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**Emerging economy resilience and vulnerability to adverse exogenous
economic shocks: The case of sub-Saharan Africa**

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Abstract

The impact of the recent global financial crisis on the global economy has highlighted the level of integration of economies and the potential spillover effects as a result thereof. The implications are that the negative effects of the crisis can quickly spread to other economies through numerous transmission mechanisms. The response of developing or emerging economies to these unpredictable exogenous shocks becomes a topical issue. The concepts of economic vulnerability to and resilience against adverse exogenous shocks for emerging economies have since taken centre stage in many economic forums. Policy makers for emerging economies have come to the realisation that the increased economic vulnerability and a lack of economic resilience in their economies can erode the hard-fought-for gains in economic growth over the past decade and potentially harm their prospects as attractive destinations for foreign direct investment (FDI).

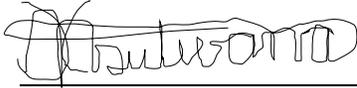
This research analysed the resilience and vulnerability of emerging economies against adverse shocks using the sub-Saharan African (SSA) region as a case. The research used previous literature on emerging economies' vulnerability and resilience to formulate four hypotheses around the major overarching themes of vulnerability and resilience. Two hypotheses looked at two functions of vulnerability, i.e. trade openness and financial integration, and two functions of resilience, i.e. international reserves accumulation and economic concentration.

The findings of this research study were that SSA economies were vulnerable and not resilient against adverse exogenous shocks, and that few economies in the SSA region were prepared to successfully manoeuvre in an economic crisis. The structure of these economies inherently rendered these economies vulnerable. However, these economic structures also allowed the SSA region to achieve the high economic growth experienced during the past decade. The output of the methodology utilised in this research study resulted in a model that can be used to reduce the likelihood of an SSA economy being severely affected by an adverse economic shock.

Keywords: vulnerability, resilience, emerging economies, foreign direct investment, sub-Saharan Africa

Declaration

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.



Xolile Msutwana

11/11/2013

Date

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Table of Contents

Abstract	i
Declaration	ii
Acknowledgements	iii
CHAPTER 1 Introduction to research problem	1
1.1 Introduction.....	3
1.2 Purpose of the research	3
1.3 Problem definition.....	4
1.3.1 Impact on foreign direct investment	5
1.3.2 Emerging economy vulnerability and resilience	6
1.4 Context.....	7
1.4.1 Resilient dynamism.....	7
1.4.2 Exploring economic resilience.....	8
1.5 Conclusion.....	8
CHAPTER 2 Literature review.....	10
2.1 Introduction.....	10
2.2 The concepts of vulnerability and resilience.....	10
2.3 Vulnerability theory	11
2.3.1 Economic vulnerability	15
2.4 Resilience theory	15
2.5 Vulnerability and resilience measurement framework	17
2.6 Emerging economies theory	18
2.6.1 Financial integration.....	19
2.6.2 Amplification effects of exogenous shocks.....	20
2.6.3 Reactions to shocks in emerging economies	21

2.6.4 Emerging economies and foreign direct investment (FDI)	22
2.6.5 Economic diversification	24
2.7 Summary of literature review	25
CHAPTER 3 Research hypotheses	27
3.1 Introduction.....	27
3.2 Hypotheses	27
3.2.1 Hypothesis 1 Accumulation of international reserves	27
3.2.2 Hypothesis 2 Economic concentration	28
3.2.3 Hypothesis 3 Trade openness	28
3.2.4 Hypothesis 4 Financial integration	29
Chapter 4 Research methodology	30
4.1 Introduction.....	30
4.2 Research design.....	31
4.2.1 Population.....	31
4.2.2 Unit of analysis	31
4.2.3 Sampling	32
4.2.4 Data gathering process.....	33
4.3 Research instrument	34
4.3.1 Accumulation of reserves.....	35
4.3.2 Economic concentration.....	35
4.3.3 Trade openness.....	36
4.3.4 Financial integration.....	37
4.4 Validity and reliability	37
4.5 Data analysis approach	38
4.5.1 Regression analysis.....	38
4.5.2 Multiple correlation analysis	39

4.5.3 Multicollinearity	39
4.6 Research limitations	40
Chapter 5 Results.....	41
5.1 Introduction.....	41
5.2 Descriptive statistics: The sub-Saharan African (SSA) region.....	42
5.2.1 GDP growth	42
5.2.2 Trade openness.....	44
5.2.3 Reserves accumulation.....	45
5.2.4 Financial integration.....	46
5.2.5 Concentration ratio	48
5.3 Statistical significance of the resilience and vulnerability model.....	49
5.4 Hypothesis testing	54
5.4.1 Hypothesis 1	54
5.4.2 Hypothesis 2.....	55
5.4.3 Hypothesis 3.....	57
5.4.4 Hypothesis 4.....	58
5.5 Multicollinearity results.....	59
5.6 Summary of hypotheses results.....	61
CHAPTER 6 Discussion of results	62
6.1	62
Introduction	62
6.2 Hypothesis 1 discussion: Accumulation of international reserves	62
6.2.1 Evaluation of economic performance	63
6.2.2 Summary of hypothesis findings	65
6.3 Hypothesis 2 discussion: Economic concentration.....	66
6.3.1 Evaluation of economic performance	67

6.3.2 Summary of hypothesis findings	69
6.4 Hypothesis 3 Discussion: Trade openness	70
6.4.1 Evaluation of economic performance	71
6.4.2 Summary of hypothesis findings	75
6.5 Hypothesis 4 Discussion: Financial integration	76
6.5.1 Evaluation of economic performance	77
6.5.2 Summary of hypothesis findings	81
6.6 Summary of results.....	82
CHAPTER 7 Conclusion.....	84
7.1 Summary of main findings	84
7.2 Research recommendations.....	86
7.3 Research limitations	88
7.4 Recommendations for future research.....	89
7.5 Conclusion.....	89
Reference list	91
Appendix A: Detailed country figures for FDI-to-GDP ratio	101
Appendix B: Detailed results for Hypothesis 1	102
Appendix C: Detailed results for Hypothesis 2.....	103
Appendix D: Detailed results for Hypothesis 3.....	104
Appendix E: Detailed Results for Hypothesis 4.....	105
Appendix F: Detailed Results of Multi- Collinearity	106
Appendix G: Detailed Results of Standardised Coefficients.....	110

List of figures and tables

Figure 2.1 Definition of vulnerability in terms of climate change	13
Figure 2.2 Definition of vulnerability applied to economic conditions	14
Figure 2.3 The role of economic resilience in economic disasters	17
Figure 2.4 Financial amplification effects.....	21
Figure 2.5 Market institutions required for FDI.....	23
Table 4.1 Resilience unit of analysis	32
Table 4.2 Vulnerability unit of analysis.....	32
Table 4.3 Economic data types	34
Table 4.4 Hypotheses variables	35
Table 4.5 Validity and reliability evaluation	38
Table 4.6 Multiple regression table.....	39
Figure 4.1 Multicollinearity VIF	40
Figure 5.1 Sample country list.....	42
Figure 5.2 Average sub-Saharan African economies' GDP growth.....	43
Figure 5.3 Average sub-Saharan African economies' GDP	44
Figure 5.4 Average sub-Saharan African economies' imports	45
Figure 5.5 Average sub-Saharan African economies' total reserves.....	46
Figure 5.6 Average sub-Saharan African economies' current account trade balance	47
Figure 5.7 Average sub-Saharan African economies' external debt stock	48
Figure 5.8 Sub-Saharan African economies' concentration ratio	49
Table 5.1 Hypothesis 1: Summary.....	55
Table 5.2 Hypothesis 2: Summary.....	56
Table 5.3 Hypothesis 3: Summary.....	58
Table 5.4 Hypothesis 4: Summary.....	59
Table 5.5 Removed economic parameters	60
Figure 6.1 Hypothesis 1: Mean average current account balance	64
Figure 6.2 Hypothesis 1: Mean average external debt stock	65
Figure 6.3 Hypothesis 2: Mean average exports data.....	67
Figure 6.4 Hypothesis 2: Mean average GDP	69
Figure 6.5 Hypothesis 3: Mean average GDP	72
Figure 6.6 Hypothesis 3: Mean average exports	73
Figure 6.7 Hypothesis 3: Mean average current account balance	74

Figure 6.8 Hypothesis 4: Mean average GDP growth	78
Figure 6.9 Hypothesis 4: Mean average external debt stocks.....	79
Figure 6.10 Hypothesis 4: Mean average GDP	80
Figure 6.11 Hypothesis 4: Mean average total reserves	81
Figure 7.1 Resilience and vulnerability model for sub-Saharan African economies	86
Table A Sample countries FDI-to-GDP ratios	101
Table B Hypothesis 1: Results.....	102
Table C Hypothesis 2: Results	103
Table D Hypothesis 3: Results	104
Table E Hypothesis 4: Results.....	105
Table F1 Mauritius: Pearson correlation	106
Table F2 Mozambique: Pearson correlation	106
Table F3 Ghana: Pearson correlation.....	106
Table F4 Lesotho: Pearson correlation.....	107
Table F5 Cape Verde: Pearson correlation	107
Table F6 Namibia: Pearson correlation	107
Table F7 Gambia: Pearson correlation	108
Table F8 Nigeria: Pearson correlation	108
Table F9 Morocco: Pearson correlation.....	108
Table F10: Rwanda: Pearson correlation	109
Table F11 South Africa: Pearson correlation	109
Table G Standardised coefficients.....	110

CHAPTER 1 Introduction to research problem

1.1 Introduction

In the past two decades, the global economy has experienced a series of major economic shocks in the form of the Asian crisis, the global financial crisis and the eurozone crisis. These economic crises have had major, long-lasting economic impacts on most economies, and more so on emerging or developing economies. Ravallion and Chen (2009) estimated that the financial global crisis compounded the issue by adding 53 million people living on less than \$1.25 a day and 64 million people living on less than \$2 a day.

Many of the developing countries were affected by a decrease in capital inflows in the form of foreign direct investment (FDI). Total capital outflows from European markets to emerging economies decreased from more than \$2 trillion in 2007 to less than \$200 billion which indicated less investment in the form of FDI in emerging economies (Suttle, Koepe & Tiftik, 2012). Most notably, Fitch (2013) mentioned that for sub-Saharan African (SSA) economies to create an enabling environment for FDI, it would be necessary to reduce external vulnerabilities and to increase resilience through economic diversification and developing local debt and credit markets. This brings to the fore the importance of these two aspects of economic resilience and economic vulnerability that should function in a reciprocal nature to attract FDI and to withstand external shocks from foreign markets.

The link between economic resilience and economic vulnerability is an important aspect when evaluating emerging economies. Emerging economies' reliance on commodities exposes them to external vulnerabilities, such as price changes and demand factors, and these economies need to enhance their resilience against these external vulnerabilities.

1.2 Purpose of the research

The aim of this study was to evaluate and assess the economic vulnerability to and resilience of emerging economies against adverse economic shocks. The research focused specifically on the SSA region. The 2007/2008 global financial crisis and the 2009

recession that originated in the United States of America quickly spread to other developed, mainly European, nations due to the integrated nature of the global financial system (Devarajan & Kasekende, 2011). The spillover effects then spread to a lesser extent to other economies in Asia and Africa, adversely affecting emerging markets.

Since then, a significant amount of academic research has been undertaken to evaluate the cause of the global financial crisis, its impact on economies, both developed and emerging economies, and measures implemented to counter the adverse impact of the crisis in the form of fiscal and monetary policies. The study of economic vulnerability and resilience was born out of the need for economies to be able to minimise or withstand the impact of such shocks. This is of particular importance for the SSA region as economic resilience and vulnerability of these economies are key determinants of levels of FDI. Understanding these dimensions for emerging economies is of particular importance (Cheung & Ito, 2008). It is thus important to evaluate and demonstrate the economic stability of the region to attract FDI and to be able to provide sufficient returns on investment.

1.3 Problem definition

Sub-Saharan Africa's economic performance has been improving steadily according to Aryeetey and Ackah (2011) who noted that, since 2000, real output in Africa's economies has been growing at a rate of above five per cent on average. Indeed, Africa's growth has been phenomenal in light of the FDI attracted by SSA countries as well the demand for their export goods, mainly commodities such as Brent crude oil, copper and coffee. FDI in the SSA region has played a vital role in stimulating economic activity with net private capital inflows increasing from US\$17.1 billion in 2002 to US\$81 billion in 2007 (Aryeetey & Ackah, 2011). It is also important to note, however, that this growth was spearheaded by increases in commodity prices where African economies had a competitive advantage (Menson, 2012).

However, the global recession in 2009, caused by the 2007/2008 financial crisis, impeded the hard-fought-for gains of the region in terms of economic activity and growth. The result

was a slump in the economies of the region with some economies affected more than others, mainly middle-income economies such as South Africa and Mauritius. The global crisis highlighted the vulnerability of emerging economies, especially to commodity prices, and growth appears to have been adversely affected by these economic shocks. Hence, the manner in which economies respond to these shocks has become critical as they can destabilise economies and derail economic gains.

1.3.1 Impact on foreign direct investment

Aryeetey and Ackah (2011) observed that the portfolio of economic development in the form of FDI has been reduced in countries that have been perceived as riskier markets where economic stability cannot be guaranteed. FDI is particularly important for Africa, the SSA region to be more precise, in that it is seen to be a vehicle to achieve the United Nation's Millennium Development Goals (MDGs), namely to halve poverty in the region by 2015 (Asiedu, 2006). The research conducted by Asiedu (2006) further stated that income levels in the region are inadequate to achieve the GDP growth levels required to achieve the MDGs. Hence, FDI in emerging economies is a vital source of investment income.

Based on the empirical work done by these authors, it becomes clear that markets that are perceived as less risky or better able to withstand economic shocks would attract the FDI required to fund increased economic activity. Economic stability is important not only for specific countries, but also for the region in which they are situated as there are significant spillover effects and synergies among countries in a geographical region due to globalisation and free trade. For example, Managi and Bwalya (2010) explored the proposition of FDI and technology transfer through technology spillovers. Their research explored the relationship between inward FDI and productivity levels. Their proposition was that FDI increases competition in the local markets, hence increasing the local economy's productivity levels. A positive correlation was found between foreign firms operating in local markets through horizontal channels, intra-industry and productivity (Managi & Bwalya, 2010). In addition to the correlation were regional effects from FDI in terms of technology and productivity levels in the Kenyan and Tanzanian region. This indicated that the concentration of FDI in a region can enhance competitive aspects with regard to the competitiveness of an economy.

1.3.2 Emerging economy vulnerability and resilience

The United Nations Secretary General, Ban Ki-moon, speaking at the fifth Tokyo International Conference on African Development (TICAD) in June 2013, emphasised the need for African economies to become resilient through diversification during a discussion of investment as an engine for economic development (UN Secretary General, 2013). This, then, is a shared view that without diversification, African economies could be rendered vulnerable to exogenous shocks. The South African Minister of Finance also indicated that African economies were faced with clear vulnerabilities due to a lack of diversification (Donnelly, 2013).

The indications from the discussions on African economies at TICAD was that while investors are indeed looking for investment opportunities, resilient economies are nevertheless essential to ensure that investments are secure in the long run in those economies. Ban Ki-moon (UN Secretary General, 2013) further emphasised that due to his views that responsible foreign investors provide more value in terms of development in Africa than any other form of development method, it is therefore essential to have economic resilience in emerging markets.

Moody's rating reports are often used to measure an economy's attractiveness to foreign investors. In recent times, an economy's resilience has been evaluated by Moody's to determine an economy's rating. For example, a report released in May 2013 reflected a B3 rating for Moldova (Moody's, 2013). A B3 rating means that obligations are considered speculative and are subject to high credit risk (Moody's, 2013). One of the key reasons for the poor rating was low economic resilience. This highlights the importance of encouraging investor confidence in the resilience of emerging economies in order to be an attractive destination for foreign investors.

However, this is not where the story ends. An investment needs to be maintained in an economy as vulnerability may present itself in the form of "hot capital" resulting from large private capital inflows due to the structure of the economy. The reversal of these capital inflows may also present vulnerability (Donnelly, 2013). For instance, according to the 2012 Institute of International Finance's report, net private capital inflows fell to \$910 billion

in 2011 from over \$1 trillion a year before with a projected recovery to \$893 billion for 2013 (Suttle et al., 2012). In this report, Suttle et al. (2012) attributed the shock in capital flows to transmission mechanisms due to the euro economies' crisis which demonstrated vulnerability in terms of connectedness to the European economies.

Hence, research to evaluate the vulnerability and resilience of emerging economies (specifically in the SSA region) to economic shocks became imperative to:

- evaluate the stability of the region
- explore its inherent weaknesses and strengths
- propose guidelines for the assessment of such vulnerabilities and resilience
- provide recommendations on how countries can enhance their investment attractiveness.

1.4 Context

Rathbone (2013) noted Mexico's plan to expand its economy by improving its GDP growth from 4% to 6%. He noted that Mexico's Reserve Bank Governor mentioned that economic resilience is one of the aspects that Mexico is investigating in an effort to improve its GDP growth levels. Economic resilience was mentioned as a necessary condition for GDP growth levels even though it is not sufficient on its own.

1.4.1 Resilient dynamism

The statement by the Mexican Reserve Bank Governor advances the argument for economic resilience as a necessary platform for economic growth. Furthermore, the subject of resilience has gained traction in recent times due to various exogenous shocks to economies around the world. The World Economic Forum explored the issue at a recent gathering of countries in Davos in March 2013. The theme of the discussions was resilient dynamism (Reuttner, 2013). Indeed, the phrase, "resilient dynamism", seems contradictory in that resilience suggests an object that withstands pressure and yet dynamism entails movement and agility. The theme of resilient dynamism was central to the Davos agenda where it was mentioned in connection with efforts to restore economic growth and

confidence in markets facing incipient economic and political shocks (WEF, 2013). In an article on resilience of financial systems, Reuttner (2013) suggested that economies should look at shifting their focus from anticipating and preparing for known events to preparing for unknown events.

