

**Regulating crypto-currencies in South Africa: The need for an effective
legal framework to mitigate the associated risks**

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Declaration

I declare that this Mini-Dissertation which is hereby submitted for the award of Legum Magister (LL.M) in International Trade and Investment Law in Africa at International Development Law Unit, Centre for Human Rights, Faculty of Law, University of Pretoria, is my original work and it has not been previously submitted for the award of a degree at this or any other tertiary institution.

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List of Acronyms

4AMLD	4th Anti-Money Laundering Directive
AML	Anti-Money laundering
ASIC	Application Specific Integrated Circuit
BSA	Bank Secrecy Act
CA	Contract Account
CFPB	Consumer Financial Protection Board
CJEU	Court of Justice of the European Union
CTF	Counter-Terrorism Financing
CRA	Canada Revenue Service
EBA	European Banking Authority
ECB	European Central Bank
EFT	Electronic Funds Transfer
EOA	Externally Owned Account
EU	European Union
FATF	Financial Action Task Force
FCAC	Financial Consumer Agency of Canada
FCSA	Financial Sector Conduct Authority
FICA	Financial Intelligence Centre Act
FinCEN	Financial Crimes Enforcement Network
FinSurv	Financial Surveillance
FinTRAC	Financial Transactions and Reports Analysis of Canada
FIU	Financial Intelligence Unit

FSR	Financial Sector Regulation
FTC	Federal Trade Commission
FTO	Foreign Terrorist Organisation
GAO	Government Accountability Office
GDP	Gross Domestic Product
IMF	International Monetary Fund
IRS	Internal Revenue Services
ISIS	Infamous State of Iraq and Syria
MSB	Money Service Business
NPS	National Payment System
OECD	Organisation for Economic Co-operation and Development
OCPA	Ontario Consumer Protection Act
P2B	Person-to-Business
P2P	Peer-to-Peer
PA	Prudential Authority
PCA	Proceeds of Crime Act
PoS	Point of Sale
QCPA	Quebec Consumer Protection Act
RAM	Random-Access Memory
RLC	Revenue Law Commission
RRP	Recovery and Resolution Plans
SADC	Southern African Development Community
SARB	South African Reserve Bank
SARS	South African Revenue Service

SCA	Supreme Court of Appeal
SEC	Securities and Exchanges Commission
SIFIs	Systemically Important Financial Institutions
STA	Swedish Tax Administration
ULC	Uniform Law Commission
UMC	Undercover Millionaire Currency
UNCITRAL	United Nations Commission on International Trade Law
US	United States
VAT	Value Added Tax

Directory of Cases

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Shuttleworth v South African Reserve Bank and Others 2013 3 SA 625 (GNP)

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European Court

Skatteverket v Hedquist CJEU 264 (22 October 2015) C-264/14

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South Africa

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Financial Intelligence Centre Act 38 of 2001

Income Tax Act 58 of 1962

National Payment System Act 78 of 1998

South African Reserve Bank Act 90 of 1989

The Banks Act 94 of 1990

Canada

Canada Income Tax Act of 1985

Ontario Consumer Protection of 2002

Quebec Consumer Protection Act of 2002

Statutes of Canada ‘Bill C-31’ 2014

United States

Electronic Funds Transfer Act of 2010

Uniform Regulation of Virtual Currency Businesses Act of 2017

Abstract

Crypto-currencies are decentralised convertible virtual currencies that use blockchain technology to process peer-to-peer electronic payments. The first successful crypto-currency was established in 2009, and it is known as Bitcoin. Owing to globalisation and the wide reach of the Internet, crypto-currencies have made their way onto South African shores. These currencies do not fall under the definition of legal tender and as such they are not regulated within the South African legal spectrum, this problem was thus investigated by this study.

The objectives of the study were to understand the concept of crypto-currencies, their relevance in the financial sector and the risks associated with these virtual currencies. The other objective was to establish whether there is a compelling need for regulatory intervention as far as the operation of crypto-currency is concerned. To conduct this study, the researcher used a desktop-research methodology. The nature of the research was analytical, explorative and comparative. Complex concepts of crypto-currency were analysed and explored. The researcher then used the comparative method to contrast the legal and regulatory frameworks of Canada, the US and the EU with the legal position of crypto-currencies in South Africa.

The study illustrated that crypto-currencies are decentralised convertible virtual currencies that are based on cryptographic algorithms. Crypto-currencies are not monitored by a central authority. It was also found that there are risks that emerge from using crypto-currencies, some risks were found to be current and other risks could be detrimental owing to the wide adopting of crypto-currencies. Some of these risks were found to be money laundering, financial stability and consumer protection caused by factors such as high volatility. Regarding regulation of these currencies, it was established that Canada, US and EU have started to formulate legal frameworks to mitigate some of the mentioned risks. It was found that there is no legal framework that regulates crypto-currencies in South Africa, however the SARB and National Treasury released position papers that cautions consumers about the risks of these currencies.

It was therefore concluded that there is a compelling need for regulatory intervention in South Africa. Based on this need, the author made recommendations such as integrating crypto-currencies into relevant legislation i.e. Consumer Protection Act 68 of 2008. Intervention should be succeeded by regulation.

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'Money is a collective agreement. If enough people come to the same agreement, what they agree upon becomes secondary, whether it be farm animals, gold, diamonds, paper, or simply a code. History proves all these cases to be true. Who knows what the future is going suggest to us as money, once we see digital currencies as ordinary?' – S.E. Sever

CHAPTER 1: INTRODUCTION

1.1 Background of the study

One of a State's sovereign rights is the making and supplying of its own currency denominations. In South Africa, this right is given to the South African Reserve Bank (SARB) in terms of section 10 of the SARB Act.¹ States have recently had to share this right with technology that decentralises currency.

The exponential growth of electronic commerce (e-commerce) has prompted innovative ways of paying for goods and services. The online medium of exchange has evolved from Electronic Funds Transfer (EFT) to credit cards to PayPal and now the controversial crypto-currency.

In 2009, Bitcoin became the first decentralized crypto-currency.² Crypto-currency is defined as a medium of exchange using cryptographic techniques to safeguard transactions and also manage the formation of additional units of the currency.³ People in the virtual or digital community agree that these units are a representation of value in the same way that currency is.⁴ Paolo Tasca, a Bitcoin expert and regulator from Deutsche Bundesbank said:

*The digital currency is both the payment and money concept at the same time. This has significant regulatory implications ...we have the "prosumer" – the producer of the good is also the consumer of the good.*⁵

The growth of technology, innovation and wide use of the Internet inspired and escalated the creation and adoption of crypto-currencies as an alternative to fiat currencies. In Venezuela it was estimated by the International Monetary Fund (IMF) that inflation would reach 1600 per cent in 2017.⁶ This estimation means that the consumers are finding it hard to afford the most basic needs. Many Venezuelans switched to using Bitcoin than their national currency.⁷

¹ South African Reserve Bank Act 90 of 1989

² K Sagona-Stophel 'Bitcoin 101: How to get started with the new trend in virtual currencies' 2015

³ H Kartik & SG Yatish 'Examining Taxation of Fiat Money & Bitcoins vis-à-vis regulated cryptocurrencies' 2016 <http://ssrn.com/abstract=2846645> (accessed 25 February 2017)

⁴ L Kearney 'Digital currencies: The Risk is Yours' 2015 <http://www.iol.co.za/personal-finance/digital-currencies-the-risk-is-yours-1937266> (accessed 26 February 2017)

⁵ 'as above'

⁶ International Monetary Fund 'Global Prospects and Policies: World Economic Outlook: Gaining Momentum?' 2017 <http://www.imf.org/~/-/media/Files/Publications/WEO/2017/April/pdf/text.ashx?la=en> (accessed 26 February 2017)

⁷ M Rossi 'Why some Venezuelans have turned to bitcoin mining: In crisis-ridden Venezuela, mining this digital currency is providing a lifeline but comes with the risk of arrest' 2017

Virtual currencies help to break down some of the structural barriers that make distinctions between consumers and producers, banked and unbanked, or rich and poor.⁸ Cryptocurrencies are seen as alternatives to these barriers, especially in a world where 39% of its population, most of which are from developing countries, do not have a bank account.

The controversy regarding this currency is that it possesses both potential risks and growth. Some people have gone as far as calling cryptocurrencies the ‘greatest technological breakthroughs since the Internet’.⁹

The attractiveness of cryptocurrencies is that there is no gatekeeper who controls who may or who may not create these networks, and modifying or building them requires nothing more than just an internet-connect machine.¹⁰

Therefore, while crypto-currency is an exception, e-money and other methods of Internet based payment systems are regulated by the South African legislation such as the Electronic Communications and Transactions Act and Payments Methods Systems Act.¹¹

1.2 Research problem

It is estimated that more than 700 virtual currencies are in operation globally,¹² and they are currently operating in what can be described as a legal grey area, because there is no regulatory framework governing these currencies.

The Financial Action Task Force (FATF) stated that ‘the rapid development, increasing functionality, growing adoption and global nature...make national action...a priority’.¹³ The SARB also stated that ‘there is potential for real growth of Bitcoin in its current operational environment’.¹⁴ The development of this innovation has prompted international interest, and more and more countries and organizations are looking at developing legal a framework to regulate crypto-currencies. The United State (US) released a regulatory framework known as

<http://aljezeera.com/indepth/features/2017/04/venezuelans-turned-bitcoin-mining-170415124105593.html>

(accessed 28 February 2017)

⁸ Kearney (n 4 above)

⁹ PWC ‘Money is no object: Understanding the evolving crypto-currency market’ 2015 <http://www.pwc.com/fsi> (accessed 22 February 2017)

¹⁰ P Van Valkenburgh ‘Framework for Securities Regulation of Cryptocurrencies’ 2016 1

<http://coincenter.org/wp-content/uploads/2016/01/SECFramework2.pdf> (accessed 23 February 2017)

¹¹ SARB ‘Position Paper on Virtual Currencies’ 2014 5

¹² United Kingdom Digital Currency Association <http://www.ukdca.org> (accessed 4 March 2017)

¹³ FATF Guidance ‘Guidelines for a risk-based approach to virtual currencies’ 2015 4

¹⁴ SARB (n 11 above) 3 - 4

the BitLicense, in attempt to facilitate anti-money laundering (AML) and cyber security programmes as well as to minimize consumer risks, amongst others.¹⁵

According to the SARB Act, crypto-currencies do not fall under the definition of a legal tender,¹⁶ and as such it cannot be regulated under the South African legislation that regulate fiat currencies, e-money and other forms of internet-based payment systems. This lack of a legal regulatory framework poses risks, such as the enforcement of the principle of finality and irrevocability in the payment systems.¹⁷ Section 4.3.4 of the SARB's Position Paper outlines consumer risks associated with the lack of a legal framework, some of which are loss or theft through security breach, fraud or unauthorized usage and absence of insurance mechanism to compensate account holders in case of theft or loss.¹⁸

In the midst of the above-mentioned risks and inherent problems associated with crypto-currencies, currently South Africa does not have an effective legal and regulatory framework to mitigate some of these risks. It is against this backdrop that this study was born; therefore this study aims to make a compelling case for an appropriate legal and regulatory framework to govern the operations of crypto-currencies.

1.3 Research question(s)

From the above research problem, the overarching legal question that this study will seek to answer is: how can the associated risks in the use of crypto-currencies in South Africa be mitigated through the enactment of a sound legal framework?

In order to answer the core question, the following sub-questions will also be answered:

- i. What is crypto-currency and why is it relevant in the financial sector?
- ii. What is the status of crypto-currency in South Africa and the associated risks in its usage?
- iii. How is crypto-currency currently regulated in South Africa and what are the loopholes in the related extant laws, if any?

¹⁵ Department of Financial Services 'Chapter 1: Regulations of the Superintendent of Financial Services, Part 200. Virtual Currencies' 2015 <http://www.dfs.ny.gov/legal/regulations/adoptions/dfsp200t.pdf> (accessed 6 March 2017)

¹⁶ SARB Act sec 17, legal tender of payment of money is (a) a tender by the Bank itself, of a note of the Bank or of an outstanding note of another bank for which the Bank has assumed liability in terms of section 15 (3)(c) of the Currency and Banking Act or in terms of any agreement entered into with another bank before or after commencement of this Act; and (b) a tender by the Bank itself, of an undefaced and unmutilated coin which is lawfully in circulation in RSA and of current mass.

¹⁷ European Central Bank 'Virtual Currency Schemes' 2012 40

¹⁸ SARB (n 11 above) 10

- iv. How can South Africa effectively regulate crypto-currency looking at countries that have attempted to regulate crypto-currency and what are the lessons that can be learned?

1.4 Thesis statement

Though crypto-currencies are relatively new in South Africa, there is potential for growth and this growth may bring about benefits as well as risks for the financial sector and economy at large. It is in the light of this, that this study will argue that there is a compelling need for an appropriate legal framework to mitigate all the associated risks such as the enforcement of the principle of finality and irrevocability in the payment systems that are induced by the unregulated character of crypto-currencies in South Africa.

1.5 Significance of the study

With the current trends in globalisation and optic of internet-based transactions, there has been a surge of digital currency on a global scale. Although it is relatively new in South Africa, there is show of interest in these new currencies, as evidenced by the establishment of a Bitcoin ATM in Midrand. Furthermore, other countries such as the United States and China have started to not only look at regulating digital currencies but also create their own crypto-currencies. South Africa being a growing member of the global economy is also tacitly being involved in digital currency transactions between private players, however the current legal standing does not take into consideration the place of digital currency in the domestic financial sector.

It is in this regard that the purpose of this study is to look at ways in which such currencies can be regulated in South Africa, as there is a lack of clarity in the existing body of laws in the financial sector.

1.6 Aims and objectives of the study

The aims and objectives of the study are to understand the concept of crypto-currencies and their relevance in the financial sector as well as to determine if there is a need for South Africa to regulate crypto-currencies.

1.7 Research methodology

A desktop-research methodology will be used to facilitate the writing of this mini-dissertation. The nature of the research will be analytical, explorative and comparative. The analytical research method will be used to describe the complex concepts of crypto-currencies. The explorative methods will be used to explore crypto-currencies and the

comparative method to contrast regulatory frameworks of Canada, the US and the European Union (EU) with the South African legal position on crypto-currencies.

1.8 Literature review

Digital currencies know no national boundaries, and as such many of the research efforts on them focus more on international intervention rather than States regulating digital currencies in isolation. There has not been a lot of literature on the regulation of crypto-currencies in South Africa.

In 2012, the European Central Bank (ECB) conducted a study on crypto-currencies. In the study, it was stated that the possible growth of digital currencies would bring about a need for international cooperation in developing a uniform regulatory framework.¹⁹ The report also showed that there is insignificant risk to price stability caused by digital currencies, but there are risks for users and risks associated with criminal schemes.²⁰

The European Banking Authority (EBA) which monitors the financial activities and makes recommendations for regulating banking concerns for safety and soundness purposes, released recommendations for steps to address the problems associated with the rise of crypto-currencies.²¹ The EBA report identified 70 risks associated with crypto-currencies, numerous difficulties in drafting a regulatory regime that will address the identified risks and some interim measures for the EU member states to institute.²² Some of the interim measures included in the EBA report are: subjecting digital currency exchanges to the anti-money laundering and counter-terrorist financing requirements as well as discouraging credit institutions, payment institutions, and e-money institutions from buying, holding, or selling digital currencies.²³

The Virtual Currencies Working Group of France released a paper in 2014 that sets out the risks of the unregulated character of digital currencies and the recommendations on how to mitigate these risks.²⁴ They identified three sources of risks that are: the presence of unregulated participants, lack of transparency and extraterritoriality.²⁵ In pursuit of managing these risks, they recommended that the use of crypto-currencies should be limited, there

¹⁹ European Central Bank 'Virtual Currency Schemes' 2012

²⁰ European Central Bank (n 19 above) 40

²¹ European Banking Authority 'EBA Opinion on 'virtual currencies' 2014

²² European Banking Authority (n 21 above) 40

²³ 'as above'

²⁴ Virtual Currencies 'Working Group Regulating Virtual Currencies: Recommendations to prevent virtual currencies from being used for fraudulent purposes and money laundering' 2014

²⁵ Virtual Currencies Working Group Regulating Virtual Currencies (n 24 above)

should be regulation and cooperation and improve the sector knowledge and therefore monitor the risk.²⁶

As the global community attempts to solve the legal problems which stem from cryptocurrencies, a study in the United States suggests that governments and regulatory authorities should encourage responsible developments of innovative digital currency technologies that will potentially bring important benefits, with the need for an effective legal and regulatory framework that aims to protect the consumers, businesses and the financial system.²⁷

In South Africa, not much has been written on the need for a regulatory framework for virtual currencies. The SARB 2014 Position Paper outlined the categories of risks relating to cryptocurrencies as consumer risks, anti-money laundering and financing of terrorism, price stability and financial stability.²⁸

In an article written in South Africa, the paper recognises the fact that the SARB reserves the right to change its position on regulating virtual currencies, but warns that the South African policy makers should implement the required regulatory reform considering the amount of value that is increasingly being moved and stored on crypto-currency platforms.²⁹

This study converges with the above studies as far as risks are concerned. In addition, it will also look at the risks associated with the use of these crypto-currencies. However, this study will differ with the above reports that suggest that crypto-currencies should be regulated strictly and firmly. This dissertation will seek to explore how South Africa can regulate crypto-currencies and still encourage innovation and safe use of the technology. It will also look at how to protect the consumer without taking away the two benefits of digital currencies that are decentralised currency and anonymity of the consumers.

