain risk management Risk functions need to play an active role in shaping blockchain strategy, Page 5.

[1832] Prakash Santhana, Abhishek Biswas, Deloitte," Blockchain risk management Risk functions need to play an active role in shaping blockchain strategy, Page 6.

[1833] Permissionless blockchains, also known as trustless or public blockchains, are open networks available to everyone to participate in the consensus process. See TechTarget, "Permissioned vs. permissionless blockchains: Key differences",(2023), available online at https://www.techtarget.com/searchcio/tip/Permissioned-vs-permissionless-blockchains-Key-differences (last accessed on 17 March 2025).

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with two or more entities on the network, causing assets to leave the network via those transacting entities.[1834]

It is important to note that this research does not attempt to draft the exact and detailed requirements for the proposed framework that could be used by the regulators from African jurisdictions for a trans-border licence allowing CASPS to conduct business in multiple countries. Rather, it highlights some of the main areas that it recommends should be covered in such a theoretical framework to provide the necessary protections while harnessing the benefits. Therefore, some of the general principles will now be set out as to what such a framework should contain, and also some of the more specific risks, which were alluded to in the paragraph above, will be further considered. It is submitted, that in terms of risk management, the panel of regulators should require that the CASP establishes and maintains an effective and comprehensive risk management function that is equipped to identify and manage both the standard risks that could arise when providing financial services as well as the unique risks that are presented with using distributed ledger technology, cryptography, and crypto assets. The CASP is also required to establish and maintain policies and procedures, as well as risk measurements and reporting methodologies that have been approved by the panel of regulators. The risk management framework should be commensurate with the nature, size, complexity, and risk profile of the CASP in order to identify, measure, quantify, manage, and monitor the risks, whether financial, technological, or otherwise, to which they are or may be exposed.[1835]

The risk management function should further consider a variety of risks that could apply to CASPS and ensure that, to the extent that they are applicable, they are identified, monitored, and managed. The first of these is financial stability risks[1836],

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[1834] Prakash Santhana, Abhishek Biswas, Deloitte," Blockchain risk management Risk functions need to play an active role in shaping blockchain strategy, Page 7.

[1835] Virtual Assets Regulatory Authority, "Compliance and Risk Management Rulebook", 2023, Page 8, available online at https://rulebooks.vara.ae/rulebook/d-risk-management (last accessed on 01 October 2024).

[1836] Financial stability refers to a financial system that inspires confidence through its resilience to systemic risks and its ability to efficiently intermediate funds. South African Reserve Bank, "Financial

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consisting of financial soundness and market risk. Financial soundness risks arise when a CASP lacks sufficient capital, liquidity, or reserves to operate and meet consumer commitments, potentially failing to comply with regulatory requirements. Market risk involves exposure to adverse market conditions, which CASPS must mitigate through regular monitoring, effective risk management, and stress testing.[1837] This includes assessing the impact of market movements, individual market factors, and extreme events on their operations and consumer assets.[1838]

The next risk that could be applicable to CASPS is credit risk.[1839] Credit risks for CASPS stem from the nature and level of credit risk exposure in their services and activities. In the realm of crypto assets, credit risk manifests through several scenarios. Crypto lending platforms, where users lend their assets to borrowers, inherently carry credit risk, as the lender may lose both the principal funds and interest if the borrower defaults. Margin trading[1840], which involves borrowing funds to leverage positions, also exposes users to credit risk with respect to significant declines in asset values that can trigger margin calls[1841], necessitating additional collateral deposits or risking liquidation.

Stability", available online at https://www.resbank.co.za/en/home/what-we-do/financial-stability (last accessed on 17 March 2025).

[1837] Stress testing in crypto is an evaluation process designed to test the resilience of a blockchain network or crypto asset to extreme market situations or stress scenarios. The main goal is to find out how well a crypto network or asset can function in unusual or unexpected situations. See Bittime, ZN Fadila, "What Is Stress Testing in Crypto: A Complete Guide to Understanding the Concept and Implementation", available online at https://support.bittime.com/hc/en-us/articles/9550211184271-What-Is-Stress-Testing-in-Crypto-A-Complete-Guide-to-Understanding-the-Concept-and-Implementation (last accessed on 16 March 2025).

[1838] Virtual Assets Regulatory Authority, "Compliance and Risk Management Rulebook", 2023, Page 9.

[1839] Credit risk is the potential that a counterparty in cryptoasset markets or directly exposed to cryptoassets could fail to meet its obligations in accordance with agreed terms. See Bank of International Settlements," BIS Papers No 138 - Financial stability risks from cryptoassets in emerging market economies", available online at https://www.bis.org/publ/bppdf/bispap138.pdf (last accessed on 16 March 2025).

[1840] Margin trading is a way of using funds provided by a third party to conduct asset transactions. Compared with regular trading accounts, margin trading accounts allow traders to obtain more funds and support them in using positions. See Binance, "What is margin trading?" available online at https://www.binance.com/en-ZA/margin-trading (last accessed on 27 April 2025).

[1841] A margin call is a notification from the platform that the client's margin level is unhealthy and assets

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Furthermore, loans collateralised by crypto assets are susceptible to credit risk due to potential fluctuations in collateral value, which may result in insufficient loan coverage. To mitigate these risks, CASPS should thus implement a robust credit rating system to assess the creditworthiness of consumers and counterparties. They must also establish clear, objective measures for evaluating potential consumers and setting appropriate credit limits. Additionally, CASPS need to use quantitative methodologies to monitor credit exposure[1842], including pre-settlement and settlement risks. For activities involving margins, it is indicated in the *Compliance and Risk Management Rulebook*[1843] issued pursuant to, and forming part of, the *Virtual Assets and Related Activities Regulations 2023* that CASPS should maintain policies detailing margin types, rates, payment methods, and procedures for handling margin calls and defaults.[1844]

Liquidity risk[1845] also has to be considered. In terms of liquidity risks for CASPS, these risks arise from their liquidity or asset and liability mix. To mitigate such risks, CASPS should enforce concentration limits on products, markets, and counterparties based on their liquidity profiles. They must also regularly monitor maturity mismatches between funding sources and requirements, as well as concentrations of crypto assets, markets, and counterparties. Additionally, CASPS need to establish clear default procedures to

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need to be added to prevent liquidation. See Coinbase, " What is crypto margin trading?", available online at https://www.coinbase.com/learn/advanced-trading/what-is-crypto-margin-trading#:~:text=A%20margin%20call%20is%20a,also%20known%20as%20forced%20liquidation (last accessed on 27 April 2025).

[1842] Quantitative methodologies for monitoring credit exposure involve using numerical data and statistical techniques to assess and manage the risk of potential losses from lending or credit-related activities. Key aspects include quantifying the probability of default (PD), loss given default (LGD), and exposure at default (EAD). These measures, along with stress testing, model validation, and early warning systems, help financial institutions understand and mitigate their credit risk. See SOA," Session 27 PD - Quantitative Methods Used in Managing Credit Risk ",(2004), available online at https://www.soa.org/globalassets/assets/library/proceedings/record-of-the-society-of-actuaries/2000-09/2004/october/rsa04v30n327pd.pdf (last accessed on 27 April 2025).

[1843] Virtual Assets Regulatory Authority, "Compliance and Risk Management Rulebook", 2023, Page 11.

[1844] Virtual Assets Regulatory Authority, "Compliance and Risk Management Rulebook", 2023, Page 10-11.

[1845] See Chapter 2,2.7.

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alert staff and management to potential liquidity issues, allowing them time to minimise the impact of any consumer's or counterparty's liquidity problems.[1846]

In regard to market conduct, this covers areas such as risks arising from business strategy and sources of business; consumer onboarding with respect to consumer due diligence; and operational risk, which comprises both internal and external threats[1847] to the operations of the CASP. It also covers cybersecurity[1848] risks that could affect the consumer and risks emanating from the structure and responsibilities imposed on the CASP.[1849] Other areas of market conduct or consumer-related risks that should be considered include issues related to communications and financial promotions, legal risks from contractual agreements, and disclosure[1850] that can arise if the complexity and target markets of the products are not considered. Also under this category of market conduct risks are the reporting practices and the handling of consumer assets. These risks can arise from non-compliance with regulatory requirements; misleading

[1846] Virtual Assets Regulatory Authority, "Compliance and Risk Management Rulebook", 2023, Page 11.

[1847] The internal risk may result from several factors; some of them are internal while others are external. The internal factors appear from the inside of a system and they can be approximately controlled. External risks are on the other hand appeared from outside the organization but they cannot be controlled as the internal factors. See Mohammad, A., Ghwanmeh, S., Alibrahim, A. (2014). "Establishing Effective Guidelines to avoid Failure and Reducing Risk in E-Business". *International Journal of Current Engineering and Technology*, Vol. 4(1), (2014), pp. 28-31, E-ISSN 2277 – 4106 (last accessed on 17 March 2025).

[1848] Cyber security is how individuals and organisations reduce the risk of cyber-attack. Cyber security's core function is to protect the devices we all use. See National Cybersecurity Centre, "What is cyber security? - NCSC.GOV.UK", available online at https://www.ncsc.gov.uk/section/about-ncsc/what-is-cyber-security (last accessed on 18 March 2025).

[1849] Virtual Assets Regulatory Authority, "Compliance and Risk Management Rulebook", 2023, Page 12.

[1850] Due to the technological architecture of crypto assets certain bespoke requirements are necessary to ensure that the client is fully informed of the risks. These include disclosures regarding the construct of the crypto assets, the holding of cryptographic keys and the safeguarding thereof and disclosures on how redemption to FIAT currency occurs. Further, the CASP should provide comprehensive, clear and transparent information regarding their operations, risk profiles and financial conditions, as well as the products they provide and activities they conduct. See Financial Stability Board, "Regulation, Supervision and Oversight of Crypto-Asset Activities and Markets – Consultative document", (2022), available online at https://www.fsb.org/uploads/P111022-3.pdf (last accessed on 22 March 2025).

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advertising, inadequate contractual terms insufficient disclosure; and improper management of consumer funds and crypto assets. CASPS must ensure they adhere to relevant regulations to protect their consumers effectively.[1851] Risks that need to be considered by the risk management function include, for instance, risks relating to the effectiveness of risk management systems being used, business continuity, and AML/CFT risks.[1852]

6.8 Complaint Management Framework

The *FSB's High-level Recommendations for the Regulation, Supervision, and Oversight of Crypto-asset Activities and Markets*[1853], specifically *Recommendation 7*, deal with disclosures and stipulate that information should be made available with respect to governance and procedures related to the main activities, which main activities include complaints management.[1854] The *IOSCO Policy Recommendations for Crypto and Digital Assets Markets – Final Report*[1855] recommends that authorities

[1851] Virtual Assets Regulatory Authority, "Compliance and Risk Management Rulebook", 2023, Page 13.

[1852] Crypto Asset Service Providers is one of the sectors identified by the international anti-money laundering and countering the financing of terrorism community as potentially highly vulnerable for money laundering and terrorist financing. The crypto-asset market structure fosters vulnerabilities. See Financial Intelligence Centre, "Assessment of the inherent Money Laundering and Terrorist Financing Risks Crypto Asset Service Providers", (2024), available online at https://www.fic.gov.za/wp-content/uploads/2024/03/2024.3-SRA-Draft-SRA-CASPs.pdf;Virtual Assets Regulatory Authority, "Compliance and Risk Management Rulebook", 2023, Page 13. (last accessed on 15 March 2025).

[1853] The recommendations establish a global regulatory baseline and some jurisdictions may also decide to take more restrictive regulatory measures. Their aim is to promote a regulatory, supervisory and oversight framework that is technology-neutral and focuses on underlying activities and risks. See Financial Stability Board, "Publications" available online at https://www.fsb.org/2023/07/high-level-recommendations-for-the-regulation-supervision-and-oversight-of-crypto-asset-activities-and-markets-final-report/ (last accessed on 15 March 2025).

[1854] Page 10, FSB Final Report - High-level Recommendations for the Regulation, Supervision and Oversight of Crypto-Asset Activities and Markets, (2023), available online at https://www.fsb.org/2023/07/high-level-recommendations-for-the-regulation-supervision-and-oversight-of-crypto-asset-activities-and-markets-final-report/ (last accessed on 15 March 2025).

[1855] The CDA Recommendations set a clear and robust international regulatory baseline to ensure that CASPS meet the standards of business conduct that apply in traditional financial markets. See

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should require CASPS to have an efficient and effective mechanism to address consumer complaints.[1856] In light of the steer from these international organisations, this research will also propose some elements in this subsection that the complaints management framework should address as part of the proposed robust framework for a trans-border crypto asset licence.

In alignment with the "Treating consumers Fairly"[1857] approach supported by the South African FSCA, it is submitted that a complaints management framework should aim to achieve the following three outcomes: The first outcome is that during a complaint process, the consumer should feel confident that they are dealing with a CASP where the fair treatment of consumers is at the core of the company's culture.[1858] Secondly, the consumers must be provided with clear information and kept appropriately informed during the process.[1859] The third outcome is that the consumers must not face unreasonable post-sale barriers when they want to submit a claim or make a

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IOSCO Press Release: 16 November 2023: IOSCO/MR/25/ 2023, available online at https://www.iosco.org/news/pdf/IOSCONEWS712.pdf (last accessed on 15 March 2025).

[1856] Page 42, IOSCO Policy Recommendations for Crypto and Digital Assets Markets – Final Report.

[1857] Treating Customers Fairly Outcome 3:" Customers are provided with clear information and kept appropriately informed before, during and after point of sale". See FSCA, "Treating Customers Fairly", available online at https://www.fsca.co.za/Regulatory%20Frameworks/Pages/Treating-customers-fairly.aspx (last accessed on 27 April 2025).

[1858] Treating Customers Fairly Outcome 1:" Customers can be confident they are dealing with firms where TCF is central to the corporate culture". See FSCA, "Treating Customers Fairly", available online at https://www.fsca.co.za/Regulatory%20Frameworks/Pages/Treating-customers-fairly.aspx (last accessed on 27 April 2025).

[1859] The Treating Customers Fairly approach comprises of outcomes that act as the guiding principles that the FSCA use to design both our regulatory as well as supervisory frameworks. It is therefore embedded in various pieces of financial sector laws through provisions and guidelines. In the FAIS Act for instance it is embedded through requirements related to product design, information disclosure, advice suitability, service quality, and complaint handling, all of which align with the core principles of TCF. See National Treasury, " Treating Customers Fairly in the Financial Sector – A draft market conduct policy framework for South Africa", (2014), available online at https://www.treasury.gov.za/public%20comments/fsr2014/Treating%20Customers%20Fairly%20in%20the%20Financial%20Sector%20Draft%20MCP%20Framework%20Amended%20Jan2015%20WithAp6.pdf (last accessed on 27 April 2025).

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complaint.[1860] These outcomes should be embodied in the comprehensive regulatory framework. What is also important is that the submission process should be simple. It is further submitted that, even where some of the consumer-facing services, for instance, custody of crypto assets, are outsourced to a third party, the consumer should be able to submit the complaint directly to the accountable CASP and not need to go through various escalation processes with the outsourced party who may not have the authority to make decisions and is not accountable to the regulator. These outcomes should be common across the participating countries, and the terminology used and interpretation of specific meanings in the framework of a complaint, for instance, "a reasonable time to respond or investigate complaints," should be agreed upon. There should be a clear playing field level for the jurisdictions that participate.

It is suggested, as a starting point, that there should be a common definition of "complaint" and "complainant." For this, this research proposes to use the EU definitions contained in the *Draft Regulatory Technical Standards specifying the requirements, templates and procedures for handling complaints under article 31 of Regulation (EU) 2023/1114 on Markets in Crypto - assets*[1861], with slight adaptations. It is therefore proposed that a "complaint" be defined in the trans-border regulatory framework as follows: "An expression of dissatisfaction addressed to a Stablecoin issuer, a CASP or a third party entity that holds, maintains, services, administers, or distributed partially or totally tokens, by a natural or legal person or any other interested party, including consumer associations that represent holders of tokens relating to the advice, issuance, marketing, or financial services rendered". In respect of "complainant" it is proposed that it is defined to mean:" A natural or legal person who is a token holder, potential token holder or successor in title or any other interested party,

[1860] Financial Sector Conduct Authority, FSCA MyMoney Learning Series, "Treating Clients Fairly," available online at https://www.fscamymoney.co.za/Pages/Treating-Clients-Fairly.aspx (last accessed on 03 October 2024).

[1861] European Banking Authority, Draft Regulatory Technical Standards specifying the requirements, templates and procedures for handling complaints under article 31 of Regulation (EU) 2023/1114 on Markets in Crypto – assets, available online at https://www.eba.europa.eu/sites/default/files/2024-03/22e7f584-a1d9-44eb-8b07-ab0bdbb3b4d2/Draft%20RTS%20on%20complaints%20handling%20under%20MiCAR.pdf (last accessed on 15 March 2025).