1.4.2 Exploring economic resilience

Recently, more and more economists have been exploring the subject of economic resilience in various economic publications. This is due, in part, to the recent exogenous shocks suffered by the global financial and monetary systems. Most notably, the 1997 Asian financial crisis and the 2009 global recession have drawn attention to the impact of these crises and have subsequently initiated debates on how best to shield or minimise the impact of such exogenous shocks on economies. Panitchpakdi (2013), at the United Nations Conference on Trade and Development (UNCTAD), underlined the need to understand the factors that determine economic vulnerability, especially focusing on the developing economies. In an effort to understand some of these factors, it became apparent from the outcome of the conference that many countries were using the accumulation of reserves as a measure to counter instability in the markets. However, this is a costly policy exercise which many developing countries cannot afford (Panitchpakdi, 2013). The question that then needs to be asked is how emerging or developing countries could shape their economies to withstand exogenous shocks.

1.5 Conclusion

This chapter highlighted the importance of the macroeconomic stability of developing or emerging economies through the implementation of policies to enhance economic resilience and to reduce economic vulnerability. These concepts are principally important for SSA economies since they rely heavily on commodities which are volatile in nature while they simultaneously endeavour to develop economies that are sufficiently stable and sustainable to attract the FDI required to increase economic growth. It was also noted that emerging economies are vulnerable to exogenous economic shocks. SSA economies therefore need to formulate and entrench policies that can increase economic resilience

and reduce economic vulnerability to achieve economic growth since integration in the global economy is inevitable.

This subject is also gaining much attention from world economic organisations in light of the financial crises which have occurred during the past 20 years and which have often spilled over into other economies due to the integrated nature of the global economy. The impact of these crises has often been more severe for emerging economies and their hard-fought-for economic gains have been eroded. Finally, resilient dynamism was discussed as a theme that emerging economies need to adopt to manage unknown exogenous shocks as well as the manner in which the economies are structured for agility with increased resilience and reduced vulnerability in anticipation of unknown economic events.

CHAPTER 2 Literature review

2.1 Introduction

This chapter provides the literature review of the concepts and various constructs of economic resilience and vulnerability in the context of emerging economies. It also provides definitions of economic resilience and vulnerability, and explores their applicability in the context of emerging or developing economies. Further, the chapter explores the effects of exogenous shocks with a specific focus on economic vulnerability and resilience concepts and frameworks in the context of emerging economies in light of their heavy reliance on commodities (Eichengreen, 2002).

Much of the research in this area focused on biological systems and their ability to adapt to changes. There has been much interest in this area as a result of the recent financial crises of the past two decades with specific reference to the impact of exogenous shocks on emerging economies. This chapter also explores the manifestation and amplification effects of exogenous shocks on emerging economies as highlighted by Korinek (2011).

Finally, this chapter uses frameworks initially designed to explain exogenous shocks in the context of climate change such as those proposed by Mechler, Hochrainer, Pflug, Lotsch and Williges (2010), and adapts these frameworks to the macroeconomic context of resilience and vulnerability.

2.2 The concepts of vulnerability and resilience

As the concept of resilience “originated in environmental studies, it described the biological capacity to adapt and thrive under adverse environmental conditions” (Christopherson, Michie & Tyler, 2010, p. 1). The concept has since been applied to various fields, including regional economics. Guillaumont (2010) acknowledged that the study of macroeconomic resilience theory first developed over 40 years ago, with a specific focus on developing countries in light of international prices of primary exports. However, the subject has

received less attention since then and has only emerged again as a result of the recent global financial crises with specific focus on developing countries.

Briguglio (2003) first developed the concept called the “Singapore Paradox” which refers to a country that is highly exposed to exogenous shocks but is sufficiently resilient to achieve constantly high economic growth levels. Briguglio, Cordina, Farrugia and Vella (2009) further studied the Singapore phenomenon in later research and discovered that Singapore posed a “contradiction that a country can be highly exposed to exogenous shocks, rendering it economically vulnerable, and yet still manage to attain high levels of GDP per capita” (p. 230). Briguglio (2003) developed this concept after an extensive study of Singapore as it is an island that is highly exposed to external economic shocks and yet is able to maintain a high GDP per capita. Jayaraman (2006) conceded that this concept is not easily replicable as Singapore is recognised as an economy that is committed to high economic growth with strong discipline along with restricted political freedom. However, there are lessons that can be extracted from the Singapore Paradox and that provide theories and frameworks based on the literature with regard to this area of addressing vulnerabilities and building resilience into emerging economies.

Pamungkas (2012) defined the two terms, namely vulnerability and resilience – “vulnerability reflects pre-disaster condition whereas resilience reflects post-disaster condition” (p. 8). These conditions are conversely reinforcing in nature in that the improvement of resilience can mitigate or lessen the vulnerability of an economic system to future shocks. In this research paper, both terms were analysed and integrated into frameworks which can be used to evaluate the stability of the microenvironment of emerging economies. This is important, particularly since South Africa and the SSA region form part of these emerging economies that are starting to trade with each other as in the case of the BRICS (Brazil, Russia, India, China and South Africa).

2.3 Vulnerability theory

The empirical study of vulnerability has only received attention in recent times and there is no consensus on the definition of vulnerability (Harttgen & Günther, 2006). Until recently,

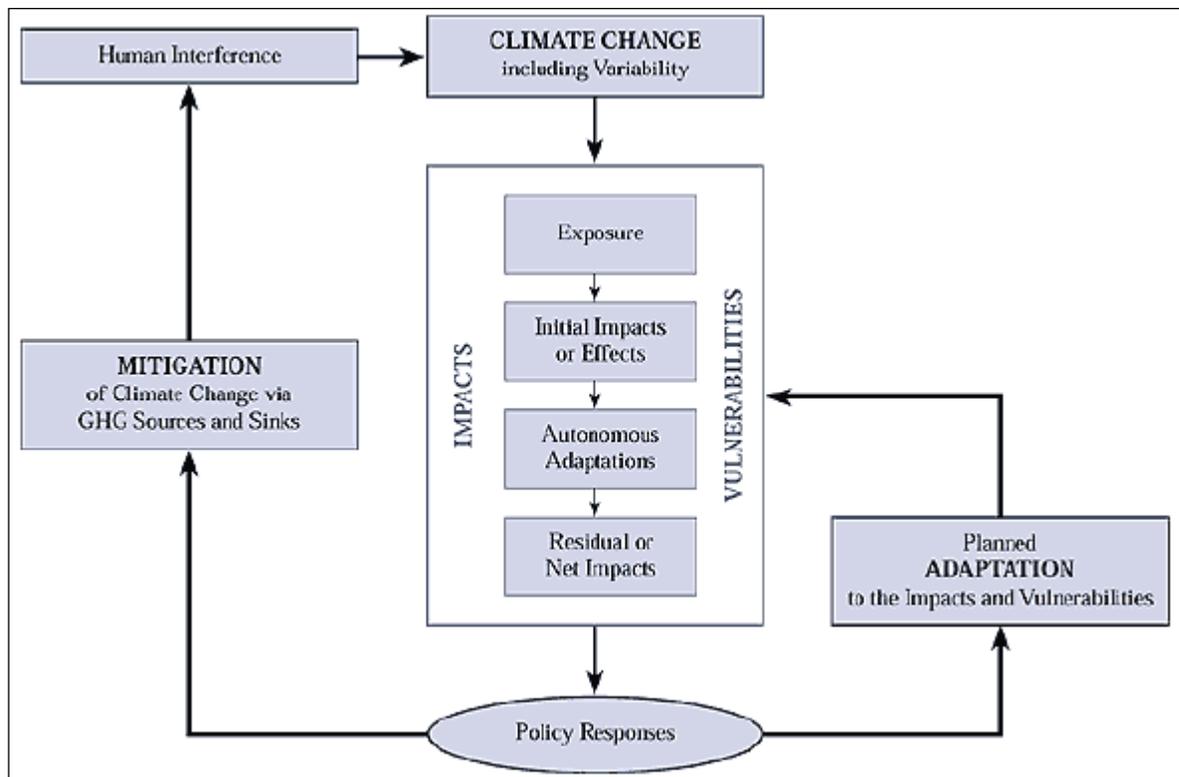
vulnerability theory had been largely applied to poverty and households' risks to poverty, but still with no agreement on the implications of the concept of vulnerability (Harttgen & Günther, 2006). However, the concept of vulnerability has gained some traction with some researchers aiming to define it and also to present it as a study that can be applied across many disciplines. Naudé, Santos-Paulino and McGillivray (2009) defined vulnerability as a risk to a system that can be applied across various disciplines to households, regions or countries that can be affected by specific distresses. These distresses would result in a negative change to the system (Naudé et al., 2009). There is consensus among various researchers in this field that vulnerability would result in different definitions depending on the subject to which the vulnerability concept is applied (Hoddinott & Quisumbing, 2008; Naudé et al., 2009).

More recent studies have attempted to define and introduce frameworks for the measurement of vulnerability. Mechler et al. (2010) studied vulnerability in the context of climate change and its impact on households, and viewed the concept as the likelihood of experiencing stress due to exogenous shocks. Limitations were highlighted in the study with regard to this narrow view of the concept since its premise was based on climate change. In economic terms, the risk was highlighted as the risk facing households of falling into poverty due to idiosyncratic or covariate shocks (Naudé et al., 2009).

More in-depth research into the components of vulnerability revealed underlying instances that could be viewed as a function of vulnerability. Mechler et al. (2010) stated that vulnerability was a function of exposure to hazards and sensitivity of the system, while risk was a potential hazard and its potential consequences, this being exposure and sensitivity. Clearly, this separated vulnerability and risk, whereas Naudé et al. (2009) viewed risk as the probability of a hazard negatively affecting a system.

In Figure 2.1, Mechler et al. (2010) defined vulnerability in the context of climate change that negatively affects an economy which is more highly exposure due to geographical location. The impact would expose the vulnerabilities inherent in the economy. Adaptation and mitigation explored the reactionary factors, including social and governmental responses, which were used intentionally or unintentionally induced to minimise the impact and to return the system to its normal state.

Figure 2.1 Definition of vulnerability in terms of climate change



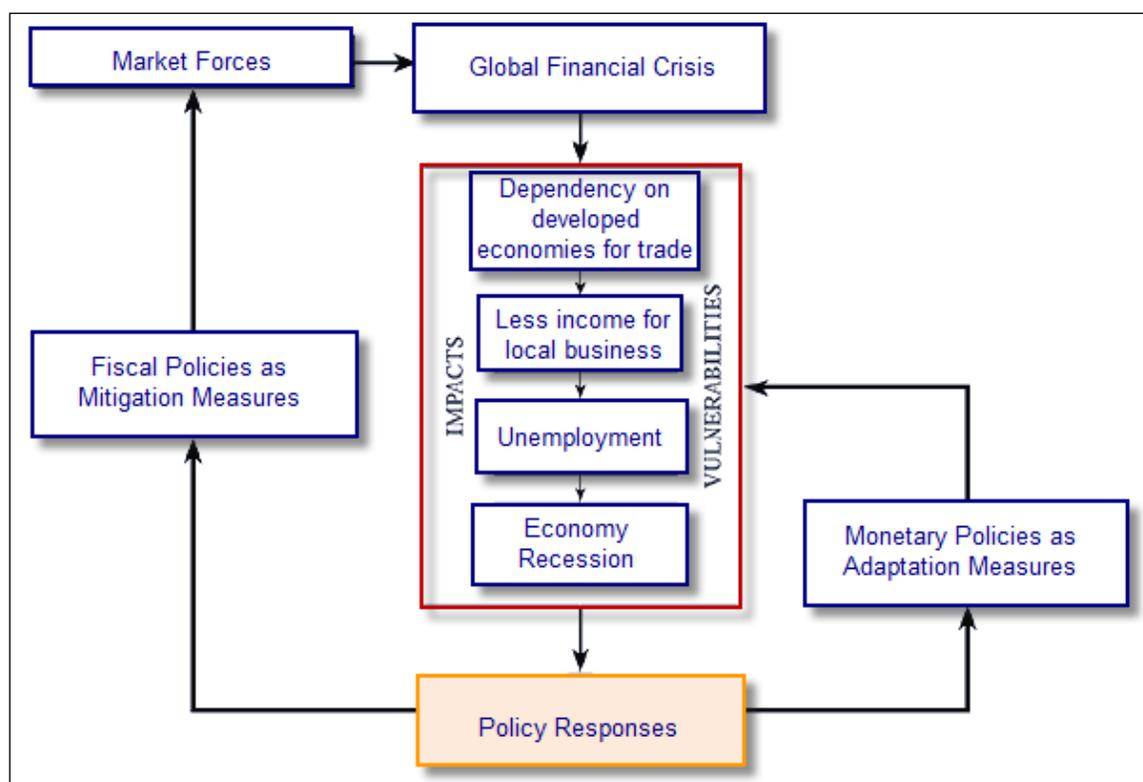
Source: Mechler, Hochrainer, Pflug, Lotsch & Williges (2010)

Indeed, risk and vulnerability are ambiguous terms. Figure 2.2 was adapted from the model of climate vulnerability theory in Figure 2.1 (Mechler et al., 2010) to demonstrate vulnerability in economic terms. The model in Figure 2.2 applies the concept of vulnerability to economic conditions as a function of the potential impacts along with society's capacity to adapt to the changes. Figure 2.2 demonstrates how exposure to exogenous shocks has a cascading effect at a macroeconomic level. The adaptability of an economy is thus crucial in minimising the impact of exogenous shocks, along with mitigation measures which largely rely on fiscal policies.

In the adapted model in Figure 2.2, the global financial crisis was seen as an exogenous shock instead of climate change. The openness and integrated nature of the economy (used for illustration purposes) to the global economy makes it possible for the financial global crisis to be transmitted to such an economy. The impact of this crisis can be

transmitted to an emerging economy, as illustrated in Figure 2.2, through the emerging or developing economy's dependence on trade with the developed economies. The results are that trade is reduced for local businesses with the consequence of less income for these businesses due to less demand for products destined for export markets. Net impacts would result in businesses retrenching staff or closing down, thus causing an increase in unemployment. Loss of employment increases the unemployment rate and reduces economic activity, causing the economy to go into recession. This demonstrates the vulnerability of an emerging economy due to its trade openness and dependence on developed markets for trade and economic activity. The ensuing economic recession would stimulate a policy response from the government concerned. Economic resilience of the economy would be measures instituted by the government such as fiscal policies that increase spending on infrastructure projects or stimulus packages to bail out local businesses in order to retain employees.

Figure 2.2 Definition of vulnerability applied to economic conditions



Source: Adapted from Mechler, Hochrainer, Pflug, Lotsch & Williges (2010)

2.3.1 Economic vulnerability

Briguglio et al. (2009) ascribed economic vulnerability “to inherent conditions affecting a country’s exposure to exogenous shocks” (p. 230). The inherent conditions could manifest as the size of the country and degree of openness to trade, among other conditions. Further arguments presented mention the high degree of economic vulnerability of small island countries due to the openness of their economies to trade (Briguglio et al. 2009).

According to Briguglio et al. (2009), the study of economic vulnerability was first evidenced in the early 1990s. This was supported by Guillaumont (2010) who mentioned the Asian crisis, also in the 1990s. Even though the study of economic instability originated some 40 years ago according to Guillaumont (2010), vulnerability economic theory was only developed later in the light of structural instability symptoms on a macroeconomic level which were underlined by various economic crises.

Economic and resilience theory often mention exogenous shocks to an economic system or economy. These exogenous shocks can be categorised into two categories, namely natural environmental shocks such as earthquakes and floods, and shocks such as changes in demand for a commodity, trade prices and global crises as noted by Guillaumont (2010). These latter shocks are the main sources of economic vulnerability.

2.4 Resilience theory

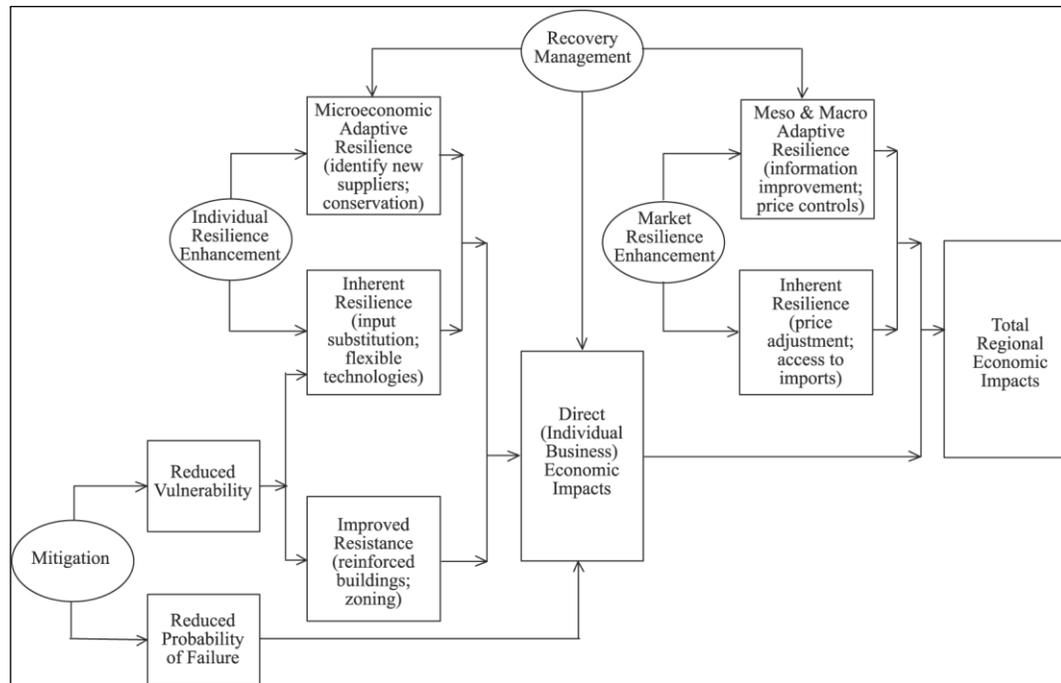
Resilience theory describes a system’s ability to adapt and reorganise itself as a result of a sudden shock. Dos Santos and Partidário (2011) defined resilience “as the capacity of socio-ecological systems to support disturbances and reorganise, [and that it] assumes a crucial role to avoid disruptions and collapses” (p. 1). This definition is congruent with Rose’s (2009) definition that resilience is the amount of disturbance a system can absorb without it changing its state. This definition is at the heart of resilience theory as it can be applied across systems, natural environments and macroeconomics.