1.9 Limitations to the study

The ambit of this dissertation is limited in that there is an inherent geographical limitation because this study is focused mainly on whether South Africa should regulate cryptocurrencies, even though they are mostly used globally. Crypto-currencies may be used as a

²⁶ 'as above'

²⁷ Fried, Frank, Harris, Shriver & Jacobson LLP 'Virtual Currencies: Growing Regulatory Framework and Challenges in the Emerging Fintech Ecosystem' 2016

²⁸ SARB (n 11 above) 5

²⁹ F Khoza & D Visser 'Blockchain Revolution and Financial Regulation in South Africa' 2016

<http://www.tech4law.co.za/news-in-brief/59-law/2233-blockchain-revolution-and-financial-regulation-in-south-africa> (accessed 25 June 2017)

payment method or as an investment; this study will focus on crypto-currencies as a payment method.

1.10 Chapter overview

Chapter 1 deals with introductory matters. It outlines the research problem, the central research question and the aims and objectives of the study. This chapter will also provide an overall outline of the study.

Chapter 2 will discuss the concept of crypto-currencies and how they operate especially their role in international trade. Furthermore, it will highlight the inherent problems of crypto-currencies and lastly it will look at case studies of the most used crypto-currencies in South Africa.

Chapter 3 will discuss in depth the consumer risks associated with using crypto-currency. It will further examine the efficiency of the current consumer protection legislation in South Africa.

Chapter 4 will explore the proposed legal framework for the regulation of crypto-currencies in Canada, US and EU. It will then look at how South Africa can use the proposed frameworks to formulate its own legal framework or integrate crypto-currencies into the current regulatory framework.

Chapter 5 will conclude the research and provide recommendations. It will also identify areas for future research.

CHAPTER 2: CRYPTO-CURRENCIES

2.1 Introduction

Historically, money can be anything that is used as a medium of exchange. Money has evolved over the centuries, from commodity money to metallic money, to paper money, to credit money, to electronic money. Since its inception in 2009, we are now faced with another form of money known as crypto-currency. Before the introduction of Bitcoin, it was nearly impossible for two parties to electronically transact without the use of a third party.³⁰ This could be one of many reasons why crypto-currencies gained popularity. This chapter will explore not only the regulatory aspect of crypto-currencies but it will also provide a technical overview of their concept, operation and current problems experienced by users of these currencies.

2.2 The concept

Crypto-currency is a system that uses cryptographic algorithms to create and authorise the secure transfer and exchange of virtual decentralised coins.³¹ They serve as a representation of value that is capable of being traded digitally as a medium of exchange. Virtual currencies can be distinguished from electronic money and other forms of Internet based payments that are an electronic representation of centralised fiat currencies. The terms “digital currency” and “virtual currency” are often used interchangeably, which causes confusion. For the purpose of this thesis, virtual currency refers to non-fiat currency that is decentralised and digital currency refers to digital representation of fiat currencies such as e-money.

The FATF proposed that crypto-currencies should be divided into convertible and non-convertible, as well as centralised and decentralised.³² Convertible or open virtual currencies can be exchanged for its fiat currency equivalence conversely.³³ Examples of convertible virtual currencies are Bitcoin, e-Gold, WebMoney and Liberty Reserve. Non-convertible or closed virtual currencies are valuable only in a fantasy world and cannot be exchanged for real currency.³⁴ World of Warcraft Gold and Q coins are some of the examples of non-convertible virtual currencies.

³⁰ E Dourado & J Brito ‘Cryptocurrency’ in SN Durlauf & LE Blume (eds) *The New Palgrave Dictionary of Economics* (2014) 2

³¹ Dourado & Brito “Cryptocurrency” in Durlauf & Blume (n 30 above) 1

³² FATF Report Virtual Currencies ‘Key Definitions and Potential AML/CFT Risks’ 2014 4

³³ ‘as above’

³⁴ ‘n 32 above, 5’

A central administrating authority simply known as an administrator controls centralised virtual currencies.³⁵ The administrator is responsible for issuing the currency, formulating terms of use, maintaining the central payment ledger and has the power to withdraw the currency from circulation.³⁶ Examples of centralised virtual currencies include E-gold, Liberty Reserve and WebMoney units. Decentralised virtual currencies that are widely known as crypto-currencies, are distributed, open-source, maths-based peer-to-peer virtual currencies that are not controlled by a central administrating authority and no central monitoring.³⁷ The most common examples of these currencies are Bitcoin, Ethereum and Litecoin.

This study will then focus on virtual currencies that are decentralised and have no administrating and monitoring authority.

2.3 Operation

As explained in the concept, crypto-currencies are convertible decentralised virtual currencies. They are “a digital representation of value that is neither issued by a central bank or a public authority.”³⁸ The process of buying and managing crypto-currencies will now be discussed. There are different participants in the crypto-currency world. To understand how these currencies operate, the roles of each stakeholder will be explained.

2.3.1 Exchange

Also known as a virtual currency exchange, the exchanger is a person or an entity that is involved as a business in the exchange of fiat currency for crypto-currency and vice versa for a commission.³⁹ Therefore the virtual currency exchange could be equated to a stock exchange. The exchange commonly accepts different types of payments such as cash, EFT and credit cards.⁴⁰ Most exchanges are not associated to the crypto-currency network they are independent third parties. Users with crypto-currency wallets will use the exchange to deposit and withdraw money.⁴¹ There are three primary functions of exchanges; firstly it is a method of exchange from real currency to crypto-currency and vice versa, secondly it is a platform for users to store crypto-currencies in an online wallet and, thirdly it acts as a platform for

³⁵ ‘n 32 above, 5’

³⁶ ‘as above’

³⁷ ‘as above’

³⁸ European Bank Authority ‘Opinion on Virtual Currencies’ 2014 5

³⁹ FATF Report Virtual Currencies (n 32 above) 7

⁴⁰ ‘as above’

⁴¹ ‘as above’

users to transfer crypto-currencies.⁴² Luno and ICE³X (Ice Cubed) are examples of exchanges operating in South Africa; they are well established and fully licensed.⁴³ These exchanges will be discussed in detail under case studies.

2.3.2 User

A user is usually a person or a company that acquires crypto-currencies and utilises them to make online payments for goods and services, make transfers in a personal capacity or hold on to the currency as a form of investment.⁴⁴

A user may obtain crypto-currency through different processes. A user can buy crypto-currency using fiat currency from an exchange as discussed above. A person may also acquire crypto-currency by selling goods and services, or by participating in activities that accept crypto-currency as a form of payment. Another way of obtaining crypto-currency is by using a complex method called mining. Mining is the process that is implemented through software, it involves solving complex mathematical problems and it is the most important function in managing crypto-currencies.⁴⁵ Once the user has successfully mined the units, he receives what is known as block rewards, these rewards are usually 25 units of the crypto-currency that was mined.⁴⁶ Different crypto-currencies have different value of block rewards, as discussed under case studies.

2.3.3 Miner

In the context of crypto-currency networks, a miner is any person or establishment that runs special software to resolve difficult mathematical equations in a distributed proof of work or another system of proof that is used to validate transactions in the virtual currency system.⁴⁷ Proof of work is commonly known as blockchain, it is public ledger that records every transaction that has ever been made on the network.⁴⁸ As mentioned above, a miner may be user who self-generate crypto-currency for their own personal use. Exchanges may also mine crypto-currency for purposes of selling it in exchange for fiat currency or another virtual currency.⁴⁹

⁴² C Swinton 'A critical analysis of the risks associated with crypto-currencies' unpublished LLM thesis, University of Dundee, 2015 16

⁴³ Bitcoinzar 'Bitcoin exchanges in South Africa' <http://www.bitcoinzar.co.za/bitcoin-exchanges-in-south-africa/> (accessed 15 August 2017)

⁴⁴ FATF Report Virtual Currencies (n 32 above) 7

⁴⁵ DR Sterry 'Introduction to Bitcoin Mining: A guide for Gamers, Geeks, and Everyone Else' 2012 10

⁴⁶ Swinton (n 42 above) 17

⁴⁷ FATF Report Virtual Currencies (n 32 above) 7

⁴⁸ Swinton (n 42 above) 16

⁴⁹ FATF Report Virtual Currencies (n 32 above) 7

To begin the mining process, a prospective miner must purchase proper equipment. This hardware varies from crypto-currency to crypto-currency, price and efficiency. The Application-Specific Integrated Circuit (ASIC) is considered to be the best mining hardware; it is specifically used to generate bitcoins.⁵⁰ A small scale miner, using hardware that costs more than \$1000 can generate as little as \$2 per day.⁵¹ In order to make sizeable profit, miners spend as much as \$5000 on hardware and make an average of \$50 a day.⁵²

2.3.4 Virtual wallet provider

A wallet provider is an entity that uses software applications to create and provide virtual currency wallets that are used to store, hold and transfer crypto-currencies.⁵³ The wallet contains the user's personal data such as private keys that permit the user to spend crypto-currency in the public ledger or blockchain.⁵⁴ The function of a wallet provider is to promote user participation in a crypto-currency system by making it easy for users, exchanges and merchants to transact.⁵⁵ It is the provider's duty to maintain the user's crypto-currency balance and as such the wallet provider should supply storage and ensure security.⁵⁶ In order to fulfil this role the wallet provider may offer multiple key signature protection and back-up storage.⁵⁷ Wallets can be stored online also known as hot storage or offline known as cold storage. Notwithstanding the measures taken by wallet providers, comprehensive security of the crypto-currency in the wallet is not guaranteed. Examples of virtual wallet providers are Coinbase, Multibit and Bitcoin wallet.

2.4 Legitimate benefits

Innovative payment methods have been erupting in the previous years. This growth can be attributed to globalisation, which facilitated international online businesses. As such payment methods needed to evolve in order to meet the growing demand for instant transfers. E-commerce has thus benefited from innovative payment technologies such as the aforementioned credit cards, EFT and PayPal.

⁵⁰ Bitcoinmining 'Bitcoin Mining Hardware Guide: 6 Best Bitcoin Mining Hardware ASICs Comparison In 2017' <http://www.bitcoinmining.com/bitcoin-mining-hardware/> (accessed 16 August 2017)

⁵¹ P Gil 'Cryptocurrency mining for beginners' <http://www.lifewire.com/cryptocurrency-mining-for-beginners-2483064> 2017 (accessed 15 August 2017)

⁵² 'as above'

⁵³ FATF Report Virtual Currencies (n 32 above) 8

⁵⁴ 'as above'

⁵⁵ 'as above'

⁵⁶ 'as above'

⁵⁷ 'as above'

Crypto-currencies have the potential to improve the payment efficiency and to reduce transaction fees for payments and fund transfers.⁵⁸ Virtual currencies function as global currencies that can escape exchange fees by processing payments at relatively lower fees compared to credit cards and PayPal fees.⁵⁹ Crypto-currencies may also promote micro-payments that will allow digital businesses to monetize very low cost goods or services such as downloading music.⁶⁰ For example, the price of a song on iTunes or any music-downloading platform can significantly be reduced if transaction costs were to be substantially reduced. Ultimately digital goods and services will be cheaper if more merchants could accept crypto-currency as a legitimate payment method. Decentralised virtual currencies have the potential to facilitate international remittances and support financial inclusion in other ways because new goods and services, based on crypto-currency, are created to benefit the unbanked and under-banked.⁶¹

2.5 Acceptance by merchants

This thesis focuses on crypto-currency as a payment method and not as an investment option. For crypto-currency to fulfil this function, service provider must be willing and equipped to receive crypto-currencies.

One way for merchants to start accepting crypto-currencies is by having a virtual wallet that is capable of receive crypto-currency, for example the Luno wallet.⁶² The other way is through a point of sale (PoS) machine such as the Coinbase, BitPay and Blockchain Merchant.⁶³

Retailers may be sceptical to accept crypto-currencies because of their unpredictable price swings. In June 2017 the price of Ethereum dropped from \$296 to \$0.10 within minutes.⁶⁴ Even though the price of Ethereum ultimately increased to \$395,⁶⁵ the volatility of crypto-currencies is a real concern for business. Notwithstanding the volatile nature of crypto-currencies, there are numerous merchants that accept this form of payment. Some of the biggest companies that accept crypto-currency are Dell, Microsoft, Overstock.com and

⁵⁸ FAFT Report Virtual Currencies (n 32 above) 9

⁵⁹ 'as above'

⁶⁰ 'as above'

⁶¹ 'as above'

⁶² CryptoCompare 'How to accept Bitcoin or Crypto Currency as a Merchant?' 2017

<http://www.cryptocompare.com/exchanges/guides/how-to-accept-bitcoin-or-crypto-currency-as-a-merchant/>
(accessed 19 August 2017)

⁶³ 'as above'

⁶⁴ E Cheng 'Ethereum is crashing by 20% right now after confidence in bitcoin rival shaken' 2017

<http://www.cnn.com/2017/06/26/ethereum-drops-more-than-10-percent-even-after-flash-crash-refund.html>
(accessed 19 August 2017)

⁶⁵ 'as above'

CheapAir.com.⁶⁶ In South Africa the number of merchants who accept crypto-currency, particularly Bitcoin, is increasing. In 2016 there were more than 150 establishments that accepted Bitcoin as a form of payment.⁶⁷ These stores and organisations include Earthchild, HPOnline, Kaizer Chiefs, Lancet Laboratories and Nelson Mandela Children's Fund.⁶⁸

The fluctuation of crypto-currency will consequently cause the demise of crypto-currency as a form of payment. In 2010 it was reported that a user bought two pizzas with 10 000 bitcoins, in 2017 those 10 000 bitcoins are worth about \$20 million.⁶⁹ The spike in the price of Bitcoin in 2017 left users confused and reluctant to pay using bitcoins. Following this increase, users would rather hold on to their bitcoins in hopes that they will yield great profits.⁷⁰ Subsequently, merchants do not want to invest money in procuring infrastructure to accept crypto-currencies if the customer does not want to use this form of payment.⁷¹ The future of crypto-currency as a payment method lies on the willingness of both the customer and the merchant.

2.6 Inherent problems

Given the nature of crypto-currencies, there are problems that come merely from the operation of these currencies. Critics of crypto-currencies often cite these associated problems. These problems will now be considered.

2.6.1 Loss and theft

In a situation where a user dies without leaving behind a password for his virtual currency account, whatever is in the account subsequently perishes with its owner. This scenario is one of many ways in which crypto-currencies can be lost. There could be loss due to a security breach, user error or a technological failure.⁷² Once virtual currencies are lost they can never be replaced. The lost crypto-currency will still be on the blockchain however it cannot be retrieved or transferred.⁷³ Attributable to the fact that transactions on the blockchain are made

⁶⁶ T Durden 'Who Accepts Bitcoins as Payments? List of Companies, Stores, Shops...' 2017 <http://www.zerohedge.com/new/2017-05-28/who-accepts-bitcoins-payment-list-companies-stores-shops> (accessed 19 August 2017)

⁶⁷ L Visser 'Where to Spend Bitcoin in South Africa' 2016 <http://www.luno.com/blog/en/post/south-africa-pay-with-bitcoin> (accessed 19 August 2017)

⁶⁸ 'as above'

⁶⁹ R Price 'Someone in 2010 bought 2 pizzas with 10 000 bitcoins – which today would be worth \$20 million' 2017 <http://www.uk.businessinsider.com/bitcoin-pizza-day-passes-2000-20million-2017-5> (accessed 19 August 2017)

⁷⁰ J Toplin 'Merchants aren't accepting bitcoin' 2017 <http://www.businessinsider.com/merchants-arent-accepting-bitcoin-2017-7> (accessed 20 August 2017)

⁷¹ 'as above'

⁷² SARB (n 11 above) 10

⁷³ 'as above'

anonymously, there is possibility that the users' accounts may be hacked resulting in irrevocable loss.

In 2014 there an exchange company, Mintpal, was allegedly hacked and consequently bitcoins worth \$2 million were lost.⁷⁴ Moolah, another exchange became insolvent after there was a reported bug in their system.⁷⁵ Again in 2014, one of the biggest crypto-currency hack occurred at Mt Gox and \$460 million worth of bitcoins disappeared.⁷⁶ According to the reports, the loss can be ascribed to poor management, neglect and raw inexperience.⁷⁷ Bithumb, one of the largest bitcoin exchange, was hacked in July 2017 as the result about 30 000 customers lost their data.⁷⁸ This loss amounted to approximately \$870 000 worth of bitcoins.⁷⁹ In July 2017 Theodore Price, a US citizen, was arrested for stealing two laptops that he allegedly used to hack Bitcoin wallets.⁸⁰ He bought software online; which he used to recode and simulate similar encryption that used to create Bitcoin wallets.⁸¹ He then diverted about \$30 million worth of bitcoin into the numerous wallets that he created.⁸²

Theft and loss remain a threat to the users and developers of crypto-currencies. There is no recourse for users if their online wallets are emptied.

2.6.2 Lack of central regulation

In South Africa crypto-currencies are not considered to be legal tender,⁸³ however this has not stopped some merchants from accepting them as a form of payment. The primary function of the SARB is to protect the value of the South African currency through sound monetary policies.⁸⁴ Without the central monitoring of crypto-currencies, there is no regulation or policies to stabilize their extremely fluctuant nature. Developers of crypto-

⁷⁴ A Hern 'British serial entrepreneur missing as \$14m bitcoin is apparently stolen' 2014 <http://www.theguardian.com/technology/2014/oct/23/british-serial-entrepreneur-missing-bitcoin-apparently-stolen?CMP=EMCNEWEML661912> (accessed 22 August 2017)

⁷⁵ 'as above'

⁷⁶ R Millan 'The inside story of MT. Gox, Bitcoin's \$460 million disaster' 2014 <http://www.wired.com/2014/03/bitcoin-exchange> (accessed 21 August 2017)

⁷⁷ 'as above'

⁷⁸ R Price 'One of the world's biggest Bitcoin exchanges has been hacked' 2017 <http://www.businessinsider.com/south-korean-bitcoin-exchange-bithumb-hacked-ethereum-2017-7> (accessed 20 August 2017)

⁷⁹ 'as above'

⁸⁰ C Tian 'Arrested hacker claims \$30 million Bitcoin theft – But offers little proof' 2017 <http://www.coindesk.com/arrested-hacker-claims-30-million-bitcoin-theft-offer-little-proof> (accessed 22 August 2017)

⁸¹ 'as above'

⁸² 'as above'

⁸³ SARB Act sec 17

⁸⁴ SARB 'Functions' <http://www.resbank.co.za/AboutUs/Functions/Pages/default.aspx> (accessed 15 August 2017)

currencies claim that these currencies do not need regulation, as they are self-regulating. The need for regulation will be further investigated in the succeeding chapters.