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including consumer associations that represent holders of tokens who have a direct or indirect interest in the agreement or service provided or offered by a CASP or Stablecoin issuer".

Due to the technological foundation of CASPS and the services it provides, a CASP will only be allowed to facilitate the submission of electronic complaints while ensuring the quality of record-keeping and timely responses in a remote working environment. In terms of architecture, it is recommended that the following requirements be provided for with respect to complaints: The CASP should be required to establish, maintain, and operate an adequate and effective complaints management framework that is proportionate to the size, nature, and complexity of the CASP and considers the business model and the market segment, and it should be subject to regular review.[1862] The complaints management framework should contain a number of minimum elements, including relevant objectives and principles for handling complaints; the allocation of responsibilities; performance standards; and remuneration. This ensures both objectivity and impartiality when handling consumer complaints.[1863] Furthermore, the complaints management framework should contain documented procedures for the management and categorisation of complaints and clearly define the escalation; decision-making; monitoring and oversight; and review processes.[1864] Further elements that need to be part of the complaint management framework include: record keeping and monitoring of complaints received by the CASP and reporting to the CASP board, as well as clear and ongoing communication with the complainants during the process.[1865]

Without setting out all the detailed requirements that should form part of the complaint's framework, this research will highlight some critical elements and provide some recommendations on how to provide for them. The first of these is the

[1862] Financial Sector Conduct Authority, Policyholder Protection Rules ("PPRs") made under section 62 of the Long-term Insurance Act, 1998, Rule 18.2.1, available online at https://discover.sabinet.co.za/document/1167926 (last accessed on 03 October 2024).

[1863] Policyholder Protection Rules, 2017, Rule 18.3.1.

[1864] Policyholder Protection Rules, 2017, Rule 18.3.1, (c) and (d).

[1865] Policyholder Protection Rules, 2017, Rule 18.3.1, (e) and (f).

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categorisation of complaints.[1866] In terms of categorisation, it is recommended that the CASP should be required to categorise the complaints received into those emanating from advice; investment performance; service to consumers; complaint handling; and redemption.[1867] The complaints should be categorised further with respect to market segment and different types of tokens, such as unbacked and backed tokens. The second element is record keeping. It should be required that the CASP must ensure accurate, efficient, and secure recording of complaints-related information.[1868] The information that must be kept should include: the number of complaints; the number upheld and rejected; the number of goodwill and compensation payments made; and the status and any escalation of complaints received. Also, a record should be kept of the number of complaints received regarding any outsourced service for at least five years.

Complaints dealt with through any third-party resource should be deemed received by the CASP as soon as the third party receives the complaint. The third party must, without delay, acknowledge receipt, which must contain the date of the receipt and provide the details of the CASP or Stablecoin issuer. The third party must also record the complaint and share the complaint data with the CASP or Stablecoin issuers as soon as possible.[1869] Lastly, regarding communication and investigations, it is recommended that the CASP communicates the status of the process to the complainants without delay, in plain language, and through a consumer's preferred channel of communication. When communicating a final decision, the CASP must also provide the consumer with details of any further internal and external escalation

[1866] Policyholder Protection Rules, 2017, Rule 18.5.

[1867] Redemption happens when upon a distribution event within an offering, investors are given the option to “Redeem” their digital assets in exchange for cash proceeds. See Meduim,”What Is A Token Redemption?”, (2020), available online at https://medium.com/@withcadence/what-is-a-token-redemption-df282fd92f88 (last accessed on 15 March 2025).

[1868] Policyholder Protection Rules, 2017, Rule 18.8.

[1869] European Banking Authority, “Draft Regulatory Technical Standards to specify the requirements, templates and procedures for handling complaints under Article 31 of the Regulation (EU) 2023/1114 on Markets in Crypto assets”, EBA/RTS/2024/02,(2024), available online at https://www.eba.europa.eu/activities/single-rulebook/regulatory-activities/consumer-protection-and-financial-innovation-0 (last accessed on 03 October 2024).

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processes that are available. Insofar as investigations are concerned, they should be completed without undue delays and within the internally agreed-upon timeframes. In the event that an investigation cannot be completed within a reasonable time, this must be communicated to the consumer, and an expected time frame must be provided.[1870]

6.9 Embedded supervision

Embedded supervision techniques are used by financial regulators that provide for compliance in decentralised markets to be automatically monitored by reading the market's ledger.[1871] This research suggests using one, or a combination of, embedded supervision techniques, to obtain data and monitor and supervise the CASPs licenced under this proposed trans-border crypto asset licence. Traditional ways of supervision can be ineffective, and it is submitted that there is a need for a supervisor of CASPS to evolve into a technology-smart supervisor who is able to use new tools effectively, more so when the supervisor, in this instance, needs to supervise CASPS conducting business across multiple jurisdictions. It is submitted that by utilising embedded supervision techniques for supervising and monitoring the CASPS that were licenced to conduct business in multiple jurisdictions within Africa, the panel of regulators can effectively address the unique challenges that these crypto asset providers pose and ensure a more robust, proactive, and efficient way of supervising multi-jurisdictional CASPS. It is submitted that using embedded supervision in this scenario offers several advantages over trying to supervise these multi-jurisdictional CASPS through traditional methods of supervision.

For example, it can level the playing field by promoting low-cost supervision and fairness for both small and large firms. Embedded supervision can be categorised into three levels: The first of these could be described as passive monitoring in real-

[1870] Draft RTS on complaints handling under MiCAR - Final report, Page 16.

[1871] Auer, Raphael, Embedded Supervision: How to Build Regulation into Decentralised Finance (2022). CESifo Working Paper No. 9771, Available at SSRN: https://ssrn.com/abstract=4127658 or http://dx.doi.org/10.2139/ssrn.4127658 (last accessed on 15 March 2025).

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time.[1872] This could be considered a low-level or less intrusive type of embedded supervision that regulators could use to monitor financial data relevant to their risk assessment, such as transaction data or perhaps funds reserve data.[1873] With this type of low-level embedded supervision, the regulator could request access to only limited pre-determined and agreed-upon data fields that are not publicly visible. The second level of embedded supervision can be described as a type of "regulatory gateway" where there is a more active feed of data into a decentralised infrastructure. The gateway can also be termed as an "oracle," as referred to in a blockchain-based broader ecosystem. Oracles are data feeds that bring data from off-the-blockchain (off-chain) data sources and put it on the blockchain (on-chain) for smart contracts to use. This is necessary because smart contracts running on Ethereum, and those beyond, cannot access information stored outside the blockchain network.[1874] Oracles then feed data from the real world to the platform; for example, it feeds in central bank interest rates that are relevant to determine prices for certain financial products traded on a decentralised infrastructure.[1875]

The most intrusive layer in terms of this categorisation is where the embedded supervision provides the regulator with active enforcement powers. This allows such a regulator to take active steps regarding blockchain transactions, such as blocking or reversing individual transactions or freezing of assets.[1876] It is further submitted that

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[1872] School, G. L., Attorney, Capital Markets Law; J. S. M. Stanford Law. (2024). "Regulating Decentralized Financial Technology: A Qualitative Study on the Challenges of Regulating DeFi with a Focus on Embedded Supervision". *Stanford Journal of Blockchain Law & Policy"*. Available online at https://stanford-jblp.pubpub.org/pub/regulating-defi (last accessed on 23 August 2024).

[1873] Auer, Raphael, Embedded Supervision: How to Build Regulation into Decentralised Finance (2022). CESifo Working Paper No. 9771, Available at SSRN: https://ssrn.com/abstract=4127658 or http://dx.doi.org/10.2139/ssrn.4127658 (last accessed on 23 August 2024).

[1874] Ethereum, Developers, Oracles, (2024) available online at https://ethereum.org/en/developers/docs/oracles/ (last accessed on 23 August 2024)

[1875] Chainlink," What Is an Oracle in Blockchain? » Explained", (2024), available online at https://chain.link/education/blockchain-oracles (last accessed on 15 March 2025).

[1876] See Proposal for a Regulation of the European Parliament and of the Council on harmonised rules on fair access to and use of data (Data Act), COM (2022) 68 final (Feb. 23, 2022) art 30: "Safe termination and interruption: ensure that a mechanism exists to terminate the continued execution of

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embedded supervision is the most optimal supervisory approach with respect to emerging technologies as it can enable real-time monitoring of transactions and activities by reading the data signal on the blockchain, thereby allowing speedy detection of risks and allowing the panel of regulators to act swiftly with respect to potential risks materialising. It is submitted that embedded supervision techniques that conclude in integration with the CASPS system, provide a more comprehensive and deep understanding of their operations. It is further submitted that embedded supervision also holds the possibility of reducing compliance costs to these entities that were approved to operate over multiple African countries as it provides for streamlined and automated reporting processes, which takes away the duplication of efforts that exist in reporting through manual processes in each and every African jurisdiction in which it operates. If there are infrastructure costs for the CASPS, for instance, where APIs[1877] are used to integrate, over the longer term, following these infrastructure costs, the reduction in compliance costs will still be realised.

It is submitted that for the regulators' embedded supervision, promises improved risk management since they are provided with real-time insights in respect of possibly both off-chain data and on-chain data if the blockchain used by the CASPS is also analysed. The further benefit for regulators using embedded supervision techniques is that it holds the promise of enhanced financial consumer protection by enabling the regulators to identify and address potential issues that arise quickly. It further allows for consistent supervision across multiple jurisdictions while lowering the resource burden on the regulators to utilise supervisors for intensive desktop supervision and onsite supervision exercises. Lastly, it is submitted that the quality and format of the data and the trustworthiness are improved through the regulator monitoring real-time data.

To unpack the different techniques and provide context in terms of their uses, which may prove helpful in supervising these entities, it is worth exploring what technologies some of the other crypto-active jurisdictions have been testing and using regarding embedded supervision. Supervisory technologies provide opportunities for both

transactions: the smart contract shall include internal functions which can reset or instruct the contract to stop or interrupt the operation to avoid future (accidental) executions."

[1877] See Chapter 1, 1.2.7.

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prudential and market-conduct embedded supervision. One example of prudential supervision through these techniques is the *API-based Prudential Reporting System*[1878] implemented in the Philippines Bangko Sentral ng Pilipinas[1879], the central bank of the Philippines.[1880]

This Suptech[1881] is a 2G/3G data collection system that enables financial institutions to digitally submit high-quality, granular data automatically to the financial authority, increasing the frequency of submissions. It has further empowered Bangko Sentral ng Pilipinas staff to expedite data validation and enhance analysis by generating customised reports in various formats for supervisory and policy development purposes. As stated by *Di Castri et al,* the Philippines' Bangko Sentral ng Pilipinas embarked on this journey because they realised there were several inefficiencies in their regulatory reporting process. For instance, the reliance on Excel-based reporting templates results in cumbersome processes due to manual preparation and validation. The processes that were in place in terms of traditional reporting, also required much

[1878] An API-based data architecture for prudential reporting with various technical layers forming a coherent, streamlined, and nimble architecture for the (1) transmission, (2) processing, (3) warehousing, and (4) analysis of banks' prudential reporting data. See di Castri, Simone and Grasser, Matt and Kulenkampff, Arend, An API-based Prudential Reporting System for the Bangko Sentral ng Pilipinas (BSP): R 2A Project Retrospective and Lessons Learned (August 2018). Available at SSRN: https://ssrn.com/abstract=3596276 or http://dx.doi.org/10.2139/ssrn.3596276 (last accessed on 27 April 2025).

[1879] The Bangko Sentral ng Pilipinas is the central bank of the Philippines. The Bangko Sentral ng Pilipinas is the central bank of the Philippines. See Bangko Sentral ng Pilipinas,"About the Bank", available online at https://www.bsp.gov.ph/SitePages/AboutTheBank/AboutTheBank.aspx#:~:text=The%20Bangko%20Sentral%20ng%20Pilipinas,Central%20Bank%20Act%20of%201993 (last accessed on 14 September 2024).

[1880] Cambridge Suptech Lab (2023), State of Suptech Report 2023, Cambridge: University of Cambridge. Available online at www.cambridgeSuptechlab.org/SOS (last accessed on 17 June 2024).

[1881] Supervisory technology is the application of emerging technology to improve how supervisory agencies conduct supervision. See Ascent, "What is Suptech and How Will it Change Compliance?" available online at https://www.ascentregtech.com/blog/what-is-Suptech-and-how-will-it-change-compliance/#:~:text=Suptech%2C%20short%20for%20supervisory%20technology,service%20firms%20handle%20regulatory%20compliance (last accessed on 14 September 2024).

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communication between reporting institutions and the regulator to clarify errors and omissions. What was further of concern in the traditional reporting methods was that there was a lag in collecting the data, and the analysis and the use of data manually submitted undermined policy effectiveness and responsiveness.[1882]

According to *Di Castri et al,* the use of integrated reporting provides a more proactive and responsive approach to the supervision of regulated entities. A further concern that the Bangko Sentral ng Pilipinas noted was the cyber risks[1883] that emanated from the use of traditional types of reporting. The use of email to send compliance reports (and follow-up communication to address inconsistencies and errors) was inherently insecure. The Bangko Sentral ng Pilipinas web portal offered a slightly safer mode of transmission, but it did not solve the issue of multiple reports that needed to be submitted individually.[1884]

As indicated in the paper on the *API-based Prudential Reporting System* titled "*An API-based Prudential Reporting System for the Bangko Sentral ng Pilipinas (BSP): R 2A Project Retrospective and Lessons Learned"* for the Bangko Sentral ng Pilipinas (BSP)[1885], the Bangko Sentral ng Pilipinas went through seven steps in its development of this system. The steps commenced with building trust and commitment, which included converging around overarching vision and goals, aligning

[1882] di Castri, Simone and Grasser, Matt and Kulenkampff, Arend, An API-based Prudential Reporting System for the Bangko Sentral ng Pilipinas (BSP): R 2A Project Retrospective and Lessons Learned (August 2018). Available online at SSRN: https://ssrn.com/abstract=3596276 or http://dx.doi.org/10.2139/ssrn.3596276 (last accessed on 17 June 2024).

[1883] The use of email to send compliance reports in traditional reporting (and follow-up communication to address inconsistencies and errors) is inherently insecure and is seen as a cyber risk. See API-based Prudential Reporting System for the Bangko Sentral ng Pilipinas, page 8 (last accessed on 17 June 2024).

[1884] API-based Prudential Reporting System for the Bangko Sentral ng Pilipinas, page 8 (last accessed on 17 June 2024).

[1885] di Castri, Simone and Grasser, Matt and Kulenkampff, Arend, An API-based Prudential Reporting System for the Bangko Sentral ng Pilipinas (BSP): R 2A Project Retrospective and Lessons Learned (August 2018). Available at SSRN: https://ssrn.com/abstract=3596276 or http://dx.doi.org/10.2139/ssrn.3596276 (last accessed on 15 March 2025).

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vision among all project stakeholders, and high-level buy-in from top leadership.[1886] The second step involved value proposition analysis, looking at the use case. The prudential reporting use case addressed issues at the core of the Bangko Sentral ng Pilipinas supervision mandate, freeing up some of their resources. Step three involved the governance process of defining the project parameters that consisted of prototype development, and the prototype would provide a basis for assessing the viability, scalability, and desirability of rolling out the solution to the broader market.[1887] Step four entailed designing the proof of concept, and a "design sprint"[1888] was utilised to create a rough blueprint for subsequent development work. The "proof of concept"[1889] was created using dummy data and mock visualisations. This served to determine the feasibility of the solution and resolve ambiguities before decisions would become hard to reverse. Resourcing was step five, and the co-creation process involved pairing financial authorities with competent technology vendors capable of delivering a prototype to specification.[1890] Pairing with competent technology vendors boosts the regulators' resource capabilities.[1891]

[1886] API-based Prudential Reporting System for the Bangko Sentral ng Pilipinas, page 11 (last accessed on 17 June 2024).

[1887] API-based Prudential Reporting System for the Bangko Sentral ng Pilipinas, page 12 (last accessed on 17 June 2024).

[1888] A design sprint in system design is a focused, time-boxed process used to rapidly design and test a solution to a specific problem, often within a week. It's a structured, collaborative workshop that combines elements of design thinking, prototyping, and user testing to validate ideas and make informed decisions before full development. See Miro, "What is Design Sprint? A Quick Guide", available online at https://miro.com/research-and-design/what-is-a-design-sprint/ (last accessed on 27 April 2025).

[1889] In system design, a proof of concept (PoC) is a preliminary demonstration that verifies whether a proposed system or idea is feasible and can be implemented using available technologies. See Alexander S. Gillis, Techtarget, "What is a proof of concept (POC)?", available online at https://www.techtarget.com/searchcio/definition/proof-of-concept-POC#:~:text=A%20proof%20of%20concept%20(POC)%20is%20a,idea%20can%20be%20turned%20into%20a%20reality.&text=While%20a%20POC%20is%20a%20process%20that,the%20production%20of%20that%20idea%20is%20practical (last accessed on 27 April 2025).