This subject has received much attention from an ecological and natural disaster perspective. Rose and Liao (2005) conducted their research in the area of the coping behaviour of business, the non-linear adaptive response of organisations and community resilience to natural disasters. Ecologists were the first to embrace the concept of resilience more than 30 years ago (Rose, 2009). Other empirical research has emerged since then that has incorporated this term in various studies. Manyena (2009) introduced the concept of the mobilisation of resources to maintain the structure of a system. From the research thus far, it is evident that much of the literature in this area focused mainly on resilience as a function of natural disasters and many studies did not consider other exogenous shocks, such as a rise in oil prices, food shortages, and financial and global crises, as a function of resilience.

According to Rose (2009), resilience has three properties that are evident on deeper inspection. The first property is the reduced probability of failure which refers to mitigation measures. The second property is reduced consequences from failure and the third is reduced time to recovery. These three properties illustrate a more in-depth approach to the two types of resilience systems, namely inherent and adaptive capabilities.

Pamungkas (2012) posited vulnerability as a pre-disaster condition and resilience as a post-disaster condition. Figure 2.3 illustrates the interrelationship between resilience and vulnerability, and how mitigation strategies affect the overall economic output focusing on disaster management systems (Pamungkas, 2012). The model implies that every structure has inherent resilient qualities which are enhanced by the reduced vulnerabilities in the structure. Reduced vulnerability also enhances inherent resilience in the structure. In turn, mitigation measures reduce vulnerabilities and the probability of failure at the most fundamental level of resilience.

Figure 2.3 The role of economic resilience in economic disasters



Source: Rose (2009)

2.5 Vulnerability and resilience measurement framework

There have been developments in the measurement of economic vulnerability and resilience, for instance the framework developed by Briguglio et al. (2009). The framework entails grouping countries or regions by classifying them according to specific criteria. Countries can be grouped into four categories, namely best case, worst case, self-made and prodigal son. The computation is performed using regression analysis with the inputs being macroeconomic stability, fiscal deficit, inflation and unemployment, external debt and macroeconomic market efficiency, among others. Each input looks in detail at economic ratios for each country or region.

Gnangnon (2012) advocated that this framework be used in economic resilience theory and noted empirical work done by other authors in deriving models of such analysis. Subsequently, Gnangnon (2012) pointed to another method first developed in 2003 and

revised in 2009 called the vulnerability index. This economic vulnerability index “captures vulnerability caused by structural factors” (Gnangnon, 2012, p. 8) and the framework is called the “Economic Vulnerability Index (EVI)” (p. 8). In addition, the author suggested that this framework could be used to measure the economic structure of an economy that is beyond the control of policy, but is affected by the global economy.

2.6 Emerging economies theory

Emerging economies, also referred to as developing or transition economies, is a term that was first developed by Van Agtmael to describe fast-growing economies in the 1970s (Bluen, 2012). These economies were differentiated from other economies in terms of economic attributes in that they displayed rapid growth when compared to developing nations and third-world countries. Hoskisson, Eden, Lau and Wright (2000) defined emerging economies as economies that satisfy two criteria, namely a rapid pace of economic development and government policies that favour market liberalisation and the free market system. Bluen (2012) noted that the emerging market economies that were originally covered by the description were Asian economies. They were commonly referred as the Asian Tigers, and included countries such as China, Singapore, South Korea and Taiwan. These economies have since developed economically as well in the manner in which they have developed their institutions. However, the term “emerging economies” is still applicable to economies that are growing rapidly.

Samoilenko and Osei-Bryson (2010) argued that there is no list of economies that are defined as emerging economies and preferred the term “transition economies”. These economies are moving from a centralised planning system to a free market system. These empirical studies noted that transition economies share characteristics of both developed and less developed economies (Samoilenko and Osei-Bryson, 2010). This view was supported by various other authors. Bluen (2012) also mentioned that the term “emerging economies” has become outdated since it was first coined to describe the Asian Tiger economies that have since emerged. Hence, this term is currently being questioned by different schools of thoughts as to its relevance.

According to empirical studies by Eichengreen (2002), emerging economies have certain structural features that define them. The author cited structural features such as using commodities to drive economic growth, large capital inflows and unpredictability in the economies themselves. However, each of these features could potentially introduce vulnerabilities in an emerging economy since many of these features are externally orientated. Even though the term “emerging economies” was derived more than three decades ago, there are few studies that define emerging economies or that provide clear guidelines on how to ascertain whether an economy is classified as an emerging economy, including the three characteristics identified as rapid growth in GDP, capital flows and certain unpredictability (Eichengreen, 2002).

2.6.1 Financial integration

The concept of financial integration refers to various links that an economy has to capital economies (Mougani, 2012). Empirical research acknowledged that financial integration has two major benefits, these being the allocation of capital across capital economies and the ability to enable countries to share or reduce risk by reducing consumption volatility (Kose, Prasad & Terrones, 2006). Financial integration occurs in many forms and some examples may include, but are not limited to, financial systems, internationalisation of financial assets and liabilities, banking systems and market institutions (Mougani, 2012). Kose et al. (2006) argued that financial integration is critical for emerging economies as it provides access to capital for emerging economies to enable them to diversify their production efforts. In time, financial integration leads emerging economies to specialisation which results in competitive advantages.

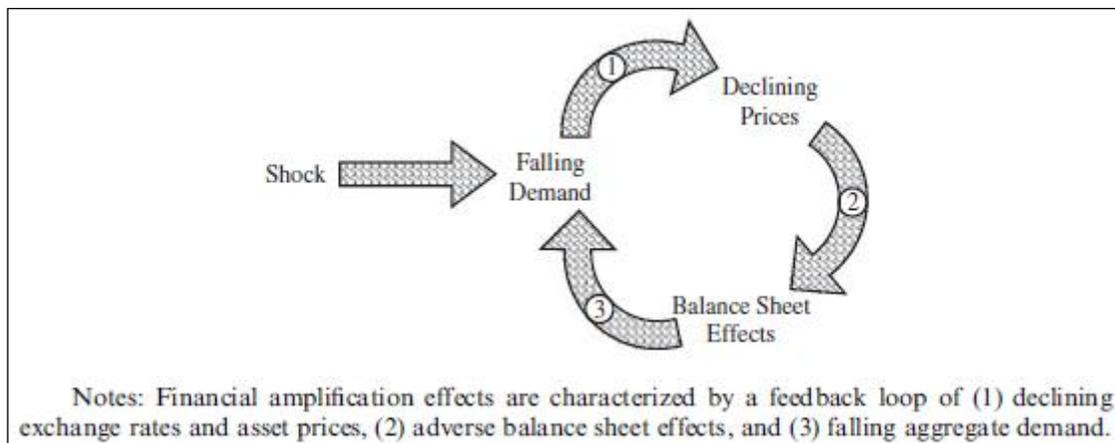
However, the production specialisation of emerging economies results in industry-specific vulnerabilities although macroeconomic volatilities in emerging economies cannot be clearly linked to financial integration according to Kose et al. (2006). Korinek (2011) concurred with this idea that emerging market economies that are integrated in the global economy face vulnerabilities. Further, Korinek (2011) stated that these economies are exposed to the boom-bust cycles of the global economy, especially since these economies are heavily reliant on capital inflows into their economies

There are various arguments as to the type of impact financial integration has on emerging economies. On the one hand, in a study conducted on SSA economies, Kose et al. (2006) found links of positive economic growth in developing countries that are financially integrated and also found other attributes that emerge apart from economic growth, such as foreign direct investment, skills transfer and technology spillovers. On the other hand, Mougani (2012) stated that there has been no finding that financial integration results in positive effects on economic growth for emerging economies.

2.6.2 Amplification effects of exogenous shocks

Demir (2009) noted that developing countries experienced significant capital flows during the 1990s. Due to the interest of emerging economies in the global economy, there is a heightened concern about reversals in the capital flows. This can also be seen as a vulnerability for emerging economies as it could quickly turn into a financial crisis for these economies (Choi, Sharma & Strömquist, 2009). Empirical research by Korinek (2011) produced a model that demonstrated the amplification effects that may be caused an exogenous shock to an emerging economy. Since Eichengreen (2002) had established that emerging economies were heavily dependent on commodities, Korinek (2011) created a model, demonstrated in Figure 2.4, where he stated that when such an emerging economy experiences a shock in the form of a decline in the aggregate demand of a commodity, the exchange rate would fall and the asset price would fall. This would result in adverse balance sheet effects. Korinek (2011) called this financial amplification as such a shock could also result in the emerging economy not being able to access external finance which would force a cut-back in spending. In turn, a feedback loop is created in the economy which amplifies the effects of an exogenous shock.

Figure 2.4 Financial amplification effects



Source: Korinek (2011)

Korinek (2011) saw the financial amplification effects as a by-product of external financing and, as such, they introduced financial fragility into emerging economies. Recently, Choi et al. (2009) noted that emerging economies had accumulated more financial reserves when compared with their more developed counterparts as measured by the average reserves-to-GDP ratio.

2.6.3 Reactions to shocks in emerging economies

The stockpiling of reserves occurred directly after the Asian crisis. This action was taken by emerging economies to reduce their vulnerabilities to exogenous shocks. Choi et al. (2009) revealed that emerging economies that were concerned about an exogenous shock in the form of a sudden stop to capital flows have been using net capital flows to build up their reserves since these countries do not have the same access as advanced economies to capital at relatively low costs. This action can be viewed as a resilience mechanism which these emerging economies have built into their economic systems.

Demir (2009) concluded that the reason for the stockpiling was the volatility of capital flows to emerging economies as this volatility affected investment by changing the prices of goods which distorted price signals. This view was also supported by Eichengreen (2002)

who stated that the openness of emerging economies had a direct impact on the exogenous shocks experienced by these economies as they were vulnerable to commodity and financial shocks. This argument was not supported by research studies conducted by Duval, Elmeskov and Vogel (2007) who established in their research on the Singaporean economy that openness actually enhances resilience and reduces economic vulnerability.

Demir (2009) concluded that during the past few decades, there had been volatility in the micro and macro environments globally that had had an impact on emerging economies in the form of boom-bust cycles, lower investments and a reversal of funds from developing to developed countries. These conclusions were in line with those of Choi et al. (2009) who stated that advanced economies have better access to capital markets as they can withdraw capital investment made in other countries, for example, while emerging economies do not have such options available to them and as such must accumulate large capital reserves. However, Korinek (2011) argued against this notion of building up precautionary reserves in favour of reducing them and increasing the amount of borrowing. This notion requires certain shifts in an emerging economy in that Korinek (2011) suggested shifting labour into the tradable sector to appreciate the country's exchange rate and to relax its borrowing constraints. In conclusion, Korinek (2011) advocated that emerging economies should "internalize such externalities and coordinate the actions of market participants toward a lower level of financial fragility" (p. 557).

2.6.4 Emerging economies and foreign direct investment (FDI)

FDI has increasingly played an important role in the development and growth of many emerging economies. Wright, Filatotchev, Hoskisson and Peng (2005) noted that a key characteristic of emerging economies is the significant amount of FDI they attract. As such, there has also been a change in attitude in emerging economies towards FDI (Gerschewski, 2013). These economies have begun to appreciate the role which FDI plays in the development of an economy, not only in monetary terms but also in terms of spillover effects. As noted by Gerschewski (2013), governments of emerging economies welcome these investments since they also boost the productivity of local firms. Adewumi

(2006) studied the impact of FDI on emerging economies' GDP and concurred that FDI has a positive contribution and that it was the most resilient factor during the Latin-American financial crisis in the 1980s and also during the 1997/1998 Asian crisis. These studies highlighted the importance of FDI in emerging economies and as such resilience and FDI in emerging economies is of paramount important to sustain high GDP growth levels. It was also noted that emerging economies with high and resilient growth levels attract higher levels of FDI than emerging economies that cannot achieve high growth levels and have not proved to be resilient during economic downturns (Adewumi, 2006).

However, there are challenges such as institutional voids that need to be overcome by companies wishing to invest in emerging economies such as India or China (Khanna & Palepu, 2011). Examples of such institutions are illustrated in Figure 2.4. These institutions are crucial for businesses which want to operate in a particular country. Khanna and Palepu (2011) noted that globalisation does not eliminate these institutional voids. Rather, the macroeconomic context of an emerging economy in the form of its political and social systems would eliminate these institutional voids.

Figure 2.5 Market institutions required for FDI

Type of Market Institution	Function that It Performs	Examples in Capital Markets	Examples in Product Markets	Examples in Talent Markets
Credibility Enhancers	Third-party certification of the claims by suppliers or customers	Audit Committees Auditors	ISO Certification CMM Level Certification	AACSB Certification ETS Admission Tests
Information Analyzers and advisors	Collect and analyze information on producers and consumers in a given market	Financial Analysts Credit Rating Agencies for companies and individuals Financial Press Financial planners Investment bankers	Consumer Reports Magazine JD Powers Ratings Press Industry Analysts (Gartner Group) Market Research Firms	Publications Ranking Universities and Professional Schools Career counselors HR Consultants
Aggregators and distributors	Provide low cost matching and other value added services for suppliers and customers through expertise and economies of scale	Banks Insurance Companies Mutual Funds Venture Capital and Private Equity Funds	Trading Companies Mass Retailers	Universities Professional Training Institutions Labor Unions

Source: Khanna and Palepu (2011)

2.6.5 Economic diversification

Economic diversification has long been a study of interest to economists with the aim of promoting economic stability. Seigel, Johnson and Alwang (1995) defined economic diversification as “the process of structural transformation as resources are shifted out of primary (natural resource-based) sectors into secondary (manufacturing) and tertiary (services) sectors.” (p. 263). Mayer (1996) argued against the notion of economic diversification in that the concept of diversification, even though it is a mechanism to reduce risk, tends to erode an economy’s competitive advantage.

It has been established that emerging economies, along with those of the SSA region, are heavily reliant on commodities due to an abundance of natural resources (Eichengreen, 2002). As such, exports and commodity prices are critical to economic growth. Hosein (2010) put forward a case for economic diversification and the reduction of economic concentration for mineral-rich countries, more so for emerging economies, to reduce the impact of exogenous shocks in the form of prices of minerals resulting from cyclical and volatility changes in economies. These observations gained support from Papageorgiou and Spatafora (2012) in their studies, with economic reform recommendations to promote macroeconomic stability through diversification. The underlying assumptions are that structural transformational processes result in an imbalance in favour of certain sectors against others. Their findings concluded that economies with more diversified economic structures faced less volatility in international prices and levels of consumption, and further increased their economic resilience to external shocks. The argument was explored further to enhance resilience through geographic diversification of export goods to reduce the impact of regional economic failures on emerging economies (Papageorgiou & Spatafora, 2012).

Economic diversification is a process that requires human and physical capital becoming more mature in terms of skills for the structural transition of an economy from exporting unprocessed goods to exporting manufactured goods (Mayer, 2006). Emerging economies are therefore faced with this challenge of diversifying their economies by upgrading their human capital in terms of the skills required for the manufacturing or processing of primary resources into manufactured goods.

2.7 Summary of literature review

Previous studies introduced the concepts of resilience and vulnerability, focusing on developing or emerging economies, more so on Asian economies. These studies were as a result of the Asian crisis that engulfed the Asian economies and how they set out to reduce their vulnerabilities to exogenous shocks and enhance their resilience to unknown shocks. Examples of Asian economies that managed to attain high levels of growth were mentioned in previous studies, particularly Singapore as its economy defied its high exposure to exogenous shocks. As a result, Briguglio (2003) devised a concept termed the Singapore Paradox.

A previous research study approached the concept of vulnerability from its most fundamental level. The study revealed that vulnerability is a function of exposure to exogenous shocks and the economy's sensitivity to these shocks, which then incorporated the resilience dimension. There was consensus from all previous research studies in this field that all economies are vulnerable to exogenous shocks and much attention was paid to reducing these vulnerabilities and increasing resilience while not restricting the economies' ability to achieve high economic growth.

Emerging or developing economies were identified as economies that achieve high economic growth and are able to attract significant FDI. These economies were also identified as economies that are at high risk and are highly exposed to exogenous shocks. In addition, many of these emerging economies lack control mechanisms to cope effectively with these shocks. The paradox that is facing emerging or developing economies is that as much as they attract significant FDI, investors still prefer economies that are achieving high growth rates and are stable and less volatile. Previous research revealed that Asian economies managed to build resilience and reduce their vulnerabilities to exogenous shocks through diversifying their economies, building reserve buffers, being less dependent on borrowings and managing their trade openness while ensuring their financial openness to enable financing of their international reserves. The end result was the attraction of significant amounts of FDI and an ability to achieve high economic growth rates.

Evaluated research literature lacked findings on SSA economies when incorporating the resilience and vulnerability concepts. This research aimed to contribute to the body of research in this area and to provide a case for SSA economies.

CHAPTER 3 Research hypotheses

3.1 Introduction

The aim of the study was to evaluate the economic resilience and vulnerability of emerging markets with a specific focus on a select few economies, the selection of which was based on the criteria discussed in Chapter 4. The hypotheses were based on the literature review from Chapter 2 where certain features of economies were highlighted that might render economies resilient or vulnerable. The hypotheses aimed to establish whether any relationships exist between the two concepts and the reciprocal relationships that ultimately drive economic performance when emerging economies experience economic shocks.

3.2 Hypotheses

3.2.1 Hypothesis 1 Accumulation of international reserves

Korinek (2011), Choi et al. (2009) and Demir (2000) suggested that emerging economies were stockpiling reserves in an effort to build resilience against exogenous shocks. They concluded that these reserves were built to withstand volatilities in the global economy. Hence, the first hypothesis evaluated this notion for emerging economies.

Null hypothesis (H_{1_0}):

Accumulating international reserves or stock-piling is a useful means of building resilience for emerging economies.

Alternative hypothesis (H_{1_A}):

Accumulating international reserves or stock-piling is not a useful means of building resilience for emerging economies.