2.6.3 Money laundering

In August 2017, 33 billions comprised of South African Rands and E-Dinar were exchanged for a crypto-currency called Localtrade that is assumed to be operating from Dubai, United Arab Emirates.⁸⁵ There have been speculations that the transaction was another form of money laundering motivated by political corruption.⁸⁶ It could possibly be an innocent transaction or a technical error, however it is evident that crypto-currencies make it easy for people to move vast amounts of money out of the country without following proper procedures.

Owing to their anonymity, crypto-currencies are the easiest way to pay for illicit transaction. In 2012, approximately 20% of all bitcoins were used Silk Road, an obsolete website which was used to sell and buy illegal drugs.⁸⁷ The Monetary Authority of Singapore (MAS), the central bank and financial regulator of Singapore, reiterated that this technology is vulnerable to money laundering and terrorist financing because of their anonymous transactions and the simplicity of raising large amount of money in a short period.⁸⁸

The EU collaborated with member states of the FATF to form effective anti-money laundering regulations in order to combat criminality conducting through trading using crypto-currencies.⁸⁹

2.7 Case studies

Examples of crypto-currencies and exchanges will now be discussed. In order to put the discussions above into perspective, the following paragraphs will discuss the most used crypto-currencies internationally and locally. There are currently more than 500 crypto-currencies in operation and new ones are rapidly invented. Following the discussion of

⁸⁵ Biznews 'Update –Mailbox: Curious case of a R33bn trade in a UAE linked cryptocurrency' 2017 <http://www.biznews.com/global-investing/2017/08/28/r33bn-transfer-uae-linked-edinar-edr-cryptocurrency/> (accessed 30 August 2017)

⁸⁶ Trustnodes 'High Level Political Corruption or just a Glitch? Questions Raised as Billions Traded on an Obscure Cryptocurrency for South African Money' 2017 <http://www.trustnodes.com/2017/08/29/high-level-political-corruption-just-glitch-questions-raised-billions-traded-obscure-cryptocurrency-south-african-money> (accessed 30 August 2017)

⁸⁷ E Southhall & M Taylor Bitcoins 2013 CTLR 178

⁸⁸ SR Choudhury 'It's a very good time to be a money launderer, and you can thank cryptocurrency' 2017 <http://www.cnbc.com/2017/08/04/icos-may-be-seen-as-securities-by-u-s-and-singapore-regulators.html> (accessed 10 August 2017)

⁸⁹ FATF Guidance (n 13 above) 2015 16

different role players in the operation of crypto-currency, case studies of exchanges and wallet providers will also be looked at.

2.7.1 Case Study 1: Bitcoin (crypto-currencies)

Bitcoin was created by Satoshi Nakamoto, it is not certain whether this is a real person or a group of persons. Although the concept of crypto-currency existed long before Bitcoin, Bitcoin is the first practical and most successful crypto-currency to date.⁹⁰ Bitcoin was launched on 3 January 2009 and it was the first borderless convertible virtual currency. In an introductory paper written by Nakamoto, Bitcoin is described as a purely peer-to-peer version of e-money that allows digital payments and exchanges between parties without the interference of a central bank or any other financial institution.⁹¹

Bitcoin payment mechanisms are purely based on trust from the users, Nakamoto said that:

‘...We need a way for the payee to know that the previous owners did not sign any earlier transaction. For our purposes, the earliest transaction is the one that counts, so we don’t care about later attempts to double spend...transactions must be publicly announced...’⁹²

Bitcoin, as in the case with other crypto-currencies, uses blockchain technology also known as a public ledger. Blockchain is a master ledger; it records and stores all previous transactions and activities, by so doing it validates ownership of all bitcoins at any given time.⁹³ In Nakamoto’s paper a comparison between blockchain and traditional banking was made. It was stated that in a traditional banking setup there is a level of privacy because users are afforded limited information regarding the operations of the bank.⁹⁴ Bitcoin necessitates that all transactions should be recorded and made public, and in the same light maintains privacy of the users.⁹⁵ Advocates of crypto-currency deem blockchain as a regulator and as such they claim that crypto-currencies do not need to be regulated.

The bitcoins are created using a combination of letters, numbers and symbols.⁹⁶ This combination is known as a digital signature. To ensure that transactions are anonymous, the digital signature is not linked to the owner’s true identity but to an account registered using

⁹⁰ B Martucci ‘What is Cryptocurrency – How it Works, History & Bitcoin Alternatives’

<http://www.moneycrashers.com/cryptocurrency-history-bitcoin-alternatives/> (accessed 17 August 2017)

⁹¹ S Nakamoto, Bitcoin: A peer-to-peer Electronic Cash System <http://www.bitcoin.org/bitcoin.pdf> (accessed 15 March 2017)

⁹² ‘as above’

⁹³ Martucci (n 90 above)

⁹⁴ Nakamoto (n 91 above)

⁹⁵ ‘as above’

⁹⁶ ‘as above’

an alias.⁹⁷ This process of creating bitcoins is called mining. Mining is defined as a distributed consensus system that is used to confirm pending transactions by including them in the blockchain.⁹⁸ By so doing, there is a chronological order in the blockchain, there is neutrality of the network and different computers can agree in a state of the system.⁹⁹ After a miner creates and circulates bitcoins, they are remunerated with block rewards.¹⁰⁰

The value of block rewards is halved after every four years, in 2009 they were worth 50 bitcoins and in 2013 they were 25 bitcoins.¹⁰¹ Currently a miner is awarded 12.5 bitcoins.¹⁰² Gradually the block reward will be zero and the production of new bitcoins will come to an end.¹⁰³ By simple calculations this will happen around 2040. Given the finite nature of Bitcoin, there is a plan in place when production ceases, one bitcoin will be broken down into 100 million smaller coins called Satoshis.¹⁰⁴

In July 2017 Bitcoin split into two crypto-currencies; the original Bitcoin and the new Bitcoin Cash. The split was a result of mounting disagreements between miners on how to decrease transaction delays.¹⁰⁵ On average it would take ten minutes for a transaction to be recorded on the public ledger.¹⁰⁶ Some of the miners suggested that the size of a bitcoin should be increased from one to two megabytes, while others argued that increasing the size of a bitcoin would put the system at a risk of being hacked.¹⁰⁷ The logic behind the latter argument is that the bigger the bitcoin the easier it is to be penetrated illegally into the system, resulting in loss of the crypto-currencies.

⁹⁷ 'as above'

⁹⁸ Bitcoin 'How does Bitcoin work' <http://bitcoin.org/en/how-it-works> (accessed 16 March 2017)

⁹⁹ 'as above'

¹⁰⁰ 'as above'

¹⁰¹ M Polasik, et al 'Price Fluctuations and the Use of Bitcoin: An Empirical Inquiry' 2014 http://www.ecb.europa.eu/pub/conferences/shared/pdf/retpaym_150604/polasik_paper.pdf (accessed 5 April 2017)

¹⁰² M Draupnir 'What is the Bitcoin Mining Block Reward?' 2016 <http://www.bitcoinmining.com/what-is-the-bitcoin-block-reward/> (accessed 5 April 2017)

¹⁰³ M Taylor, et al 'Virtual Currencies: the other side of the coin' 2013 <http://uk.practicallaw.thomsonreuters.com/9-542-5225> (accessed 6 April 2017)

¹⁰⁴ J Cook 'Bitcoin: Technological Innovation or Emerging Threat?' (2014) 30 *The John Marshall Journal of Information Technology & Privacy Law* 539

¹⁰⁵ B Popken 'Why Did Bitcoin 'Fork' Today and What is 'Bitcoin Cash?'' 2017 <http://www.nbcnews.com/business/consumer/why-bitcoin-forking-today-what-bitcoin-cash-n788581> (accessed 10 August 2017)

¹⁰⁶ B Popken (note 105 above)

¹⁰⁷ F Chaparro 'Bitcoin splits in 2' 2017 <http://www.businessinsider.com/bitcoin-price-fork-happens-2017-8> (accessed 10 August 2017)

2.7.2 Case study 2: Ethereum (crypto-currency)

Ethereum was launched in January 2014 by Vitalik Buterin at the North American Bitcoin Conference held in Miami, Florida, US.¹⁰⁸ It is defined as an open blockchain platform that allows anyone to build and use a decentralised application that runs on blockchain technology.¹⁰⁹ Unlike the creator of Bitcoin, Buterin is a real person, a 21-year-old college dropout from Russia but raised in Canada. The Ethereum units are known as Ethers.

Ethereum utilises the same blockchain technology and as such most of their features are similar.¹¹⁰ There are, albeit, new modification and innovations. Bitcoin uses the blockchain as a ledger to record transactions while in Ethereum blockchain is used to record the accounts.¹¹¹ The Ethereum blockchain follows the state of each and every account and all state transitions on the blockchain are transfers of value and information between accounts.¹¹² Two types of Ethereum accounts are; the Externally Owned Accounts (EOAs) and Contract Accounts (CAs). Private parties control the EOAs whilst the CAs are controlled by their contract code and they can only be activated by an EOA.¹¹³ The primary difference between these two accounts is that human users control the EOA and the CA is operated by their internal code.¹¹⁴

Ethereum is a good example of the volatility involved in crypto-currencies. In June 2017, Ether dropped from about \$300 to \$0.10 in a matter of minutes, because of the increased confidence in Bitcoin.¹¹⁵ The price of Ether in August 2017 was \$350.50.¹¹⁶

2.7.3 Case study 3: Ripple (crypto-currency and exchange)

Ripple is the brainchild of Jed McCaleb and his friends, and was launched in September 2013.¹¹⁷ It has the third biggest market cap of \$8,6 billion and one XRP,¹¹⁸ in August 2017

¹⁰⁸ T Gerring 'Cut and try: building a dream' 2016 <http://blog.ethereum.org/2016/02/09/cut-and-try-building-a-dream/> (accessed 14 August 2017)

¹⁰⁹ Ethereum Homestead 0.1 Documentation 'Introduction' <http://www.ethdocs.org/en/latest/introduction/index.html> (accessed 14 August 2017)

¹¹⁰ 'as above'

¹¹¹ 'as above'

¹¹² 'as above'

¹¹³ 'as above'

¹¹⁴ 'as above'

¹¹⁵ E Cheng 'Ethereum is crashing by 20% right now after confidence in bitcoin rival shaken' 2017 <https://www.cnn.com/amp/2017/06/26/ethereum-drops-more-than-10-percent-even-after-flash-crash-refund.html> (accessed 23 August 2017)

¹¹⁶ 'The price of ethereum' 2017 www.ethereumprice.org (accessed 23 August 2017)

¹¹⁷ The Cointelegraph 'Ripple' <http://cointelegraph.com/tags/ripple> (accessed 17 August 2017)

¹¹⁸ XRP is the name of the currency produced by Ripple

was worth \$0,226.¹¹⁹ Ripple is defined as a single, decentralised and global network of banks and payment providers using Ripple's distributed financial technology which provides real-time messaging, clearing and settlement of financial transactions.¹²⁰ It is the first global real-time gross settlement network.¹²¹ To further explain this phenomenon, the chief cryptographer at Ripple stated that:

'Payment systems today are where email was in the early '80s. Every provider built their own system for their customers and if people used different systems they couldn't easily interact with each other. Ripple is designed to connect different payment systems together'.¹²²

Ripple does not only produce crypto-currency but it also provides a service where users can transfer and make payments globally using this blockchain technology. Contrary to the traditional methods of online payments such as credit cards, EFT and PayPal, Ripple does not charge transactional fees.¹²³

2.7.4 Case study 4: LiteCoin (crypto-currency)

In 2011, two years after the birth of Bitcoin Charles Lee, who is a former engineer of Google, developed LiteCoin.¹²⁴ It is the fourth largest crypto-currency in terms of market cap; which is approximately \$3,3 billion and sells at \$63 per coin.¹²⁵ Similarly to the above currencies, it is generated using the mining process. One of the differentiating factors is that it takes LiteCoin miners about three minutes to generate a block, while it takes around ten minutes for Bitcoin users.¹²⁶ The difference in time is that unlike Bitcoin's SHA-256, Ethereum uses an algorithm known as s-crypt, which is more serialised and allows for large amounts of high-speed random-access memory (RAM).¹²⁷ In South Africa, LiteCoin could be purchased through the ICE3X exchange.

¹¹⁹ Coinmarketcap 'CryptoCurrency Market Capitalizations' <http://coinmarketcap.com/currencies> (17 August 2017)

¹²⁰ RippleNet 'One frictionless experience to send money globally: Across a connected network of financial institutions and payment providers' http://ripple.com/files/rippletnet_brochure.pdf (accessed 18 August 2017)

¹²¹ 'as above'

¹²² A Brown '10 things you need to know about Ripple' 2013 <http://www.coindesk.com/10-things-you-need-to-know-about-ripple/> (accessed 18 August 2017)

¹²³ 'as above'

¹²⁴ Coindesk 'What is the Difference Between Litecoin and Bitcoin' 2014 <http://www.coindesk.com/information/comparing-litecoin-bitcoin/> (accessed 19 August 2017)

¹²⁵ Coinmarketcap (n 124 above)

¹²⁶ 'as above'

¹²⁷ 'as above'

2.7.5 Case study 5: Number42 (crypto-currency)

Number 42 is a South African born crypto-currency that is based on the “Proof of Stake” technology; which records every transaction on a public ledger.¹²⁸ This currency was created in 2016 and was circulated in May 2017 by a company known as Sagteware.NET.¹²⁹

In addition to blockchain, Number42 uses the Proof of Stake technology that makes it relatively easy to mine N42. Gideon Louw, who is part of the software development team at Number42, said that:

‘The system has been developed so that anyone that just has an Internet connection and the wallet open will act as a miner, and those people will verify the transactions. This way of verifying transaction is called in technical terms Proof of Stake.’¹³⁰

Number42 serves as an alternative to old methods of mining crypto-currency. It is easier, fast and more cost effective to create. Number42 functions as both a crypto-currency network and a virtual wallet provider.

2.7.6 Case Study 6: Undercover Millionaire Currency (crypto-currency)

Undercover Millionaire Currency (UMC) is a digitally powered peer-to-peer online platform designed to help users buy UMC coins.¹³¹ It was developed by Louis JR Tshakoane, a youth from South Africa. On its website, UMC states that users can get up to 25% interests until October 2017.¹³² The value of UMC depends on the supply and demand of the coin.¹³³ While other crypto-currencies give miners block rewards for successfully solving algorithms, UMC give rewards based on the invested amount.

There is very little information about the operation of this crypto-currency. Unlike many crypto-currencies, some of them discussed above, UMC does not mention a blockchain or a public ledger that records all transactions between the users. A point of concern that stems from lack of transparency and information is that the value of one UMC is not known to the user, therefore the user does not know how many units of this crypto-currency he has purchased. Another point that raises eyebrows is the unusual warning on the website that reads:

¹²⁸ Sagteware.Net ‘Number 42’ <http://www.sagteware.net/Number42/Info> (accessed 20 August 2017)

¹²⁹ A Moyo ‘SA-develop cryptocurrency takes on Bitcoin’ 2017
http://www.itweb.co.za/index.php?option=com_content&view=article&id=161511 (accessed 20 August 2017)

¹³⁰ Moyo (n 129 above)

¹³¹ Undercover Millionaire Currency <http://buyumc.page.tl/> (accessed 21 August 2017)

¹³² ‘as above’

¹³³ ‘as above’

*'Risk Warning: Forex, Commodities and CFDs (OTC Trading) are leveraged products that carry substantial risk of loss up to your invested capital and may not be suitable for everyone. Please ensure that you understand fully the risks involved and do not invest money you cannot afford to lose. The information provided can under no circumstances be considered a recommendation to engage in any trade.'*¹³⁴

In July allegations the UMC could be a scam surfaced. A user who deposited a sum of about R145 000 into the UMC network encountered a problem when he had to withdraw the funds.¹³⁵ Tshakoane responded to the allegations by saying the following:

*'...He did not loan me any money but he bought coins from the company and now they want their money back he thinks he can just tap back and ask for his money back. You buy coins and when there is demand for the coins you sell them to investors and then you make your money from there.'*¹³⁶

It is evident from the lack of transparency that UMC mimics well-established international crypto-currencies. By using words such as “peer to peer” it appears to be following the trends and jargon in the international crypto-currency world.