[1890] Page 12, An API-based Prudential Reporting System for the Bangko Sentral ng Pilipinas.(last accessed on 15 March 2025).

[1891] Page 12, An API-based Prudential Reporting System for the Bangko Sentral ng Pilipinas.(last accessed on 15 March 2025).

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Step six involved the actual building of the prototype. Using the technical and functional specifications, a rudimentary prototype API was developed that could receive a small subset of the required data from the participating FSPs in a controlled environment. The final phase of prototyping involved sharpening the analytics, specifically the ability for Bangko Sentral ng Pilipinas to extract and visualise information from the prudential database in statistics, reports, and dashboards.[1892] The last step in this process entails launching the product full-scale. The technology being used comprises of the use of an API that establishes a direct line of machine-to-machine transmission between the supervised banks' core banking system and Bangko Sentral ng Pilipinas without human intervention.[1893]

The embedded supervision implemented by Bangko Sentral ng Pilipinas in particular allows for an alternative to having supervised entities manually populate multiple spreadsheet-based report templates.[1894] It facilitates the extraction of raw data from the regulated entities' databases and converts this into a single encrypted XML-based file.[1895] This file is then "pushed" directly to Bangko Sentral ng Pilipinas's processing queue, obviating the need for email or web data portals.[1896]

[1892] API-based Prudential Reporting System for the Bangko Sentral ng Pilipinas, page 13 (last accessed on 17 June 2024).

[1893] Page 15, An API-based Prudential Reporting System for the Bangko Sentral ng Pilipinas.(last accessed on 15 March 2025).

[1894] Paragraph 1, Page 15, An API-based Prudential Reporting System for the Bangko Sentral ng Pilipinas.(last accessed on 15 March 2025).

[1895] Extensible Markup Language (XML) lets you define and store data in a shareable manner. XML supports information exchange between computer systems such as websites, databases, and third-party applications. Predefined rules make it easy to transmit data as XML files over any network because the recipient can use those rules to read the data accurately and efficiently. See Amazon Web Services, "What is XML?", available online at https://aws.amazon.com/what-is/xml/ (last accessed on 27 April 2025).

[1896] di Castri, Simone and Grasser, Matt and Kulenkampff, Arend, An API-based Prudential Reporting System for the Bangko Sentral ng Pilipinas (BSP): R 2A Project Retrospective and Lessons Learned (August 2018). Available at SSRN: https://ssrn.com/abstract=3596276 or http://dx.doi.org/10.2139/ssrn.3596276 (last accessed on 15 March 2025).

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Another jurisdictional example is the ECB which is transforming its supervisory capabilities with artificial intelligence through a project titled "*Athena*".[1897] The project is focused on the prudential supervision of banks and non-bank deposit-taking institutions.[1898] What prompted this project is that, in terms of supervision, it is highly resource-intensive for supervisors to go through extensive amounts of unstructured data in diverse formats within tight timeframes to conduct assessments on supervised entities. In these assessments, it is crucial that the data is thoroughly considered and that oversights are non-existent. Therefore, diligence is of utmost priority. During this process, a broad range of relevant documents, including news articles, supervisory assessments, and banks' own documents, are analysed. The result that is sought from this process, is to consolidate the wealth of information in one place and obtain structured insights and a robust foundation that serves as the basis for initiating the supervisory analysis of significant institutions that are supervised by the ECB.[1899]

In 2021, the ECB rolled out its first *Single Supervisory Mechanism* Suptech tool for textual analysis.[1900] This tool aims to advance supervisory capabilities through the analysis of documents and unstructured data via Artificial Intelligence-driven textual analysis. The platform uses "natural language processing"[1901] technology to speed up

[1897] Athena, a web-based platform helping supervisors find, extract and compare information from a corpus of millions of articles, supervisory assessments and bank documents. Athena has an intelligent search engine at its core and employs natural language processing techniques, automated optical character recognition and translation capabilities that help reduce manual tasks for supervisory assessments. See European Central Bank, "Suptech: thriving in the digital age",(2023), available online at https://www.bankingsupervision.europa.eu/press/supervisory-newsletters/newsletter/2023/html/ssm.nl231115_2.en.html (last accessed on 16 March 2025).

[1898] University of Cambridge " Cambridge Suptech Lab – State of Suptech Report 2023"(2023) available online at https://lab.ccaf.io/wp-content/uploads/2024/03/Cambridge-State-of-Suptech-Report-2023.pdf (last accessed on 24 June 2024).

[1899] Bank of International Settlements, D Araju,S Doerr, L Gambacorta, B Tissot, "Online annex for 'Artificial intelligence in central banking'" available online at https://www.bis.org/publ/bisbull84_annex.pdf (last accessed on 16 March 2025).

[1900] Is a broad term for various research methods used to describe, interpret, and understand texts. See PWC, "What is the Single Supervisory Mechanism (SSM)?" available online at https://www.pwc.com/gx/en/services/audit-assurance/risk-assurance/ssm-eba-office/single-supervisory-mechanism.html (last accessed on 24 June 2024).

[1901] NLP is the application of computational techniques to the analysis and synthesis of natural language

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textual analysis – to front-line supervisors across the Single Supervisory Mechanism or SSM. The data that is fed into *Athena* consists of news articles, supervisory assessments, and bank documents, which allow the supervisors to find, extract, and compare information in a single user-friendly web-based platform. *Athena* enables supervisors who are busy working on on-site inspections to have access to an English-language (translation capabilities also provided for in this project), machine-readable version of credit files that come in European native languages.[1902]

This type of use of Suptech enables the supervisor to analyse and compare information from a vast data lake, transforming the way they approach their crucial tasks. The support that *Athena* provides to the supervisors of the ECB[1903] consists of topic classification, sentiment analysis[1904], dynamic topic modeling[1905], and entity recognition. Some of *Athena's* capabilities include: a note-taking feature; advanced search capabilities; horizontal dashboards[1906]; document type classification;

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and speech. See TechTarget, Alexander S Gillis,Ben Lutkevich,Ed Burns,2023," What is natural language processing" available online at https://www.techtarget.com/searchenterpriseai/definition/natural-language-processing-NLP#:~:text=Natural%20language%20processing%20(NLP)%20is,of%20artificial%20intelligence%20(AI) (last accessed on 24 June 2024).

[1902] Central Banking, "Artificial Intelligence Initiative: European Central Bank", (2023), available online at https://www.centralbanking.com/awards/7958739/artificial-intelligence-initiative-european-central-bank (last accessed on 16 March 2025).

[1903] See Chapter 5,5.1.

[1904] Sentiment analysis is the process of computationally identifying and categorizing opinions expressed in a piece of text, especially to determine whether the writer's attitude towards a particular topic, product, etc. is positive, negative, or neutral. See TavTechnologies, Murat Kerem Çelenli, 2019," Sentiment Analysis" available online at https://tavtechnologies.aero/en-EN/review/pages/sentiment-analysis#:~:text=According%20to%20Oxford%20Dictionary%2C%20the,positive%2C%20negative%2C%20or%20neutral (last accessed on 24 June 2024).

[1905] Dynamic topic modeling is a collection of techniques aimed at analyzing the evolution of topics over time. See BERTopic, "Dynamic Topic Modeling" available online at https://maartengr.github.io/BERTopic/getting_started/topicsovertime/topicsovertime.html (last accessed on 24 June 2024).

[1906] Horizontal dashboards refer to dashboards that use a horizontal navigation bar or layout. This means the primary navigation elements, like menu items or tabs, are arranged horizontally at the top or along the sides of the screen. The focus is on saving screen real estate and presenting

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classification and topic modeling; automated translation; and Optical Character Recognition.[1907] Using sophisticated techniques, *Athena* substantially reduces the need for manual intervention in supervisory assessments.

In this research context, it is submitted that such Suptech tools will greatly assist with the supervision of entities licenced to conduct business in multiple jurisdictions and also to translate various native languages into English for the panel of regulators to assess the state of compliance by these entities. What this technology also does for the supervisors of the ECB is that it helps address "supervisory blind spots" by allowing the supervisors to perform horizontal analysis to efficiently check for compliance and consistency of regulatory standards, guidance, and methodologies. Further, *Athena* allows the supervisors to identify trends in the market and emergent risks. Therefore, it allows "officials to spot and assess new risks at the banking sector level and an individual bank level using machine learning models", as stated by Daniela Schackis of the ECB.[1908]

At the time of writing this thesis, March 2025, capabilities were being progressed for *Athena*, which will harness advancements in large language models to enhance existing functionalities and create new natural language processing capabilities, which include summarisation, a question-and-answer chat feature, and vector search capabilities.[1909] In a publication of the ECB in June 2024 titled "*SSM digitalisation* –

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information clearly, often in a way that's familiar to users. See MangoApps Guides, "Navigation styles", available online at https://guides.mangoapps.com/admin-guide/navigation/navigation-styles#:~:text=Horizontal%20Layout,-Horizontal%20navigation%20menus&text=Additionally%2C%20they%20make%20efficient%20use,different%20sections%20of%20the%20platform (last accessed on 27 April 2025).

[1907] Optical Character Recognition (OCR) is the process that converts an image of text into a machine-readable text format. See SuperAnnotate,2023, "What is Optical Character Recognition (OCR): Overview and use cases" available online at https://www.superannotate.com/blog/ocr-overview-and-use-cases (last accessed on 24 June 2024).

[1908] Central Banking, "Artificial Intelligence Initiative: European Central Bank", (2023), available online at https://www.centralbanking.com/awards/7958739/artificial-intelligence-initiative-european-central-bank (last accessed on 27 April 2025).

[1909] Vector search is a method of information retrieval where documents and queries are represented as

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from exploration to full-scale adoption" regarding a roadmap on the Single Supervisory Mechanism"[1910], the ECB visualised to the reader what the banking supervisor of the future could look like.[1911] What is depicted in this publication in the ECB's summer meetings on SSM digitalisation is a "banking supervisor of the future", who through digital transformation efforts becomes an augmented data expert who combines prudential data with other sources using AI to derive new insights and who is also agile by collaborating in virtual teams and works on fully integrated and AI empowered systems. Further to this, the future supervisor is a citizen technologist who can use the latest technologies, leveraging self-built apps to resolve pain points and work together with all European banking supervisors based on a common set of tools.[1912]

In terms of consumer protection and market conduct supervision, some of the Suptech tools that were developed for regulators include a financial consumer protection suite with web scraper[1913] and machine learning (ML)-based analysis[1914], a next-generation

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vectors instead of plain text. In vector search, machine learning models generate vector representations of source inputs, which can be text, images, or other content. See Microsoft Ignite, 2024, "Vectors in Azure AI Search" available online at https://learn.microsoft.com/en-us/azure/search/vector-search-overview; European Central Bank, Keynote speech by Elizabeth McCaul, Member of the Supervisory Board of the ECB, at the Supervision Innovators Conference 2024, available online at https://www.bankingsupervision.europa.eu/press/speeches/date/2024/html/ssm.sp240918~522b3441ba.en.html (last accessed on 16 March 2025).

[1910] See Chapter 6, 6.9.

[1911] European Central Bank, E McCaul, "SSM digitalisation – from exploration to full-scale adoption"(2024) available online at https://www.bankingsupervision.europa.eu/press/speeches/date/2024/html/ssm.sp240612_1~a3ace1ed8e.en.pdf (last accessed on 24 June 2024).

[1912] Page 20, European Central Bank, E McCaul, "SSM digitalisation – from exploration to full-scale adoption"(2024) available online at https://www.bankingsupervision.europa.eu/press/speeches/date/2024/html/ssm.sp240612_1~a3ace1ed8e.en.pdf (last accessed on 24 June 2024).

[1913] Web scraping is the process of using bots to extract content and data from a website. See Imperva, "What Is Scraping | About Price & Web Scraping Tools", available online at https://www.imperva.com/learn/application-security/web-scraping-attack/ (last accessed on 16 March 2025).

[1914] Machine learning (ML)-based analysis uses algorithms to analyze data, identify patterns, and make

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artificial intelligence (AI)- powered, chatbot-supported complaints management system[1915], and a platform for financial market monitoring via social media and web extraction. For the purposes of this research, only the financial consumer protection suite will be considered here. Notably, the financial consumer protection suite with a web scraper and ML-based analysis was developed for the Bangko Sentral ng Pilipinas and the Securities and Exchange Commission of the Philippines.[1916]

In terms of this prototype for the Bangko Sentral ng Pilipinas and the Securities and Exchange Commission of the Phillippines developed, together with Winnow Technologies,[1917] an automated platform to ingest, process, analyse, and visualise streams of data from social media channels, app-store reviews, and news sites, along with APIs for integration with existing complaints management systems. What this technology does for the Phillippines regulators is to combine both publicly available data sets with the data sets of the regulators (internal data) to which sophisticated sentiment analysis[1918], topic modeling[1919], and other ML techniques are applied to

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predictions or decisions without explicit programming, enabling computers to learn from experience and improve performance over time. See Oracle, B Mosterd,(2023), "What Is Machine Learning for Analytics?", available online at https://www.oracle.com/za/business-analytics/what-is-machine-learning-for-analytics/#:~:text=more%20about%20analytics-,Machine%20Learning%20Defined,and%20present%20data%2Ddriven%20insights (last accessed on 16 March 2025).

[1915] A chatbot is a software or computer program that simulates human conversation or chatter through text or voice interactions. See Techtarget, "What is a chatbot?", available online at https://www.techtarget.com/searchcustomerexperience/definition/chatbot (last accessed on 27 April 2025).

[1916] University of Cambridge, State of Suptech report, 2023 Page 106.

[1917] Winnow Technologies Inc. provides governments and public agencies with new technologies to enhance decision-making through the responsible use of data science. See WinnowTech, "about us" available online at https://www.winnowtech.io/about (last accessed on 22 June 2024).

[1918] Sentiment analysis is the process of analyzing large volumes of text to determine whether it expresses a positive, negative or neutral sentiment. See IBM, "What Is Sentiment Analysis?", available online at https://www.ibm.com/think/topics/sentiment-analysis (last accessed on 16 March 2025).

[1919] Topic modeling is a technique used in information retrieval to automatically identify and organize the hidden themes within a collection of textual documents. It provides a way to understand and summarize large amounts of text and is widely used in natural language processing tasks. See Aly

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provide valuable insights into public discussions and perceptions about the services, goods, and support provided by regulated entities. Through combining these data sets, the monitoring capabilities of these financial regulators are greatly enhanced by enabling them to process and analyse large volumes of data effectively.[1920]

In this way, the regulators consider the concerns and unhappiness that are expressed informally through these public channels and combine them to gain a more immediate and candid view of consumer sentiments. This helps the regulators to have a proactive approach to supervision in which potential issues are identified and addressed with financial products and services, instead of relying solely on formal complaint channels, which may only capture feedback after an issue has escalated. In this way, consumer harm is minimised. It is submitted that this type of Suptech[1921] use will be beneficial in the approach proposed in this thesis to licencing and supervising of CASPS across multiple jurisdictions because it will allow the panel of regulators to act swiftly and pro-actively to address emerging problems, enhancing consumer protection and maintaining the integrity of the financial system. This Suptech tool, after gathering, correlating, and categorising the data, uses AI methodologies to infer sentiment and topics, whereafter, the data is then systematically organised in a centralised database system, ensuring secure and efficient storage. The tool uses an advanced filtering system on the visualised data and the underlying raw data. As pointed out by the University of Cambridge, this granular data enables supervisors to focus on particular areas of interest or concern.[1922] This Suptech tool offers an advanced level of automation that adeptly adjusts to the dynamic nature of web platforms, which is crucial, as it alleviates the burden on supervisors of constantly maintaining and updating data collection mechanisms.[1923]

Abdelrazek, Yomna Eid, Eman Gawish, Walaa Medhat, Ahmed Hassan, Topic modeling algorithms and applications: A survey, Information Systems, Volume 112, 2023, 102131, ISSN 0306-4379, https://doi.org/10.1016/j.is.2022.102131 (last accessed on 16 March 2025).

[1920] University of Cambridge - Suptech Report 2023, Page 107.

[1921] See Chapter 1,1.2.7.

[1922] University of Cambridge - Suptech Report 2023, Page 107.

[1923] University of Cambridge - Suptech Report 2023, Page 107.

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Some of the other jurisdictions that are exploring or using Suptech tools with functionalities that are relevant to this research are the Abu Dabi Global Markets[1924] and the Federal Reserve Bank of Boston.[1925] The tools that these jurisdictions are exploring or using will, therefore, be considered here before details on specific techniques that could be used in respect of the research, are discussed. The Financial Services Regulatory Authority[1926] in the Abu Dhabi Global Markets stipulated in their *RegTech Report* that was issued in 2021 that it has become necessary for the Financial Regulators to adopt and consume technology solutions that augment and improve their own capabilities to become more proactive in detecting and mitigating novel risks or similar risks that are exacerbated by the use of new delivery systems and other technologies in a globally connected digital financial system.[1927] There are several use cases that the Financial Services Regulatory Authority explored or employed, including the use of digital regulation, which relies on AI to provide regulated financial institutions with a more accessible and contextual understanding of the financial sector legislation under its administration.[1928]

[1924] Abu Dhabi Global Market, a financial zone located in the heart of Abu Dhabi city, provides a superior and regulated environment. See Ministry of Economy – UAE,"Abu Dhabi Global Market | Ministry of Economy – UAE", available online at https://www.moec.gov.ae/en/-/abu-dhabi-global-market?p_l_back_url=%2Fen%2Ffree-zones%3Fdelta%3D40%26start%3D1 (last accessed on 16 March 2025).