3.2.2 Hypothesis 2 Economic concentration

Demir (2009) suggested that emerging economies are susceptible to exogenous shocks in the form of boom-bust cycles and commodities. This observation combined with the notion that emerging markets are mainly export-driven economies (Duval et al., 2007) suggests that economic diversification or lack of sector concentration becomes a critical factor in building a resilient emerging economy.

Null hypothesis (H_{1_0}):

Reducing economic concentration is a useful means of building resilience for emerging economies.

Alternative hypothesis (H_{1_A}):

Reducing economic concentration is not a useful means of building resilience for emerging economies.

3.2.3 Hypothesis 3 Trade openness

In Chapter 2, it was mentioned that the degree of openness to economic trade renders an economy vulnerable (Briguglio et al. 2009). This view was also supported by Eichengreen (2002) in that the openness of an emerging economy exposes the economy to exogenous shocks in the form of commodity shocks. However, Duval et al. (2007) argued against these observations by citing Singapore in what was termed the Singapore Paradox as this country has a high degree of openness with an export-driven economy and yet built a high degree of resilience.

Null hypothesis (H_{1_0}):

Trade openness to the global economy does not render emerging economies vulnerable to exogenous shocks.

Alternative hypothesis (H_{1_A}):

Trade openness to the global economy renders emerging economies vulnerable to exogenous shocks.

3.2.4 Hypothesis 4 Financial integration

Korinek (2011) mentioned in his study that the level of integration of an emerging economy in the global economy exposed it to various exogenous shocks such as boom-bust cycles. However, Duval et al. (2007) argued against this observation, using Singapore as a case in point.

Null hypothesis (H_{1_0}):

Financial integration in the global economy renders emerging economies vulnerable to exogenous shocks.

Alternative hypothesis (H_{1_1}):

Financial integration in the global economy does not render emerging economies vulnerable to exogenous shocks.

Chapter 4 Research methodology

4.1 Introduction

The research methodology was based on a quantitative design using secondary data as a data source. A quantitative approach was selected as an appropriate tool since the performance data on the macroeconomic level was in the form of numerical performance indicators. These data were obtained from multiple sources to form a new data set (Saunders & Lewis, 2012). The main reason for this approach was that relevant macroeconomic performance indicators were embedded in different databases.

The data were collected over a period of time. Hence, longitudinal data were selected since the study intended to track and analyse selected variables used in the four hypotheses. The selected variables were then observed while tracking the performance of selected economies as the economies experienced economic shocks. A longitudinal analysis was performed over a period of 17 years from 1995 to 2011 inclusive. This allowed the capture of economic performance during the normal phase of the global economy when economic output of the selected countries was optimal as well as the capture of economic performance during the recent global financial crises that affected most emerging economies.

Saunders and Lewis (2012) introduced the research onion in 1997 to describe the unpacking of different layers in the research process. This process was used to chart the research design and methodology. The inner layer entailed the data collection method. For this research, secondary data sources were used to collect data. Mixed data methods were used as the data were obtained from different sources which conformed to the research hypotheses and also to cross-reference the accuracy of the data sources.

The research type was explanatory as described by Saunders and Lewis (2012) in that it “takes a descriptive research a stage further by looking for an explanation behind a particular occurrence through the discovery of causal relationships between key variables” (p. 113). The aim of this research was to find causal relationships between variables

through the analysis of the hypotheses stated in Chapter 3 and a historical analysis was thus deemed to be the appropriate method.

4.2 Research design

The research design was based on the deductive approach which “involves the testing of a theoretical proposition by using a research strategy specifically designed for the purpose of its testing” (Saunders & Lewis, 2012, p. 108). Research hypotheses and existing economic vulnerability and resilience theories and frameworks were used to obtain verification or otherwise of the stated hypotheses using the stated theories and frameworks.

4.2.1 Population

Population was defined as “the complete set of group members” by Saunders and Lewis (2012, p. 132) and is also known as the universe. For the relevance of this study, all SSA economies formed part of the population. There are 48 SSA countries and therefore this was taken as the population of the study (World Bank, 2011).

4.2.2 Unit of analysis

A unit of analysis could be an organisation, system or artefact of the study (Hasan and Banna, 2010). The research focused on two units of analysis, namely the resilience of an economy and the vulnerability of an economy. Each of these units of analysis contained measurements as listed in Table 4.1 and Table 4.2 respectively.

Table 4.1 Resilience unit of analysis

Resilience		
Variables	Ratio	Unit
Capital reserves or stock-piling	Reserve-to-GDP ratio	Percentage
Economic concentration	Economic concentration ratio	Index

Table 4.2 Vulnerability unit of analysis

Vulnerability		
Variables	Ratio	Unit
Economic openness	Import and export-GDP ratio	Percentage
Financial integration	Assets and liabilities-to-GDP ratio	Percentage

4.2.3 Sampling

According to Saunders and Lewis (2012), a sample is a subgroup of the population or the selected universe. The selected population of the study was all economies in the SSA region. This region was selected as a case for study due to the growing FDI activity in the region, with the region's global share of FDI rising from 3.2% in 2007 to 5.6% in 2012 (Ernst & Young, 2013). The study was mainly interested in these emerging economies since they maintain trade partnerships with other economies through these links.

Since a complete list of countries or populations was obtained, probability sampling techniques were used (Saunders and Lewis, 2012). The total list of countries that were listed in the population was 48 SSA economies. A systematic probability sampling technique was selected so that the countries could be ranked according to their attractiveness to FDI relative to the size of their economies. The study was interested in assessing the resilience and vulnerabilities of emerging economies by evaluating their economic performance against exogenous shocks, using the 2007/2008 financial global crisis as a contextual milieu and their ability to attract FDI inflows under these conditions.

A systematic sampling method was selected. Pepe (1997) stated that systematic sampling involves a random ordering of the population in the variable values used. This method is considered equivalent to a random sample. The sample focused on the economies that attracted the highest FDI relative to the size of their economies as this was an indication that these economies were forming trade links with the global economy. To eliminate the size of the economy as a criterion, FDI was viewed in relation to the size of the economy. Hence, FDI was reflected as a percentage of each country's GDP (FDI-to-GDP), using 2011 figures. The top 20 economies in relation to FDI-to-GDP (as a percentage) in the SSA region were selected as part of the sample for analysis. This method was random in that it did not consider any internal characteristics or mechanisms that enforced resiliency and reduced or enhanced inherent vulnerabilities. The sampling method was not biased towards any internal characteristics possessed by these economies such as the availability of resources or towards resource-rich countries. Hence, the sampling was truly random in the countries selected for analysis.

4.2.4 Data gathering process

Secondary data were selected as a data source as this type of data source allowed access to larger data sets than could be collected by this researcher (Saunders & Lewis, 2012). This method also saved time in the process of data collection. As per Saunders and Lewis (2012), collecting secondary data is unobtrusive, can easily be combined with other data sets and is open to public scrutiny.

4.2.4.1 Data sources

Data were collected from two major reputable sources which were the World Bank for the macroeconomic country performance data and United Nations Conference on Trade and Development (UNCTAD) for the trade export concentration ratio which was composed of trade export data for each country. The data collection involved the collection of data sets of the entire population of 48 SSA countries from the World Bank and UNCTAD. Economic data for Asian economies were collected from the Economist Intelligence Unit (EIU).

4.2.4.2 Data types

The analysis of the data, through the use of the instruments, required specific economic parameters that were used and transformed to form input variables. The data, as illustrated in Table 4.3, were collected for each of the emerging economies as input variables and applied to specific purposes as detailed in the purpose column.

Table 4.3 Economic data types

Parameter no	Economic parameter	Unit	Input variable	Purpose
1	GDP	US dollars	FDI-to-GDP ratio	Sampling, Research instrument
2	Foreign direct investment	US dollars	FDI-to-GDP ratio	Sampling
3	Country imports	US dollars	Economic trade openness	Research instrument
4	Country exports	US dollars	Economic trade openness	Research instrument
5	Foreign reserves	US dollars	International trade reserves	Research instrument
6	Country sector data	Percentage	Concentration ratio	Research instrument
7	Country external assets	US dollars	Financial integration	Research instrument
8	Country external liabilities	US dollars	Financial integration	Research instrument

4.3 Research instrument

The research instrument consisted of methods adopted from various publications due to the nature of the hypotheses that were posed in Chapter 3. The appropriate instrument was allocated for each hypothesis to process the input variables through the proposed method based on empirical work to produce an output variable for analysis. Table 4.4

summarises the hypotheses, the measurement variables used and the input data used for each measurement variable.

Table 4.4 Hypotheses variables

Hypothesis no.	Hypothesis	Measurement variable	Input data
1	Accumulation of reserves	International reserves	Foreign reserves (US\$), GDP (US\$)
2	Economic concentration	Herfindahl-Hirschman Index	Economic sector data
3	Trade openness	Trade openness	Import (US\$), Export (US\$), GDP (US\$)
4	Financial integration	Financial integration	Assets (US\$), Liabilities (US\$), GDP (US\$)

The instruments that were used for each research question are discussed below.

4.3.1 Accumulation of reserves

The instrument that was used to obtain international reserves was that formulated by Hur and Kondo (2013) where foreign reserves are all foreign assets, except for gold, that are controlled by the state. The instrument used was formulated by Cheung and Ito (2008) and was stated as:

$$IR_{it} = \frac{R}{GDP}$$

The input variables to the instrument were the foreign reserves (excluding gold), calculated as a percentage of GDP at a point in time and measured in US dollars.

4.3.2 Economic concentration

There have been many models developed over the years to measure economic industry concentration or diversification, for instance the concentration ratio (Rhoades, 2011). However, the Herfindahl-Hirschman Index (HHI) has become the primary measure that was

developed to measure the concentration of firms or industries in an economy (Calkins, 2002). This instrument was used to measure an economy's concentration and was denoted as:

$$HHI = \sum_{i=0}^n (MS)^2$$

The input variables to the instrument were the industry sector sizes of the economy, with the larger industries contributing more to the Herfindahl-Hirschman Index or concentration coefficient.

The economic diversification instrument was the inverse of the HHI as stated below:

$$Economic\ Diversification = \frac{1}{HHI}$$

This instrument highlighted the diverse nature of the economy.

4.3.3 Trade openness

Research was conducted by Cheung and Ito (2008) on modelling an instrument that could be used to measure an economy's average propensity to import and export, and which measures the economy's openness to the global economy. This model was supported by Down (2007) and determines that trade openness is reflected as imports plus exports as a percentage of an economy's GDP. The formula to measure an economy's trade openness is stated below:

$$Trade_{Openness} = \frac{(Import+Export)}{GDP}$$

This formula consisted of input variables of an economy's import, export and GDP values measured in US dollars.

4.3.4 Financial integration

The model that was constructed to measure financial integration was developed by Lane and Milesi-Ferretti (2006) and offered a volume-based measure of international financial integration. This instrument was further developed by Choi et al. (2009) to estimate the effects of financial integration on emerging economies. The instrument is stated below:

$$IFIDGDP_{it} = \frac{(FA + FL)}{GDP}$$

This instrument consisted of input variables of the stock of external assets (FA), as measured by the current account balance (Lane and Milesi-Ferretti, 2003) with the stock of external liabilities (FL) and the economy's GDP, as measured in dollars.

4.4 Validity and reliability

Validity of the research methodology refers to the accuracy of the method used to measure what it is supposed to measure, while reliability refers to the consistency of the results should the process of measurement be repeated (Saunders & Lewis, 2012). The evaluation of vulnerability and resilience of emerging economies against exogenous shocks was evaluated in the context of the FDI that SSA economies were able to attract as this singularity reflected the economies' integration into the global economy and is one of the factors that drives economic growth in these economies.

The performance of the SSA economies' vulnerability and resilience against exogenous shocks was evaluated in the context of the recent financial global crisis that affected all economies across all continents. Table 4.5 summarises the evaluation of the research methodology's validity and reliability.

Table 4.5 Validity and reliability evaluation

Factor	Evaluation
Subject Selection	Size of the countries' GDP was not a factor, along with the internal structuring of the economies
History	There are no specific events that occurred during the history of the research
Testing	Quantitative data were collected over the same period from the same sources (World Bank, UNCTAD) for all countries sampled
Subject error	Data were collected over the same period
Subject bias	Data reflected quantitatively from the input data to the output data

4.5 Data analysis approach

Data analysis was performed using two methods for each hypothesis. The output measurement of the impact of the exogenous shocks was based on the economies' output GDP. Hence, this was treated as an independent variable for both approaches. The first method of regression analysis determined whether there was a relationship between each of the four hypotheses. The second method of multiple correlation analysis determined the strength of correlation between each of the four independent variables and the dependent variable, namely the GDP output.

4.5.1 Regression analysis

Weiers (2010) stated that regression analysis provides a "best fit" mathematical equation for two variables. This type of regression analysis involved the use of a dependent (y) and independent (x) variable to perform correlation analysis, of which the strength of the relationship between the variables was measured. As mentioned by Weiers (2010), since the research study was evaluating multiple variables, a multiple regression and correlation approach was more appropriate and was used for the analysis.

A linear relationship was examined with economic GDP growth as the dependent variable and the four variables as independent variables. The multiple regression analysis was computed as reflected in Table 4.6.

Table 4.6 Multiple regression table

Dependent variable (y)	Independent variables (x's)
GDP growth	International reserves
	Economic concentration
	Trade openness
	Financial integration

Each of the linear multiple regression tests were computed at a 95% confidence level to test for significance of the variables in determining the output GDP growth.

4.5.2 Multiple correlation analysis

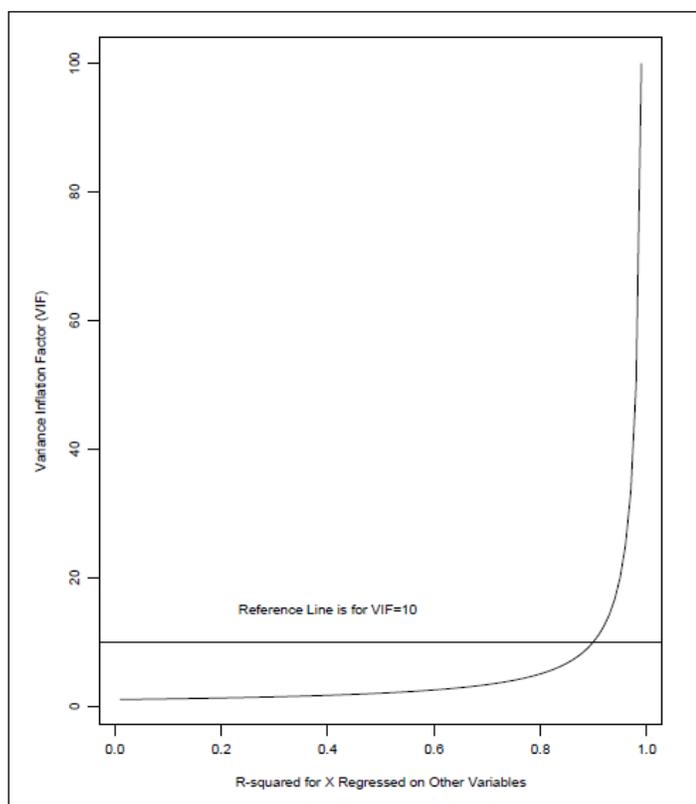
The coefficient of multiple determinations (R^2) was calculated as the variation in the GDP growth (dependent variable) that was explained by the multiple regression equation with the independent variables (Weiers, 2010). The R^2 was calculated for each of the sample SSA countries over a period of 17 years, from 1995 to 2011, using the multiple regression equation to evaluate which of these economies' GDP growth rate was explained by the four independent variables.

4.5.3 Multicollinearity

Multicollinearity occurs when one or more independent variables are highly correlated with one another in a multiregression analysis (Ethington, 2005). This was a critical phenomenon in that highly correlated independent variables caused by type 2 errors in the interpretation of the regression analysis result, and this may lead to inaccurate coefficients estimates and standard errors which may lead to inference errors (Grewal, Cote & Baumgartner, 2002). Lynch (2003) used the variance inflation factor (VIF) to explore the issue of multicollinearity as highly correlated independent variables will render the VIF very large. Lynch (2003) indicated a threshold VIF value of 10 to be the threshold value for independent value correlation which corresponds to an R^2 regression of 0.9 correlation value. Beyond this value, the regression becomes unstable as illustrated in Figure 4.1.

The VIF value used as a threshold to detect multicollinearity was defined as 10 and any variable equivalent to an R^2 of 0.9 was removed from the regression analysis to minimise multicollinearity.

Figure 4.1 Multicollinearity VIF



4.6 Research limitations

There were limitations to using secondary data for the research in that the data might not be completely suitable for the research hypotheses and would have to be processed through various research instruments since the data were originally collected for a different purpose to this research study. In addition, there might also be questions around how the data were collected by the sources (Saunders & Lewis, 2012). The research also focused on SSA economies in the context of inward FDI to assess the resilience and vulnerability of these economies. As such, the selection criteria might not be applicable to all emerging economies since the selected emerging economies attracted high levels of inward FDI.

Chapter 5 Results

5.1 Introduction

Chapter 4 detailed the methodology that was used to collect and analyse the data. This chapter presents the results and findings of the collected data, and also presents results based on the hypotheses posed in Chapter 3. The secondary data were collected from credible sources, namely the World Bank, the United Nations Conference on Trade and Development (UNCTAD) and the Economic Intelligence Unit (EIU).

The aim of the research study was to evaluate emerging economy resilience to and vulnerability against adverse economic shocks using the SSA region as the case in point. A sample was used of 20 performing countries in terms of attracting FDI as a percentage of each economy's GDP. This removed the bias of focusing only on the size of the economies. In addition, the research study was undertaken against the backdrop of the importance of attracting FDI and maintaining return on investment through measures that seek to address economic structural issues pertaining to the economies' resilience to and vulnerabilities against exogenous economic shocks.