2.7.7 Case study 7: Luno (exchange and wallet)

Luno, formerly known as BitX, is one of the only two licensed exchanges operating in South Africa.¹³⁷ It was incorporated in Singapore, and has offices in Cape Town. Luno is both an exchange and a virtual wallet provider.¹³⁸ It is the biggest exchange in South Africa in terms of the number of users and the trading volume. Luno allows its users to securely and easily send, receive and store their bitcoins. To guarantee some form of security, the Luno wallets are stored offline.¹³⁹ Users who require a Luno wallet will have to produce Financial Intelligence Centre Act (FICA) documents, such as an identity document and proof of

¹³⁴ Undercover Millionaire Currency (n 131 above)

¹³⁵ J Madibogo 'Tshakoane accused of running forex scam: Former Kaizer Chiefs and Bafana spokesman Louis Tshakoane is caught in a bitter forex trading money dispute' 2017 <http://www.sowetanlive.co.za/entertainment/2017/07/04/tshakoane-accused-of-running-forex-scam> (accessed 10 July 2017)

¹³⁶ 'as above'

¹³⁷ B Booker 'Luno (formerly BitX) Bitcoin Exchange and Wallet Reviewed' 2014 <http://99bitcoins.com/bitcoin-exchange-reviewed/> (accessed 18 August 2017)

¹³⁸ Bitcoinzar 'Bitcoin exchanges in South Africa' 2015 <http://www.bitcoinzar.co.za/bitcoin-exchanges-in-south-africa> (accessed 18 August 2017)

¹³⁹ 'as above'

registration.¹⁴⁰ All deposits into the Luno wallet are free however the user will be charged R8.50 to exchange bitcoin into the South African Rand.¹⁴¹

The price of bitcoin and other crypto-currencies in South Africa are much higher than the global average because of the concept of arbitrage. South African buyers and sellers of bitcoin using Luno are permitted to buy or sell only to other South African Luno users.¹⁴² As such, when the demand is higher than the supply the local price increases in attempt to persuade the sellers. This limited liquidity of bitcoins in South Africa causes the price of bitcoin to be approximately 35% higher than the global price.¹⁴³

2.7.8 Case study 8: ICE³X (exchange and wallet)

ICE³X is the other fully licensed exchange based in South Africa. It is defined as a safe platform where users can exchange their fiat currency for Bitcoin, Litecoin and Ether. It has been operating in South Africa since 2013 and started its operation in Nigeria in 2015.¹⁴⁴

The ICE³X network is based on innovative technology and uses the same architecture as other leading, high-volume transaction systems.¹⁴⁵ ICE³X can process several hundred transactions in a fraction of a second.¹⁴⁶ Similar to Luno, it functions both as an exchange and a virtual wallet provider. This exchange uses offline storage to safeguard its users' cryptocurrencies and thereby minimizing online security threats.¹⁴⁷ To purchase Bitcoin, Litecoin or Ether a user need to register in the ICE³X network. The user has to provide documents in terms of the Financial Intelligence Centre Act (FICA); this is one of the benefits of a licensed exchange. It is free to deposit into your ICE³X account, however it will cost the user R10 to make a withdrawal.¹⁴⁸

¹⁴⁰ 'as above'

¹⁴¹ 'as above'

¹⁴² D van Vuuren 'Bitcoin bull run: why you'll pay a 35% premium on SA exchanges' 2017 <http://www.biznews.com/global-investing/2017/08/25/bitcoin-cryptocurrency-35-premium-sa-exchanges/> (accessed 19 August 2017)

¹⁴³ 'as above'

¹⁴⁴ J Southurst 'Ice3x Launches Nigeria's First Bitcoin Exchange' 2015 <http://www.coindesk.com/ice3x-launches-nigerias-first-bitcoin-exchange/>

¹⁴⁵ Bitcoinzar (n 138 above)

¹⁴⁶ 'as above'

¹⁴⁷ Bitcoinzar (n 138 above)

¹⁴⁸ 'as above'

ICE³X reported an increase of 30% in bitcoin trading volume in 2015 when the Rand weakened.¹⁴⁹ People found it to be a safer solution to hedge against the Rand's inflation and devaluation, even though Bitcoin is also volatile.¹⁵⁰

2.7.9 Case study 9: Bitcoin ATM in South Africa

The establishment of the first Bitcoin ATM in Kyalami, Midrand in August 2014, further evidences the acceptance of Bitcoin and subsequently crypto-currencies. Lamassu Bitcoin vending machine is the brainchild of Rolf Deppe and Monre Botes.¹⁵¹ The term “vending machine” is more appropriate than ATM because the Lamassu Bitcoin does not dispense rands for bitcoins. To utilize the machine, consumers will need to install a Bitcoin wallet application on their smartphones or tablets; such applications include Blockchain and Mycelium.¹⁵² The Bitcoin vending machines electronically sense the QR code generated by the consumer using the application on the smartphone.¹⁵³ The machine will then carry out the instruction from the application, i.e. to sell or buy bitcoins.

2.8 Conclusion

The preceding discussions are indications that crypto-currencies are gaining popularity in South Africa. It is difficult to predict the future of crypto-currencies. With more merchants willing to accept crypto-currency as a form of payment, the previous payment methods may soon be in competition with crypto-currencies. The benefits of crypto-currencies are beyond dispute, i.e. lower transaction costs, however without proper regulation crypto-currencies are also a gateway for organized crimes such as money laundering. Regulation should not stunt the growth of this technology but should instead promote participation and ensure consumer protection. To afford the users some form of protection and security, more exchanges need to be licensed and regulated. In the succeeding chapter, risks associated with crypto-currencies will be discussed in detail.

¹⁴⁹ F Harris ‘People are flocking to bitcoin as the Rand falls’ 2017 <http://ice3x.co.za/south-africans-flock-to-bitcoin-as-rand-falls/> (accessed 18 August 2017)

¹⁵⁰ ‘as above’

¹⁵¹ N Harding ‘First Bitcoin ATM hits South Africa’ 2014 <http://www.ice3x.co.za/first-bitcoin-hits-south-africa/> (accessed 15 August 2017)

¹⁵² R van der Berg ‘SA gets first Bitcoin vending machine’ 2014 <http://www.techcentral.co.za/sa-gets-first-bitcoin-vending-machine/50432> (accessed 15 August 2017)

¹⁵³ ‘as above’

CHAPTER 3: ASSOCIATED RISKS OF CRYPTO-CURRENCIES

3.1 Introduction

In the previous chapter it was shown how crypto-currencies are exponentially becoming more attractive to both consumers and merchants. On the one hand, the technology that drives this new payment method facilitates efficiency, lower transaction costs, faster transactions and flexibility. On the other hand, crypto-currencies could be a driveway for money laundering, avoidance of exchange control regulations and funding terrorism. Owing to their unregulated nature, crypto-currencies are susceptible to illegal usage. In this chapter the risks associated with crypto-currencies will be highlighted, and more emphasis will be placed on protection of consumers against these risks.

3.2 Payment systems and payment service provider

Payments are the driving force behind any country's economy. Payment system is understood to mean a system that enables payments to be effected or a system that facilitates the circulation of money and includes any instruments and procedures that relate to the system.¹⁵⁴ Payment systems are usually comprised of infrastructure, such as institutions and technical means, which facilitates the transfer of monetary value between parties discharging mutual obligation.

The National Payment System (NPS) records payments of over R350 billion on daily basis, through recognised payment mechanism such as cash, debit cards, EFTs, and mobile transfers.¹⁵⁵ In terms of the National Payment System Act, crypto-currencies do not fall under the definition of 'money'.¹⁵⁶ In this regard, payments made using crypto-currencies are currently not covered by the NPS and thus unregulated. The objective of the NPS is to provide a payment system that is safe and efficient.¹⁵⁷ Payment service providers must guarantee adherence to the contractual obligations within the crypto-currency environment or the safety of the payment system will be compromised.¹⁵⁸ Due to the absence of guaranteed settlement of current or future financial obligations, crypto-currency users are exposed to credit risk with regard to the funds in their virtual wallets.¹⁵⁹

¹⁵⁴ National Payment System Act 78 of 1998 sec 1

¹⁵⁵ Payment Association of South Africa 'National Payment System Overview' <http://www.pasa.org.za/national-payment-system/overview> (accessed 2 September 2017)

¹⁵⁶ National Payment System Act 78 of 1998 Sec 1 : 'money' means a banknote or coin issued by the Reserve Bank in terms of section 10(1)(a)(iii), read with section 14 of the South African Reserve Bank Act

¹⁵⁷ SARB 'Position Paper on access to the National Payment System' 2011 3

¹⁵⁸ SARB (n 11 above) 6

¹⁵⁹ 'as above'

Crypto-currencies bring with them ground-breaking alternative digital payments platforms. These decentralised virtual currencies serve as electronic peer-to-peer (P2P) payments mechanisms for e-commerce.¹⁶⁰ A holder of a bitcoin may be able to make P2P or person-to-business (P2B) transactions without the involvement of a third party, such as a financial institution.¹⁶¹ Ripple is one of the crypto-currencies that was designed to operate as a payment system. It is made up of operational networks that are governed by rules and standards that connect different accounts to use and transfer value between each other.¹⁶² By using these systems, users bypass the already established financial institutions by transacting directly with each other. Virtual currency systems settle the transactions in almost real time, which eliminates intermediation costs, including transaction fees and payment uncertainty.¹⁶³

Payment systems are regulated in order to mitigate credit and liquidity risks of intermediaries, who are required to complete the payment transaction. A consumer that uses crypto-currency to pay for goods and services does not have a transparent, end-to-end regulatory scheme that measures the execution of the payment transaction.¹⁶⁴ As such crypto-currency payments are concluded with little transparency as well as accountability. The unregulated nature of crypto-currencies would thus render their operating costs significantly lesser than those of regulated payment systems.

In crypto-currency, payment systems risk could be manifested by liquidity exposures, the anonymity of transacting parties, failure to hold sufficient crypto-currencies to settle the transaction, the volatility in the price of crypto-currencies as well as lack of transparent price formation.¹⁶⁵ The credit and liquidity risks, which may arise from the use of crypto-currencies, could potentially destabilise the structure of the payment system.¹⁶⁶ Liquidity risk may be the result of the institution's failure to settle any commitment it has made to provide liquidity to crypto-currency users.¹⁶⁷ The lack of a central monitoring authority makes virtual currencies extremely susceptible to these risks.

¹⁶⁰ FATF Guidance (n 13 above) 39

¹⁶¹ 'as above'

¹⁶² 'as above'

¹⁶³ 'as above'

¹⁶⁴ SARB (n 11 above) 6

¹⁶⁵ 'as above'

¹⁶⁶ 'as above'

¹⁶⁷ SARB (n 11 above) 7

3.3 Anti-money laundering and Counter-terrorism financing (AML/CTF)

One of the selling points of crypto-currencies is that the persons behind the transactions are unknown to each other. This anonymity may steer users towards illicit transactions. Crypto-currency runs the risk of being used as a platform to clean dirty money.

Money laundering can be defined as a processing of assets generated through criminal activity to obscure the link between the funds and their origins.¹⁶⁸ In 2011, it was reported that money laundering accounted for almost 2.7% of the total global annual gross domestic product (GDP).¹⁶⁹ This percentage amounts to \$1.6 trillion, however law enforcement and regulatory bodies were only able to recover 1% of the laundered money.¹⁷⁰ Money laundering and terrorist financing poses detrimental consequences for the integrity and stability of the financial sectors and the global economy. These illicit activities can discourage foreign investment and distort international capital flows.¹⁷¹ Money laundering has the potential to cause welfare losses by draining resources from more productive economic activities. Owing to globalisation, the effects of these activities could be felt on a global scale. Money launders and terrorist financiers take advantage of the inherent difficulties of the global financial system and the differences between national laws, i.e. jurisdictions with weak or ineffective controls.¹⁷²

Due to their decentralised character, crypto-currency systems are prone to anonymity risks because their addresses or accounts are not associated with the true names of the users or any form of identification nor do they have a central server or service provider.¹⁷³ To be a participant on a virtual currency network, a user is not required to produce identification, as is the case with the banks. These networks do not have central monitoring bodies and there is currently no AML software to oversee and identify transactions, which have suspicious trends.¹⁷⁴ The FATF and the EU pointed out that money laundering and terrorism financing

¹⁶⁸ International Monetary Fund ‘The IMF and the Fight Against Money Laundering and the Financing of Terrorism’ 2017 <http://www.imf.org/en/About/Factsheets/Sheets/2016/08/01/16/31/Fight-Against-Money-Laundering-the-Financing-of-Terrorism> (accessed 13 September 2017)

¹⁶⁹ United Nations Office on Drugs and Crime ‘Estimating Illicit Financial Flows Resulting from Drug Trafficking and other Transactional Organized Crimes: Research Report’ 2011 5

¹⁷⁰ ‘as above’

¹⁷¹ International Monetary Fund (n 168 above)

¹⁷² ‘as above’

¹⁷³ FATF Guidance (n 13 above) 32

¹⁷⁴ ‘as above’

risks could arise from these new payment mechanisms.¹⁷⁵ The global reach of cryptocurrencies increases the potential of AML and CTF risks.¹⁷⁶

One of the virtual currency platforms that was utilised to launder money was Liberty Reserve. Liberty Reserve operated as both a crypto-currency and an exchange.¹⁷⁷ It was based in Costa Rica and described itself as the:

*“...oldest, safest and most popular payment processors...serving millions all around the world.”*¹⁷⁸

During its operation, from 2006 to 2013, Liberty Reserve allegedly laundered \$6 billion for cyber criminals, drug traffickers, child pornographers, identity thieves and other criminals. Before it was rendered obsolete, it had more than a million users and had processed approximately 12 million transactions annually, some of which were legal. True to its nature, the users of Liberty Reserve were anonymous; because they only needed a name, email address and a date of birth, which were not verified, to set up an account.¹⁷⁹

Another digital platform that was used solely by criminals to clean their money was Silk Road. This was a crypto-currency exchange, operating specifically with bitcoins. Silk Road was a hidden marketplace used for trading goods and services such as weapons, drugs, pornography and murder for hire, *inter alia*.¹⁸⁰ It was a huge platform for illicit trading using crypto-currency transfers; it had an estimate of a million users and processing transaction amounting to almost \$1,2 billion.¹⁸¹ Before it was shut down in October 2013, it had made profit of about \$13 million. A user, who acquired an account anonymously through a fake name, would engage in an illegal transaction, e.g. selling drugs, and then exchange the bitcoins acquired from such an agreement for clean fiat currency.

A few days after Silk Road was shut down by the US Department of Justice, Silk Road 2.0 was launched.¹⁸² It had the same mandate as its predecessor. Silk Road 2.0 had back ups in 500 locations, in 17 countries and had it been shut down it was set to re-launch within 15

¹⁷⁵ SARB (n 11 above) 8

¹⁷⁶ Homeland Security Enterprise ‘Risks and threats of cryptocurrencies’ 2014 98

¹⁷⁷ Liberty Reserve was indicted by the Department of Justice of the US in May 2013

¹⁷⁸ BBC ‘Liberty Reserved digital money service forced offline’ 2013 <http://www.bbc.co.uk/news/technology-22680297> (accessed 12 September 2017)

¹⁷⁹ Homeland Security Enterprise (n 176 above) 99

¹⁸⁰ A Greenberg ‘End of The Silk Road: FBI Says it’s Busted The Web’s Biggest Anonymous Drug Black Market’ 2013 <http://www.forbes.com/sites/andygreenberg/2013/10/02/end-of-the-silk-road-fbi-busts-the-webs-biggest-anonymous-drug-black-market/> (accessed 12 September 2017)

¹⁸¹ SR Parker ‘Bitcoin Versus Electric Money’ 2014 3

¹⁸² Homeland Security Enterprise (n 176 above) 100

minutes.¹⁸³ It is evident that without a sound legal framework there will always be a demand for these types of platforms. The anonymity character that is associated with cryptocurrencies predominantly fuels this demand.

It is simple to deduce from the inherent operation of these currencies how terrorism can be easily financed. Crypto-currencies are appealing to terrorist financiers because they can move money across borders using a fast, cheap and relatively safe platform without jeopardising their identity.¹⁸⁴ Following the 9/11 attack, the US enforcement and intelligence agencies were allowed, by law, to track suspicious movement of money.¹⁸⁵ Therefore cryptocurrencies provide a perfect platform to evade these laws. Terrorist may disguise their illicit financial activities through these anonymous and sometimes pseudonymous currencies. Foreign Terrorist Organisations (FTOs) who were previously unable to fund terrorism may now establish a global donor base of like-minded non-state actors.¹⁸⁶

The Infamous State of Iraq and Syria (ISIS) released a blog, which they titled “Bitcoin and the Charity of Violent Physical Struggle.” In this blog they highlighted a use case for Bitcoin as a method of funding terrorism. According to the blog, the pseudonymous character of this crypto-currency complies with the requirements of a radical Islamist group.¹⁸⁷ They wrote that:

“This system has the potential to revive the lost sunnah of donating to the mujahedeem, it is simple, easy, and we ask Allah to hasten its usage for us.”¹⁸⁸

In addition, they mentioned how they can, without effort, acquire weapons, sell drugs and conduct other illegal activities on the Silk Road website, which has since been shut down.¹⁸⁹

A counter argument, against Bitcoin being a driveway for terrorist funding, was made by some people in the crypto-currency community.¹⁹⁰ It was held that the blockchain technology used in crypto-currency would equip states with the tools that could be used to trace terrorist

¹⁸³ A Greenberg ‘How Online Black Market have Evolved since Silk Road’s Downfall’ 2014 <http://www.wired.com/2014/09/internet-black-market/> (accessed 11 September 2017)

¹⁸⁴ Homeland Security Enterprise (n 176 above) 108

¹⁸⁵ ‘as above’

¹⁸⁶ ‘as above’

¹⁸⁷ T al-Munthir ‘Bitcoin wa Sadaqat al-Jihad: Bitcoin and the Charity of Violent Physical Struggle’ <http://alkhilafaridat.files.wordpress.com/2014/07/btcredit-21.pdf> (accessed 16 September 2017) 2

¹⁸⁸ ‘n 187 above, 3’

¹⁸⁹ ‘n 187 above, 2’

¹⁹⁰ PJ Delaney ‘Will Bitcoin be used to Fund Terrorism’ 2014 <http://www.cryptocoinsnews.com/bitcoin-supporting-fighting-terrorism> (accessed 15 September 2017)

funding.¹⁹¹ This argument is endorsed by the fact that charitable foundations are a source of funding for FTOs.¹⁹² Given that charities are used as aliases to fund these FTOs, it is possible for governments to trace the transactions back to the said charities. The use of blockchain technology, by the governments, could potentially limit the abuse of crypto-currency by terrorists. Canada was the first state to amend its anti-money laundering and terrorist financing statute to specifically include crypto-currencies.¹⁹³

3.4 Financial stability

Financial stability is a complex concept to define. In broad terms, financial stability means the joint stability of the key financial institutions and the financial markets in which they operate.¹⁹⁴ A more comprehensive definition is given in the Financial Sector Regulation Bill.¹⁹⁵ To achieve financial stability, there must exist a robust financial system has the ability to prevent, predict and withstand shocks under all types of domestic and international market conditions.¹⁹⁶ Financial stability is evidence by an effective regulatory infrastructure that includes laws, regulations, standard and practices that form a robust financial regulatory environment.¹⁹⁷

A stable financial market is one that has less excessive and disruptive volatility, which may yield positive real economic consequences.¹⁹⁸ Through the concept of financial stability, financial crisis can be avoided and systemic financial risk can be managed.¹⁹⁹ Systemic risk should be managed by the market participants through private risk management and by banking authorities through supervision, market surveillance and systemic risk management.²⁰⁰ If these role players commit to their mandates then systemic financial crises are less likely to occur.