[1925] As part of the Central bank of the United States, the Boston Fed works to promote sound growth and financial stability in New England and the nation. See Federal Reserve Bank of Boston, "About Us", available online at https://www.bostonfed.org/about-the-boston-fed.aspx (last accessed on 16 March 2025).

[1926] ADGM's Financial Services Regulatory Authority was established to advocate a progressive financial services environment and uphold the integrity of the whole international financial centre by managing any potential risk exposure and undesirable impacts. See ADGM," Authorities/Supporting and facilitating all financial activities in ADGM" available online at https://www.adgm.com/financial-services-regulatory-authority#:~:text=ADGM's%20Financial%20Services%20Regulatory%20Authority,risk%20exposure%20and%20undesirable%20impacts. (last accessed on 14 September 2024).

[1927] Page 4, ADGM. "Powering The Future of Regulation - Use Cases of Regulatory Technology"(2021) available online at https://www.adgm.com/documents/publications/en/adgm-regtech-report.pdf (last accessed on 24 June 2024).

[1928] ADGM RegTech Report, Page 19.

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There are also use cases relating to Consumer Money Monitoring[1929], which enables a more real-time approach to verifying how financial institutions safeguard their consumers' money, and the FSRA Connect[1930], which implements a new digital workflow process to streamline the authorisation and supervision of firms and enforcement of breaches of regulations and rules. Further to this, the *RegTech Report* showcases a tool that monitors third-party providers of Fintech services and uses novel technologies to collect key regulatory statistics on a real-time and at-will basis. Lastly, the *RegTech Report* highlights a case study that enables trade finance by collaborating with international government agencies to facilitate the use of digital documents for trade finance.[1931] For the purposes of this research, not all of the case studies will be explored in detail, but only the ones where some elements of the use case could form part of tools that will eventually be proposed to give the panel of regulators a holistic and detailed view of the licenced entities under the trans-border CASP licence. The first use case to be explored hereinafter, due to its possible relevance to the proposals that will be made in this thesis, is the consumer money monitoring tool.[1932]

Some of the significant failures in the crypto asset market have made it clear that mismanagement and the misappropriation of consumer funds can pose a considerable risk and have the potential to result in disastrous consequences. FTX in the US is one of the largest crypto asset exchanges between the end of 2019 and the Spring of 2022 when it filed for Chapter Eleven bankruptcy.[1933] It was found that significant parts of consumer funds had been misappropriated.[1934] FTX reportedly lent over half of its

[1929] This is a solution allowing regulators to automatically monitor, flag and reconcile potential issues with how licenced firms manage and safeguard client money held in client accounts. See ADGM RegTech Report, Page 27.

[1930] FSRA Connect is financial regulatory platform to automate the underlying processes and procedures within the core areas of authorisation, supervision and enforcement. See ADGM RegTech Report, Page 39.

[1931] ADGM RegTech Report, Page 35.

[1932] ADGM RegTech Report, Page 27.

[1933] Chapter 11, Title 11, United States Code is a type of bankruptcy generally filed by businesses and involves a reorganization of their assets and debts under court supervision.

[1934] Advisense, S Fritz-Morgenthal,"FTX – A Case Study on Organizational Mis-Behaviour" (2023) available online at https://advisense.com/2023/11/28/ftx-a-case-study-on-organizational-mis-behaviour/ (last accessed on 24 June 2024).

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consumer funds to Alameda, a sister company, clearly indicating risky financial arrangements between FTX and Alameda. These arrangements put big question marks on this sister company's balance sheet, which seemed to consist of a large part of FTX's native token, FFT.[1935] The reference to FTX at this point in the thesis attempts to highlight the relevance of a consumer asset monitoring tool in supervising and monitoring CASPS.

The "consumer asset monitoring"-tool is a proactive solution that enables regulators to automatically monitor, flag, and reconcile potential issues with how licenced financial institutions manage and safeguard consumer money held in consumer accounts.[1936] The "proof of concept" was constructed by developing a dashboard that worked together with application programming interface technology to obtain data via an API call[1937] from the licenced financial institution's bank accounts. Because several of the financial institutions in the "proof of concept" development use Quickbooks[1938] as their accounting package, an integration was also built for Quickbooks, which automatically pulls information on consumer transactions as recorded by licenced institutions and matches this information against the corresponding records of consumers' money holdings. This was done to lessen the reporting burden on financial institutions while increasing the efficiency of reconciliation processes.[1939] This functionality means that the regulator using this supervisory tool would be able to compare the information that

[1935] FTT is FTX'S native utility token that offers holders access to features and services on the FTX trading platform. See Pontem Network, "An overview of FTX (FTT)", available online at https://pontem.network/posts/an-overview-of-ftx-ftt; Page 2, L W Cong, J Zheng, "The rise and fall of FTX", *International Journal of Law and Legal Studies ISSN 2736-1608 Vol. 11(2)*, pp. 001-003. June, 2023, available online at www.internationalscholarsjournals.org (last accessed on 16 March 2025).

[1936] ADGM RegTech Report, Page 27.

[1937] An API call is a request sent from one application to another to perform a specific action, like retrieving data or triggering a service. It's a way for different programs to interact and exchange information. See Getstream, "API Request - What is it and how does it work?", available online at https://getstream.io/glossary/api-request/ (last accessed on 27 April 2025).

[1938] QuickBooks is an accounting software package developed and marketed by Intuit. See Wise, P Kemenes, 2021," What is QuickBooks, and how does it work? Top guide" available online at https://wise.com/us/blog/what-is-quickbooks (last accessed on 15 September 2024).

[1939] ADGM RegTech Report, Page 28.

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was pulled from the financial institution via API call with the information in their internal accounting package.

Another functionality that was tested is an “issue management”-functionality allowing for manual flagging of discrepancies, which allows the financial institution to respond and clear up any uncertainty using the tool.[1940] The second of the tools that will be further discussed here is the work that was done by the Financial Services Regulatory Authority in Abu Dhabi Global Markets to monitor third parties.[1941] In the context of CASP monitoring and supervision, this type of tool could be of interest. Reliance on third parties takes on many forms in the crypto asset ecosystem. For instance, some CASPS delegate their cyber or operational processes to third parties. These types of outsourced services should be closely monitored since there have been many occasions where consumers were unable to access their holdings because of operational failures.[1942]

Some of the CASPS may not have the necessary capability to build their own tools and may build these applications that the consumer uses through the use of blockchain development outsourcing. Blockchain development outsourcing is the process of finding an external third-party agency to take on the development and management of your blockchain application or project. Outsourced blockchain development entails several processes outside of the ongoing management of the platform, such as implementing the right technology stack for applications, designing interfaces and the user experience, and determining any integration capabilities that may be required. Another impactful activity that is sometimes outsourced, is that some financial institutions outsource their digital asset services to sub-custodians, while others retain custody of consumers' assets themselves.[1943]

[1940] ADGM RegTech Report, Page 28.

[1941] ADGM RegTech Report, Page 30.

[1942] P Bains, A Ismail, F Melo, and N Sugimoto, International Monetary Fund, “Regulating the Crypto Ecosystem - The Case of Unbacked Crypto Assets”(2022) available online at https://www.imf.org/-/media/Files/Publications/FTN063/2022/English/FTNEA2022007.ashx (last accessed on 24 June 2024).

[1943] Fireblocks, “Digital Asset Custody 101: Guide to Self Custody, Wallet Options, and More”, available

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Suptech tools similar in nature to the functionalities of the tool described in the *RegTech Report*[1944] with respect to digital supervision could assist in mitigating the outsourcing risk. It is stipulated in the *RegTech Report* that the outsourced service providers in this ecosystem are technology-centric institutions with infrastructure capabilities that make using embedded supervision a viable option over traditional reporting processes to unlock efficiencies.[1945] However, considering the fast-paced and evolving ecosystem, period reporting is, in the writer's view, insufficient.

The periodic nature of traditional reporting requirements means that changes to CASPS operating conditions may go undetected for a prolonged period. With traditional reporting, if financial institutions experience a sudden decline in service utilisation or encounter repeated but non-severe incidents, the regulator may not become aware of these issues until the next reporting period. A vast number of resources is required to generate, analyse, and collate the reports, as crypto CASPS create a lot of data. How it was approached by the ADGM, according to the *RegTech Report,* is that an API specification was developed for reporting purposes. This specification was written in conformance with the OpenAPI 3.0[1946] specification, resulting in the creation of a machine-readable way to describe the required functionality that the outsourced partners are expected to implement. In the crypto

online at https://www.fireblocks.com/digital-asset-custody/ (last accessed on 21 March 2025).

[1944] ADGM RegTech Report, "Powering the future of regulation – use cases of regulatory technology",(2021), available online at https://assets.adgm.com/download/assets/ADGM+RegTech+Report.pdf/0f9a9112586911ef9707466f46fb6a94?la=en&hash=3BD959786216DE48DFEA097813BED096 (last accessed on 22 March 2025).

[1945] ADGM RegTech Report – Page 31.

[1946] OpenAPI 3.0 is an open specification for defining REST APIs. The OpenAPI 3.0 Specification (OAS) defines a standard, language-agnostic interface to RESTful APIs, which allows both humans and computers to discover and understand the capabilities of the service without access to source code, documentation, or through network traffic inspection. When properly defined, a consumer can understand and interact with the remote service with a minimal amount of implementation logic. See IBM,"OpenAPI 3.0", available online at https://www.ibm.com/docs/en/app-connect/13.0?topic=apis-openapi-30 (last accessed on 21 March 2025).

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asset ecosystem, technology companies would be able to implement the specifications of the API quickly and efficiently.[1947]

Stepping to the next relevant use case of supervisory technology, in 2019, the Federal Reserve Bank of Boston[1948] explored a new use case for embedded supervision in the form of supervisory nodes and consequently published a White Paper titled "*Beyond Theory: Getting Practical With Blockchain - Boston Fed Learns by Doing With Blockchain Technology*".[1949] Understanding that regulators need to adapt, the Federal Reserve Bank of Boston investigated what could be learned from developing a rich set of capabilities for the supervisor peer subscribed to each of the channels in their simulated network. The purpose of the exploration was to uncover what blockchain technology[1950] and smart contract logic, possibly coupled with AI and ML, could accomplish in terms of the supervisor or regulator's role and possibly other roles such as an auditor, payments network rule-enforcer, or data reporting entity.[1951] Some questions were posed in this exploration, for instance: what business functions (audit, regulatory supervisor, payment network rule-enforcer) could supervisory nodes perform?[1952] Also, when multiple blockchain platforms are utilised for a given business process (e.g., delivery versus payment, or DvP), what impact does this have on the supervisory node(s) architecture and performance?[1953] In this White Paper, it is clear that the discussion on supervisory nodes was still in the nascent stages at the time of publication. Further research on supervisory nodes was also undertaken in 2022,

[1947] ADGM RegTech Report – Page 33.

[1948] Federal Reserve Bank of Boston, White Paper, Page 21, In the White Paper, the Federal Reserve Bank of Boston explained why they had interest in pursuing this work, stated that they "believe continued experimentation is essential and can contribute to the continued maturing of the platforms", they further also expressed that they "are interested in exploring the capabilities of a supervisory node".

[1949] Federal Reserve Bank of Boston, "Beyond Theory: Getting Practical With Blockchain Boston Fed Learns by Doing With Blockchain Technology" (2019), available online at https://www.bostonfed.org/publications/Fintech/beyond-theory-getting-practical-with-blockchain/a-new-use-case-a-supervisory-node.aspx (last accessed on 25 June 2024).

[1950] See Chapter 1,1.1.

[1951] Federal Reserve Bank of Boston, White Paper, Page 19.

[1952] Federal Reserve Bank of Boston, White Paper, Page 19.

[1953] Federal Reserve Bank of Boston, White Paper, Page 19.

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where governing blockchain by a blockchain regulatory system[1954] was analysed.[1955] This paper, titled "*PoEC: A Cross-Blockchain Consensus Mechanism for Governing Blockchain by Blockchain",* proved that the method used could provide a feasible cross-blockchain governance scheme for the field of blockchain governance without losing the efficiencies of the blockchain consensus mechanism.[1956]

To further highlight some of the projects in respect of supervisory technology and to bring to the forefront for the reader some of the exciting applications that could form part of the supervisory arsenal for a panel of regulators supervising the entities licenced to conduct business in multiple jurisdictions, some of the concluded and ongoing projects driven in the Innovation Hub[1957] of the BIS[1958] are now considered. The first project to be considered from the BIS is *Ellipse*, a regulatory reporting and data analytics platform that was concluded in March 2022.[1959] In essence, what the project *Ellipse* does, is explore how technology solutions could enable supervision to

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[1954] Refers to transforming the blockchain governance scheme into the code-based rule paradigm in the blockchain network with the help of consensus mechanism, smart contract, incentive mechanism and other key blockchain technologies, to coordinate the legitimate interest demands of non-specific subjects. See J Cheng, Y Zhang, Y Yuan, H Li, X Tang, V Sheng and G Hu,"PoEC: A Cross-Blockchain Consensus Mechanism for Governing Blockchain by Blockchain",DOI:10.32604/cmc.2022.026437, available online at https://www.techscience.com/cmc/v73n1/47783/html (last accessed on 21 March 2025).

[1955] J Cheng, Y Zhang, Y Yuan, H Li, X Tang, V Sheng and G Hu,"PoEC: A Cross-Blockchain Consensus Mechanism for Governing Blockchain by Blockchain",DOI:10.32604/cmc.2022.026437, available online at https://www.techscience.com/cmc/v73n1/47783/html (last accessed on 21 March 2025).

[1956] Page 1, Abstract, PoEC: A Cross-Blockchain Consensus Mechanism for Governing Blockchain by Blockchain.

[1957] The Bank of International Settlement (BIS) Innovation Hub develops public goods in the technology space to support central banks and improve the functioning of the financial system. We have centres around the world and a global network of central bank experts on innovation. See BIS, "About the BIS Innovation Hub", 2024, available online at https://www.bis.org/about/bisih/about.htm (last accessed on 14 September 2024).

[1958] See Chapter 2, 2.6.1.

[1959] BIS Innovation Hub Projects, " Ellipse: regulatory reporting and data analytics platform" (2022) available online at https://www.bis.org/about/bisih/projects.htm?m=268 (last accessed on 08 July 2024).

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be more forward-looking, insights-based, and data-driven by using an integrated regulatory data and analytics platform to achieve this state. This analytics platform utilises two types of data sets, one being structured data and the other in the form of unstructured data.[1960] These data sets are then combined, and with the use of integrated data sources, the supervisors using this tool are provided with early warning indicators, analytics, as well as prudential metrics.[1961] Describing the project, Ross Leckow, the then Acting Head of the BIS Innovation Hub, stated the following:

> "Project Ellipse shows how authorities could use a single platform for "on demand" access to timely and integrated sources of data to help support and inform their supervisory assessments. This project showcases our strong partnership and collaboration with the Monetary Authority of Singapore and we wish to also thank our project partners at the Bank of England, the International Swaps and Derivatives Association and Financial Network Analytics."[1962]

The report published by the BIS on project *Ellipse* explains regulators' challenges with regulatory data in the digital age.[1963] These challenges include regulatory reporting, incorporating other sources of data, and the rapid development of data (the so-called "Red Queen effect").[1964] Project *Ellipse* had two phases, the first phase involved

[1960] Structured data includes mainly text, these data are easily processed. These data are easily entered, stored and analyzed. Unstructured data includes videos, images, and audios. Unstructured data is not suitable for a relational data base and not based on Schema. See Praveen, Shagufta & Chandra, Umesh. (2020). "Influence of Structured, Semi- Structured, Unstructured data on various data models". *International Journal of Scientific and Engineering Research*. 8. 67-69. (last accessed on 21 March 2025).

[1961] BIS, "Project Ellipse: an integrated regulatory data and analytics platform" (2022) available online at https://www.bis.org/publ/othp48.htm (last accessed on 08 July 2024).

[1962] BIS, "Project Ellipse: an integrated regulatory data and analytics platform" (2022), Foreword, Page 1, available online at https://www.bis.org/publ/othp48.htm (last accessed on 08 July 2024).

[1963] BIS Innovation Hub Projects, " Ellipse: regulatory reporting and data analytics platform" (2022), Page 11, available online at https://www.bis.org/about/bisih/projects.htm?m=268 (last accessed on 08 July 2024).