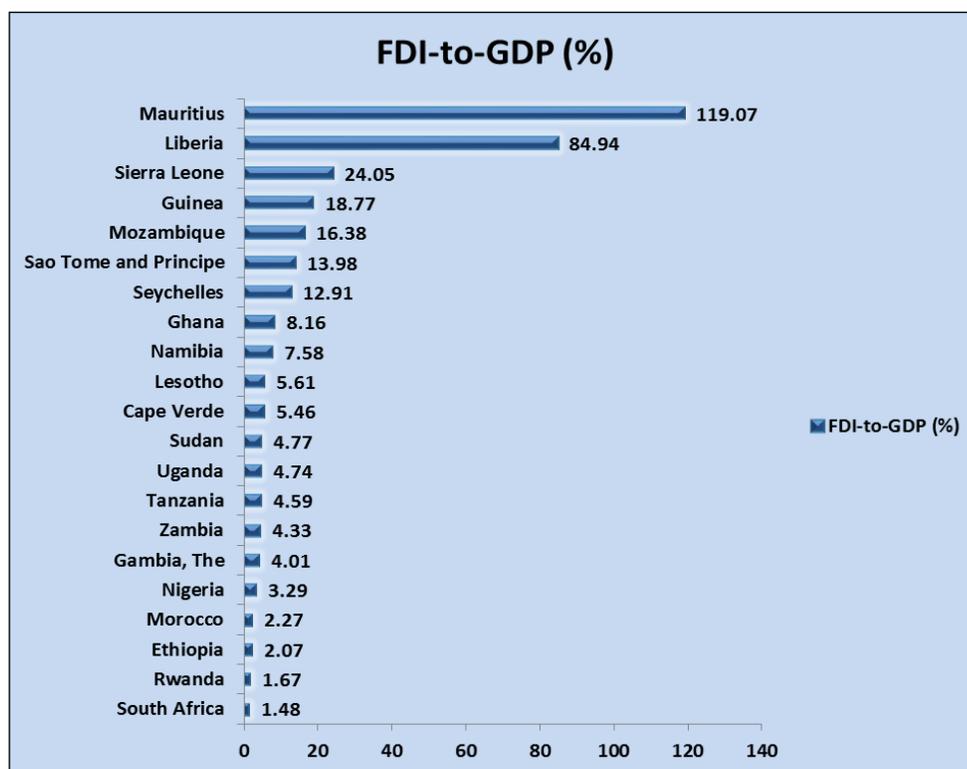
The data were collected and analysed over a 17-year period from 1995 to 2011. The 17-year period allowed the study to track the economic changes through the various phases within the context of global economic performance, including important periods such as the most recent global recession. The data also allowed the study to evaluate the trends of these economies with respect to trade openness, financial integration in the global economy, economic or GDP growth, and trade diversification. These were important issues to explore and form part of the rationalising of the results in Chapter 6 as well as the recommendations for the SSA region in improving economic resilience while reducing vulnerability against shocks that are beyond their sphere of control.

The next section describes the economic trends observed from the collected data for the SSA region as a collective.

5.2 Descriptive statistics: The sub-Saharan African (SSA) region

This section describes the economic performance trends for the SSA region as a whole over a 17-year period (1995 to 2011) for the 20 selected countries. Figure 5.1 illustrates the SSA sampled countries based on their FDI-to-GDP ratio. Refer to Appendix A for detailed figures.

Figure 5.1 Sample country list



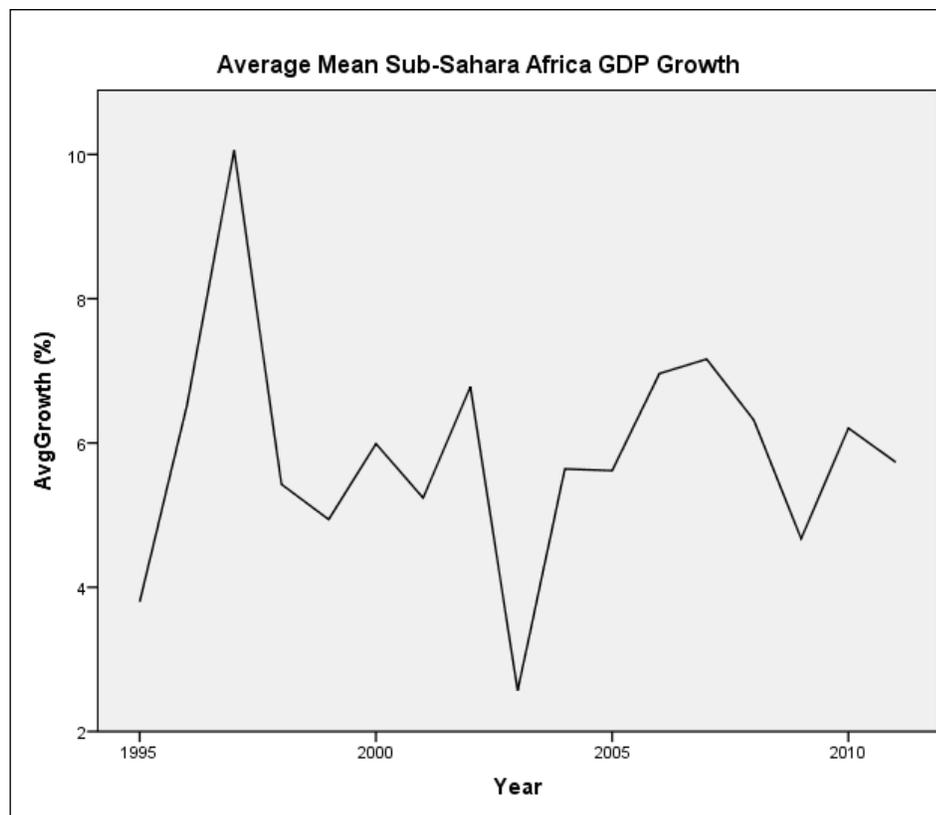
5.2.1 GDP growth

The collected dataset of 20 SSA economies over a 17-year period indicated boom-bust economic growth with mild volatility levels during the period under observation. It was evident from the mid- to late 1990s that SSA economies' GDP output reached levels as high as 10%. However, there was an immense decline in 2001 with GDP levels dropping

as low as 3% before a recovery of around 6% during the first decade of the twenty-first century.

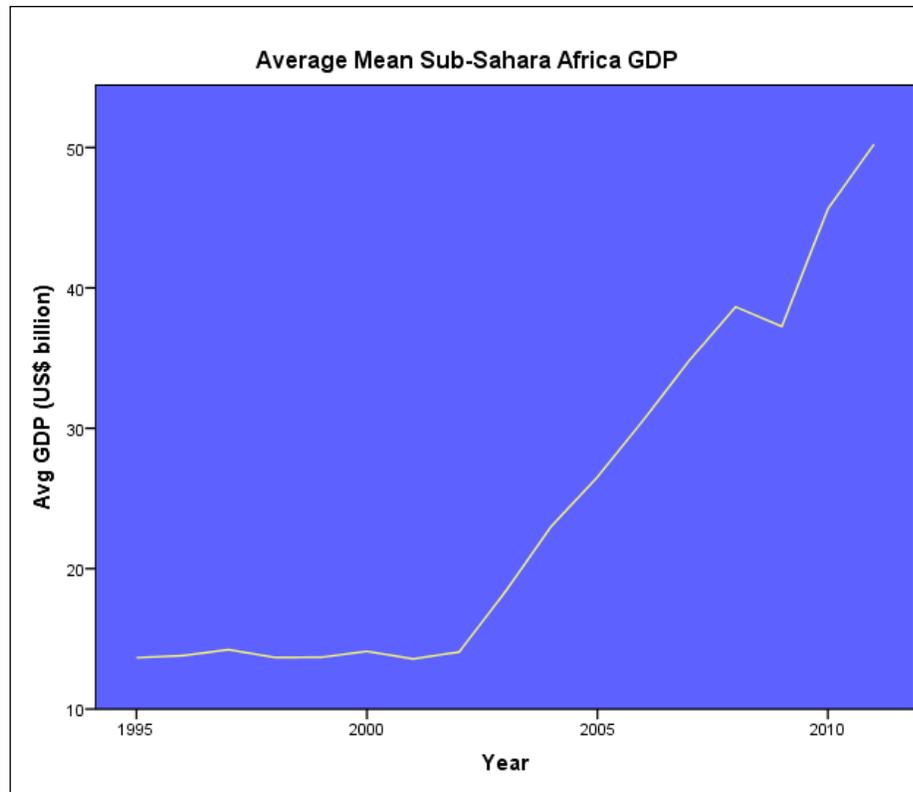
There was a decline in economic growth across SSA economies during the 2008/2009 global recession although the impact appears to be less than the slump of 2001/2002 as a result of the recession in the US economy, as demonstrated in Figure 5.2.

Figure 5.2 Average sub-Saharan African economies' GDP growth



According to Figure 5.3, it was evident from the data collected that GDP levels for the sampled SSA economies from the mid-1990s to the early twenty-first century were stagnant based on the average mean of these economies. From the early 2000s, SSA economies experienced sharp increases in the sizes of their GDPs with slight GDP contractions in 2009 due to the global financial crisis with signs of economic recovery from 2010.

Figure 5.3 Average sub-Saharan African economies' GDP

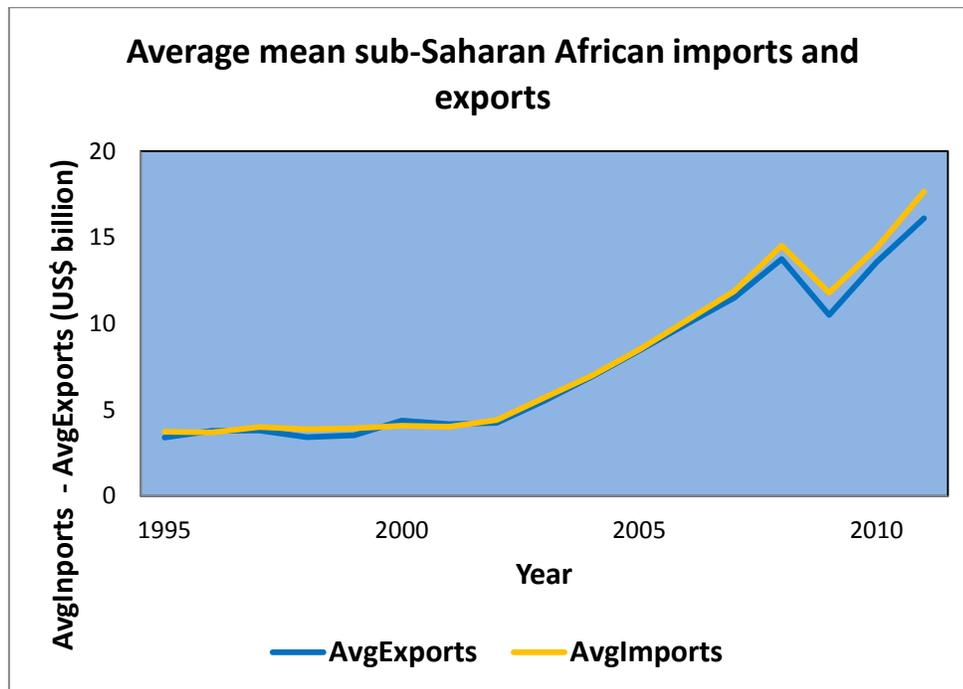


5.2.2 Trade openness

The dataset collected revealed that imports in the SSA economies coincided with their economic growth levels as imports experienced a sharp increase from the early 2000s until the economic recession in 2008/2009, according to the dataset compiled in Figure 5.4.

As illustrated in Figure 5.4, trade exports revealed similar trends to imports as SSA economies started exporting more commodities and services to the global economy from mid-2000. However, it appeared that exports from these economies were affected slightly more than imports as SSA economies traded with the global economy that demanded less of their products. As of 2011, the data revealed that SSA economies' imports and exports had fully recovered and were well above the previous levels prior to the global recession even though they were now importing more than they were exporting.

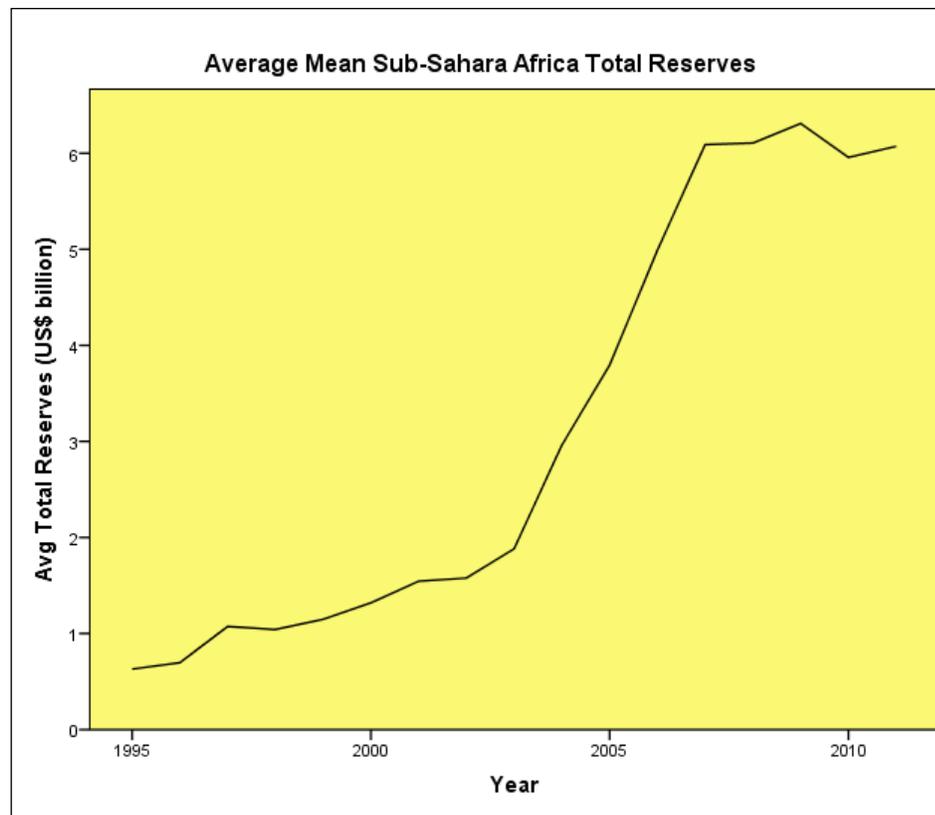
Figure 5.4 Average sub-Saharan African economies' imports



5.2.3 Reserves accumulation

The dataset revealed average total reserves (as held by the IMF in terms of drawing rights) for SSA economies from the mid-1990s as reflected in Figure 5.5. What was evident from the World Bank dataset was that the SSA's total reserves increased dramatically from the early 2000s which demonstrates a similar trend to the average size of SSA GDP economies. It appeared that the 2008/2009 economic recession had a minor impact on the average total reserves as SSA economies drew on their total reserves.

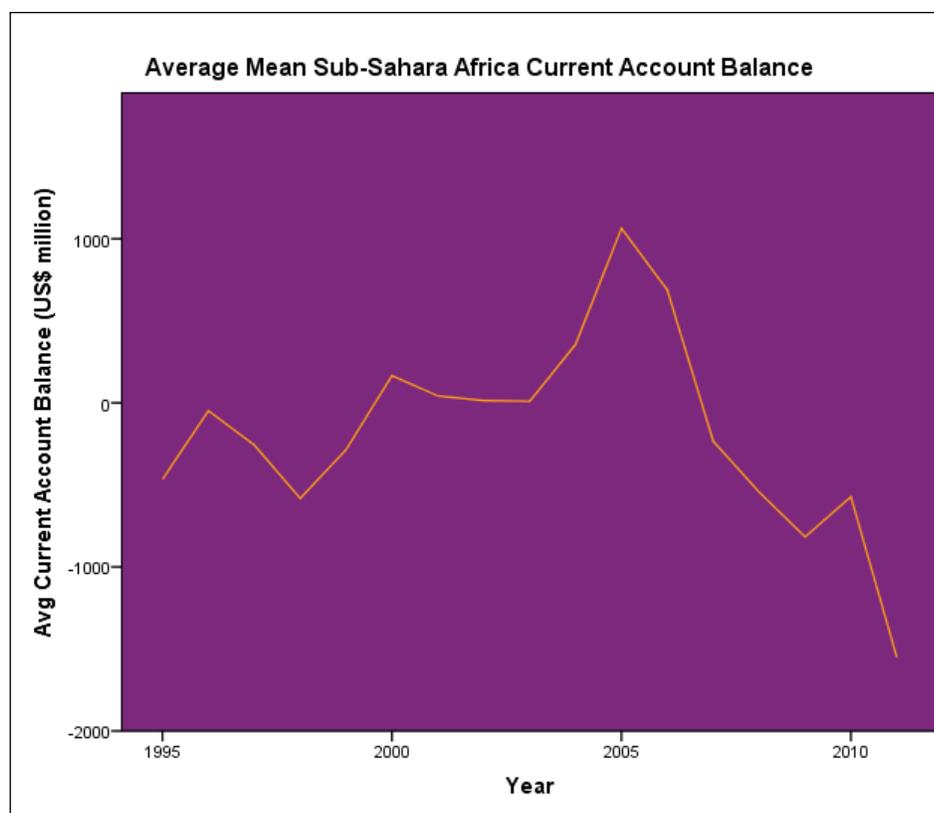
Figure 5.5 Average sub-Saharan African economies' total reserves



5.2.4 Financial integration

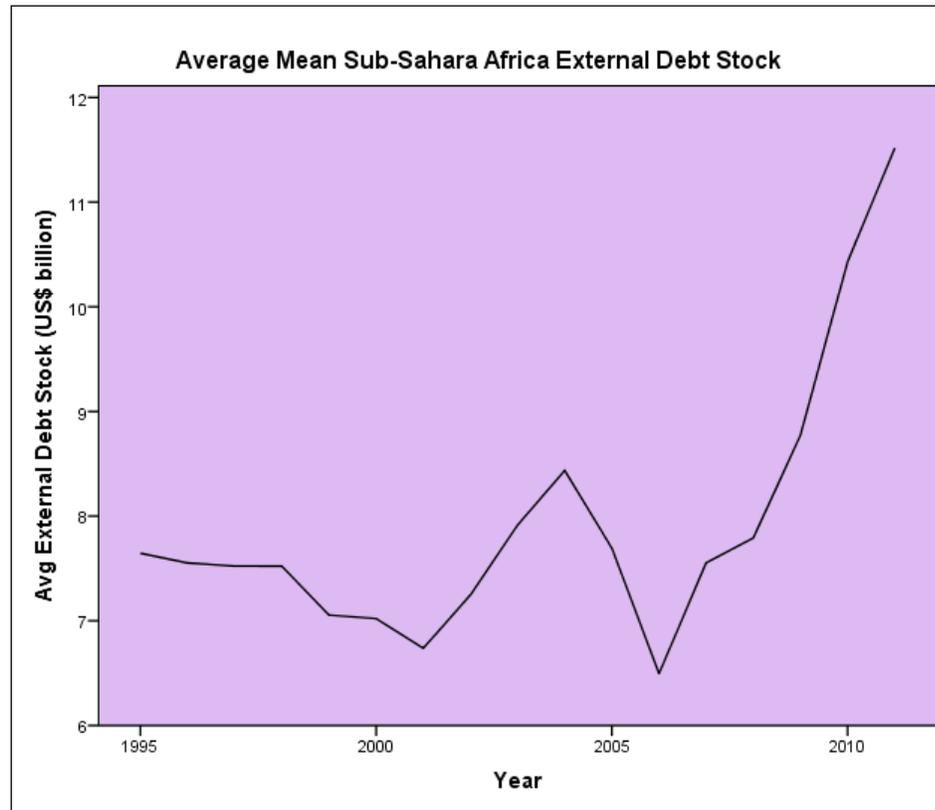
The collected dataset suggested that SSA economies were functioning with trade deficits, based on the country mean average, until the year 2000. According to Figure 5.6, in 2005, however, the SSA economies had, on mean average, the highest trade surplus and had accumulated significant external assets of approximately US\$1 billion. Since 2007, the World Bank data indicated that the SSA economies have been running average mean trade deficits and there is no sign of the current account balance turning positive as the trend indicates that these economies are continuing to have trade deficits. This could be attributed to the flow of FDI into these economies.