¹⁹¹ Homeland Security Enterprise (n 176 above) 109

¹⁹² Cyber Terrors Blog 'Charities accused of ties terrorism'

<http://www.cyberterrors.wordpress.com/associations/charities-accused-of-ties-to-terrorism> (accessed 15 September 2017)

¹⁹³ C Duhaime 'Canada implements world's first national digital currency law; regulated new financial technology transactions' 2014 <http://www.duhaimelaw.com/2014/06/22/canada-implements-worlds-first-national-bitcoin-law/> (accessed 16 September 2017)

¹⁹⁴ SARB 'Financial Stability' <http://www.resbank.co.za/Financial%20Stability/Pages/FinancialStability-Home.aspx> (accessed 16 September 2017)

¹⁹⁵ sec 4(1)(a) of this Bill states that financial stability means that financial institutions generally provide financial products and financial services and market infrastructure generally perform their functions and duties in terms of financial sector laws without interruption.

¹⁹⁶ SARB (n 194 above)

¹⁹⁷ 'as above'

¹⁹⁸ 'as above'

¹⁹⁹ 'as above'

²⁰⁰ 'as above'

Financial instability could be caused by a manifestation of systemic risks, banking failures, intense asset-price volatility, interest and exchange rate volatility as well as a collapse of market liquidity.²⁰¹ A disturbance of the payment and settlement system could be a resultant of the mentioned manifestations. Regulation of the financial sector seeks to address vulnerability and risks in the financial markets that could potentially weaken the financial stability.²⁰² The objectives of financial regulation are to:

- give institutions incentives for taking systemic risk into consideration,
- protect consumers where it is difficult and expensive to obtain information, and
- support competition and prevent oligopolistic behaviour.²⁰³

In the context of crypto-currencies, financial instability could be found in the link between crypto-currencies and the real economy and where crypto-currencies ruins threaten the smooth functioning of payment systems.²⁰⁴ Crypto-currencies are developing financial services outside the boundaries of the supervisory and regulatory framework and this may lead to the eruption of new risks.²⁰⁵ The emergence of these new technologies may also significantly increase the speed and the volume of financial transaction.²⁰⁶ The IMF stated that it is not yet clear whether this would promote financial stability through increased efficient price discovery or if this would lead to greater volatility and instability.²⁰⁷

Crypto-currency is largely based on algorithms and technological solutions; therefore wider adoption of crypto-currencies could increase vulnerabilities to cyber-attack.²⁰⁸ Crypto-currencies may also increase concentration risk on key nodes within the global system as market structures adjust and network connection strengthen.²⁰⁹ In its 2014 Position Paper, the SARB vowed to constantly monitor and analyse market and other financial and economic factors in order to identify and mitigate any emerging systemic risks.²¹⁰ Monitoring systemic risks would be challenging given the anonymity of exposures, decentralised parties and lack

²⁰¹ 'as above'

²⁰² D He et al 'Fintech and Financial Services: Initial Considerations' 2017 14

<http://www.imf.org/~media/Files/Publications/SDN/2017sdn1705.ashx> (accessed 16 September 2017)

²⁰³ 'as above'

²⁰⁴ SARB (n 11 above) 12

²⁰⁵ He et al (n 202 above) 15

²⁰⁶ 'as above'

²⁰⁷ 'as above'

²⁰⁸ 'as above'

²⁰⁹ 'as above'

²¹⁰ SARB 'Position Paper on Virtual Currencies (n 11 above) 12

of a governing regulatory framework.²¹¹ SARB stated that it would implement appropriate policies if a need arises and monitor the impact of these policies on the broader financial system.²¹²

3.5 Price stability

Price stability refers to the general level of prices in the economy; it is achieved by avoiding prolonged inflation and deflation.²¹³ The SARB must achieve and maintain price stability in the interest of a balanced and sustainable economic growth in South Africa.²¹⁴ The attainment of price stability is measured by setting an inflation target that is used as yardstick with which price stability is quantified.²¹⁵ To attain the desired level of price stability, there must be stability in the financial system and financial markets.²¹⁶ Therefore price stability is directly proportional to financial stability.

Price stability has a number of benefits to the economy such as increasing economic activity and employment. Price stability may increase these factors by:

- improving the transparency of the price mechanism. When people can anticipate changes in the prices of different goods, they are able to make sound decision when it comes to consumption and investment,
- reducing inflation risks where interests rates are involved. Reducing real interest rates will subsequently increase incentives for investing,
- avoiding unproductive activities to hedge against the negative impact of inflation or deflation,
- reducing distortions of inflation or deflation that can worsen the distortionary impact on economic behaviour of tax and social security systems,
- preventing an arbitrary redistribution of wealth and income as a result of unexpected inflation or deflation, and
- contributing to financial stability.²¹⁷

²¹¹ G Fernandez Laris ‘Bitcoin: To Regulate or not to Regulate?’ 2017 <http://sevenpillarsinstitute.org/case-studies/bitcoin-regulate-not-regulate> (accessed 10 September 2017)

²¹² SARB (n 11 above) 12

²¹³ European Central Bank ‘Benefits of Price Stability’ <http://www.ecb.europa.eu/mpo/intro/benefits/html/index.en.html> (accessed 03 September 2017)

²¹⁴ SARB ‘Mandate’ <http://www.resbank.co.za/AboutUs/Mandate/Pages/Mandate-Home.aspx> (accessed 03 September 2017)

²¹⁵ ‘as above’

²¹⁶ ‘as above’

²¹⁷ European Central Bank (n 213 above)

Crypto-currencies have no central regulatory authority, and as such there are no policies that regulate price stability. The value of crypto-currencies is very volatile. It was argued that crypto-currencies could potentially affect price stability in cases where they substantially modify the quantity of money, have an impact on the velocity of money, the use of cash and influence the measurement of monetary aggregates.²¹⁸ Crypto-currencies may have an impact on price stability and monetary policy if they manage to affect SARB's liabilities and disrupt the control of capital through open market operations.²¹⁹

If more consumers and merchants accept crypto-currencies as the primary tender, there will be a substantial effect on fiat currencies and the need for cash will be decreased.²²⁰ This will subsequently reduce the balance sheet of the central bank and its ability to influence the short-term interest rates.²²¹ These risks to price stability will increase as more people crypto-currencies.

3.6 Avoidance of Exchange Control Regulations

Exchange control refers to the manner in which the government of a particular country attempts to control the movement of money into and out of the country.²²² In South Africa, the Exchange Control Regulations Act of 1961 governs this function. The main objective of this Act is to prevent the loss of foreign currency resources through the transfer abroad of real or financial assets held in South Africa, and to form an effective system of control over the movement of financial and real assets into and out of South Africa.²²³ Exchange control regulations also govern companies that need to make payments to a foreign party.²²⁴ The regulations cover all foreign payments made by a South African resident and loans granted to a South African by a foreign investor.²²⁵

The Exchange Control Regulations applies to South African residents, and persons regarded as residents for exchange control purposes.²²⁶ The SARB oversees the exchange control system and the capital in and outflows although it delegates some of its power to larger financial institutions, such as banks, to monitor transactions on behalf of SARB.²²⁷ Persons,

²¹⁸ European Central Bank 'Virtual Currency Schemes' 2012 34

²¹⁹ SARB (n 11 above) 7

²²⁰ European Central Bank (n 218 above) 35

²²¹ 'as above'

²²² Immigration & Business Solutions 'Foreign Exchange Control Regulations in South Africa'

<http://ibn.co.za/foreign-exchange-control-regulations-in-south-africa> (accessed 11 September 2017)

²²³ SARB (n 11 above) 10

²²⁴ Immigration & Business Solutions (n 222 above)

²²⁵ 'as above'

²²⁶ 'as above'

²²⁷ 'as above'

both natural and juristic, need to justify the transfer and they may only proceed with the transfer with SARB's prior approval or the approval of any authorised institution.²²⁸ The regulations allow for a foreign capital allowance of R4 million per calendar year.²²⁹ South African residents may transfer these funds abroad and invest it however they wish without the prior approval from the Financial Surveillance Department of SARB (FinSurv).²³⁰ The only required document is the tax clearance certificate.

In South Africa, exchange controls have always been a contentious issue. This was proven in the recent case between SARB and IT billionaire Mark Shuttleworth. In March 2008, Shuttleworth applied to SARB to have his R1.5 billion transferred out of South Africa because he had moved to Isle of Man.²³¹ In terms of the legislation, Shuttleworth had to pay a 10% levy on all the assets he was planning to export.²³² He subsequently paid an exit levy of R250.5 million, which he believed it was unfair and unconstitutional. Shuttleworth took his dissatisfaction to Pretoria High Court, which refused to order the repayment sought.²³³ However the High Court removed certain provisions of the Currency and Exchange Act as well as the Exchange Control Regulations.²³⁴ Mark Shuttleworth appealed this decision, and the Supreme Court of Appeal (SCA) upheld his appeal by setting aside the order of the High Court.²³⁵ The SCA ordered SARB to repay the damages with interest; it held that the 10% levy was inconsistent with sections 75 and 77 of the Constitution and thus invalid.²³⁶ Furthermore, the SCA stated that it was ultra vires, as it is beyond the treasury's legal authority to impose such conditions on the exportation of capital from South Africa.²³⁷ Following the decision of the SCA, SARB took the matter to the Constitutional Court. The Constitutional Court dismissed the ruling of the SCA, making the 10% levy against Shuttleworth valid.²³⁸

As the economic hub of the Southern African, South Africa is a home for 2.1 migrants who are coming from the 14 countries of the Southern African Development Community

²²⁸ 'as above'

²²⁹ SARB (n 11 above) 11

²³⁰ SARB (n 11 above) 11

²³¹ Fin24 'Shuttleworth loses R250m exchange control battle' 2015

<http://fin24.com/fin24/Companies/Financial-Services/Shuttleworth-loses-R250m-exchange-control-battle-20150618> (accessed 15 June 2017)

²³² 'as above'

²³³ *Shuttleworth v South African Reserve Bank and Others* 2013 3 SA 625 (GNP)

²³⁴ *Shuttleworth v South African Reserve Bank and Others* 2013 3 All SA 625 (GNP)

²³⁵ *Shuttleworth v South African Reserve Bank* 2014 4 All SA 693 (SCA)

²³⁶ *Shuttleworth v South African Reserve Bank* 2014 4 All SA 693 (SCA)

²³⁷ *Shuttleworth v South African Reserve Bank* 2014 4 All SA 693 (SCA)

²³⁸ *South African Reserve Bank and Another v Shuttleworth and Another* 2015 8 BCLR 959 (CC)

(SADC).²³⁹ The migrants send approximately R6.1 billion home in cross-border remittances a year.²⁴⁰ Of that amount, only 5% of the transactions are sent through proper exchange and anti-money laundering channels.²⁴¹ Migrants' choices of remittance methods are usually affected by the following factors;

- the simplicity of the transaction process,
- familiarity with the remittance system,
- the cost of the transaction,
- the time take to complete the transaction,
- the associated risks of the preferred payment method, and
- accessibility by the receiver of the remittance.²⁴²

The anonymity involved in crypto-currencies allows for undetected transactions and capital outflows. Crypto-currencies have the potential to cause a circumvention of exchange control rules because the transaction would not be effected and reported by an authorised institution in foreign exchange. Owing to the fact that crypto-currencies are unregulated, the risks associated with cross-border trades are borne by the user. FinSurv is not mandated to report on the “flow” of crypto-currencies because the transaction is not reported on the FinSurv Report System.²⁴³

Crypto-currencies put a significant competitive pressure on the current exchange control systems because of their low transaction costs. Citizen wishing to relocate to other countries may opt to transfer their funds using crypto-currencies, as they are prompt and relatively cheap. This practice could potentially minimise the country's tax base that is accumulated, inter alia, through exit levies. It is then very paramount to regulate these currencies to minimise the possible circumvention of exchange control regulations.

3.7 Consumer risks

Crypto-currencies poses risks to the user, mostly because their unregulated character. Taking into consideration all the abovementioned risks, it is evident that they will ultimately affect the consumer. This thesis was inspired by the need to protect the consumer from these risks. A discussion of these risks will now follow.

²³⁹ S Truen et al. 'Supporting Remittances in Southern African: Estimating Market Potential and Assessing Regulatory Obstacles' 2005 ix

²⁴⁰ 'n 240 above, x'

²⁴¹ Truen et al (n 239 above) 88

²⁴² Truen et al (n 239 above) 27

²⁴³ SARB (n 11 above) 11

3.7.1 Lack of transparency

Crypto-currency has been in existence since 2009 and it is still a very complex concept to understand. Its complexity can be attributed to the limited information that is available. There are no transparency requirements that apply in terms of these virtual currencies.²⁴⁴ Lack of transparency could mislead the consumer when evaluating the associated risks and value.²⁴⁵ Crypto-currencies can bear undisclosed features that may be exploited for fraudulent activities, thereby putting the consumers at a risk.²⁴⁶

As explained in chapter 2, consumers may opt to accumulate profit through the process of mining. Mining is a complex practice that involves solving mathematical algorithms in order to issue and distribute crypto-currency units. Owing to the fact that most users are not familiar with this costly process, lack of transparency around mining poses risks for the consumer. Third parties who claim to know more about crypto-currency charge potential users for information that should be readily available. Lack of transparency can thus be exploited and users will suffer the consequences thereof.

3.7.2 Absence of legal status

Currently in South Africa, crypto-currencies do not have a legal status; most of the key players of crypto-currencies are unregulated nor supervised.²⁴⁷ Due to this unregulated environment, users do not benefit from the legal protection, such as a deposit guarantee scheme.²⁴⁸ This lack of regulation exposes the consumer to various risks that would, otherwise, be mitigated by the presence of regulation. Furthermore, lack of information about the legal obligations of different parties may expose consumers to unexpected legal requirements that may render their online contracts illegal or void.²⁴⁹ Such legal obligations may include taxation laws surrounding crypto-currencies.

Although crypto-currencies are not regulated in South Africa, users of these currencies are not exempted from paying taxes on the income made through virtual currencies.²⁵⁰ When a user exchanges virtual currencies for rand it may trigger a capital gain event and earnings of

²⁴⁴ European Central Bank ‘Virtual currency schemes – a further analysis’ 2015 20

²⁴⁵ ‘n 245 above, 21’

²⁴⁶ ‘as above’

²⁴⁷ SARB (n 11 above) 12

²⁴⁸ European Central Bank (n 244 above) 21

²⁴⁹ ‘as above’

²⁵⁰ J McKane ‘How your Bitcoin earnings are taxed in South Africa’ 2017

<http://mybroadband.co.za/news/banking/210074-how-your-bitcoin-earnings-are-taxed-in-south-africa.html>
(accessed 19 June 2017)

active crypto-currency traders may qualify as income for tax purposes.²⁵¹ The South African Revenue Services (SARS) stated that transactions made in crypto-currency, particular bitcoin, are subject to the general principles of South African tax law and are therefore taxed accordingly.²⁵²

Another important part of the crypto-currency ecosystem that has a legal “grey area” is the exchange. In South Africa only two exchanges are fully licensed and are in compliance with FICA standards and there are currently at least five exchanges that are not licensed.²⁵³ Subscribers of these exchanges are vulnerable to losses resulting from fraud, theft or even bankruptcy.²⁵⁴ Mt Gox, which oversaw 80% of Bitcoin transactions, has been a victim of these incidents numerous times. In 2011 it was reportedly hacked and its users lost \$8.75 million.²⁵⁵ A similar problem occurred in 2014 where \$460 million disappeared from the system, this incident led to Mt Gox filing for bankruptcy.²⁵⁶ The users of another exchange, MyCoin, lost an estimate of €342 million after fraud allegations.²⁵⁷ Although some exchanges are licensed, consumers do not have legal recourse should they suffer a loss at the hands of these exchanges. There are no compensation mechanism that are put in place should these exchange not meet their obligations.²⁵⁸

3.7.3 High volatility

Volatility is characterised by how much the price of a financial asset varies over time. The higher the volatility, the riskier it is for the user to hold on to the asset. The high volatility of crypto-currencies is one of the major concerns for its users. The value of crypto-currencies is based on the perception of its users; therefore its value is subject to constant inflation and deflation because there is no monetary policy that regulates this. The volatility of these currencies raises concern for users because they will have to dispose their units by either cashing out their crypto-currencies or using them to buy goods.²⁵⁹

²⁵¹ ‘as above’

²⁵² S Samantha ‘Bitcoin and Tax revision South Africa’ 2017 <http://ice3x.co.za/bitcoin-and-tax-revision-south-africa/> (accessed 13 May 2017)

²⁵³ Bitcoinzar ‘Bitcoin exchanges in South Africa’ (n 138 above)

²⁵⁴ European Central Bank (n 244 above) 21

²⁵⁵ J Mick ‘Inside the Mega-Hack of Bitcoin: the Full Story’ 2011 <http://dailytech.com/Bitcoins+Largest+Exchange+Mt+Gox+Hacked+Closes+After+Massive+Selloff/article21942.htm> (accessed 20 July 2017)

²⁵⁶ R McMillan ‘The inside story of Mt. Gox, Bitcoin’s \$460 million disaster’ 2014 <http://www.wired.com/2014/03/bitcoin-exchange> (accessed 15 July 2017)

²⁵⁷ C Osborne ‘Bitcoin closes its doors \$387 million in investor funds vanishes’ 2015 <http://www.zdnet.com/article/mycoin-closes-its-doors-387-million-in-investor-funds-vanishes/> (accessed 19 July 2017)

²⁵⁸ European Central Bank (n 244 above) 21

²⁵⁹ European Central Bank (n 244 above) 23

There is a risk that once the consumer uses crypto-currency to make payment, the value of the particular crypto-currency may increase. This uncertainty and lack of predictability may cause consumers to be more reluctant to use crypto-currencies as a payment method. Subsequently, merchants will also be reluctant to accept these currencies if the opposite occurs. Potentially consumers may be exposed to exchange rate risks due to the high volatility of virtual currencies.²⁶⁰

Consumers need assurance that a crypto-currency unit is stable before using it as a payment currency. If the unit extremely fluctuate, there is a possibility that fewer consumers will opt for this payment mechanism. This will in turn stunt user adoption and consequently the broader adoption of crypto-currency.