[1964] The red queen effect is the need to continually adapt and evolve to maintain relevance in an ever-changing environment. See Kumar, S, (2023). "The The Red Queen Effect and How to Evade the Red Queen Effect by using Generative AI: Preparing Companies for Industry 5.0". *DME Journal of Management*, 4(02), 44–53. https://doi.org/10.53361/dmejm.v4i02.05 (last accessed on 14

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obtaining granular data, common data models, and machine-executable reporting, and the second phase involved integrating data and analytics onto one platform.[1965] The first phase had a key component in the form of a system for the digitally-enabled collection and processing of granular and standardised data.[1966] For the project to be successful, it should provide data that is consistently understood by stakeholders, can be repurposed for different use cases, and is represented in a way that allows programmable code to reference that data to generate reporting of regulatory metrics.[1967]

With respect to the challenges mentioned in the previous paragraph, project *Ellipse* explored several solutions. The first of these was that the collection of granular data from reporting entities could replace the need for authorities to request information using templates. From the granular data extracted, some supervisory metrics could be derived. This would be done instead of requiring reporting entities to aggregate the required data prior to submission. The second solution explored in this project involved standard data models to address some of the challenges. Differences in the description of data for similar products and transactions across banks can be addressed using data standards and common data models. This is what is needed to collect granular data from regulated institutions, as the systems development requires a common understanding of data and comparative analysis, which can only be successful if the data provided is based on common sense.[1968]

The report on project *Ellipse* points out that once common standards have been developed, and data have been collected on that basis, supervisory metrics could then be derived using programmable rules that reference machine-readable and machine-executable standard data models.[1969] To combat the challenges emanating from the rapidly evolving nature of the landscape, a solution explored in this project was real-

September 2024).

[1965] Project Ellipse, An integrated regulatory data and analytics platform, March 2022, Page 7.

[1966] Project Ellipse, An integrated regulatory data and analytics platform, March 2022, Page 20.

[1967] Project Ellipse, An integrated regulatory data and analytics platform, March 2022, Page 52.

[1968] Project Ellipse, An integrated regulatory data and analytics platform, March 2022, Page 15.

[1969] Project Ellipse, An integrated regulatory data and analytics platform, March 2022, Page 12.

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time information uploads. The project *Ellipse* report indicates that real-time insights using advanced analytics could be derived from large volumes of unstructured data that would supplement the granular reporting available.[1970] This would provide supervisors with additional indicators and proactive red flag triggers of any at-risk exposures in regulated entities. The last solution explored was the integration of structured and unstructured data. This solution aimed to reduce the manual processing of screening unstructured data and also enables a holistic view by using advanced analytics, such as AI and ML, to make risk associations and consider sentiment, alerting supervisors in real-time of matters that may require further investigation.[1971]

The primary objective of project *Ellipse* is to explore and demonstrate how an integrated data and analytics platform can enable supervisors to digitally extract, access, and analyse large and diverse sources of real-time data relevant to current events. Such a solution, which incorporates real-time data and sets red flag triggers, would be particularly beneficial for supervising a CASP operating in multiple jurisdictions under a single licence. The project *Ellipse* report indicates that this Suptech will reduce the resource burden of scanning and monitoring unstructured data manually.[1972] For this type of solution to be implemented in the proposed framework, it is submitted, that it is evident from project *Ellipse*, that the regulators of the different jurisdictions in Africa will need to participate in converging on a common solution and for convergence on standard data inputs, data standardisation, and information sharing to support innovation while balancing this with the need to manage risks.[1973] One functionality explored in this project that the writer wanted to highlight due to its potential importance in supervising multi-jurisdictional CASPS, is the mapping of exposures to entities and networks.

It is submitted that this functionality can substantially reduce the burden placed on supervisors to find and link this information manually. If the Suptech tools could identify high risks materialising pro-actively through predictive analysis, this would be most

[1970] Project Ellipse, An integrated regulatory data and analytics platform, March 2022, Page 15.

[1971] Project Ellipse, An integrated regulatory data and analytics platform, March 2022, Page 2.

[1972] Project Ellipse, An integrated regulatory data and analytics platform, March 2022, Page 15.

[1973] Project Ellipse, An integrated regulatory data and analytics platform, March 2022, Page 17.

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helpful in ensuring timely interventions by the regulator. It is submitted that the panel of regulators could determine a list of risk indicators that warrant great attention if triggered, and set these as red flag triggers. When these triggers are activated, the regulators could then click on an exposure or select the CASP to drill down further into this entity. Visualisation mapping tools could be enabled to assist the supervisors. As with any type of Suptech that can be used by regulators, one key operational consideration is the security of the application or prototype, given that supervisory data can be sensitive. To address this, a modular user authentication system[1974] was developed in project *Ellipse*, which could be integrated with regulated entities. It is further suggested that only participating regulators should be able to access any Suptech solutions using the proposed supervisory approach.

It is submitted that the panel of regulators' integration of innovative technologies, as will be proposed in this thesis, is crucial to implementing more effective and adaptable supervisory solutions regarding the proposed transborder licence. Instead of manual oversight, which is reactive, periodic, and insufficient, it is proposed that the panel of regulators leverage advanced technologies to automate and optimise the regulatory process. It is submitted that five main principles, as elaborated hereinafter, should drive the implementation of the supervisory technology to ensure its effectiveness in this proposed framework.[1975]

The first of these principles involves having a comprehensive supervisory technology strategy that encompasses not only the development of supervisory technology but also its deployment, user training, and integration into supervisory systems, which is crucial. The second principle ensuring effectiveness, is making sure that the

[1974] The aim of authentication systems is to guarantee that an entity attempting to access protected resources is genuine. Mohammadreza Hazhirpasand Barkadehi, Mehrbaksh Nilashi, Othman Ibrahim, Ali Zakeri Fardi, Sarminah Samad, Authentication systems: A literature review and classification, Telematics and Informatics, Volume 35, Issue 5, 2018, Pages 1491-1511, ISSN 0736-5853, https://doi.org/10.1016/j.tele.2018.03.018.(last accessed on 21 March 2025).

[1975] BankIQ," Comprehensive Guide to Suptech: Supervisory Technology in Financial Regulation"(2024), available online at https://bankiq.co/comprehensive-guide-to-Suptech-supervisory-technology-in-financial-regulation/ (last accessed on 17 August 2024).

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supervisory technology addresses the “pain points” for the supervisor. Suptech tools should naturally fit into supervisory processes and address specific needs rather than adding unnecessary steps. The third principle pertains to integration. It is submitted that these supervisory tools should be seamlessly integrated into existing supervision systems to ensure smooth data and application usage. The fourth principle, which is a fundamental principle, is the aspect of quality data. Access to high-quality, granular data is absolutely essential for the effective use of Suptech tools. It is submitted that enhancing data collection practices, particularly for off-chain data, is a prerequisite for the effective use of Suptech tools where blockchain technology is being employed by the regulated entity. This can be achieved by developing granular questions that serve as risk indicators, developed as standalone and in a combined fashion are developed. The last of the principles is user accessibility and confidence. Supervisory tools should have user-friendly interfaces and clear objectives to foster user confidence and ease of use.[1976]

Before proposing supervisory tools to proactively manage risks associated with transborder licences, it is essential to first identify potential risks inherent in utilising these tools within a specific supervisory framework. Awareness of these risks is crucial for effective consideration and implementation. One of the main risks associated with using supervisory tools and these technologies is the risk to data privacy and data security.[1977] Privacy laws and regulations must be considered to ensure secure data access, and sufficient protection must be employed to ensure safekeeping. There are also some risks that present regulatory and legal challenges. There are some significant challenges during the technological transition from traditional supervision to technology-enabled supervision that arise in the adoption of a Suptech solution. As pointed out by Brodie, these include data quality, resourcing, and compatibility with legacy systems.[1978] Moreover, non-communication across stakeholders creates a

[1976] BankIQ, Chapter 1.

[1977] Large-scale data collection and analysis increase the risk of data breaches, and how to strike a balance between improving regulatory effectiveness and protecting personal privacy has become a key issue. See Xia, W. (2024) Challenges and Innovations of SupTech on Traditional Financial Regulatory Laws. Beijing Law Review, 15, 2487-2497. doi: 10.4236/blr.2024.154136. (last accessed on 21 March 2025).

[1978] From the perspective of the Information Systems (IS) scholars, a Legacy System is defined as any

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significant obstacle to effective Suptech implementation, leading to other challenges. The last of the risks transpires in terms of technical issues in Suptech, including cyber, dependencies on third-party systems, data localisation issues (cross-border payment risks), algorithm and data quality concerns, and mishaps in tool design and outputs.[1979]

What is proposed in this thesis in terms of embedded supervision concerning CASPS, is that a requirement to conduct business in multiple countries under the trans-border licence should be that the crypto asset services integrate with the panel of regulators through API and enable the pulling of data in real-time. The integration should consist of three elements, one being market surveillance and conduct, the next being AML/CFT, and lastly, prudentially focused. In terms of Suptech in market conduct, the World Bank has highlighted that effective and efficient market conduct supervision is critical to safeguarding financial consumers to ensure that they are sheltered from unfair business practices and offered clear and appropriate information when they purchase or invest in crypto assets.[1980] For a regulator to effectively supervise a CASP from a market conduct perspective, it would entail that the regulator must collect a wide variety of data from a diversity of data sources and then perform complex qualitative analyses on this large amount of data. These challenges, amongst others, are where using Suptech solutions can help increase the efficiency and effectiveness of the regulator's supervisory activities.[1981]

It is further submitted that incorporating AI capabilities in these Suptech tools can increase efficiency and effectiveness in the market conduct supervision of the CASPS as Brown illuminates that AI can imitate human cognitive abilities, like thinking, through pure logical reasoning by using algorithms and neural networks, including automating

information system that significantly resists changes and modifications. See Brodie M.L. and Stonebraker, M., 1995," Migrating Legacy Systems", Morgan Kaufmann Publ., San Francisco. (last accessed on 21 March 2025).

[1979] BankIQ, Chapter 6.

[1980] WorldBank, "Discussion Notes - From Spreadsheets to Suptech Technology Solutions for Market Conduct Supervision"(2018) available online at https://documents1.worldbank.org/curated/ru/612021529953613035/pdf/127577-REVISED-Suptech-Technology-Solutions-for-Market-Conduct-Supervision.pdf (last accessed on 19 August 2024).

[1981] WorldBank, Discussion notes, Page 7.

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the process of discovering and testing hypotheses and extracting insights from data.[1982] In the view of the writer, what could be focused on with respect to a Suptech tool for market conduct purposes in respect of supervising the proposed trans-border regulatory licence, is automated data collection to reduce the duplication of manual efforts across the different countries if national approaches were to be followed and to use a "data pull" system to improve the timeliness, scope, and granularity of data collected from the CASPS.[1983] Following the data collection process by pulling raw data from the CASPS, AI tools can be used to provide improved data analytics and set out trigger alerts for potential harm to consumers.

Here, AI will be used to analyse the entire dataset and uncover patterns and useful insights for the panel of regulators overseeing this licenced entity operating under the transborder licence. AI will be used to help with the identification of outliers and anomalies, the identification of patterns and trends (within and across CASPS), and enable the creation of early warning indicators or red flag triggers, network analysis, and checks on the quality of the data reported by the CASPS. It is submitted that, for this to work, it is essential that a reporting data set is developed that is granular and detailed enough to inform the data that the CASP must configure that will be pulled as, and when, the panel of regulators wishes to extract the market conduct data.[1984]

This reporting data set, it is suggested, should firstly make provision for extracting data that inform risk levels in respect of conflict of interest and governance structural risk to confirm that there is indeed meaningful separation between potentially conflicted business lines and other risks that could arise when the CASP is a multifunction

[1982] The term artificial intelligence is used broadly in this context and covers such subfields as machine learning and natural language processing. See Brown S, MIT Management Sloan School,2021, "Machine learning, explained" available online at https://mitsloan.mit.edu/ideas-made-to-matter/machine-learning-explained (last accessed on 19 August 2024).

[1983] WorldBank, Discussion notes, Page 10.

[1984] Toronto Centre," Supervisory Implications Of Artificial Intelligence And Machine Learning", (2022) available online at https://www.torontocentre.org/videos/Supervisory_Implications_of_AI_and_ML_Updated_Links.pdf (last accessed on 20 August 2024).

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intermediary in its construct.[1985] As observed by the FSB, multi-function intermediaries typically combine many services, which may include exchange, brokerage, dealing, market-making, custody, clearing, and asset management activities; issuing, promoting, and distributing crypto assets. It is explained by the FSB that combining some functions poses additional risks originating from mutual reinforcement and interaction of individual risks. This combination of functions may also give rise to conflicts of interest.

Without appropriate controls, such as when entities are non-compliant with existing requirements or there is a lack of comprehensive regulation or legal segregation of certain functions, crypto-asset service providers that combine certain functions could become key central points for amplifying and transmitting risks.[1986] Data points to highlight some of the conflict of interest risks with respect to relationships[1987] with connected persons can be monitored through analysis of information that can be pulled from many areas of a CASP. Details such as telephone numbers; addresses; company registration numbers; bank account numbers; and contact emails can be extracted from a number of sources, such as employee and supplier lists, purchase orders, and

[1985] Multifunction crypto asset intermediaries refer to individual firms, or groups of affiliated firms, that offer combinations of crypto asset services, products, and functions that are typically conducted by separate legal entities in traditional finance. See Financial Stability Board,2023, "The Financial Stability Implications of Multifunction Crypto asset Intermediaries" available online at https://www.fsb.org/wp-content/uploads/P281123.pdf (last accessed on 20 August 2024).

[1986] Financial Stability Board, "The Financial Stability Implications of Multifunction Crypto asset Intermediaries",(2023) available online at https://www.fsb.org/wp-content/uploads/P281123.pdf (last accessed on 20 August 2024).

[1987] Considerations to determine possible conflicted relationships include whether the person or entity; holds shares, tokens (including governance tokens), other ownership rights or membership in the CASP;holds debt instruments of or has other debt arrangements with that person, body or entity;has any form of contractual arrangements, such as management contracts, service contracts, delegation or outsourcing contract or intellectual property licences, with that person, body or entity. See Article 3, European Banking Authority, Final Report Draft Regulatory Technical Standards specifying the requirements for policies and procedures on conflicts of interest for issuers of asset-referenced tokens under Article 32(5) of Regulation (EU) 2023/1114, (2023), available online at https://www.eba.europa.eu/sites/default/files/2024-06/8c8b0d34-5f61-49d6-88c3-01ea6b0c0649/Final%20report%20on%20draft%20RTS%20on%20conflicts%20of%20interest%20under%20MICAR.pdf (last accessed on 21 March 2025).

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banking information. Merging and analysing these together can reveal previously unidentified and undisclosed networks and links.[1988]

With respect to further market conduct risks, providing misleading information can lead to hardship for vulnerable consumers.[1989] In this regard, Blue *et al* remark that some crypto assets and related products are aggressively advertised to the public, using marketing material and other information that may be unclear, incomplete, inaccurate, or even purposefully misleading.[1990] For instance, advertisements via social media may be very short, with a focus on the potential gains but not the high risks involved.

Another market conduct risk to financial consumers pertains to the product complexity of certain crypto asset products. It is submitted that certain products that provide

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[1988] ControlRisks,"State of the art in conflicts of interest – using data to detect and de-conflict",(2022) available online at https://www.controlrisks.com/our-thinking/insights/state-of-the-art-in-conflicts-of-interest-using-data-to-detect-and-de-conflict?utm_referrer=https://www.google.com (last accessed on 20 August 2024).

[1989] Vulnerable clients in this context refer to clients who lack financial literacy, are susceptible to scams, or are disproportionately impacted by the volatility and risks inherent in the market, including those with low incomes and limited access to resources. Due to the complex construction of some of the crypto assets, for example, where the crypto asset represents ownership through complex structures, the rights and the enforceability of the rights may not be clear-cut. See Blue, Levon & Xing, Congcong & Pham, Thu. (2024). "Cryptocurrencies: Who is vulnerable and what are the vulnerabilities?". *Australian Journal of Social Issues*. 10.1002/ajs4.351 available online at https://onlinelibrary.wiley.com/doi/10.1002/ajs4.351 (last accessed on 23 March 2025).

[1990] The Financial Conduct Authority identified 3 common issues with cryptoasset financial promotions. These include:

(a) promotions making claims about the 'safety', 'security' or ease of using cryptoasset services without highlighting the risk involved;
(b) risk warnings not being visible enough due to small fonts, hard-to-read colouring or non-prominent positioning; and
(c) firms are failing to provide clients with adequate information on the risks associated to specific products being promoted.

See FCA, "FCA warns about common issues with crypto marketing",(2023), available online at https://www.fca.org.uk/news/statements/common-issues-crypto-marketing#:~:text=Since%208%20October%2C%20we%20have,without%20highlighting%20the%20risk%20involved (last accessed on 24 March 2025).