Figure 5.6 Average sub-Saharan African economies' current account trade balance



According to Figure 5.7, SSA economies' average external debt stocks have been on the rise for the past 17 years. The early 2000s and late 2000s dataset suggested a slight curb on external debt levels with an exponential increase in debt levels on average for SSA economies.

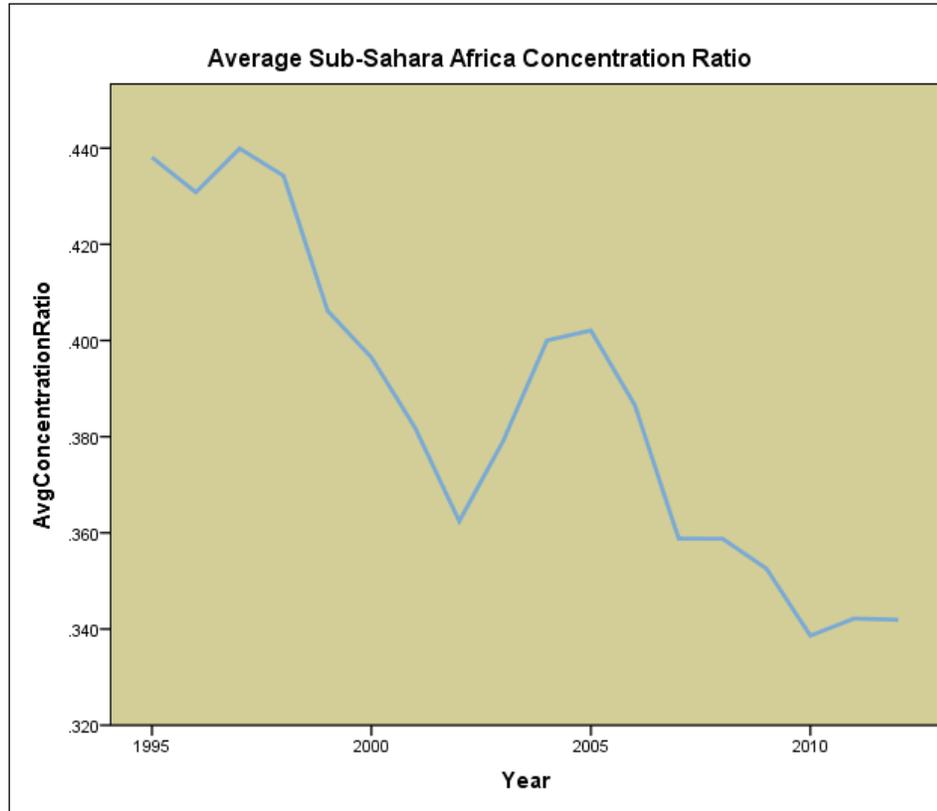
Figure 5.7 Average sub-Saharan African economies' external debt stock



5.2.5 Concentration ratio

The concentration ratio data (UNCTAD, 2012) that detailed the lack of export diversification in SSA individual economies revealed highly concentrated economies in 1995. By the early 2000s, the average concentration ratio had decreased by a quarter, suggesting that SSA economies had diversified their export sectors. Throughout the mid-2000s, the data revealed that the concentration ratio had increased and by 2010 it had dropped to its lowest levels throughout the SSA economies, according to Figure 5.8.

Figure 5.8 Sub-Saharan African economies' concentration ratio



5.3 Statistical significance of the resilience and vulnerability model

The resilience and vulnerability model, with GDP growth as the dependent variable (y) and economic openness, economic integration, economic concentration and international reserves as independent variables (x), was compiled for all 20 countries over the 17-year period. The resilience and vulnerability model was statistically significant for eight out of the 20 countries. The model was statistically significant for the following countries:

Mauritius – International reserves removed

The model was statistically significant for Mauritius with a statistical significance of 0.0001 at a 95% confidence level ($0.0001 < 0.05$) with a correlation of 0.791.

Model summary

Model	<i>R</i>	<i>R</i> ²	Adjusted <i>R</i> ²	Std. error of the estimate	Change statistics				
	country = Mauritius				<i>R</i> ² change	F change	df1	df2	Sig. F change
1	.911 ^a	.830	.791	.86415	.830	21.182	3	13	.000

Cape Verde – International reserves and financial integration removed

The model was statistically significant for Cape Verde with a statistical significance of 0.023 at a 95% confidence level ($0.023 < 0.05$) with a correlation of 0.417.

Model summary

Model	<i>R</i>	<i>R</i> ²	Adjusted <i>R</i> ²	Std. error of the estimate	Change statistics				
	country = Cape_Verde				<i>R</i> ² change	F change	df1	df2	Sig. F change
1	.646 ^a	.417	.334	1.74794	.417	5.003	2	14	.023

Lesotho – Trade openness and international reserves removed

The model was statistically significant for Lesotho with a statistical significance of 0.001 at a 95% confidence level ($0.001 < 0.05$) with a correlation of 0.623.

Model summary

Model	<i>R</i>	<i>R</i> ²	Adjusted <i>R</i> ²	Std. error of the estimate	Change statistics				
	country = Lesotho				<i>R</i> ² change	F change	df1	df2	Sig. F change
1	.789 ^a	.623	.569	1.09824	.623	11.566	2	14	.001

Mozambique – International reserves removed

The model was statistically significant for Mozambique with a statistical significance of 0.002 at a 95% confidence level ($0.002 < 0.05$) with a correlation of 0.66.

Model summary

Model	<i>R</i>	<i>R</i> ²	Adjusted <i>R</i> ²	Std. error of the estimate	Change statistics				
	country = Mozambique				<i>R</i> ² change	F change	df1	df2	Sig. F change
1	.813 ^a	.660	.582	1.71559	.660	8.423	3	13	.002

Nigeria

The model was statistically significant for Nigeria with a statistical significance of 0.006 at a 95% confidence level ($0.006 < 0.05$) with a correlation of 0.673.

Model summary

Model	R	R^2	Adjusted R^2	Std. error of the estimate	Change statistics				
	country = Nigeria				R^2 change	F change	df1	df2	Sig. F change
1	.820 ^a	.673	.564	1.90957	.673	6.168	4	12	.006

Tanzania

The model was statistically significant for Tanzania with a statistical significance of 0.0001 at a 95% confidence level ($0.0001 < 0.05$) with a correlation of 0.833.

Model summary

Model	R	R^2	Adjusted R^2	Std. error of the estimate	Change statistics				
	country = Tanzania				R^2 change	F change	df1	df2	Sig. F change
1	.913 ^a	.833	.777	.69220	.833	14.963	4	12	.000

Uganda – Trade openness removed

The model was statistically significant for Uganda with a statistical significance of 0.0001 at a 95% confidence level ($0.0001 < 0.05$) with a correlation of 0.904.

Model summary

Model	R	R^2	Adjusted R^2	Std. error of the estimate	Change statistics				
	country = Uganda				R^2 change	F change	df1	df2	Sig. F change
1	.951 ^a	.904	.881	.74761	.904	40.610	3	13	.000

Ghana – International reserves and financial integration removed

The model was statistically significant for Ghana with a statistical significance of 0.009 at a 95% confidence level ($0.009 < 0.05$) with a correlation of 0.492.

Model summary

Model	R	R^2	Adjusted R^2	Std. error of the estimate	Change statistics				
	country = Ghana				R^2 change	F change	df1	df2	Sig. F change
1	.701 ^a	.492	.419	1.99326	.492	6.772	2	14	.009

5.4 Hypothesis testing

Chapter 3 described four hypotheses to be tested for resilience and vulnerability in emerging economies using SSA countries to test the hypotheses. The discussion below describes the results of the four tests that were conducted as well as the results from the hypotheses.

5.4.1 Hypothesis 1

5.4.1.1 Testing of accumulation of international reserves

The first hypothesis tested whether the accumulation of international reserves of emerging economies was a form of resilience against exogenous shocks. For this test, linear regression was used to test the impact of international reserves as an independent variable and the emerging economies' GDP output as the dependent variable. Below are the two hypotheses:

Null hypothesis (H_{1_0}):

Accumulating international reserves or stock-piling is a useful means of building resilience for emerging economies.

Alternative hypothesis (H_{1_A}):

Accumulating international reserves or stock-piling is not a useful means of building resilience for emerging economies.

5.4.1.2 Hypothesis 1: Testing results

The results for hypothesis testing for international reserves or stock-piling as a useful means of building resilience as the NULL hypothesis are presented on Table 5.1 for each country. Refer to Appendix B for detailed results.

Table 5.1 Hypothesis 1: Summary

Country	Statistical significance (α)	p-value	Result
Liberia	0.05	0.984	NULL hypothesis rejected
Sierra Leone	0.05	0.966	NULL hypothesis rejected
Guinea	0.05	0.994	NULL hypothesis rejected
Namibia	0.05	0.22	NULL hypothesis rejected
Sudan	0.05	0.555	NULL hypothesis rejected
Uganda	0.05	0.00005	Failed to reject NULL hypothesis
Tanzania	0.05	0.068	NULL hypothesis rejected
Zambia	0.05	0.778	NULL hypothesis rejected
Nigeria	0.05	0.636	NULL hypothesis rejected
Morocco	0.05	0.907	NULL hypothesis rejected
Ethopia	0.05	0.988	NULL hypothesis rejected
Rwanda	0.05	0.278	NULL hypothesis rejected
South Africa	0.05	0.274	NULL hypothesis rejected

5.4.2 Hypothesis 2

5.4.2.1 Testing of economic concentration

The second hypothesis tested whether the reduction of the export economic concentration of emerging economies was a form of resilience against exogenous shocks. For this test, linear regression was used to test the impact of economic concentration as an independent variable and the emerging economies' GDP output as the dependent variable. Below are the two hypotheses:

Null hypothesis (H_{10}):

Reducing economic concentration is a useful means of building resilience for emerging economies.

Alternative hypothesis (H_{1A}):

Reducing economic concentration is not a useful means of building resilience for emerging economies.

5.4.2.2 Hypothesis 2: Testing results

The results for hypothesis testing for reducing export economic concentration as a useful means of building resilience as the NULL hypothesis are presented in Table 5.2 for each country. Refer to Appendix C for detailed results.

Table 5.2 Hypothesis 2: Summary

Country	Statistical significance (α)	p-value	Result
Mauritius	0.05	0.021	Failed to reject NULL hypothesis
Liberia	0.05	0.349	NULL hypothesis rejected
Sierra Leone	0.05	0.578	NULL hypothesis rejected
Guinea	0.05	0.978	NULL hypothesis rejected
Mozambique	0.05	0.861	NULL hypothesis rejected
Ghana	0.05	0.759	NULL hypothesis rejected
Namibia	0.05	0.388	NULL hypothesis rejected
Lesotho	0.05	0.861	NULL hypothesis rejected
Cape Verde	0.05	0.335	NULL hypothesis rejected
Sudan	0.05	0.143	NULL hypothesis rejected
Gambia	0.05	0.824	NULL hypothesis rejected
Uganda	0.05	0.149	NULL hypothesis rejected
Tanzania	0.05	0.976	NULL hypothesis rejected
Zambia	0.05	0.893	NULL hypothesis rejected
Nigeria	0.05	0.799	NULL hypothesis rejected
Ethiopia	0.05	0.454	NULL hypothesis rejected
Rwanda	0.05	0.561	NULL hypothesis rejected
South Africa	0.05	0.638	NULL hypothesis rejected

5.4.3 Hypothesis 3

5.4.3.1 Testing of trade openness

The third hypothesis tested whether the degree of openness to trade in emerging economies rendered the economy vulnerable to exogenous shocks. For this test, linear regression was used to test the impact of openness of an economy as an independent variable and the emerging economies' GDP output as the dependent variable. Below are the two hypotheses:

Null hypothesis (H_{1_0}):

Trade openness to the global economy does not render emerging economies vulnerable to exogenous shocks.

Alternative hypothesis (H_{1_A}):

Trade openness to the global economy renders emerging economies vulnerable to exogenous shocks.

5.4.3.2 Hypothesis 3: Testing results

The results for hypothesis testing for trade openness showed that this phenomenon does not result in economic vulnerability as shown by the NULL hypotheses presented in Table 5.3 for each country. Refer to Appendix D for detailed results.

Table 5.3 Hypothesis 3: Summary

Country	Statistical significance (α)	p-value	Result
Mauritius	0.05	0.236	NULL hypothesis rejected
Liberia	0.05	0.704	NULL hypothesis rejected
Sierra Leone	0.05	0.955	NULL hypothesis rejected
Guinea	0.05	0.783	NULL hypothesis rejected
Mozambique	0.05	0.037	Failed to reject NULL hypothesis
Namibia	0.05	0.181	NULL hypothesis rejected
Cape Verde	0.05	0.008	Failed to reject NULL hypothesis
Gambia	0.05	0.699	NULL hypothesis rejected
Sudan	0.05	0.027	Failed to reject NULL hypothesis
Tanzania	0.05	0.059	NULL hypothesis rejected
Zambia	0.05	0.28	NULL hypothesis rejected
Nigeria	0.05	0.676	NULL hypothesis rejected
Ethiopia	0.05	0.84	NULL hypothesis rejected

5.4.4 Hypothesis 4

5.4.4.1 Testing of financial integration

The fourth hypothesis tested whether the level of integration of emerging economies exposed these economies and rendered them vulnerable to exogenous shocks. For this test, linear regression was used to test the impact of the integration level of an economy to the global economy as an independent variable and the emerging economies' GDP output as the dependent variable. Below are the two hypotheses:

Null hypothesis (H_{1_0}):

Financial integration in the global economy renders emerging economies vulnerable to exogenous shocks.

Alternative hypothesis (H_{1o}):

Financial integration to the global economy does not render emerging economies vulnerable to exogenous shocks.

5.4.4.2 Hypothesis 4: Testing results

The results for hypothesis testing showed that the level of financial integration level has an impact on emerging economies as the NULL hypotheses are presented in Table 5.4 for each country. Refer to Appendix E for detailed results.

Table 5.4 Hypothesis 4: Summary

Country	Statistical significance (α)	p-value	Result
Mauritius	0.05	0.001	Failed to reject NULL hypothesis
Liberia	0.05	0.794	NULL hypothesis rejected
Sierra Leone	0.05	0.828	NULL hypothesis rejected
Mozambique	0.05	0.053	Failed to reject NULL hypothesis
Ghana	0.05	0.007	Failed to reject NULL hypothesis
Lesotho	0.05	0	Failed to reject NULL hypothesis
Cape Verde	0.05	0.168	NULL hypothesis rejected
Sudan	0.05	0	Failed to reject NULL hypothesis
Uganda	0.05	0	Failed to reject NULL hypothesis
Tanzania	0.05	0.005	Failed to reject NULL hypothesis
Zambia	0.05	0.644	NULL hypothesis rejected
Nigeria	0.05	0.015	Failed to reject NULL hypothesis
Morocco	0.05	0.562	NULL hypothesis rejected

5.5 Multicollinearity results

Multicollinearity tests were conducted and a number of economic parameters were found to be highly correlated and were removed from the multiregression model. As indicated in the methodology section in Chapter 4, an independent variable with an R^2 of 0.9

introduced multicollinearity in the model and was therefore removed. Table 5.5 illustrates all the independent variables that were removed due to multicollinearity for each country. Refer to Appendix F for detailed results.

Table 5.5 Removed economic parameters

Country	International reserves	Economic concentration	Trade openness	Financial integration
Mauritius	X			
Mozambique	X			
Ghana	X		X	
Lesotho	X		X	
Cape Verde	X			X
Namibia				X
Gambia, The	X			X
Nigeria				
Morocco		X	X	
Rwanda			X	
South Africa			X	

5.6 Summary of hypotheses results

Table 5.6 summarises all results from the hypotheses tests that were performed.