3.7.4 Anonymity

The blockchain, otherwise known as a public ledger, is a platform where all transactions between the users are recorded. Users are identified only by their virtual currency addresses, which act as pseudonyms.²⁶¹ This is one of the features of crypto-currency that consumers find most attractive. It is nearly impossible to link a particular address on a blockchain to a real person or organisation.²⁶² Fraudsters could potentially mislead legitimate consumers about the real beneficiary of the payments.²⁶³

Due to the hidden identity of real beneficiaries, such fraudulent activities occur on regular basis. The impossibility of reversing these transactions increases the risks of these fraudulent transactions.²⁶⁴ Owing to this anonymous character, it will be difficult to employ a mechanism that makes it possible for these erroneous or fraudulent transactions to be resolved.²⁶⁵

3.7.5 Lack of continuity

Notwithstanding the exponential growth of crypto-currency, users are exposed to the risk that these networks may suddenly come to a halt. Should the crypto-currency activities end, users will be left with crypto-coins that are worthless.²⁶⁶ Key players, such as exchanges, may decide to discontinue their services due to factors like bankruptcy and lack of profitability.²⁶⁷

²⁶⁰ European Central Bank (n 244 above) 23

²⁶¹ European Central Bank 'Virtual currency schemes' (n 244 above) 22

²⁶² 'as above;

²⁶³ 'as above;

²⁶⁴ SARB (n 11 above) 10

²⁶⁵ European Central Bank (n 244 above) 22

²⁶⁶ 'as above'

²⁶⁷ 'as above'

Merchants choose to accept crypto-currencies out of their free will, and it is one the same premise that they can decide to stop accepting crypto-currencies as a payment method. Should this occur, it could be misconstrued to mean that there is little confidence in the particular crypto-currency. This could potentially lead to illiquidity.

3.7.6 Emergence of illegitimate crypto-currencies

Crypto-currencies are seen as an alternative to centralised currencies, with people hedging their South African currency against virtual currencies such as Bitcoin and Ethereum. Virtual currencies are gaining popularity in South Africa, which poses the risk of “fake” currencies being invented. People are constantly looking for a new investing venture, and crypto-currencies appear to be a solution because of their rising value. Scammers could exploit the unregulated nature as well as lack of transparency of these currencies, by inventing systems that imitated crypto-currencies. As discussed in Chapter 2, UMC claims to be a crypto-currency however there is no trace of cryptography in its operation. UMC, unlike other virtual currencies, is not mined and does not have a blockchain. Another imitation of a crypto-currency system in South Africa is Pipcoin. Users need to be aware of these scams. There must exist a regulatory authority that will see to it that these systems are recognised as legitimate, this will help consumers to make conscious decisions and mitigate risk of loss.

3.8 Conclusion

Crypto-currencies present themselves as advantageous alternatives. With the aid of these virtual currencies cross-border and e-commerce transactions have become easier, faster and relatively cheaper than pre-existing mechanisms. These are all good news for the legitimate consumers and realistically potential criminals. AML and exchange control rules can be evaded with the same ease. If the growth of crypto-currencies continues on this trajectory, a need for a sound effective legal framework will be unavoidable. Without regulation, crypto-currency could destabilise the financial sector. However mitigating consumer risk cannot be postponed any further. In the next chapter, the importance of financial regulation will be investigated. There are some countries have made positive strides in attempting to mitigate risks emerging from crypto-currencies, these attempts will also be discussed in the next chapter.

CHAPTER 4: REGULATION OF CRYPTO-CURRENCIES

4.1 Introduction

The decentralised feature of crypto-currencies, distances them from a body of laws that governs fiat currency. Risks associated with crypto-currencies were dissected in the previous chapter, and its lack of regulation of these currencies fuels the extent of these risks. South Africa's financial sector is regulated through a comprehensive legal framework that has managed to keep up with international standards. The regulatory bodies have not kept up with crypto-currencies. This chapter will analyse the points of convergence between crypto-currencies and the current legal regime in South Africa. To get a clear view on how to incorporate these currencies into existing laws, the objectives of financial regulation will be discussed. There are some countries that managed to integrate crypto-currencies into their legal frameworks. This chapter will also look at the governance of crypto-currencies by different countries.

4.2 Importance of regulation

The financial sector is regulated mostly because unlike other industries, it exhibits market failures that could have devastating results.²⁶⁸ There are different approaches to financial regulation. The three perspectives of financial regulation are; philosophy, principles and objectives.²⁶⁹ The philosophy of financial regulation is built on accepted norms and conventions of the financial community and the ideologies and philosophies of political authorities.²⁷⁰ The principles of financial regulation refer to those principles that should be applied when formulating policies, regulatory requirements and the structure of regulatory institution.²⁷¹ These principles are, *inter alia*, efficiency-related, stability-related and regulatory structure related.²⁷² The essence of this section; objectives of financial regulation will be extensively discussed in the following subsections. The main objective of regulating the financial sector is to achieve a high degree of economic efficiency and consumer protection.²⁷³ It is against this backdrop that the following core objectives are acknowledged.

²⁶⁸ The University of Warwick 'Chapter 1: Why Regulate?' 9

²⁶⁹ H Falkena et al 'Report: Financial Regulation in South Africa' 2005 1

²⁷⁰ 'as above'

²⁷¹ Falkena et al (n 269 above) 5

²⁷² 'as above'

²⁷³ Falkena et al (n 269 above) 2

4.2.1 Ensuring systemic stability

A strong economy is characterised by its ability to withstand shocks that could arise from ineffective trading, poor clearing and settlement systems, substantial market illiquidity, poor market infrastructures, *inter alia*.²⁷⁴

South Africa's economy amounts to 1% of the total global GDP, however it is not immune from major global shocks that may occur.²⁷⁵ An example of a global shock is the 2008 financial crisis. Owing to the regulations that were put in place during that period, South Africa was well equipped to stand against the global storm.²⁷⁶ Low levels of external debt, relevant fiscal and monetary policies and a flexible rate helped South Africa's economy to get through the crisis with minimal casualties.²⁷⁷ This is not say to claim that the global crisis did not have an impact on the countries economic activities. Notwithstanding the mechanisms that were put in place, there were certain sectors that were affected. Following the 2008 crisis, the financial regulators in South Africa responded with the Financial Sector Regulation (FSR) Bill that will implement the Twin Peaks model of financial sector regulation.²⁷⁸ The Twin Peaks model is designed to make the financial services industry safer. The two most important objectives of the Twin Peaks model are to:

- strengthen the manner in which South Africa approach consumer protection and market conduct in the financial sector, and
- create a resilient and stable financial system.²⁷⁹

The model proposes two regulatory authorities namely; the Prudential Authority (PA) and the Financial Sector Conduct Authority (FSCA). The PA will be assigned the duty of strengthening the financial safety and soundness of financial institutions.²⁸⁰ The FSCA's aim will be to improve the consumer protection and to ensure that they are treated fairly by the financial institutions.²⁸¹

²⁷⁴ as above'

²⁷⁵ R Baxter 'The global economic crisis and its impact on South Africa and the country's mining industry' 2005 SARB publication 105-116 112

²⁷⁶ 'as above'

²⁷⁷ 'as above'

²⁷⁸ Financial Services Board 'What is Twin Peaks?' <http://www.fsb.co.za/Departments/twinpeaks/Pages/What-is-Twin-Peaks.aspx> (accessed 24 July 2017)

²⁷⁹ 'as above'

²⁸⁰ National Treasury 'Twin Peaks in South Africa: Response and Explanatory Document' 2014 7

²⁸¹ 'as above'

Systemic stability can also be upheld by maintaining the integrity of the payment systems and the securities delivery system with regard to the financial markets.²⁸²

In the context of crypto-currency, it is evident that there is a substantial possibility for systemic failure. Crypto-currency networks and key players may decide to close shop, and leave the consumer with worthless crypto-coins. Subsequently, this would cause liquidity issue when merchants stop accepting virtual currencies. Crypto-currencies were developed to be finite, for instance the last Bitcoin could be mined in 2043.²⁸³ Exchanges are concerned that the teams responsible for these crypto-currencies could generate systemic instability.²⁸⁴ It was stated by Brian Armstrong, the CEO of Coinbase exchange, that the development team seem to be reluctant when it comes to solving the finite nature of crypto-currencies.²⁸⁵ According to him the miners may see this reluctance as a red flag and may stop activities because of potential lack of profitability.²⁸⁶

It is evident that there are continuous operational challenges in the crypto-currency ecosystem that indicate potential systemic failures. In that light, there is a need for regulatory intervention to mitigate potential risk. The systemic risk discussed is limited only to the crypto-currency network and do not affect the other financial institutions.

4.2.2 Safeguarding the safety and soundness of financial institutions

The prudential regulation and supervision of financial institutions assist the SARB in achieving the overall financial stability.²⁸⁷ In their quest to promote efficiency, the regulatory authorities should not impose laws that create regulatory obstacles or barriers of financial institution, even when there is a systemic dimension.²⁸⁸

The most important rationale behind the regulation of financial institutions is to minimise the concerns over their safety and stability.²⁸⁹ Mandatory deposit insurance schemes are introduced in order to avoid banks runs.²⁹⁰ Capital liquidity requirements ensure that financial

²⁸² Falkena (n 269 above) 3

²⁸³ As discussed in the operational section in Chapter 2

²⁸⁴ S Higgins 'Coinbase CEO: Core Developers May Be Bitcoin's 'Biggest Systemic Risk' 2016
<http://www.coindesk.com/coinbase-brian-armstrong-risk-developers/> (assessed 12 September 2017)

²⁸⁵ 'as above'

²⁸⁶ 'as above'

²⁸⁷ SARB 'Regulation and Supervision'

<http://www.resbank.co.za/RegulationAndSupervision/Pages/RegulationAndSupervision-Home.aspx> (accessed 13 September 2017)

²⁸⁸ Falkena (n 269 above) 3

²⁸⁹ A Heimler 'Competition Policy, Antitrust enforcement and Banking: some recent developments' 2006 3

²⁹⁰ 'as above'

institutions do not become too exposed.²⁹¹ As the lender of last resort, the SARB intervenes where there is temporary illiquidity. Under the Twin Peaks model, as facilitated by the incoming FSR Bill, the PA will oversee the functioning of systematically important financial institutions (SIFIs).²⁹² The SARB together with the PA will set standards for SIFIs in relation to capital, leverage, liquidity and Recovery and Resolution Plans (RRPs).²⁹³

The Basel III Accord was introduced with the aim to improve the ability of the banking sector to absorb shocks caused by the financial and economic stress by strengthening the transparency and disclosures of the banks.²⁹⁴ The Basel III transforms micro prudential regulation by strengthening the resilience of individual banking institutions during stressful periods.²⁹⁵ It also reforms macro prudential measures that tackle systemic risks by reducing the ability of banks to damage the economy through excessive risk taking.²⁹⁶

Should similar regulatory mechanisms be applied to crypto-currencies, consumers will have more confidence in the crypto-currency ecosystems. Factors that impact on the integrity of crypto-currency, such as lack of transparency, would be properly supervised. Through relevant frameworks that promote liquidity, lack of continuity will no longer be a threat to current and potential users. By introducing regulation in the world of crypto-currency, the number of transactions will increase and there will be confidence in the available services and crypto-currencies will less likely be associated with illicit activities.

4.2.3 Promoting consumer protection

Consumer protection is paramount where there is a possibility that the consumer may be exploited due to asymmetric information flows.²⁹⁷ Regulatory authorities have an important role to ensure that there are rules in place to protect the customer. Financial consumer protection is an integral part of the legal and regulatory framework in the financial sector.²⁹⁸ Legal and judicial mechanisms should not be lenient and should aim at protecting the consumer from frauds and abuses.²⁹⁹ In order to protect the consumer, regulation need to

²⁹¹ 'as above'

²⁹² National Treasury (n 280 above) 24

²⁹³ 'as above'

²⁹⁴ Basel Committee on Banking Supervision 'Basel III: A global regulatory framework for more resilient banks and banking systems' 2010 <http://www.bis.org/publ/bcbs189.pdf> (accessed 14 September 2017)

²⁹⁵ 'as above'

²⁹⁶ 'as above'

²⁹⁷ Falkena et al (n 269 above) 3

²⁹⁸ OECD 'Draft G20 High Level Principles on Financial Consumer Protection for Public Consultation' 2011 5 <http://www.oecd.org/daf/fin/financial-markets/48473101> (accessed 12 September 2017)

²⁹⁹ 'as above'

promote the integrity, transparency and disclosure when supplying financial services.³⁰⁰ Efficient legal frameworks should see to it that competent staff provides these services and the consumer has access to the full spectrum of retail financial services.³⁰¹ There must be compensation mechanisms, which are effective and cost-efficient, available in case the consumer is wronged.³⁰²

Crypto-currency systems do not have mechanisms readily available to the consumer to measure liquidity of exchanges and associated risks, such as bankruptcy, fraudulent misappropriation of funds and vulnerability to hacks. This lack of quantifying mechanisms suggests a lack of transparency in the crypto-currency ecosystem. Furthermore, the absence of any compensation mechanisms and the implicit guarantee of government as the lender of last resort suggest that there is insufficient consumer protection. Asymmetric information flows are evidenced by the inability of measuring these risks. Based on the actual and potential risks, it is apparent that regulatory intervention is required.

4.3 International regulation

More and more people are accepting and using crypto-currencies. Virtual currencies have certainly become mainstream especially owing to the fact that more merchants have started accepting them as a form of payment. Crypto-currencies have captured the attention of regulators around the world. The prime focus of regulatory intervention has been on issues such as anti-money laundering, consumer protection, taxation, fraud and counter-terrorist financing.³⁰³

Some countries have been successful in incorporating crypto-currencies into their already existing body of legislation; therefore crypto-currencies are, to some extent, regulated in some jurisdiction. The absence of a single legal framework that is specific to crypto-currencies should not be evidence of complete lawlessness. This section will look at how crypto-currencies are regulated internationally.

4.3.1 Canada

Canada is the first country to pass a law that aims at regulating virtual currencies. Canada's national tax administrator, the Canada Revenue Agency (CRA) was one of the government agencies that called for legal intervention so far as crypto-currencies are concerned.³⁰⁴

³⁰⁰ Falkena et al (n 269 above) 3

³⁰¹ 'as above'

³⁰² 'as above'

³⁰³ Virtual Currency Today 'Regulation of Virtual Currencies: A Global Overview' 2015 3

³⁰⁴ S Hoegner & J Friedman 'Canada' in S Hoegner (ed) *The Law of Bitcoin* (2015) 1

Canada has a federal system of governance, with a separation of powers between federal and provincial governments. Quebec is the only province that follows civil law while the rest of the provinces follow common law.³⁰⁵ This section will discuss the Bill C-31 that was amended specifically to factor in crypto-currencies. The application of current laws on virtual currencies will also be discussed.

- **Anti-money laundering and counter-terrorist financing**

In 2014, the Parliament passed the bill that amended Canada's money laundering and terrorist financing Act.³⁰⁶ The application of the amended Act was extended to persons in Canada that deal in crypto-currencies as well as persons distributing virtual currencies who reside outside of Canada.³⁰⁷

Canadian AML laws are found mainly in three sources namely; the Criminal Code, the Proceeds of Crime and Terrorist Financing Act (PCA) and the Proceeds of Crime and Terrorist Financing Regulations (PCA Regulations).³⁰⁸ Money laundering is defined in the Criminal Code as the act of using, transferring possession, sending or delivering any property or any proceeds of any property with the intent of concealing or converting that property with the knowledge that all or part of that property was acquired directly or indirectly as a result of an illegal activity.³⁰⁹ Canadians who launder money using crypto-currency platforms are bound by this definition. In terms of definition there must exist an intention to launder the proceeds and the person must be aware that the crypto-currency was obtained illegally. The Criminal Code inclusively defines property as an intangible or tangible asset, crypto-currencies fall under this definition.