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exposure to crypto assets are very complex, sometimes with features that can increase the magnitude of losses in case of adverse price movements.[1991] These products, given their complexity, are evidently not suitable for many consumer segments. It is further submitted that extreme price movements also pose a significant risk. Some unbacked crypto assets are subject to sudden and extreme price movements and are speculative, because their price often relies solely on consumer demand (i.e., there may be no backing assets or other tangible value). In terms of risks that should be monitored through market surveillance, several examples of market manipulation[1992] can occur, some of which are similar to the manipulation practices seen in traditional finance, but may also involve new actors not present in traditional financial markets.

For instance, Maximal Extractable Value, (also referred to as MEV), refers to trading strategies that exploit the ability to decide which transactions go into a block. MEV is the maximum extractable value a blockchain miner or validator can obtain by reordering, censoring, or introducing its own transactions during the block production process.[1993] In other words, MEV refers to the maximum value that can be extracted from block production in excess of the standard block reward[1994] and gas fees[1995].

[1991] One example of this is crypto asset leverage trading, which, in essence, allows traders to borrow funds outside of their own funds, enabling them to control positions much larger than their initial investment. By increasing exposure to market price movements, traders can achieve higher potential gains, which also significantly increases the risk of losses. See Gemini, Cryptopedia,"Crypto Leverage Trading: What Is It, How It Works, and Strategies", available online at https://www.gemini.com/cryptopedia/crypto-leverage-trading (last accessed on 24 March 2025).

[1992] See Chapter 6,6.9.

[1993] Barczentewicz, Mikolaj and Sarch, Alex F. and Vasan, Natasha, "Blockchain Transaction Ordering as Market Manipulation" (February 3, 2023). (2023) 20 *Ohio State Technology Law Journal* 1-87, Available at SSRN: https://ssrn.com/abstract=4187752 or http://dx.doi.org/10.2139/ssrn.4187752 (last accessed on 24 March 2025).

[1994] The Bitcoin system uses block rewards in the form of new Bitcoins and transaction fees to engage miners in this transaction validation process. See Enchuan Shao, Danusha Rajapaksa, "Miner competition and transaction fees", *Journal of Economic Behavior & Organization*, Volume 227, 2024, 106736, ISSN 0167-2681, https://doi.org/10.1016/j.jebo.2024.106736 (last accessed on 24 March 2025).

[1995] Gas fees are transaction fees that are typically paid when a user initiates an action that is to be recorded on the blockchain. Such actions can range in complexity, from sending cryptocurrency to another party or using a dApp to perform more complicated actions such as borrowing and lending

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Initially introduced within the context of proof-of-work (PoW)[1996], this concept was initially labeled as “miner extractable value”, owing to miners’ authority over transaction incorporation, omission, and sequencing. For example, with Ethereum’s migration to proof-of-stake (PoS), these responsibilities have transitioned to validators, rendering mining obsolete within the Ethereum protocol.[1997] Another example is the “pump and dump” schemes. This refers to the artificial inflation of an asset's price, a practice that has been employed for many years in various markets. It involves a series of sales and purchases of a cryptocurrency to create the impression that the asset is increasing in value.[1998]

Those behind these “schemes” then sell the asset when their artificially raised price attracts buyers who have been duped into believing that the cryptocurrency in question is set to keep rising in value. The last example that is mentioned to provide some examples of manipulative practices, is called “whale wall spoofing” and “stop hunting”. The practice of whale wall spoofing was often used when Bitcoin was in its infancy. It involves an individual or organisation (“a whale”) placing a large order so that fake buy or sell walls are created in the order books of the CASPS, which can trick other parties into panic selling (as they fear that a particular asset is losing value) or rushing to buy (as they believe massive demand for an asset is pushing its value up). For example, a “whale” may set large sell orders, which in turn trick investors into panic selling. In “stop hunting”, a “whale” drives the price to where set stop-loss orders, which are designed

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or executing the terms of a smart contract. Depending on the consensus mechanism of the particular blockchain, these transaction fees serve to compensate network validators, which ensure the maximization of the probability that activity within the blockchain is recorded fairly and accurately. See Koutmos, Dimitrios. (2023). “Network Activity and Ethereum Gas Prices”. *Journal of Risk and Financial Management*. 16. 431. 10.3390/jrfm16100431 (last accessed on 24 March 2025).

1996 See Chapter 1, 1.2.4.

1997 J Galea, BCAS, (2023),”Does MEV fall within scope of MiCA’s Market Abuse provisions?”, available online at https://blog.bcas.io/does-mev-fall-within-scope-of-micas-market-abuse-provisions#:~:text=With%20Ethereum's%20migration%20to%20proof,to%20better%20capture%20this%20phenomenon (last accessed on 25 March 2025).

1998 Page 2, Hamrick, JT & Rouhi, Farhang & Mukherjee, Arghya & Feder, Amir & Gandal, Neil & Moore, Tyler & Vasek, Marie. (2018). “The Economics of Cryptocurrency Pump and Dump Schemes”. *SSRN Electronic Journal*. 10.2139/ssrn.3303365. (last accessed on 24 March 2025).

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to limit an investor's loss if an asset falls in value, are triggered. The resulting market volatility then enables assets to be bought at a lower price.[1999]

For market manipulation[2000] supervision, it is submitted that the panel of regulators in the proposed framework could leverage Suptech with AI capabilities to transform large datasets into usable patterns for detecting potential insider trading and market manipulation. For example, supervised learning ML tools analyse this data to produce signals of market manipulation. In this regard, the use of certain anomaly detection techniques has shown better results than others. One study titled "*Manipulation Detection in Crypto Currency Markets: An anomaly and change detection based approach*"[2001] developed an unsupervised anomaly[2002] detection tool, which in this particular study, outperformed a set of other methods deployed to detect anomalies in data extracted from crypto asset exchanges.[2003] In the study, the unsupervised

[1999] MerkleScience," Key Considerations for Crypto fraud detection and risk mitigation in APAC Region",(2024) available online at https://www.merklescience.com/crypto-fraud-detection-in-apac (last accessed on 20 August 2024).

[2000] Market manipulation in this context refers to trade based market manipulation not action based or information based market manipulation. See Marius-Christian Frunza, *Introduction to the Theories and Varieties of Modern Crime in Financial Markets, Academic Press*, 2016, Pages 111-121, ISBN 9780128012215 available online at https://doi.org/10.1016/B978-0-12-801221-5.00007-5 (last accessed on 15 September 2024).

[2001] Olaf Kampers, Abdulhakim Qahtan, Swati Mathur, and Yannis Velegrakis. 2022. Manipulation detection in cryptocurrency markets: an anomaly and change detection based approach. In Proceedings of the 37th ACM/SIGAPP Symposium on Applied Computing (SAC '22). Association for Computing Machinery, New York, NY, USA, 326–329. https://doi.org/10.1145/3477314.3507185 (last accessed on 24 March 2025).

[2002] Data anomalies refer to data instances or patterns that do not comply with the 'normal' behavior of the data. Anomalies can be categorized into Point anomaly, Contextual anomaly, and Collective anomalies. See Anomalo,2024," Data Anomaly: What Is It, Common Types and How to Identify Them" available online at https://www.anomalo.com/blog/data-anomaly-what-is-it-common-types-and-how-to-identify-them/ (last accessed on 15 September 2024).

[2003] Olaf Kampers, Abdulhakim Qahtan, Swati Mathur, and Yannis Velegrakis. 2022. *Manipulation detection in cryptocurrency markets: an anomaly and change detection based approach*. In Proceedings of the 37th ACM/SIGAPP Symposium on Applied Computing (SAC '22). Association for Computing Machinery, New York, NY, USA, 326–329 available online at https://doi.org/10.1145/3477314.3507185 (last accessed on 20 August 2024).

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anomaly detection tool first collected data from crypto asset exchanges using an application programming interface, and a set of statistical quantities was computed and stored in the form of a univariate time series.[2004] The tool then processes these time series in the form of "disjoint windows" (batches).[2005] The next step is to use an outlier detection model, then combine it with a statistical method that is based on estimating the probability density function[2006] of the data and an isolation-based approach, using isolation forests,[2007] is created and used to compute the outlier score of each sample in the batch.

If the anomaly rate increases significantly, it indicates a change in data distribution. A new model is then created using the latest data batch. This process ensures that the tool adapts to changes in the data over time. In this particular case study, the research team created and explored the anomaly detection tool, using a method called probability density function (PDF)[2008] to find unusual data points in the form of outliers. This method was found to be faster and more effective than other methods. In terms of PDF-based outlier detection, they used PDFs to identify outliers. This approach is

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[2004] A univariate time series is a sequence of measurements of a single variable recorded over time, often at regular intervals, used for forecasting or analysis of trends and patterns. See Penn State University," Applied time series Analysis", available online at https://online.stat.psu.edu/stat510/lesson/1/1.1#:~:text=A%20univariate%20time%20series%20is,and%20not%20necessarily%20identically%20distributed (last accessed on 24 March 2025).

[2005] Manipulation detection in cryptocurrency markets, Page 327.

[2006] A. Qahtan, X. Zhang, and S. Wang. 2012. Efficient Estimation of Dynamic Density Functions with an Application to Outlier Detection. CIKM (2012) available online at https://www.researchgate.net/publication/241279756_Efficient_estimation_of_dynamic_density_functions_with_an_application_to_outlier_detection (last accessed on 21 August 2024).

[2007] F.T. Liu and K.M. Ting. 2012. Isolation-based Anomaly Detection. TKDD (2012) available online at https://dl.acm.org/doi/abs/10.1145/2133360.2133363 (Last accessed on 21 August 2024).

[2008] In probability theory, a probability density function, density function, or density of an absolutely continuous random variable, is a function whose value at any given sample in the sample space can be interpreted as providing a relative likelihood that the value of the random variable would be equal to that sample. See okheef, Dalia. (2016). *Probability Density Function (PDF)*. 10.13140/RG.2.1.1688.9843 available online at https://www.researchgate.net/publication/305445674_Probability_Density_Function_PDF/link/578f665308ae35e97c427271/download?_tp=eyJjb250ZXh0Ijp7ImZpcnN0UGFnZSI6InB1YmxpY2F0aW9uIiwicGFnZSI6InB1YmxpY2F0aW9uIn19 (last accessed on 15 September 2024).

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efficient and accurate. To make the process quicker, they also used a technique called Kernel Density Estimation (KDE) -Track, which can efficiently estimate the density function with linear time complexity.[2009] It estimates the PDF of data points and uses simple math (linear interpolation) to fill in gaps between known points. For error estimation, they then calculated the possible error in the estimates to help distinguish between minor and significant outliers. This method allows them to quickly and accurately detect anomalies in cryptocurrency exchange data.[2010]

To conclude, this study on manipulation detection in crypto asset markets examined the application of ML and statistical forecasting methods to identify manipulations in the Bitcoin market. The key points included in this specific study are price estimation methods; time series forecasting; ML; and deep learning techniques were used to predict weekly and monthly Bitcoin price trends.[2011] Furthermore, in terms of reliability, the experiments were conducted in a minimally manipulation-free zone to ensure reliable results. The effect of sentiment analysis[2012] was also considered in this study, the social media posts' effects on prices were analysed using enhanced Iterative Semi-Supervised Feature Selection methods[2013], eliminating regressions in big data.[2014] The

[2009] KDE-Track estimates the density of spatiotemporal data streams. KDE-Track can efficiently estimate the density function with linear time complexity using interpolation on a kernel model, which is incrementally updated upon the arrival of new samples from the stream. See A. Qahtan, S. Wang and X. Zhang, "KDE-Track: An Efficient Dynamic Density Estimator for Data Streams (Extended Abstract)," 2018 IEEE 34th International Conference on Data Engineering (ICDE), Paris, France, 2018, pp. 1759-1760, doi: 10.1109/ICDE.2018.00237 available online at https://ieeexplore.ieee.org/document/8509458/authors#authors (last accessed on 14 September 2024).

[2010] Manipulation detection in cryptocurrency markets, Page 328.

[2011] Page 12, Akba F, IHSAN TM, Guzel MS, Askerzade I, (2021)," Manipulator Detection in Cryptocurrency Markets Based on Forecasting Anomalies" available online at https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=9502700 (last accessed on 24 March 2025).

[2012] Sentiment analysis is the process of analyzing large volumes of text to determine whether it expresses a positive, negative or neutral sentiment. See IBM, "What is sentiments analysis", available online at https://www.ibm.com/think/topics/sentiment-analysis (last accessed on 24 March 2025).

[2013] Iterative Semi-Supervised Feature Selection methods leverage both labeled and unlabeled data to iteratively refine feature selection, enhancing accuracy and reducing computational complexity. See Rostami, M., Berahmand, K. & Forouzandeh, S. A novel method of constrained feature selection by

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results or outcomes of this experiment showed that manipulators significantly influenced price trends during anomaly periods.[2015]

With respect to efficiency, the Iterative Semi-Supervised Feature Selection[2016] method outperformed deep learning alternatives in sentiment classification. From a performance perspective, the Support Vector Machine[2017] performed best with sentiment analysis and anomaly detection for identifying manipulation zones and potential manipulators. In terms of this study, titled "*Manipulator Detection in Cryptocurrency Markets Based on Forecasting Anomalies*"[2018], around 200 experiments were conducted, making this one of the most comprehensive studies on Bitcoin market manipulation detection.[2019] This study thus aimed to provide a roadmap for future research in this area.

Two approaches to detect and combat money laundering with respect to crypto assets are proposed from a technology perspective. The first requires the use of certain

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the measurement of pairwise constraints uncertainty. J Big Data 7, 83 (2020). https://doi.org/10.1186/s40537-020-00352-3 (last accessed on 25 March 2025).

2014 See Chapter 1, 1.2.1.

2015 Manipulation detection in cryptocurrency markets, Page 327.

2016 Akba, F., Medeni, I. T., Guzel, M. S., & Askerzade, I. (2020, February). Assessment of Iterative Semi-Supervised Feature Selection Learning for Sentiment Analyses: Digital Currency Markets. In 2020 IEEE 14th International Conference on Semantic Computing (ICSC) (pp. 459-463). IEEE, available online at https://www.researchgate.net/publication/338236378_Assessment_of_Iterative_Semi-Supervised_Feature_Selection_Learning_for_Sentiment_AnalysesDigital_Currency_Markets (last accessed on 22 August 2024).

2017 A support vector machine is a supervised machine learning algorithm that classifies data by finding an optimal line or hyperplane that maximizes the distance between each class in an N-dimensional space. See GeeksforGeeks,2024, "Support Vector Machine (SVM) Algorithm" available online at https://www.geeksforgeeks.org/support-vector-machine-algorithm/ (last accessed on 14 September 2024).

2018 Akba F, IHSAN TM, Guzel MS, Askerzade I, (2021)," Manipulator Detection in Cryptocurrency Markets
Based on Forecasting Anomalies" available online at https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=9502700 (last accessed on 24 March 2025).

2019 Page 12, Manipulator Detection in Cryptocurrency Markets.

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technologies to ensure adequate risk management. The other approach, as will be explained and detailed, focuses purely on embedded supervision techniques.[2020] The first approach that can be taken is to require the use of specialised KYC API[2021] tools. There is a variety of tools available using these technologies. How the KYC API, in essence, works is that it responds to input and searches for the data that the consumer provided, and then runs a variety of checks in relation to the data collected.[2022] There are several types of KYC APIs, each with its own set of validations that it runs, depending on the information input collected. The following types of KYC API's can be used: document verification APIs; or AML check APIs; Government KYC verification; biometric authentication; address verification tools; telephone number verification; or bank verification tools.[2023]

In respect of the proposed framework, it is recommended that it be made compulsory for the CASP licenced to conduct business in multiple jurisdictions to use the AML check API. For this reason, the other KYC APIs are not explored further. An AML check API is a technology-based tool that was created to help businesses meet their compliance obligations with respect to AML. The use of this API would help the CASP screen consumers against global watchlists, sanctions lists, and politically exposed person[2024] databases.[2025] It is submitted that this is a useful tool to apply during the

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[2020] See Chapter 1, 1.2.7.

[2021] A KYC (Know Your Client) API is a software tool that automates and streamlines the process of verifying client identities, ensuring compliance with anti-money laundering (AML) regulations, and enhancing security. See KYC AML Guide," KYC APIs: How They Can Transform the ID Verification Process", available online at https://kycaml.guide/blog/kyc-apis-how-they-can-transform-the-id-verification-process/#:~:text=A%20KYC%20(Know%20Your%20Client,data%20checks%20into%20business%20processes (last accessed on 24 March 2025).

[2022] Emmanuel Agwu, SmileID, "KYC APIs: Easiest Way Unlock Seamless AML Compliance in 2024", (2024), available online at https://usesmileid.com/blog/kyc-api (last accessed on 04 October 2024).

[2023] SmileID, Types of KYC API's.