Table 5.6 Summary of hypotheses results

Country	Hypothesis 1 Reserves	Hypothesis 2 Concentration	Hypothesis 3 Openness	Hypothesis 4 Integration
Mauritius		Failed to reject NULL hypothesis	NULL hypothesis rejected	Failed to reject NULL hypothesis
Liberia	NULL hypothesis rejected	NULL hypothesis rejected	NULL hypothesis rejected	NULL hypothesis rejected
Sierra Leone	NULL hypothesis rejected	NULL hypothesis rejected	NULL hypothesis rejected	NULL hypothesis rejected
Guinea	NULL hypothesis rejected	NULL hypothesis rejected	NULL hypothesis rejected	Failed to reject NULL hypothesis
Mozambique		NULL hypothesis rejected	Failed to reject NULL hypothesis	NULL hypothesis rejected
Ghana		NULL hypothesis rejected		Failed to reject NULL hypothesis
Namibia	NULL hypothesis rejected	NULL hypothesis rejected	NULL hypothesis rejected	
Lesotho		NULL hypothesis rejected		Failed to reject NULL hypothesis
Cape Verde		NULL hypothesis rejected	Failed to reject NULL hypothesis	
Sudan	NULL hypothesis rejected	NULL hypothesis rejected	Failed to reject NULL hypothesis	Failed to reject NULL hypothesis
Uganda	Failed to reject NULL hypothesis	NULL hypothesis rejected	NULL hypothesis rejected	Failed to reject NULL hypothesis
Tanzania	NULL hypothesis rejected	NULL hypothesis rejected	NULL hypothesis rejected	Failed to reject NULL hypothesis
Zambia	NULL hypothesis rejected	NULL hypothesis rejected	NULL hypothesis rejected	NULL hypothesis rejected
Gambia, The		NULL hypothesis rejected	NULL hypothesis rejected	
Nigeria	NULL hypothesis rejected	NULL hypothesis rejected	NULL hypothesis rejected	Failed to reject NULL hypothesis
Morocco	NULL hypothesis rejected			NULL hypothesis rejected
Ethiopia	NULL hypothesis rejected	NULL hypothesis rejected	NULL hypothesis rejected	NULL hypothesis rejected
Rwanda	NULL hypothesis rejected	NULL hypothesis rejected		NULL hypothesis rejected
South Africa	NULL hypothesis rejected	NULL hypothesis rejected		NULL hypothesis rejected

CHAPTER 6 Discussion of results

6.1 Introduction

Chapter 3 formulated hypotheses that were evaluated against a sample of 20 SSA countries. The research methodology used for the evaluation of the hypotheses was formulated in Chapter 4. The data results were presented in Chapter 5.

The aim of this chapter is to draw conclusions based on the results presented in Chapter 5 and also to gain a better understanding of these results. The overall objective of this research study was to evaluate emerging economy resilience to and vulnerability against adverse economic shocks through the use of four specific macroeconomic determinants based on previous emerging economy research. These determinants were used and applied to a sample of 20 SSA economies that attracted a significant amount of FDI in relation to their size of economies.

The period under evaluation was from 1995 to 2011 (17 years). This was largely determined by the availability of the data that were required to evaluate the stated hypotheses in Chapter 3, specifically the concentration ratio that was compiled by the UNCTAD based on the sector export concentration for SSA countries. This data collection commenced in 1995.

6.2 Hypothesis 1 discussion: Accumulation of international reserves

The first hypothesis stated:

H1: Accumulating international reserves or stock-piling is a useful means of building resilience for emerging economies.

The accumulation of international reserves has been observed in emerging economies recently as a means of creating a barrier against exogenous shocks (Choi et al., 2009). This trend has been noticed with regard to many emerging economies, more specifically the Asian economies after the 1997 Asian financial crisis. Choi et al. (2009) noted that

relative to the size of their economies, these emerging economies had accumulated more reserves than most developed economies. Demir (2009) attributed some reasons for the stock-piling of international reserves to the volatility of international markets, mainly in the prices of commodity goods which severely affected emerging economies. Emerging economies are particularly vulnerable to these changes due to their dependence on commodities which are susceptible to price and demand factors.

Choi et al. (2009) also attributed the international reserve accumulation to the emerging economies not having access to capital at relatively low costs as compared to advanced economies. Hence, the international reserve accumulation brings forth the critical issue of access to capital access when required as a result of exogenous shocks being experienced by these economies. However, it was advocated that emerging economies resist stock-piling of international reserves and instead increase the amount of borrowing by means of a shift to the economy's tradable sector in order to relax borrowing constraints (Korinek, 2011).

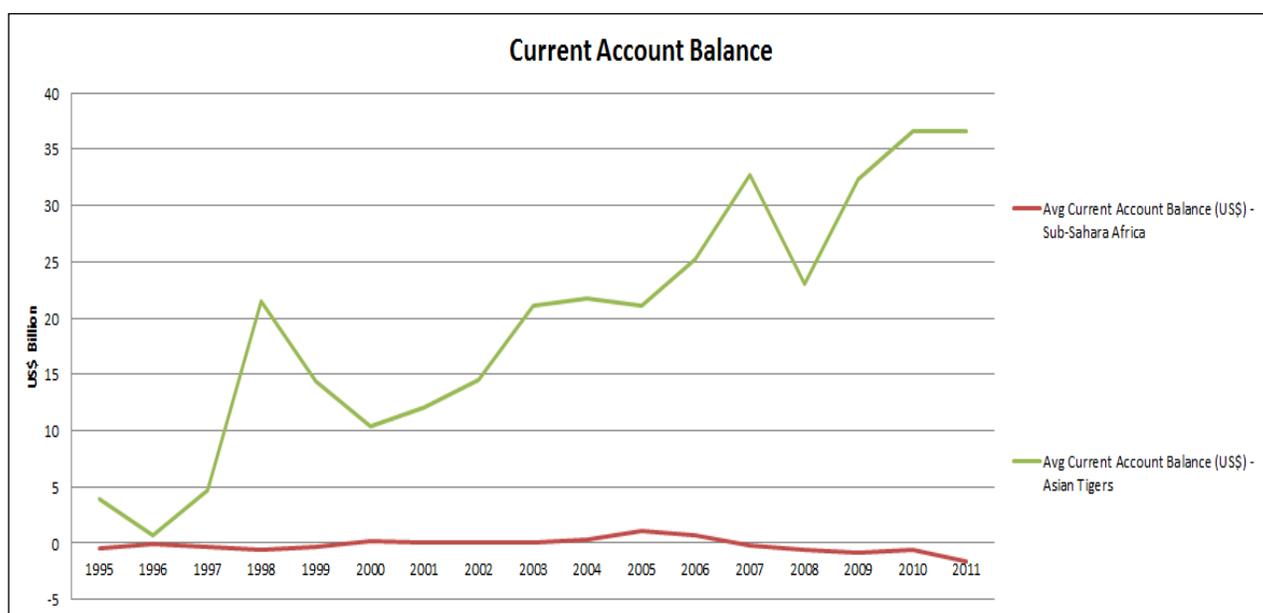
A sample of 20 SSA countries was evaluated for the hypothesis to test whether the accumulation of international reserves has a statistically significant positive influence on SSA economies' economic performance. Six countries were removed from the analysis of this parameter due to multicollinearity in the regression model. Thirteen of the evaluated economies rejected the NULL hypothesis (p -value > 0.05) with only Uganda failing to reject the NULL hypothesis. These results suggested that the accumulation of international reserves did not provide a useful mechanism for the building of resiliency for SSA economies.

6.2.1 Evaluation of economic performance

Time-series data analysis over the 17-year period (from 1995 until 2011) for international reserves accumulation indicated that SSA economies accumulated minimal international reserves and have been running current account deficits since 2007 as illustrated in Figure 6.1, showing mean average international reserves for each country. A time-series analysis

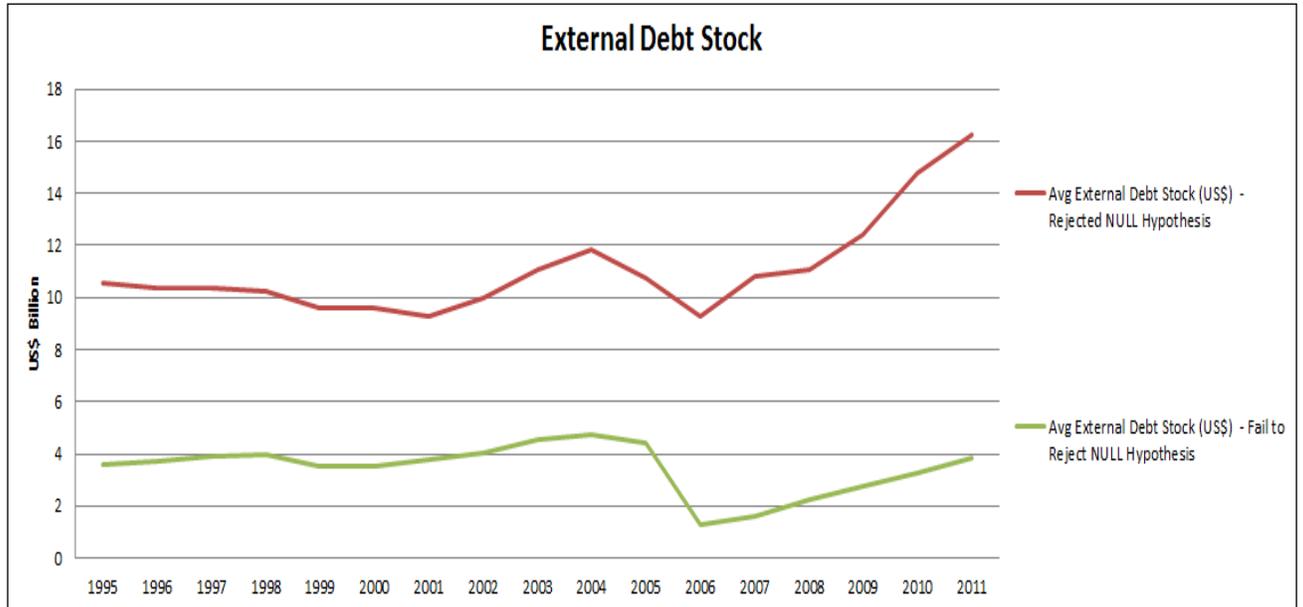
plotted on the same graph indicated a significant and increasing amount of international reserves. There was a sharp decrease of these reserves during the 2008/09 financial global crisis, which indicated that these reserves were tapped into as a form of resilience mechanism. As illustrated in Figure 6.1, SSA economies did not have international reserves to dampen the impact of the 2008/09 financial global crisis compared with the Asian Tigers which successfully utilised reserves as a barrier against sudden shortages of capital (Choi et al., 2009). This would explain the insignificance of international reserves as a form of resilience against exogenous shocks for SSA economies.

Figure 6.1 Hypothesis 1: Mean average current account balance



Even though international reserve accumulation was statistically insignificant for SSA economies, spurious positive standardised coefficients mean average of 0.23 indicated that international reserves do not have a significant influence on the dependent variable, the economic growth. Rather, Figure 6.2 indicated that SSA economies relied heavily on increasing their debt stock to cushion the impact of the 2008/09 global financial crisis even in the aftermath of the crisis.

Figure 6.2 Hypothesis 1: Mean average external debt stock



6.2.2 Summary of hypothesis findings

From the analysis, it is evident that the concept of utilising international reserves as a resilience factor against exogenous shocks was found not to be applicable. This suggests that SSA economies did not build up sufficient international reserves when compared with other emerging economies such as the Asian Tigers as demonstrated in Figure 6.1. Choi et al. (2009) suggested that emerging economies build up international reserves on which they could draw in the event of an exogenous shock. The research concluded that the international reserves accumulation by the Asian economies was due to the economies not being able to access funding like the developed economies. However, this conclusion was not substantiated for the SSA economies in that they did not use this measure as a form of resilience. Korinek (2011) suggestion that emerging economies decrease the amount of international reserves in favour of borrowing was evidenced by these economies.

6.3 Hypothesis 2 discussion: Economic concentration

The second hypothesis stated:

H2: Reducing economic concentration is a useful means of building economic resilience for emerging economies.

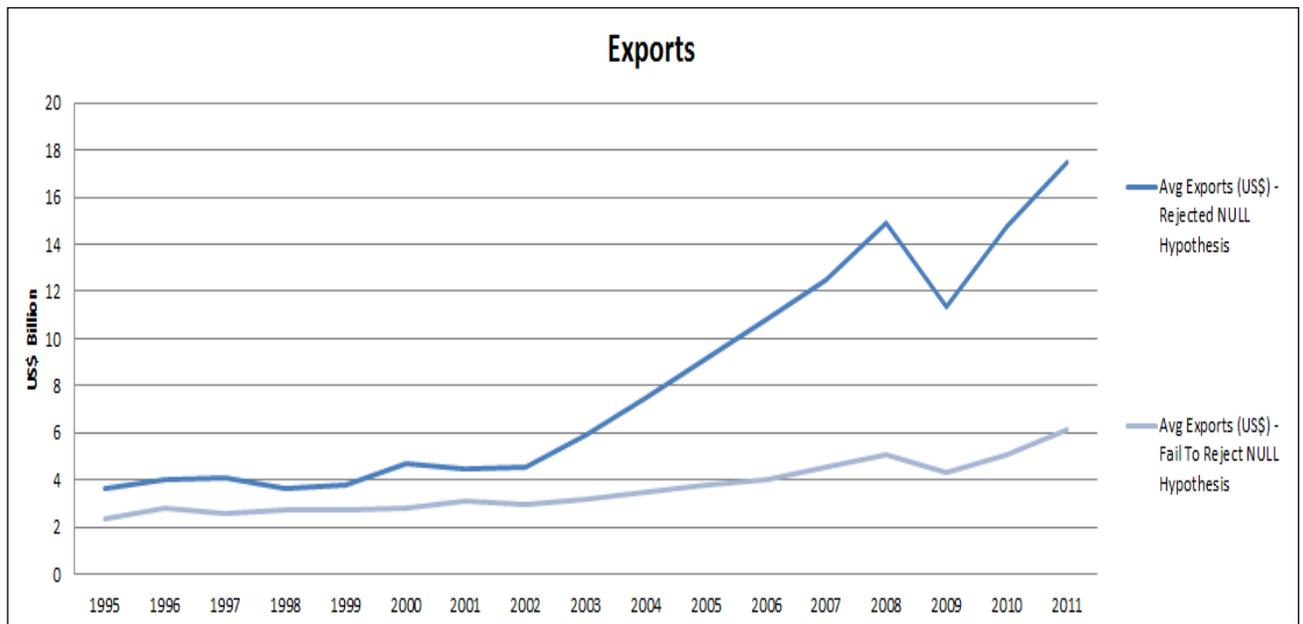
It has been argued that economic diversification in terms of exports from an emerging economy is a form of resilience and protects an emerging economy from exogenous shocks (Hosein, 2010). This is largely due to the heavy reliance of emerging economies on minerals and natural resources (Eichengreen, 2002). Exogenous shocks are exerted in two forms on these emerging economies, the first being the sudden changes in prices of these commodities and the second being the demand factors for these commodities which affect the income normally generated from minerals and other natural resources. Reducing the economic concentration of an emerging economy principally means that should one commodity or service suffer either of the above-mentioned shocks, this would not necessarily devastate economic growth but would be minimised through the diversification process. Empirical studies have developed recommendations for economic export diversification as a driver of economic stabilisation which builds economic resilience (Papageorgiou & Spatafora, 2012). In similar studies, there were, however, opposing insights that argued that reducing economic concentration would essentially mean that the emerging economy forfeits its economic competitive advantage (Mayer, 2006).

A sample of 20 SSA economies was evaluated. Morocco was excluded from this hypothesis evaluation since this country did not have economic concentration data. The hypothesis evaluated whether the reduction of economic concentration had any resilience or significantly positive impacts on the countries' economic growth. The hypothesis was rejected for 18 (p-value < 0.05) of the 19 economies, with only Mauritius failing to reject the hypothesis (p-value > 0.05). This suggested that reducing economic concentration or increasing economic diversification had no significant impact on the resilience of SSA economies.

6.3.1 Evaluation of economic performance

Economic performance from 1995 to 2011 for all SSA economies that rejected and failed to reject the NULL hypothesis (that reducing economic concentration is a useful means of building economic resilience) was plotted on a time-series graph, as shown in Figure 6.3.

Figure 6.3 Hypothesis 2: Mean average exports data



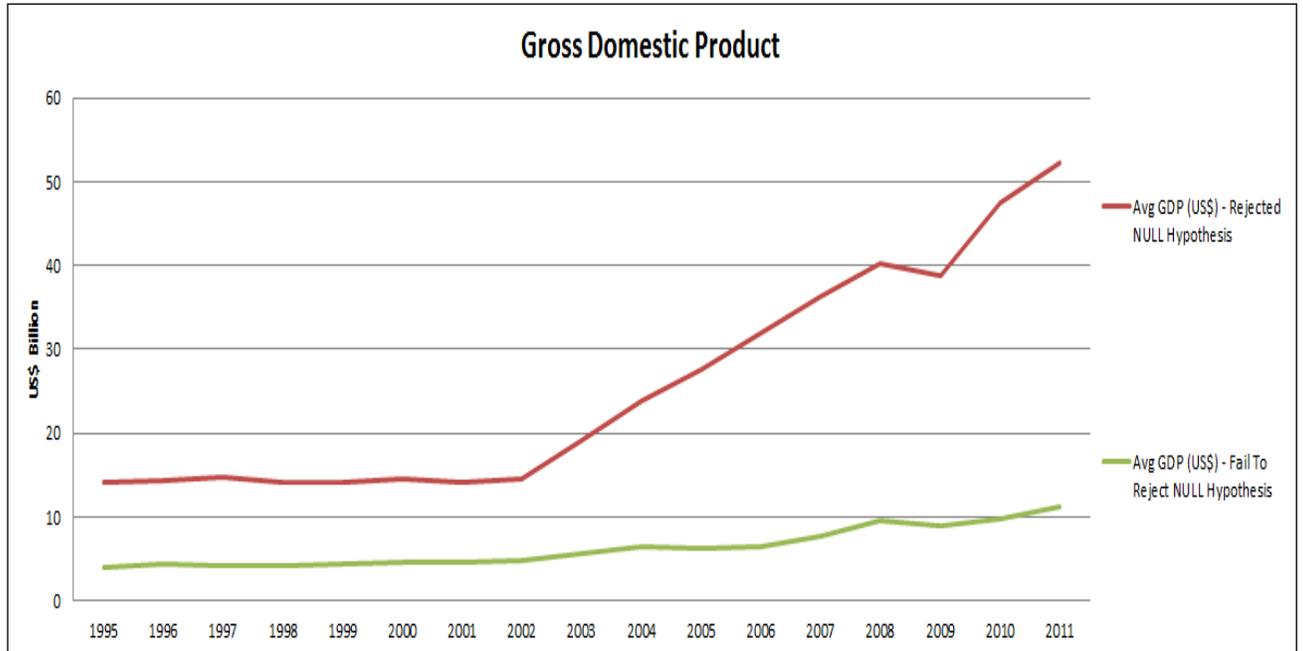
From the mean export data for countries grouped according to their results for Hypothesis 2, it was evident that exports for countries that rejected the NULL hypothesis are more vulnerable to global economic changes as can be seen with the impact of the global financial crisis in 2008/2009. The country that failed to reject the NULL hypothesis experienced a minor drop in export figures, suggesting that lower economic concentration was effectively used as a mechanism to increase economic resilience against the exogenous shock of the 2008/2009 global financial crisis. The economic concentration data also supported this finding as the economic concentration ratio for economies that were statistically significant and that failed to reject the NULL hypothesis was significantly

lower (mean concentration ratio = 0.26) compared to economies that were not statistically significant and that rejected the NULL hypothesis (mean concentration ratio = 0.362). This indicated that the lower the economic concentration was, the less impact exogenous shocks would have on exports.