The PCA established the Financial Transactions and Reports Analysis of Canada (FinTRAC). FinTRAC is mandated to prevent money laundering and terrorist financing by analysing financial transaction reports and ensuring compliance with the PCA and the PCA Regulations.³¹⁰ The FinTRAC requires money services businesses (MSBs), such as securities dealers and accountants, to register and report to FinTRAC, keep prescribed records and obtain certain information about their clients.³¹¹ The new bill broadened the

³⁰⁵ 'as above'

³⁰⁶ Virtual Currency Today (n 303 above) 5

³⁰⁷ 'as above'

³⁰⁸ Hoegner & Friedman 'Canada' in Hoegner (n 304 above) 2

³⁰⁹ Criminal Code R.S.C., 1985, c. C-46 (hereafter 'Criminal Code') sec 462.31(1)

³¹⁰ FinTRAC 'About FINTRAC' <http://www.fintrac.gc.ca/intro-eng.asp> (accessed 20 September 2017)

³¹¹ Hoegner & Friedman 'Canada' in Hoegner (n 304 above) 5

definition of MSB to include entities that deal in virtual currencies.³¹² Following this inclusion exchanges and other crypto-currency businesses will be required to adhere to MSB requirements as provided by the PCA. Exchanges will be required to register with the FinTRAC and provide information regarding their operations such as their business, branches, agents, owners and banking.³¹³ Not all exchanges operate with legitimate reasons and disclosing of their business would minimize the number of illegal exchanges. Additionally, exchanges must ensure that they comply with the PCA Regulations in terms of record-keeping, verifying identity, reporting suspicious transactions and protecting the financial system as a whole.³¹⁴ This requirement takes away the anonymity feature of crypto-currencies. The identity of those who plan to launder money through crypto-currencies will no longer be hidden and that will ensure that perpetrators are traced.

- **Consumer Protection**

Because crypto-currencies are digital, most of the transactions will be conducted online. Owing to the anonymity of parties transacting using crypto-currencies, it is evident that the consumer may pay the wrong person or a person who misrepresents himself as a merchant. Provincial law currently protects, to an extent, consumers who conduct transactions using virtual currencies.³¹⁵

In the common law province of Ontario, consumers are protected under the Consumer Protection Act (OCPA). The OCPA outlines the rights of the consumer as well as the obligations of the supplier.³¹⁶ The OCPA governs the relationship between the consumer and the merchant if one of these parties resides in Ontario. In terms of the OCPA there is no limit with regards to the right or remedy a consumer may claim at common law.³¹⁷ OCPA voids any term or acknowledgment that varies any condition or warranty.³¹⁸ The OCPA defines payment as any kind of consideration including an initiation fee,³¹⁹ from this broad definition it seems as though crypto-currencies are included. Under the OCPA

³¹² Statutes of Canada ‘Bill C-31’ 2014 http://www.parl.ca/Content/Bills/412/Government/C-31/C-31/C-31_4.PDF (accessed 22 September 2017)

³¹³ Hoegner & Friedman ‘Canada’ in Hoegner (n 304 above) 10

³¹⁴ PCA sec 9.6(1)

³¹⁵ Hoegner & Friedman ‘Canada’ in Hoegner (n 304 above) 24

³¹⁶ ‘n 324 above, 25’

³¹⁷ Ontario Consumer Protection Act (OCPA) of 2002 sec 6

³¹⁸ OCPA sec 9(3)

³¹⁹ OCPA sec 1

the merchant is required to disclose information such as; the address of the business, fair description of the goods, *inter alia*.³²⁰

Under civil law, the province Quebec protects its consumer using the Quebec Consumer Protection Act (QCPA). The QCPA applies to all consumer contracts that are concluded or assumed to be concluded in the province of Quebec. The QCPA does not expressly state that payment should be made in money or legal tender; consequently cryptocurrencies are fitting to qualify as payment.³²¹ The merchant is not allowed to make false or misleading representations to the consumer.³²² Statements and advertisements made by the merchant are binding.³²³ Consequently a crypto-currency exchange claiming to charge a fee of a certain percentage is prohibited from charging more than it stated.³²⁴ Merchants in Quebec have the duty to inform consumers about any information that is not obvious to the consumer, this is important when dealing with a novel technology and often misunderstood crypto-currencies.³²⁵ Where there is a lack of instructions that may protect the consumer from risk, the consumer is entitled to take legal action against the service provider.³²⁶ This provision is relevant to crypto-currencies because merchants cannot hide behind the complexity of virtual currencies and they will proactively take part in educating their customers about using crypto-currencies.

The Financial Consumer Agency of Canada (FCAC) released a report on the use of crypto-currencies.³²⁷ The FCAC oversees federally regulated financial institutions and focuses on their adherence to consumer protection. The report stated that virtual currencies are not considered legal tender and as such there is no oversight for them.³²⁸ It continued to warn users that crypto-currencies are not covered by deposit insurance, consequently there will be limited recourse should the merchant not deliver the purchased goods.³²⁹ The Canadian consumer protection laws are on the right path, however more comprehensive regulations should be considered.

³²⁰ OCPA sec 38(1)

³²¹ Hoegner & Friedman 'Canada' in Hoegner (n 304 above) 27

³²² Quebec Consumer Protection Act (QCPA) of 1978 sec 219

³²³ QCPA sec 41

³²⁴ Hoegner & Friedman 'Canada' in Hoegner (n 304 above) 28

³²⁵ 'as above'

³²⁶ QCPA sec 53

³²⁷ FCAC 'Virtual Currencies' 2014 <http://www.fcac-acfc.gc.ca/Eng/forConsumers/topics/paymentOptions/Pages/VirtualC-Monnaies.aspx> (accessed 21 September 2017)

³²⁸ 'as above'

³²⁹ 'as above'

- **Taxation**

Crypto-currency transactions that relate to productive sources of income are taxed under the Income Tax Act and other tax legislation.³³⁰ Crypto-currencies are regarded to be commodities by the CRA; which has made commentaries on how different crypto-currency transactions should be taxed.³³¹ The Income Tax Act provides two nexuses with which income may be taxed; source-based and resident-based.³³²

The CRA provided two ways for taxing crypto-currency transactions; one based on the concept of barter dealings and the other by treating crypto-currency as within the scope of securities transactions.³³³ In terms of the first nexus, it means that merchants who accept crypto-currency, as a form of payment, will be taxed on the income received as a result of the crypto-currency transaction. The second nexus refers to persons who buy and sell crypto-currencies like a commodity; any income that arises from these transactions could be taxable.³³⁴

In December 2013 the CRA issued a memorandum in which it highlighted its views about securities and barter of crypto-currencies.³³⁵ In the memorandum, the CRA maintained that crypto-currencies could be the subjects of gifts and they should be taxed based on their fair market value at the time of their transfer.³³⁶ The Income Tax Rulings Directorate confirmed that crypto-currencies should be taxed according to the barter and securities rules. In *Stewart v Canada*, the department agreed that the addressee of the crypto-currency appears to be operating a mining business.³³⁷ It was further explained that the bitcoins produced by the process of mining, particularly through issuance and transactions fees, are inventory in the possession of the miner and they should be subjected to valuation at the end of the year.³³⁸ The CRA also provides for a situation where crypto-currencies that form part of inventory are lost or stolen, such virtual currencies will be deducted only if the CRA views the loss as an inherent risk of carrying the business.³³⁹

³³⁰ Hoegner & Friedman 'Canada' in Hoegner (n 304 above) 35

³³¹ 'as above'

³³² Canada Income Tax Act of 1985 secs 2(1) & 2(3)(a)

³³³ CRA 'What you should know about digital currency' 2013 http://www.cra-arc.gc.ca/nwsrm/fctshts/2013/m11/fs131105-eng.html?utm_source=mediaroom&utm_medium=eml. (accessed 22 September 2017)

³³⁴ 'as above'

³³⁵ Hoegner & Friedman 'Canada' in Hoegner (n 304 above) 37

³³⁶ CRA 'Internal Memorandum' 2013

³³⁷ Hoegner & Friedman 'Canada' in Hoegner (n 304 above) 37

³³⁸ 'as above'

³³⁹ CRA 'Technical Interpretations' 2014

Crypto-currencies can be used to evade tax and minimise the country's tax base. The CRA has made progressively efforts in the taxation of crypto-currencies, covering aspects of mining, barter and securities. Further work in this area include efficient tax structuring of transactions in the case of corporations, trusts holding and disposing of crypto-currencies.

4.3.2 United States

In July 2017 the Uniform Law Commission (ULC) concluded a two-year effort to formulate model law for the regulation of crypto-currencies.³⁴⁰ The aim of this model law is to provide guidance for States and also to consolidate State regulations such as the New York's BitLicense.³⁴¹ The New York State Department of Financial Services released the BitLicense in 2015.³⁴² The BitLicense was created to regulate exchanges that were operating in the State of New York, however the process of acquiring the license has been criticised as being too costly.³⁴³ To date, only 3 companies have been granted the license to operate in crypto-currencies.³⁴⁴ Notwithstanding the criticism, the BitLicense was an innovative way to regulate a part of crypto-currencies and attempt to protect the users. This section will look at how the model law; Uniform Regulation of Virtual Currency Businesses Act, will impact crypto-currencies. The current laws of the US will also be discussed as they apply to crypto-currencies.

- **Anti-money laundering and counter-terrorism financing**

The Bank Secrecy Act (BSA) regulates the financial institutions; this is mainly because financial institutions usually process transactions that could be associated with money laundering.³⁴⁵ The BSA applies to all entities that are classified as MSBs and it requires that financial institutions should put record keeping mechanisms in place.³⁴⁶ In the US, a MSB is defined as an entity that conducts the business of dealing in foreign exchange, cashing a check, issuing or selling travellers checks, selling prepaid access or transmitting money within the US.³⁴⁷ To combat money laundering, the Financial Crimes Enforcement

³⁴⁰ A Stanley 'A Bitcoin Law for Every State? Interest and Animosity Greet Model US Regulation' 2017 <http://www.coindesk.com/a-bitcoin-law-for-every-state-appetite-and-animosity-greet-model-us-regulation/> (accessed 23 September 2017)

³⁴¹ 'as above'

³⁴² M del Castillo 'Bitcoin Exchange Coinbase Receives New York BitLicense' 2017 <http://www.coindesk.com/bitcoin-exchange-coinbase-receives-bitlicense/> (accessed 23 September 2017)

³⁴³ 'as above'

³⁴⁴ 'as above'

³⁴⁵ EV Murphy et al 'Bitcoin: Questions, Answers, and Analysis of Legal Issues' 2015 18

³⁴⁶ 'as above'

³⁴⁷ RJ Straus & MJ Cleary 'The United States' in S Hoegner (ed) *The Law of Bitcoin* (2015) 106

Network (FinCEN), empowered by the BSA, provides requirements that MSBs must adhere to such as, reporting suspicious activities, record keeping and reporting currency transactions.³⁴⁸

In 2013 the FinCEN published an interpretive guidance to explain how the BSA apply to certain persons dealing in crypto-currencies.³⁴⁹ The guidance clarified that a person who acquires crypto-currencies and uses as a payment method for goods or services does not fall under the definition of MSB.³⁵⁰ The guidance further stated that because exchanges and administrators of crypto-currencies are transmitting money they are therefore classified as MSBs.³⁵¹ Consequently exchanges must be registered as money transmitters with FinCEN, they are required to examine any money laundering risk and implement AML programs to mitigate the risk.³⁵² Additionally, exchanges must be in compliance with the BSA by keeping record of certain documents, reporting and monitoring currency transaction.³⁵³

In 2014 the FinCEN published two administrative rulings outlining the position of miners and the software used in crypto-currency. According to the first ruling, miners of crypto-currencies were seen as users and not necessarily as MSBs and as such they are not required to register as such.³⁵⁴ The second ruling also excluded businesses that create and distribute crypto-currency software that facilitates the sale of crypto-currencies from being classified as MSBs.³⁵⁵ Persons and businesses that buys and sells crypto-currencies as investments for their own persons and businesses are also excluded from the list of MSBs.³⁵⁶

The new Uniform Regulation of Virtual Currency Businesses Act has a provision that requires compliance with AML rules from businesses operating with crypto-currency. An exchange or any businesses that deals with virtual currency must create and maintain

³⁴⁸ ‘as above’

³⁴⁹ FinCEN ‘Application of FinCEN’s Regulations to Persons Administering, Exchanging, or using virtual currencies’ 2013 http://fincen.gov/statutes_regs/guidance/pdf/FIN-2013-G001.pdf (accessed 23 September 2017)

³⁵⁰ ‘as above’

³⁵¹ ‘as above’

³⁵² ‘as above’

³⁵³ ‘as above’

³⁵⁴ FinCEN ‘Application of FinCEN’s Regulations to Virtual Currency Mining Operations’ 2014 http://www.fincen.gov/news_room/rp/rulings/pdf/FIN-2014-R001.pdf (accessed 23 September 2017)

³⁵⁵ FinCEN ‘Application of FinCEN’s Regulations to Virtual Currency Software Development and Certain Investment Activity’ 2014 http://www.fincen.gov/news_room/rp/rulings/pdf/FIN-2014-R002.pdf (accessed 23 September 2017)

³⁵⁶ ‘as above’

policies and procedures that are against money laundering, fraud and terrorist funding.³⁵⁷ The Act further provides the manner in which the policies should be created and maintained. Policies must identify and assess material risks of the crypto-currency business, it must also be in accord with AML federal laws and it must include filing of reports in terms of the BSA.³⁵⁸

Regulation of money laundering in the US through crypto-currencies has been evolving with the aid of FinCEN's rulings. The model law augmented the already existing body of rules.

- **Consumer protection**

There are laws that could potentially apply to crypto-currencies; however there have not been formal statements from both the Consumer Financial Protection Board (CFPB) and the Federal Trade Commission (FTC) that specifically link crypto-currencies to the current consumer protection laws.³⁵⁹

The Electronic Funds Transfer Act (Regulation E) states that financial institutions must disclose fees and have error-resolution mechanisms to enable the consumer to initiate the transfer of funds.³⁶⁰ Owing to the character of crypto-currency, adherence to the error-resolution mechanism could be hard to implement without altering the way the consumer interact with the crypto-currency network.³⁶¹ The FTC receives numerous complaints from consumers of crypto-currencies, the two most common complaints are that they have not received the purchased goods and the merchant gives refund in a form of a store credit and not in the currency they used when purchasing.³⁶²

Uniform Laws provide for a more comprehensive consumer protection provisions. Article 5 of Uniform Laws provides for disclosure and other protections for the consumer. The Uniform Laws requires that crypto-currency businesses disclose any additional information that is necessary for consumer protection.³⁶³ Furthermore, merchants need to disclose a fee and charge schedule, whether the service or good is cover by insurance,

³⁵⁷ Uniform Regulation of Virtual Currency Businesses Act (hereafter 'Uniform Laws') of 2017 Art 6(1)(a)(4)-(6)

³⁵⁸ Uniform Laws Art 6(1)(d)(1)-(3)

³⁵⁹ Straus and Cleary 'The United States' in Hoegner (n 356 above) 111

³⁶⁰ Electronic Funds Transfer Act of 2010

³⁶¹ Straus and Cleary 'The United States' in Hoegner (n 356 above) 112

³⁶² K Cohen 'Before paying with Bitcoin...' 2015 <http://www.consumer.ftc.gov/blog/2015/06/paying-bitcoins> (accessed 24 September 2017)

³⁶³ Uniform Laws sec 501(a)

irrevocability of a transfer of crypto-currency, *inter alia*.³⁶⁴ The list of disclosures is very comprehensive and provides the consumer with ample protection. Due to the amount of complexity involved in the crypto-currency transaction, this Article is paramount in the attempt of fully protecting the consumer. The merchant's license is renewed every year, and its renewal is *inter alia* dependant on whether the merchant has been complying with consumer protection provisions.³⁶⁵

- **Taxation**

In 2013 the Government Accountability Office (GAO) identified the five tax compliance risks posed by crypto-currencies as users lack of knowledge regarding tax requirements, uncertainty regarding the type of income, uncertainty about calculating tax base, difficulty with third party reporting and evasion.³⁶⁶ One of the recommendations made by GAO was that the Internal Revenue Services (IRS) must develop guidance on the basic tax reporting reporting for transactions using crypto-currencies.³⁶⁷ In 2014 the IRS responded with a report that outlines the general tax principles that may be applied to crypto-currency transactions.³⁶⁸ According to the report, crypto-currencies are not taxed as currency but as property such gold or shares.³⁶⁹

The IRS report reiterated that crypto-currencies do not have legal tender status in any jurisdiction.³⁷⁰ The use of crypto-currencies is a realisation occurrence and as such the amount that is realised is the fair market value of the property received.³⁷¹ Furthermore, the outcome from the sale of crypto-currencies in a taxable gain or loss, which is calculated by subtracting the seller's basis fro the amount realised in any sale.³⁷² Gain or loss is portrayed by whether the seller is holding the crypto-currency as a capital asset or is using the virtual currency as an inventory in a trading business.³⁷³ Miners' gross income is calculated based on the fair market value of the crypto-currency at the time of

³⁶⁴ Uniform Laws sec 501(b)

³⁶⁵ Uniform Laws sec 208(a)(7)

³⁶⁶ US GAO 'Virtual Economies and Currencies: Additional IRS Guidance Could Reduce Tax Compliance Risk' 2013 <http://www.gao.gov/assets/660/65420.pdf> (accessed 25 September 2017)

³⁶⁷ 'as above'

³⁶⁸ IRS 'Notice 2014-21' 2014 <http://www.irs.gov/pub/irs-drop/n-14-21.pdf> (accessed 25 September 2017)

³⁶⁹ 'as above'

³⁷⁰ 'as above'

³⁷¹ 'as above'

³⁷² 'as above'

³⁷³ 'as above'

mining.³⁷⁴ A miner that participates in a mining activity in his own personal capacity and not as an employee is liable to pay self-employment tax on the net earnings.³⁷⁵

US courts have developed some amount of case law involving the taxation of cryptocurrencies. One of the leading cases is *Securities and Exchange Commission (SEC) v Shavers*, which was heard in the federal court for the Eastern District of Texas in September 2014.³⁷⁶ The defendant, Tredon Shavers, was the founder and operator of Bitcoin Savings and Trust that promised its customers a 7% return of their investment per week.³⁷⁷ The business defrauded its investors because it was later discovered that Bitcoin Savings and Trust was in fact a ponzi scheme.³⁷⁸ The SEC maintained that the offering of bitcoins as investment made them seem like they were securities or investment contracts.³⁷⁹ Shavers claimed that customers invested with bitcoins and not fiat currency, as such the *Howey* test is not satisfied and the investments do not qualify to be securities.³⁸⁰ The court rejected his claim and held that bitcoins can be used to make payments and can also be interchanged into fiat currency.³⁸¹

There is no reference to taxation of businesses dealing in virtual currencies in the Uniform Laws.