[2024] Section 1 of the Financial Intelligence Centre Act, 2001 (Act No. 38 of 2001) defines two types of politically exposed persons, one being domestic politically exposed persons and foreign politically exposed persons. In terms of the FIC Act, a domestic politically exposed person is an individual who holds, including in an acting position for a period exceeding six months, or has held a prominent public function in the Republic, including those listed in Schedule 3A(a)(i) –(xiv). A foreign politically

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onboarding phase of the consumer journey buying crypto assets, where the AML check API would cross-reference the consumer's information with the lists mentioned. If the CASP successfully uses the tools, this will assist in compliance with FATF recommendations 12[2026] that deal with politically exposed persons. The use of external databases is recommended by the FATF, but they need to be combined with measuring other red flags and indicators for suspicion that can be used to assist in the detection of misuse of the financial systems.[2027] It is submitted that this AML check API can then be combined with an AML information widget,[2028], which showcases all information connected to the AML API request, including input data, potential matches, and a list of data sources.

The display, for example, can show the number of times the consumer has been screened, the number of matches against the consumer's name, and a list of sanction

exposed person is an individual who holds or has held, in any foreign country a prominent public function, including those listed in (a) – (f) in Schedule 3B.

[2025] SmileID, AML Check API's.

[2026] FATF Recommendation 12 deals with politically exposed persons and provides as follows:" Financial institutions should be required, in relation to foreign politically exposed persons (PEPs) (whether as client or beneficial owner), in addition to performing normal client due diligence measures, to: (a) have appropriate risk-management systems to determine whether the client or the beneficial owner is a politically exposed person; (b) obtain senior management approval for establishing (or continuing, for existing clients) such business relationships; (c) take reasonable measures to establish the source of wealth and source of funds; and (d) conduct enhanced ongoing monitoring of the business relationship. Financial institutions should be required to take reasonable measures to determine whether a client or beneficial owner is a domestic PEP or a person who is or has been entrusted with a prominent function by an international organisation. In cases of a higher risk business relationship with such persons, financial institutions should be required to apply the measures referred to in paragraphs (b), (c) and (d). The requirements for all types of PEP should also apply to family members or close associates of such PEPs."

[2027] Financial Action Task Force, "FATF Guidance: Politically Exposed Persons (Recommendations 12 and 22)" available online at https://www.fatf-gafi.org/en/publications/Fatfrecommendations/Peps-r12-r22.html (last accessed on 04 October 2024).

[2028] A widget is an element of a graphical user interface that displays information or provides a specific way for a user to interact with the operating system or an application. See Paul Kirvan, TechTarget, "What is a widget?", available online at https://www.techtarget.com/whatis/definition/widget#:~:text=In%20computing%2C%20a%20widget%20is,(OS)%20or%20an%20application (last accessed on 04 October 2024).

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sources.[2029] This type of technology is helpful for the CASP, but still requires manual AML reporting to the panel of regulators. For this reason, a further recommendation is to employ the use of Suptech[2030] tools as a panel of regulators overseeing the CASP that is licenced to conduct business in multiple jurisdictions. A tool that is used by some authorities is network analysis, which can be used to gauge the exposure of the CASP, and the panel of regulators can use this information during onsite inspections. One jurisdiction that applies this type of Suptech tool is the Monetary Authority of Singapore (MAS),[2031], which uses its surveillance capabilities to monitor AML risks. The network analysis conducted by the MAS identifies clusters of higher-risk activities for more intensive supervisory scrutiny and also performs analytics on the regulated entities' transactions to identify concerning flows warranting closer examination. The MAS uses blockchain data signals, in other words, on-chain data in real-time, and couples this with their statutory retrieved data to augment the data that has been collected from the regulated entities.[2032] It is submitted that this approach can enable the panel of regulators to proactively act on emerging risks and have timelier and more coordinated prioritisation of supervisory measures.

6.10 Recommendations and conclusion

This thesis has demonstrated that Africa, as a country, has the potential to become a globally recognised Fintech hub if it strengthens the local and regional ecosystem and makes conducting business easier on a multi-national level. This research also shows that a harmonised regulatory framework is one of the fundamental components for establishing a Fintech ecosystem with true depth capable of delivering notable achievements and scalability to bolster economic growth and deepen financial

[2029] Seon, "Knowledge Base - Data Enrichment: AML widget", (2023), available online at https://docs.seon.io/knowledge-base/data-enrichment/aml-widget#overview (last accessed on 04 October 2024).

[2030] See Chapter 1,1.2.7.

[2031] See Chapter 2, 2.2.4.

[2032] Rodrigo Coelho, Jonathan Fishman and Denise Garcia Ocampo, Financial Stability Institute, "FSI Insights on policy implementation No 31 - Supervising crypto assets for anti-money laundering",(2021), available online at https://www.bis.org/fsi/publ/insights31.pdf (last accessed on 04 October 2024).

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inclusion. The continent, in the writer's view, currently sits at the perfect and strategic juncture where it is possible to coordinate and collaborate to craft a bespoke regulatory framework on a continent-wide level to allow CASPS to conduct business in multiple African countries under one licence granted by a single coordinated panel of regulators' that will supervise the CASP.

The value this thesis aims to add is to initiate a conversation that could lead to discussions and potentially trigger action toward developing a continental-wide regulatory framework for CASPS in Africa. This framework would enable CASPS to scale and support innovation through a facilitative approach and a comprehensive framework that avoids duplicating requirements due to fragmentation and slight variations in approaches across jurisdictions, while still effectively mitigating risks. It is hoped that this thesis will open further discussions on how African jurisdictions can use embedded supervision and share data to become future-fit regulators who are able to effectively regulate emerging technologies and be more proactive in their approach and move away substantially from periodic manual reporting by CASPS.

As mentioned in Chapter One, this thesis did not aim to cover all the possible elements of a trans-border regulatory framework or cover all the existing embedded supervision tools being used or explored by regulators across the globe. It, however, considered some of the fundamental design elements on a principle basis and explored some of the novel and exciting technology-based tools that can be used, for example, through API integration and the use of supervisory or forensic nodes. The novelty in this thesis lies in the uniqueness of some of the approaches that are considered, for instance, using special drawing rights[2033] as an international reserve and by extensively using embedded supervision[2034] to centralise the supervision and monitoring through a panel of regulators instead of having varied and manual supervisory approaches on a national level. The novelty further lies in the level of technical detail that is considered with respect to a trans-border licence, although during the completion of the thesis,

[2033] See Chapter 6, 6.5.

[2034] See Chapter 1, 1.2.7.

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some recommendations have been made for such a "passporting" licence, no comprehensive proposals have been made that deal with the technical construct.

The developments on an international level in terms of the policy recommendations and guidelines that have been issued by international standard setters and bodies, for instance, the FSB, IOSCO, the IMF, BCBS, and FATF, have provided an imposing force to steer jurisdictions globally to align their regulatory frameworks and create a level playing field. This development makes the proposals in this thesis plausible, as it has been shown in Chapter Two of this thesis that the African countries that are members of these bodies are working towards the implementation of these policy recommendations and guidance[2035], and this brings the regulatory requirements in the regulatory frameworks much closer. For this reason, these policy recommendations and guidelines are suggested as a baseline for the proposed framework, specifically the *FSB High-level Recommendations for the Regulation, Supervision, and Oversight of Crypto-asset Activities and Markets,* as discussed in Chapter Two of this thesis, because they are high-level and flexible and can be accommodated in different types of frameworks and by authorities with different mandates.

Various channels are currently open to facilitate further discussions with respect to the proposed trans-border framework for CASPS, which was explored in this thesis. For instance, the African Continental Free Trade Area[2036] is a pinnacle of the development framework in Africa as it champions increased cooperation and integration of African countries and builds the rights and obligations under the *Constitutive Act of the African Union of 2000.*[2037] The proposed regulatory framework largely aligned with the

[2035] See Chapter 2, 2.3,2.4 and 2.5

[2036] The African Continental Free Trade Area (AfCFTA) is the world's largest free trade area, established to boost intra-African trade and create a single market for goods and services across the continent, encompassing 55 African Union member states. See African Union, "The African Continental Free Trade Area", available online at https://au.int/en/african-continental-free-trade-area (last accessed on 23 March 2025).

[2037] The Constitutive Act is determined to promote and protect human and peoples' rights, consolidate democratic institutions and culture, and to ensure good governance and the rule of law. It is further determined to take all necessary measures to strengthen our common institutions and provide them with the necessary powers and resources to enable them discharge their respective mandates

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objectives of the African Continental Free Trade Area for the economic integration of the African continent and a single market as set out in Article Three[2038] of the founding agreement, the *Constitutive Act of the African Union of 2000,* and can very much be a component in reaching these objectives. Further to this, the Committee of Insurance, Securities, and Non-banking Financial Authorities[2039] established in 1998 in Victoria Falls, Zimbabwe, pursuant to Article 2 of Annexure 10 of the *Protocol on Finance and*

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effectively. See Constitutive Act of the African Union of 2000, available online at https://au.int/sites/default/files/pages/34873-file-constitutiveact_en.pdf (last accessed on 23 March 2025).

[2038] Article 3 of the Constitutive Act of the African Union 2000 sets out the following objectives in Article 3: The objectives of the Union shall be to:
"(a)achieve greater unity and solidarity between the African countries and the peoples of Africa;
(b)defend the sovereignty, territorial integrity and independence of its Member States;
(c)accelerate the political and socio-economic integration of the continent;
(d)promote and defend African common positions on issues of interest to the continent and its peoples;
(e)encourage international cooperation, taking due account of the
(f)promote peace, security, and stability on the continent;
(g)promote democratic principles and institutions, popular participation and good governance;
(h)promote and protect human and peoples' rights in accordance with the African Charter on Human and Peoples' Rights and other relevant human rights instruments;
(i)establish the necessary conditions which enable the continent to play its rightful role in the global economy and in international negotiations;
(j)promote sustainable development at the economic, social and cultural levels as well as the integration of African economies;
(k)promote co-operation in all fields of human activity to raise the living standards of African peoples;
(l)coordinate and harmonize the policies between the existing and future Regional Economic Communities for the gradual attainment of the objectives of the Union;
(m)advance the development of the continent by promoting research in
(n)work with relevant international partners in the eradication of preventable diseases and the promotion of good health on the continent".

[2039] CISNA is part of the Directorate of Finance, Investment and Customs of the SADC Secretariat and reports to the SADC Committee of Ministers of Finance and Investment through the Committee of Senior Treasury Officials. The main mandate of CISNA is to ensure that the non-bank financial services regulatory frameworks within SADC member states are harmonised and comply with best international practices, standards and principles as set by the relevant international standard setting bodies. See Committee of Insurance, Securities and Non-Banking Financial Authorities, "About CISNA", available online at https://cisna.net/about-cisna/ (last accessed on 24 March 2025).

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Investment of the Southern African Development Community[2040] is also a suitable platform to further the conversation on this topic since they have as an objective, the harmonisation of regulatory frameworks of member countries together with the alignment to international steer by standard-setting bodies. It is submitted that the proposals in this thesis could help drive some of the objectives of the African Union.[2041] The African Union aims to promote Africa's growth and economic development by championing citizen inclusion and increased cooperation and integration of African states.[2042] In line with the African Union's *Agenda 2063* titled *"The Africa we want",*[2043], which aims to transform Africa into a global powerhouse of the future, the trans-border crypto asset licence regime proposed in this thesis can assist in bringing inclusive development.[2044] The goals and priority areas of *Agenda 2063* include transformed economies and inclusive growth, which, it is submitted, can be bolstered by creating a harmonised regulatory framework to help CASPS scale and provide innovative products.[2045]

Some of the key research objectives in this thesis, as set out in Chapter 1, 1.3, included considering the recommendations from relevant international bodies and standard setters concerning crypto assets. This objective underscored the importance of cooperation and collaboration as a common theme in the directives from these entities.

[2040] SADC," Protocol, Finance and Investment", available online at https://www.sadc.int/sites/default/files/2021-08/Protocol_on_Finance__Investment2006.pdf (last accessed on 23 March 2025).

[2041] The African Union (AU) is a continental union of 55 member states located on the African continent, established in 2002 as a successor to the Organisation of African Unity (OAU), with the goal of promoting unity, solidarity, and cooperation among African countries and peoples. See African Union, "About the African Union", available online at https://au.int/en/overview (last accessed on 23 March 2025).

[2042] African Union, "What we do", available online at https://au.int/en/au-nutshell (last accessed on 06 October 2024).

[2043] African Union, "Agenda 2063: The Africa We Want" available online at https://au.int/en/agenda2063/overview (last accessed on 06 October 2024).

[2044] African Union, "Agenda 2063: The Africa We Want" available online at https://au.int/en/agenda2063/overview (last accessed on 06 October 2024).

[2045] Page 15, African Union, "Agenda 2063.

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Another key objective was to analyse the MiCA framework developed for the regulation of crypto assets in Europe, since it is a first-of-its-kind framework from which lessons can be learned if a trans-border regulatory framework is considered for Africa as a whole. By exploring this continental-wide regulatory framework, the study intended to extract valuable lessons that could inform the regulatory approach with respect to the proposed framework for a trans-border licence in Africa.

Furthermore, the research analysed the Commonwealth *Model Law* on virtual assets, focusing on aspects that can facilitate a coordinated regulatory approach and the development of a trans-border crypto asset licence. This objective aimed to identify provisions within the *Model Law* that can be instrumental in creating a harmonised regulatory framework across African countries.

Before setting out the recommendations and the conclusion to the research, a brief summary of the findings from the key objectives of this thesis will be set out in the next subsections.

6.10.1 Findings from the recommendations from relevant international bodies and standard setters

In regard to the steer from the IMF, the *IMF's "Elements of Effective Policies for Crypto Assets"*[2046] was considered in Chapter Two, as it outlined nine elements to help countries develop a comprehensive, coordinated, and consistent policy response. The IMF's *"Elements of Effective Policies for Crypto Assets"* explains that authorities should endeavour to establish a joint monitoring framework that considers the cross-border nature of crypto assets because reliable and consistent data is important. The publication further explains that a fragmented approach to the categorisation can act as an inhibitor to the availability and reliability of data.[2047] Also, element 7 in this

[2046] See Chapter 2, 2.1.

[2047] IMF, Elements of effective policies for crypto assets, Page 29.

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publication states that due to the borderless nature of crypto assets and crypto asset markets, the effectiveness of national approaches to regulation is limited. What is suggested is that regulatory arbitrage is minimized through collaboration.[2048] These suggestions by the IMF align with the recommendations that follow in this thesis of approaching the regulation in a coordinated manner, where data is obtained collectively and analysed through embedded supervision techniques. Further to this, the IMF's *"Regulation of Crypto Assets-Note/19/03"*[2049] was analysed as this provides a guide to essential elements for building a regulatory framework, covering offering, trading, custody, and exposure to crypto assets. The elements considered in this publication by the IMF, form the foundation of the proposed joint framework for CASPS operating in multiple African countries as out in Chapter Six.

In terms of designing a framework, the IMF's 2022 Fintech Note, *"Regulating the Crypto Ecosystem: The Case of Unbacked Crypto Assets",*[2050] offers high-level guidance for designing a regulatory and supervisory approach. As discussed in Chapter Two, the publication sets out six steps for developing a consistent and comprehensive global regulatory framework, emphasising the importance of accurate, granular, and standardised data. Building these data sets through aligning terminology and using embedded supervision across African countries could improve monitoring and understanding. It was also further highlighted that collaboration is crucial, addressing potential arbitrage risks and resource scarcity through collective efforts.

In conclusion, the IMF's guidance highlights the importance of a coordinated, risk-based, and collaborative approach to regulating crypto assets. It is reflected in the key recommendations of this thesis, that by adopting these principles, countries can develop effective regulatory frameworks that support innovation while ensuring financial stability and consumer protection.

[2048] See Chapter 2, 2.3.2.

[2049] See Chapter 2, 2.1.

[2050] See Chapter 2, 2.1.

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In terms of the FSB, Chapter Two considered the *"High-level Recommendations for the Regulation, Supervision and Oversight of Crypto-asset Activities and Markets: Final Report"*,[2051] which emphasised the principle of "same activity, same risk, same regulation" This principle suggests that similar regulations should be applied to similar risks, which can be extended to a unified set of rules across African countries to avoid regulatory duplication. However, the conclusion drawn in respect of this approach was that the nuances introduced by different technologies suggest a more fitting term might be "same activity, comparable risk, and same regulatory outcome". In the publication of the FSB titled "*High-level Recommendations for the Regulation, Supervision and Oversight of Global Stablecoin Arrangements: Final Report"*[2052] that was discussed in Chapter Two, the FSB provides for additional recommendations over and above those applicable to crypto assets generally, thereby confirming the need for distinct regulatory treatment for Stablecoins. This is supported in this thesis through the proposal for a separate framework for Stablecoins and is also embedded in the recommendations that follow.

In conclusion, the FSB's recommendations underscore the necessity of a coordinated, risk-based, and collaborative approach to regulating crypto assets and Global Stablecoins. The recommendations made in this chapter of the thesis highlight that by adopting these principles, countries can develop effective regulatory frameworks that support innovation while ensuring financial stability and consumer protection. The recommendations made in this research propose that collectively, regulators can be more effective and more proactive in their responses as risks are monitored across the borders of the participating countries.

[2051] See Chapter 2, 2.4.2.

[2052] See Chapter 2, 2.4.2.

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6.10.2 Findings from the analyses of the Commonwealth Model Law on virtual assets

As explained in Chapter Four of this thesis, the *Model Law*[2053] aims to provide financial market actors with much-needed clarity while protecting consumers who use these financial products. Because the key focus of the *Model Law* is mitigating risks related to AML, CFT and CPF, ensuring that the FATF recommendations[2054] on new technologies are addressed, the usability in respect of the proposed trans-border framework, as suggested in this research, is limited.

Chapter Four highlighted that the *Model Law* is underpinned by five principles.[2055] The first principle emphasises a principle-based, outcome-focused, and flexible regulatory approach that supports positive innovation. The second principle is protection-focused, aiming to safeguard participants from counter-party risks and ensure market integrity, surveillance, and fair pricing. It also covers custody, clearing, conflict of interest disclosure, and business continuity planning. The third principle advocates for a balanced and proportionate framework, allowing nascent Fintech innovations to thrive while maintaining financial stability and integrity. The fourth principle calls for comprehensive frameworks that consider the entire crypto asset ecosystem and its participants. This fourth principle is adopted and echoed in the recommendations of this thesis, in which it is suggested that a panel of experts consider creating a comprehensive framework under a single licence that captures the participants in the ecosystem fully but supports innovation.

The fifth principle highlights the need for flexibility and adaptability, ensuring the framework is technology-neutral and customisable according to each member country's regulatory readiness and resources. Despite its limited scope, the *Model Law* recommends that member countries implement comprehensive and aligned frameworks, which is also supported in this thesis and in the recommendations.

[2053] See Chapter 1, 1.7.

[2054] See Chapter 2, 2.3.2.

[2055] See Chapter 4, 4.1.

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As explained in Chapter Four, the *Model Law's* relevance to this research lies in its potential to align regulatory frameworks across different jurisdictions, addressing risks effectively and avoiding regulatory arbitrage. Furthermore, the comparative countries discussed in the research, including Zambia, Mauritius, South Africa, Kenya, and Namibia, are all Commonwealth members, which could facilitate the proposed trans-border regulatory license. The recommendations in Chapter Six of this thesis build on the process that has been initiated through this *Model Law*, where common regulatory frameworks are being designed under AfCFTA.[2056] Lastly, the Model Law considered the FATF recommendations[2057] to ensure the mitigation of the AML/CFT risks that could materialise. An approach to align with the FATF recommendations has also been incorporated in the proposed framework for a trans-border licence in this thesis and reflects in the recommendation to make use of supervisory tools, for instance, a KYC API tool to manage AML/CFT risks.

6.10.3 Findings from the analyses of MiCA

In Chapter Five of this thesis, *MiCA* was considered in detail as it introduces a pioneering, uniform regulatory framework for crypto assets across multiple countries within the EU.[2058] *MiCA* represents a coordinated response based on common principles advocated by international standard-setting bodies, which is also what the recommendations that follow in Chapter Six propose for the African continent. As was discussed in Chapter Five, *MiCA* replaces the national frameworks in the EU, allowing CASPS authorised under *MiCA* to operate across all EU countries with a single "passport", thereby eliminating the need for separate authorisations.

The framework applies to a wide range of entities, both natural and legal, involved in crypto asset services and activities. Despite its comprehensive nature, it was noted in the analyses in Chapter Five of this thesis that *MiCA* excludes certain entities, such as

[2056] See Chapter 6, 6.10.

[2057] See Chapter 2, 2.3.2.

[2058] See Chapter 5, 5.1.

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NFTs, as well as tokens representing rights applicable to financial instruments, which are also excluded, as they fall under other EU legal frameworks.[2059]

In conclusion, *MiCA* provides a robust and adaptable regulatory framework for the crypto asset market within the EU, setting a global standard and fostering innovation while ensuring financial stability and consumer protection. From the research, it is clear that there is broad alignment between what is provided for in *MiCA* and the *FSB's High-level Recommendations for the Regulation, Supervision and Oversight of Crypto-asset Activities and Markets: Final report.*[2060] Although guidance can be taken, and foundational elements can be incorporated from MiCA into a proposed trans-border license framework for Africa, there are complexities in *MiCA* with respect to the supervision and enforcement under this framework.

The complexities arise from both the EBA, and the national competent authorities having the power to supervise and enforce. It is submitted that there are also complexities arising from defining the regulatory scope, particularly regarding which crypto assets and activities fall under *MiCA* and ensuring effective supervision and enforcement across different jurisdictions. The recommendations that follow take cognisance of the complexities under the EU structure and therefore propose a single panel of regulators, instead of various levels of regulators.

6.10.4 Recommendations

The following recommendations are made, emanating from the research that was considered and interrogated in the preceding chapters of this thesis.

(a) Recommendation One: It is first recommended that Africa set the objective of tackling the fragmentation of regulatory frameworks as a priority, thereby

[2059] See Chapter 5, 5.2.

[2060] See Chapter 2, 2.4.2.

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enabling the scaling of Fintechs, which can lead to broader participation in the financial sector.

(b) **Recommendation Two:** It is secondly recommended that a panel of experts be constituted at the African Continental Free Trade Area or African Union level to conduct further research and to explore this proposal further, and consider the elements of the proposed framework that were detailed in this thesis to establish a comprehensive framework that regulates the entire crypto asset ecosystem and its participants under a trans-border licence for Africa. This panel could further consider which countries within the African continent could be best suited to be part of a bilateral or multilateral pilot project to test the effectiveness of the regulatory framework in mitigating the risks and the purported benefits for the economy, and with respect to financial inclusion. Once the countries have been determined, a central panel of regulators can be created from the participating countries to regulate and enforce with respect to CASPS that was granted a licence to conduct business in the selected countries under a single licence.

(c) **Recommendation Three:** The panel referred to in recommendation two can determine which types of crypto assets should be tested in the pilot that could potentially provide the most significant benefit to the African continent. It is recommended that some of the use cases that could deepen financial inclusion and should be considered are Stablecoins, which can broaden global access to the pegged currency at a low cost. Stablecoins are estimated to account for approximately 43% of the Sub-Saharan African region's total transaction volume.[2061] The case for Stablecoins is also bolstered by the shortage of foreign exchange in many African countries. For instance, a US Dollar Stablecoin allows the facilitation of transactions that would otherwise have been stopped due to currency shortages.[2062] Another use case is real-time and cross-border

[2061] Chainanalysis, "2024 Geography of Cryptocurrency Report", (2024), available online at https://www.chainalysis.com/blog/subsaharan-africa-crypto-adoption-2024/#:~:text=%E2%80%9CIt's%20much%20faster%20and%20more,methods%20facilitated%20by%20fiat%20currency (last accessed on 22 October 2024).

[2062] Chainanalysis, "2024 Geography of Cryptocurrency Report", (2024).

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payments[2063], where the technology facilitates instant cross-border transactions[2064], like remittance and B2B, and real-time payroll, reducing costs.

Notably, the use cases of Stablecoins and cross-border payments are very much intertwined. The remittance of small payments across borders and the application of blockchain to trade finance, for example, could solve possible critical problems in Africa when combined with stable value tokens. In terms of remittance, this serves as a vital source for families to support their lives and livelihoods and is happening on a large magnitude as it was reported as recently as 2024 that remittance supports over 200 million Africans.[2065] It is submitted that digital remittances have helped lower costs in terms of low value or micropayments. However, it is still costly, and there is, therefore, a need to use distributed blockchain technology[2066] and crypto assets to lower costs and improve efficiency with respect to these remittances, which are vital for financial inclusion. It is estimated that the cost of sending digital remittances is around 5% of the amount sent, which harms the vulnerable consumer who may be sending several low-value remittances over the course of a month to his or her family members.[2067] Should the proposed use case be accepted and Stablecoins used in the implementation, it is recommended that a separate Stablecoin framework be established as set out in this thesis.

[2063] Cross-border payments, also known as international payments, are transactions where the sender and recipient are located in different countries and often use different currencies. These payments involve the transfer of funds across national borders, typically via financial institutions or other payment service providers. See Stripe, "Types of cross-border payments and who uses them", available online at https://stripe.com/resources/more/cross-border-payments-explained (last accessed on 28 April 2025).

[2064] Instant cross-border payments refer to the ability to transfer funds from one country to another with minimal delay, usually within seconds or minutes. This is a significant improvement over traditional international transfers, which can take several days. See SWIFT, "Instant payments", available online at https://www.swift.com/payments/instant-payments (last accessed on 28 April 2025).

[2065] Liwaaddine Fliss, United Nations, "The Transformative Power of Digital Remittances in Africa",(2024), available online at https://www.un.org/osaa/news/digital-remittances-africa (last accessed on 22 October 2024).

[2066] See Chapter 1,1.1.

[2067] Liwaaddine Fliss, United Nations, "Cost of remittance services".

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(d) Recommendation Four: It is proposed that the remittance process can be streamlined, fees reduced, and access broadened by leveraging the functionality of Stablecoins and their underlying technology to shorten transaction chains and expedite settlement. It is further submitted that using Stablecoins for remittance reduces currency risk when there is high volatility and depreciation of currency value in play. When the payment is sent through normal payment rails across borders, the payment passes through various banking systems and intermediaries, making the traditional payment rails expensive and slow compared to some of the crypto asset payment-like options. Microtransactions are provided through the use of crypto assets, which are transactions of a value below one hundred and fifty rands. For instance, doing these transactions on traditional payment rails is often not possible without the aggregation of transactions and is costly.[2068]

(e) Recommendation Five: This recommendation relates to possible use cases. In terms of trade finance, there is a significant deficit of available finance to small and medium enterprises, which some estimate to be around $80 billion annually, severely hampering economic growth and development.[2069] For providers of trade finance, some of the hurdles that can be overcome through the use of Stablecoins is hedging the volatility of some of the local currencies in Africa, where the depreciation risk that erodes the value can be avoided by steering clear from changing the investment from, for example, the US Dollar to a local currency, therefore providing a stable store of value. Foreign exchange volatility and foreign currency shortages remain a significant challenge facing private equity investors in Africa, and by using Stablecoins, it may be possible to unlock further investment in the African continent by mitigating some of these risks.[2070]

[2068] Chris Harmse, BVNK, "Blockchain in cross-border payments: 2024 guide : A guide to using blockchain for cross-border payments – benefits, challenges and opportunities" available online at https://www.bvnk.com/blog/blockchain-cross-border-payments (last accessed on 22 October 2024).

[2069] Business Insider Africa," Closing the funding gap for trade finance and cross-border payments in Africa for DeFi", (2024), available online at https://africa.businessinsider.com/local/leaders/closing-the-funding-gap-for-trade-finance-and-cross-border-payments-in-africa-for/88e14dd (last accessed on 22 October 2024).

[2070] African Private Equity and Venture Capital Association, "Currency Risk Management Practices

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Another use case could possibly be fractionalisation, which enables participation in investments that are otherwise not possible by some consumer segments.

(f) Recommendation Six: Another recommendation with respect to the trans-border licence is that, the expert panel of regulators further explore the use of embedded supervisory tools to supervise the licenced entities. It is suggested that the panel of regulators at least make use of API integration with push data capability for off-chain data, and combine this with the use of forensic nodes for monitoring the blockchain data signals. In terms of Stablecoins, it is recommended that a Suptech tool should be used to monitor the level of reserve assets. These data sets should then be analysed through the use of predictive and network analysis tools. From an AML/CFT perspective, it is suggested that a KYC API tool is used, specifically the use of an AML check API is proposed. The AML check API can be combined with an AML information widget. Lastly, it is also suggested that the panel of regulators use network analysis to gauge the exposure of the CASPS. Supervision tools used for this proposal can leverage much of the good work that has been done and is readily available, such as the BIS Innovation Hub[2071], the Cambridge SupTech Lab[2072], and the UK's FCA RegTech Forum.[2073]

6.10.5 Conclusion

To conclude, blockchain technologies and crypto assets are transformative forces that can reshape the financial sector in many ways. In the African context, blockchain technologies have the potential to help improve some of the problems that the continent is facing. Some of the use cases that could address some of the problems

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2071 BIS Innovation Hub, available online at https://www.bis.org/about/bisih/about.htm (last accessed on 28 April 2025).

2072 Cambridge SupTech Lab, available online at https://lab.ccaf.io/ (last accessed on 28 April 2025).

2073 FCA, available online at https://www.fca.org.uk/firms/innovation/regtech (last accessed on 28 April 2025).

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are the use of Stablecoins for payments, cross-border remittances, and in the use of trade finance. Also, fractionalisation of assets through tokenisation could allow for broader participation in investments that may not have been accessible to certain consumer segments. To successfully reap the benefits that the technologies promise, active steps need to be taken to assist the CASPS in scaling by removing barriers to entry that prevent them from operating in different African countries. Taking a continent-wide approach and using these technologies as a strategic tool to drive economic growth and financial inclusion by Africa becoming a global Fintech hub and an innovation accelerator. This can only be achieved by deep regional cooperation and unified national approaches, sharing skills, and navigating the risks and complexities together.

It is submitted that it is evident that many regulators worldwide have shifted their approach to financial technology. Although initially taking a "wait and see" approach, some regulators are now adopting a more supportive and collaborative approach, with some even taking progressive steps through dedicated teams to attract foreign financial services companies interested in expanding their businesses within their jurisdictions. On the African continent, positive progress has been made regarding the alignment of regulatory frameworks during the time that this research was undertaken. One such development is the publication in December 2024 by the African Fintech Network (AFN)[2074], titled "*Enabling Fintech Licence Passporting in Africa Via AfCFTA*".[2075] In this publication, the AFN acknowledges that the concept of Fintech licence passporting presents a transformative approach by enabling Fintech companies to operate across multiple African nations under a single licence issued by the regulatory authority of one member state. The AFN also agrees that this system effectively minimises licencing redundancies, reduces administrative costs, and expedites market entry, thereby allowing companies to concentrate their efforts on

[2074] The goal of the African Fintech Network is to connect Africa and the global community: to enable open dialogue, build rewarding synergies, and create new and exciting opportunities in fintech. See African Fintech Network, "About us", available online at https://africafintechnetwork.com/about-us/ (last accessed on 28 April 2025).

[2075] African Fintech Network," Enabling Fintech Licence Passporting in Africa Via AfCFTA", (2024), available online at https://africaFintechnetwork.com/wp-content/uploads/2024/12/Enabling-Fintech-Licence-Passporting-in-Africa-Via-AFCFTA.pdf (last accessed on 23 March 2025).

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innovation and service delivery. The publication also comes to the conclusion that the passporting mechanism holds significant implications for market expansion and financial inclusion in Africa, particularly in addressing the needs of the unbanked and underbanked populations, and in providing accessible and affordable financial services throughout the continent.[2076]

While these developments hold promise of realising the establishment of a trans-border licence as envisaged in this research, a vast amount of technical work needs to be undertaken to construct the architecture of an enabling framework that takes into consideration the uniqueness of the African continent. This research is aimed at progressing the technical discussions and proposing a unique approach, differing from, for instance, *MiCA*[2077] through the establishment of a central panel of regulators and the use of embedded supervision to empower this panel of regulators to proactively and effectively monitor risks. Ideally, approval of the implementation of such a trans-border licence should be sought from several of the countries concurrently. However, it is submitted that practically a lot of work can be progressed through bilateral agreements between two countries to explore the equivalence of regulatory frameworks and the use of embedded supervision to collectively monitor risks. A critical development supporting the regional collaboration that is needed for bilateral agreements is the establishment of the SADC Fintech Working Group, which is constituted under the auspices of the SADC Committee of Central Bank Governors.[2078] The SADC Fintech Working Group seeks to collaboratively formulate policy positions among SADC central banks concerning developments in financial technology (fintech), including crypto-assets, insofar as these innovations pertain to the fulfillment of their respective institutional mandates.[2079] Considering that the SADC Fintech Working

[2076] AFN, "Enabling Fintech Licence Passporting in Africa Via AfCFTA", Page 4.

[2077] Chapter 1, 1.7.

[2078] Established in 1995, as a specialised body in SADC to promote and achieve closer co-operation among central banks within the Community. See Committee of Central Bank Governors, available online at https://www.sadcbankers.org/Pages/default.aspx (last accessed on 23 June 2025).

[2079] AfricaNenda Foundation, "Consultant to Support the Development of the SADC Fintech Framework", 2024, available online at https://www.africanenda.org/uploads/files/241001-RFP-Consultant-to-Support-the-Development-of-the-SADC-Region-Fintech-Framework.pdf (last accessed on 23 June 2025).

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Group advises the SADC Committee of Central Bank Governors and recommends fintech programs and projects to be prioritised, it is submitted that the SADC Fintech Working Group could serve as a forum to prioritise a trans-border license and to assist in collaboration.

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