4.3.3 The European Union (EU)

In July 2016 the European Commission adopted legislation that amended the 4th Anti-Money Laundering Directive (4AMLD), the legislation aims to integrate crypto-currency exchanges and wallets providers with the EU's AML framework.³⁸² The EU legislation of virtual currencies is focused primarily on combating money laundering and terrorist funding. Some of the member states of the EU have been regulating crypto-currencies using national law, e.g. Germany.

- **Anti-money laundering and counter terrorist financing**

In the new legislation has broadened the definition of entities that fall under the scope of 4AMLD to include exchanges, wallet providers and other institutions that deal in crypto-

³⁷⁴ 'as above'

³⁷⁵ 'as above'

³⁷⁶ *SEC v Shavers* 413 US 416 (2014)

³⁷⁷ 'as above'

³⁷⁸ 'as above'

³⁷⁹ 'as above'

³⁸⁰ 'as above'

³⁸¹ 'as above'

³⁸² EDCAB 'European Union virtual currency legislation published' 2016 <http://edcab.eu/blog/european-union-virtual-currency-legislation-published> (accessed 24 September 2017)

currencies.³⁸³ The legislation brings crypto-currencies businesses into the legal spotlight, because they were previously not monitored.

Financial Intelligence Units (FIUs) were only allowed to access information after suspicious transactions has occurrence.³⁸⁴ FIUs play a significant role of identifying operations of terrorist networks as well as their financial backers.³⁸⁵ The new legislation proposes that information should be made readily available upon the request of the FIUs.³⁸⁶ The request may be made before a suspicious transaction occurs. The report maintains that the faster the FIUs can access the information, the faster they will be able to detect suspicious transactions that may be linked to money laundering and/or terrorist funding.³⁸⁷

- **Taxation**

The Swedish Tax Administration (STA) referred a matter concerning the taxation of crypto-currencies to the Court of Justice of the EU (CJEU).³⁸⁸ The matter was between the STA and David Hedquist and the legal question was whether the transaction of exchanging national currency for bitcoin was subjected to value added tax (VAT).³⁸⁹ Hedquist wished to started an exchange business, before doing so he requested the opinion of the Revenue Law Commission (RLC) on the tax implications of such an entity.³⁹⁰ The RLC held that bitcoins are similar to foreign exchange activities and as such an entity that deals in virtual currency should pay VAT.³⁹¹ STA appealed the decision of the RLC; the CJEU maintained that the transaction of exchanging bitcoin for fiat currency is exempt from VAT.³⁹²

4.4 Crypto-currencies' legal position in South Africa

Crypto-currencies are not considered to be legal tender under the South African legislation. There are no specific laws or provisions that are focused only crypto-currencies. Currently the SARB does not oversee, supervise or regulate crypto-currency systems for effectiveness,

³⁸³ European Commission 'Directive of the European Parliament and of the Council' 2016 12
http://ec.europa.eu/justice/criminal/documents/files /aml-directive_en.pdf (accessed 24 September 2017)

³⁸⁴ 'n 383 above, 13'

³⁸⁵ 'as above'

³⁸⁶ European Commission (n 392 above) 14

³⁸⁷ 'as above'

³⁸⁸ *Skatteverket v Hedquist* CJEU (22 October 2015) C-264/14

³⁸⁹ 'as above'

³⁹⁰ 'as above'

³⁹¹ 'as above'

³⁹² 'as above'

soundness, integrity or robustness.³⁹³ However regulatory authorities committed to monitoring the crypto-currencies and the their impact on the financial sector. In 2014 the SARB issued the first opinion on crypto-currencies, in which consumers were cautioned against the potential risks of these unorthodox currencies.³⁹⁴

The head of group strategy and communication at the SARB said that:

‘Bitcoin has no legal status or regulatory framework. Thus it poses a number of risks for those that would choose to transact with is such as the lack of guarantee of security, convertibility or value. The South African Reserve Bank is actively monitoring the developments around virtual currencies to inform any future regulatory approached that may become necessary within the South African jurisdiction.’³⁹⁵

South African monetary authority is comprised of both the SARB and the National Treasury. Therefore the National Treasury also released a consumer alert about crypto-currencies. The alert reiterated that the National Treasury together with the SARB and the Financial Intelligence Centre will continue to monitor the development of virtual currencies and that consumers should be aware of the risks.³⁹⁶ Additionally, it was stated that crypto-currencies do not fall under the definition of securities as prescribed by the Financial Markets Act even though they are sold and bought on numerous platforms.³⁹⁷

The SARB held that regulation should follow innovation and as such its position regarding regulation is not written in stone.³⁹⁸ Following the increase in crypto-currency users in South Africa, the SARB announced that it has started to test a number of regulations relating to crypto-currencies.³⁹⁹ The SARB joined forces with Bankymoon, a company that specialises in blockchain solutions.⁴⁰⁰ It is worth noting that the SARB has not yet committed to approving anything that Bankymoon comes up with.⁴⁰¹

³⁹³ SARB (n 11 above) 12

³⁹⁴ ‘as above’

³⁹⁵ BusinessTech ‘What SARB thinks about Bitcoin’ 2014 <http://businesstech.co.za/news/banking/53097/what-the-sarb-thinks-about-bitcoin/> (access 21 March 2017)

³⁹⁶ National Treasury ‘User Alert: Monitoring of Virtual Currency’ 2014 http://www.treasury.gov.za/comm_media/press/2014/2014091801%20User%Alert%20Currencies.pdf (accessed 14 April 2017)

³⁹⁷ ‘as above’

³⁹⁸ SARB (n 11 above) 12

³⁹⁹ BusinessTech ‘Reserve Bank to begin testing Bitcoin and cryptocurrency regulations’ 2017 <http://businesstech.co.za/news/finance/186533/sa-reserve-bank-to-begin-testing-bitcoin-and-cryptocurrency-regulations/> (accessed 29 July 2017)

⁴⁰⁰ ‘as above’

⁴⁰¹ ‘as above’

4.5 Conclusion

Owing to the complexity and uncertainty of crypto-currencies, regulators have been reluctant to regulate them. It is not certain how long will they exist but it is evident from the growing numbers of users that crypto-currencies could be here for longer than anticipated. Financial regulation is the glue that holds the economy and the financial sector in perfect harmony. Immediate intervention may be needed with regards to certain violations such as consumer protection, money laundering and taxation. The SARB is open to crypto-currencies and there is a possibility for future regulation. As discussed above, virtual currencies do not have to be regulated from a single Act; it can be integrated into the existing laws. South Africa can therefore follow in the steps of the above-discussed countries and absorb crypto-currencies into relevant legislations in order to offer an immediate relief. In the following chapter, recommendations will be made.

CHAPTER 5: CONCLUSION

5.1 The story thus far

Prior to 2009, governments were the only institutions that made and supplied money. The inception of Bitcoin, the first convertible decentralised virtual currency, inspired a lot of developers to create their own crypto-currencies and currently there are over 700 crypto-currencies in the world. Owing to globalisation, South Africans have also followed the trend of crypto-currencies, with more than 150 merchants in South Africa accepting them as a mode of payment. The research problem that this study aimed to address was the unregulated character of crypto-currencies and whether the risks associated with these currencies could be mitigated through an effective legal framework. The objectives of this study were to understand the concept of crypto-currencies, to investigate the risks associated with crypto-currencies and to establish if there is a compelling need for regulation in South Africa. In the next section the summary of the findings will be discussed.

5.2 Summary of findings

In understanding the concept of crypto-currencies, it was found in chapter 2 that crypto-currencies are convertible decentralised virtual currencies based on cryptographic algorithms. They have no central monitoring authority. It was also established that crypto-currency uses blockchain technology that records all the transactions made on the network.

In considering their operations, it was found that there are different actors in the crypto-currency ecosystem, such as the exchange, miner, user and virtual wallet provider. Legitimate benefits of crypto-currencies were found to be; reduced transaction fees and time, which may lead to cheaper goods and services. In determining their reach in South Africa, it was established that there are over 150 merchants who accept them as a method of payment, which illustrates that there is an active market of crypto-currencies in South Africa. When looking into the inherent problems of crypto-currencies, it was discovered that loss, theft, lack of central regulation and money laundering were associated with crypto-currencies.

In chapter 3 it was illustrated that there are risks associated with the use of crypto-currencies, some of which are current and others are likely to occur owing to the increase of adoption of virtual currencies. Payment systems and payment service providers were found to be a risk of crypto-currencies; this is mainly due to the lack of a central monitoring authority. It was found that the objective of NPS is to provide a safe and efficient payment system. It was

established that payment system risks could be the result of liquidity exposures, the anonymity of transacting parties, failure to hold sufficient crypto-currencies to settle the transaction as well as volatility of the virtual currencies.

Another risk of crypto-currency was found to be AML/CTF, due to anonymity of the transacting parties and the rapid transaction period, it is easy to engage in money laundering and terrorist funding activities. It was established that the transactions on the blockchain technology could not be traced back to a particular person because when registering for an account, personal details are not required or verified and as such only a pseudonym can be used.

Financial stability was found to be a risk that could stem from lack of central monitoring of crypto-currencies. It was found that crypto-currency systems are susceptible to cyber attacks and this could potential disrupt the stability of crypto-currencies. Lack of central monitoring regulatory infrastructure can affect the financial stability of crypto-currency. It was illustrated that crypto-currency could put price stability at risk. It also established that in order to achieve price stability the entire financial sector needs to also be stable. It was found that crypto-currencies could be used to avoid exchange control regulations. Due to their unregulated character, crypto-currencies do not have policies that regulate price stability and as such they are very volatile. Also, crypto-currencies put a significant control system, as they are cheaper and faster. Consumer risks were indicated as another risk associated with crypto-currency. Lack of transparency, absence of legal status, high volatility, anonymity, lack of continuity as well as fake crypto-currency networks were found to be factors that impact consumer protection.

In chapter 4 the importance of regulation and the regulation of crypto-currencies were discussed. It was found that there are three main objectives of financial regulation. The first is that financial regulation ensures systemic stability and as such the economy can bounce back from global shocks. It was found that the infinite nature of crypto-currencies could cause a systemic meltdown whereby miners cease operations due to potential lack of profitability. The second objective of financial regulation was found to be safeguarding the safety and soundness of financial institutions. It was established that financial institutions could stand against shocks and systemic risks by increasing transparency and disclosures of the banks. It was observed that users of crypto-currency could have more confidence in the institutions if these measures were put in place. The final importance of financial institutions was found to be the promotion of consumer protection. It was found that there is no transparency within

the crypto-currency system and as such consumers are unable to make sound decisions regarding their use of virtual currencies.

The legal position of crypto-currencies in South Africa was also discussed and it was illustrated that crypto-currencies are not regulated however the SARB is open to the idea of regulation. In South Africa users who are trading in crypto-currency could be liable for tax even though it was unclear how SARS plans to execute the taxation.

It was illustrated how other countries, i.e. Canada, US and EU, regulate crypto-currencies. It was established that Canada passed a bill that includes crypto-currencies in the regulation of AML/CTF. Canada has also integrated crypto-currencies in their legal framework in order to ensure consumer protection and to cease tax avoidance. The legal status of crypto-currencies in the US was also observed. It was found that the ULC in the US has formulated a model law for regulating virtual currency businesses. The model law has provision for AML/CTF and consumer protection however there were no provisions for taxation of businesses dealing in crypto-currency. The legal position of crypto-currencies in the EU was also looked at. The EU does not have a single framework for the regulation of virtual currencies. However it was found that a proposal to amend the 4AMLD was accepted, with the intention of including crypto-currencies in AML/CTF legislation. It was also found that there has been case law regarding the taxation of crypto-currencies.

5.3 Conclusion

Crypto-currencies are attractive to users for different reasons. Virtual currencies are peer-to-peer electronic cash systems with no central monitoring authority. Any capable person can create and issue virtual currency through a process called mining. The use of crypto-currency as a payment method, especially on online platforms, eliminates a third party such as bank, and by so doing there are less transaction fees and the transactions are conducted within a faster period. By reducing transaction fees, goods cost less and this is one of the reasons consumers are adopting this method of payment. Additionally, crypto-currencies transactions are recorded on a public ledger, known as a blockchain, but the records reflect only a pseudonym and not the true identity of the transacting parties. Owing to their anonymity, terrorist funders have chosen this platform to finance terrorist because their transfers cannot be traced back to them. Bitcoin was praised and pray for by the terrorist group, ISIS.

With every great innovation, there are downsides and unfortunately this is true for crypto-currencies. Virtual currencies are highly volatile, with the price of 1 bitcoin going from

\$1300 in January 2017 to \$4200 in September 2017; there is no predicting their trend. The nature of crypto-currency is that its value is based on the perception of its users, the money its in demand the higher its price. This is particularly a problem for both consumer and merchants, e.g. a consumer that bought an item with Bitcoins in January could have tripled the amount if he had held to it. Therefore volatility could impact the way consumers choose to use their crypto-currencies, this possibility causes merchants to be reluctant in adopting crypto-currency as payment mechanism. Due to the anonymity of crypto-currencies, consumers could be deceived into believing that they are buying from legitimate businesses only to realise that they have been defrauded. Another disadvantage of virtual currencies is that they are infinite and can only be mined until a certain point, it was pointed out in the study that this factor causes a discomfort among the key players of crypto-currency.

It is the author's view that most of these risks could be mitigated through the enactment of a sound and effective legal framework. In South Africa crypto-currencies are not regulated, and as such they are vulnerable to misuse. The SARB and National Treasury released reports that highlight risks associated with the use of crypto-currencies, and in both reports it was maintained that consumers must exercise caution when dealing with crypto-currencies. In the case study of UMC, it was shown how citizens could be lured into buying crypto-currency that does not exist by promising them higher returns on their investments. The complexity and lack of transparency of crypto-currencies make consumers susceptible to fraud. UMC appears to be a crypto-currency however it has been found in the study that two elements of crypto-currencies are mining and blockchain, and UMC does not have information on how to mine and it does not have a public ledger. In July 2017, the SARB stated that it would consider regulating virtual currencies.

There has been steady progress in the regulation of crypto-currencies in certain countries. It has been illustrated in the study that integrating crypto-currencies into already existing laws could provide an immediate response to some of the risks such as consumer protection.

To conclude, crypto-currencies have created a financial system outside the mainstream system and it is the author's opinion that regulation should follow innovation. It has been illustrated in this study that crypto-currencies have a market in South Africa, and although the use of crypto-currency in South Africa is not strong enough to impact the conventional financial sector, there is a need for regulation. In the author's opinion, regulatory bodies can

take lessons from Canada and the US, and integrate crypto-currencies into the existing laws, such as the Consumer Protection Act of 2008. It is the view of the author that regulation should not stunt the growth of crypto-currencies, but it should aim to improve the system and enhance confidence of consumers in crypto-currencies. In the next section, recommendations on how integration can be achieved within the South African legal frameworks will be made.

5.4 Recommendations

The future of crypto-currency is uncertain, however it is clear that they are currently operating in a legal grey area. Regulatory intervention in South Africa should not be postponed further. Measures should be put in place to ensure that crypto-currencies do not corrode the financial sector. In this section recommendations, based on lessons from the above-discussed jurisdictions, will be made.

In terms of FICA, the list of ‘accountable institutions’ has been amended to include any person or category of persons used or likely to be used for money laundering purposes. The list contained in Schedule 1 of FICA should reflect the definition of ‘accountable institution’ by expressly including institutions that mine, exchange and hold crypto-currencies. In South Africa, only two exchanges are in compliance with the FICA regulations, this study recommends that it should be mandatory for all institutions that deal in crypto-currency, such as exchanges and wallet providers, to adhere to FICA. Adherence to FICA means that the exchanges will have records of their users real identity, suspicious transactions, *inter alia*, as such it will be easier to track transactions related to money laundering.

In order to protect the consumer from illegitimate crypto-currencies, any institution that is in the business of mining, exchanging and holding crypto-currency should acquire a license to operate. Crypto-currency and associated operations must be clearly defined, so as to eliminate operations that claim to be crypto-currency related.

It should be made mandatory for businesses dealing in crypto-currency to have in place mechanisms that will promote and ensure transparency between the consumer and the institution.

The definition of ‘consideration’ in the Consumer Protection Act 68 of 2008 should include crypto-currency. The inclusion of virtual currencies in the Consumer Protection Act will provide consumers with protection from dubious merchants, who accept crypto-currency as consideration. Additionally merchants will have to disclose information that will assist the consumer to make educated decisions. Owing to the complexity of crypto-currencies it is

paramount for merchants to disclose information that would otherwise be unknown to the consumer.

The definition of ‘financial instrument’ in the Income Tax Act 58 of 1962 should be amended to ‘any other contractual right or obligation the value of which is determined directly or indirectly with reference to crypto-currency’ for trading purposes. To tax crypto-currency users on the income made from selling or exchanging crypto-currency for fiat currency, the definition of ‘asset’ must be amended to include crypto-currency. Capital gains and losses should be recorded after disposing or selling crypto-currencies; consumers will then be given a relief should they sell their units for less than what they bought them for. Given the volatility of crypto-currencies, a tax relief granted for losses will give consumers protection against the risk of volatility.

There is a need for a uniform international regulation. Owing to their global reach, users of crypto-currency may exploit the lack of conformity to infringe laws of weaker jurisdictions. The OECD or United Nations Commission on International Trade Law (UNCITRAL) should formulate a model law that governs crypto-currencies.

Owing to the ever-changing nature of technology, there will always be a need for future research. The growth and risks of crypto-currencies must be monitored.

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