When evaluating the standardised coefficient, Freud and Littell (2000) stated that it is “useful in ascertaining the relative importance of the effects of independent variables not affected by the scales of measurement” (p. 29). For the countries that failed to reject the NULL hypothesis, economic concentration was the second most influential factor on the independent variable (GDP economic growth) with a positive 0.636 standardised coefficient. This implied that the lower concentration ratio had had a positive change on the GDP economic growth.

Observing the mean export figures for the two groups of economies in Figure 6.4, it was apparent that less economic concentration for SSA economies resulted in less export growth. The economies where the concentration ratio was not significant experienced an exponentially higher export growth. The exponential export growth also resulted in a much higher mean GDP growth. Figure 6.4 also strengthened the argument that a lower concentration ratio insulated the economies from the 2008/2009 financial global crisis.

Figure 6.4 Hypothesis 2: Mean average GDP



Observing the mean export figures for the two groups of economies in Figure 6.3, it was apparent that less economic concentration for SSA economies resulted in less export growth. Economies where the concentration ratio was not significant experienced an exponentially higher export growth. The exponential export growth also resulted in much higher mean GDP growth (figure 6.4). Figure 6.4 also strengthened the argument that a lower concentration ratio insulated the economies from the 2008/2009 financial global crisis.

6.3.2 Summary of hypothesis findings

The concentration ratio was not an effective means of building resilience in most of the SSA economies. There were significant differences in economic performance between economies where the concentration ratio played a positive role in the economic growth of an economy and those where the concentration ratio displayed no significant impact. Hosein (2010) argued that less economic concentration ensures economic stabilisation

and increased economic resilience for emerging economies. This was observed with the data analysis performed in this study. These economies displayed economic resilience where an exogenous shock had a minimal adverse impact. However, the data also demonstrated that less economic concentration resulted in the slow growth in exports and GDP which supported the research by Mayer (2006) that competitive advantage for emerging economies is forfeited through decreased economic concentration. This argument could provide a probable explanation in the observed slow growth in exports for low economic concentration economies.

6.4 Hypothesis 3 Discussion: Trade openness

The third hypothesis stated:

H3: Trade openness to the global economy does not render emerging economies vulnerable to exogenous shocks.

There have been various arguments relating to the impact of openness relative to macroeconomic performance when exogenous shocks are exerted. There are two schools of thoughts on the subject of the degree of openness of an economy, The first is that of Duval et al. (2007) who, in their research on this topic, concluded that the degree of openness of an economy enhances the resilience of the economy and reduces vulnerability to exogenous shocks, citing the Singaporean economy in what was termed the Singapore Paradox. They argued that the high degree of openness essentially contributed to the high resilience experienced by this economy. This finding disputed the outcomes of research conducted on emerging economies by Eichengreen (2002). This research concluded that openness rendered emerging economies vulnerable since these economies are heavily reliant on commodities. Eichengreen (2002) argued that these exogenous shocks in the form of demand and price changes could easily be transmitted to emerging economies with severe consequences.

A sample of 20 SSA economies was evaluated for this hypothesis. Gambia was excluded from the evaluation since the country did not have import and export data to compute the trade openness input variable. The hypothesis aimed to evaluate whether trade openness had a significant impact on the economic output of the SSA economies. The NULL hypothesis was rejected ($p\text{-value} > 0.05$) for 11 of the 19 economies with the remainder of economies removed due to multicollinearity. This suggested that the degree of trade openness did render most SSA economies vulnerable to adverse economic shocks.

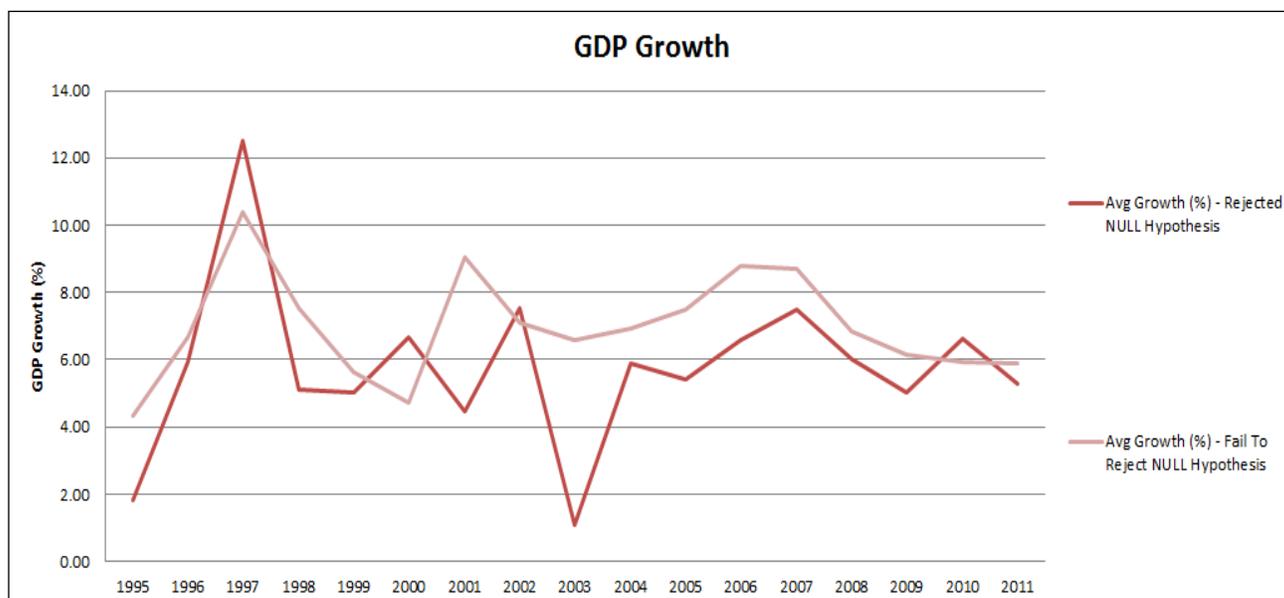
6.4.1 Evaluation of economic performance

The NULL hypothesis that trade openness does not render SSA economies vulnerable to exogenous shocks, using economic data over a 17-year period, was rejected for 11 of the 19 economies. The economies that failed to reject the NULL hypothesis were separated from the economies that rejected the NULL hypothesis. Average means were computed to evaluate these economies against adverse economic shocks to track and extrapolate findings from their economic performance. Figure 6.5 demonstrates the differences in terms of GDP growth between these economies, particularly during the two exogenous shocks of the twenty-first century (the 2001/2002 and 2008/2009 economic crises).

Trade liberalisation has often been advocated by the World Bank and the IMF as a major source of economic growth via the Washington Consensus which promotes a pro-globalisation approach (Cavallo & Frankel, 2007) as it encourages economic activity and competition (Yahikkaya, 2002). The view advocated by the IMF is that trade openness is associated with economic growth. In the case of SSA economies, it was clear that those economies that were not vulnerable experienced higher economic growth. Furthermore, from the research results, economies that rejected the NULL hypothesis, in other words, economies that were rendered vulnerable to exogenous shocks (which in this case were 11 of the 19 economies) were badly affected by the two exogenous shocks and economic growth was volatile with a boom-bust cycle while also experiencing lower economic growth, as illustrated in Figure 6.5. Yet, the statically significant economies experienced

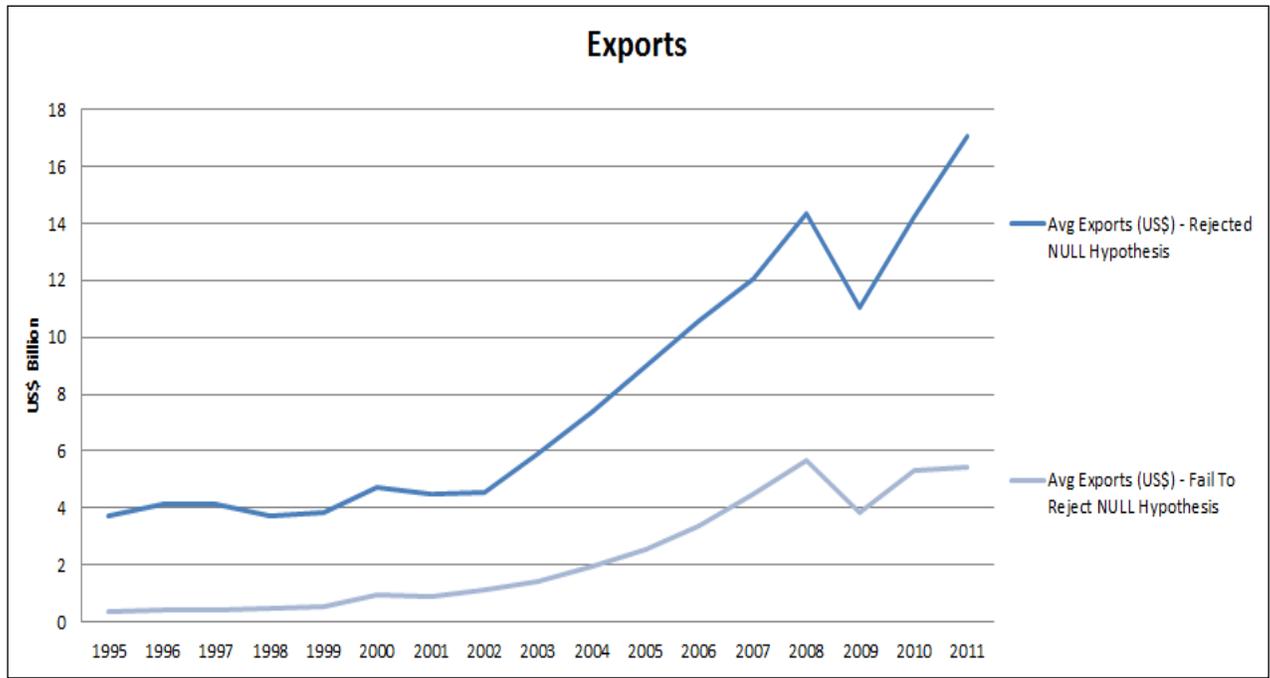
higher and more stable economic growth with no notable impact as a result of the global financial crisis.

Figure 6.5 Hypothesis 3: Mean average GDP



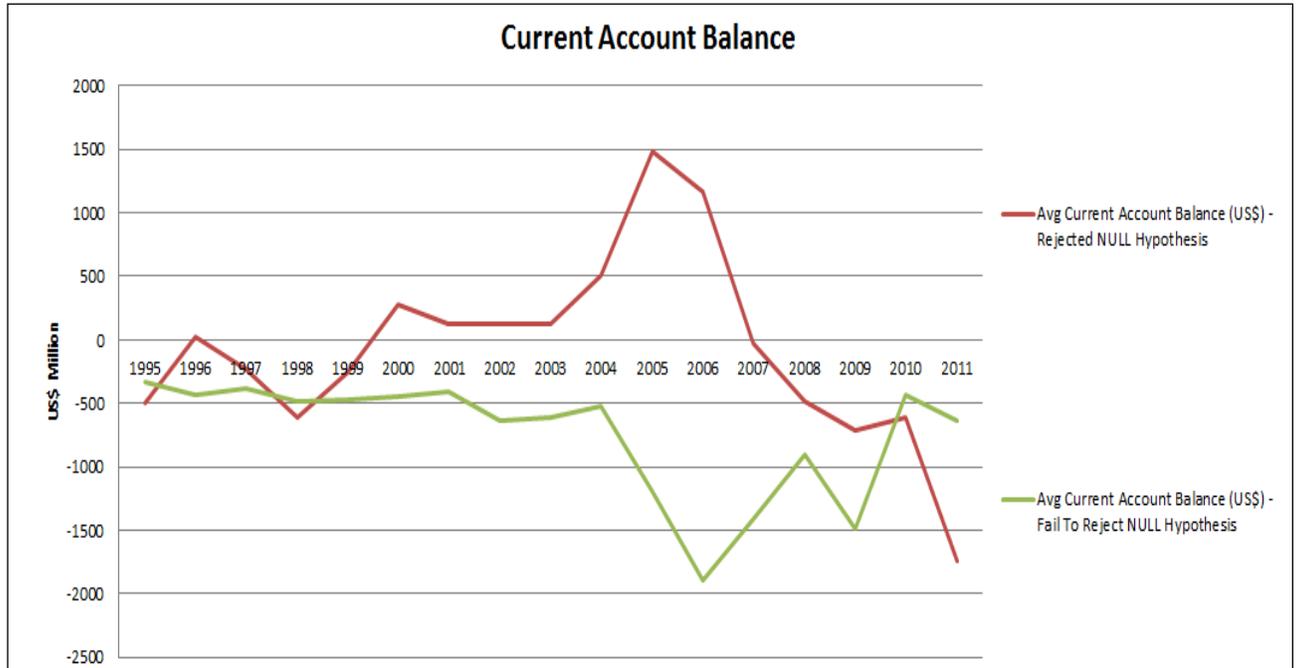
Yahikkaya (2002) stated that economies with a higher share of trade experience higher economic growth. In this study, trade volumes in the form of exports traded by SSA economies that were vulnerable to exogenous shocks and trade volumes are plotted in Figure 6.6. This graph illustrates that economies that were vulnerable to exogenous shocks traded or exported higher volumes than economies that were statistically significant and that were not rendered vulnerable to exogenous shocks. It was also evident that these economies tended to have a much better rate of recovery in exports once the exogenous shock had ceased. Cavallo and Frankel (2007) offered a plausible explanation for this recovery, namely that more openness may reduce the cost of the trade deficit and encourage FDI to facilitate more commercial trade in the developing economies.

Figure 6.6 Hypothesis 3: Mean average exports



Indeed, the observations by Cavallo and Frankel (2007) that openness tends to encourage FDI in economies especially post-crisis was the case in those SSA economies that were more open to trade and rendered more vulnerable to exogenous shocks. This can be seen in Figure 6.7 in the trade deficit experienced by these economies in the aftermath of the global financial crisis.

Figure 6.7 Hypothesis 3: Mean average current account balance



The trade openness standardised coefficients affected the three statistically significant economies (Mozambique, Cape Verde and Sudan) differently. Since standardised coefficients measure the strength of the impact of the independent variable on the dependent variable in absolute units (Freud and Littell, 2000), this measure was used to assess the impact of trade openness on these economies. For Mozambique, trade openness had a standardised coefficient of -0.459 , implying that trade openness heavily influenced Mozambique's economic performance. However, the minus sign ($-$) meant that trade openness had a fundamentally adverse impact on economic performance. This was a similar finding for Cape Verde with a standardised coefficient of -0.632 . For Sudan, trade openness had a standardised coefficient of 0.69 , which signified that trade openness had a significant positive impact on Sudan's economic performance.

6.4.2 Summary of hypothesis findings

Trade openness rendered most SSA economies vulnerable to exogenous shocks as the NULL hypothesis (that trade openness does not render SSA economies vulnerable to exogenous shocks) was rejected for 11 of the 19 economies. Further, the economies were separated into two groups based on their statistical significance to compare and assess the impact of the global financial crisis on these economies. This offered deeper insights into these two types of economies. Evidence from the data analysis implied that the economies that were vulnerable due to trade openness to the global economy tended to export more than the economies that were not vulnerable due to trade openness. This signified greater economic growth. Prasad, Rogoff, Wei and Kose (2006) confirmed that trade openness contributes greatly to promote economic growth, a phenomenon which was observed in the time-series analysis.

Economic growth volatility was also evident for economies that were vulnerable due to trade openness. This alluded to the finding that trade openness often resulted in output volatility for developing economies. This finding was supported by Prasad et al. (2003) who argued that an increase in trade openness leads to higher output volatility for developing countries. This is another factor of vulnerability to adverse shocks (Di Giovanni & Levchenko, 2007). Data analysis also illustrated that economies that were vulnerable due to trade openness had greater external assets. During the global financial crisis, these economies accumulated financial deficits which suggested that they were accessing their financial assets and borrowing with the current account deficit increasing significantly after 2010. This signalled global economic recovery, resulting in greater FDI in these economies, and was consistent with the hypothesised positive relationship between trade openness and FDI (Asiedu, 2002).

6.5 Hypothesis 4 Discussion: Financial integration

The fourth hypothesis stated:

H4: Financial integration in the global economy renders emerging economies vulnerable to exogenous shocks.

Kose et al. (2006) argued that financial integration is essential for emerging economies to increase economic growth as it provides emerging economies with access to capital markets. Indeed, access to capital markets is critical for emerging economies since they rely heavily on FDI to grow their economies. However, other findings indicated that financial integration is often beneficial for middle-income and wealthy countries rather than for developing economies (Mougani, 2012). Emerging economies, such as those in SSA, are heavily reliant on commodities which are adversely affected by demand and price changes with boom-bust cycles transmitted through financial integration (Korinek, 2011). Kose et al. (2006) observed that emerging economies that are financially integrated in the global economy experience high growth but also experience significant volatility and are thus vulnerable to transmitted economic shocks.

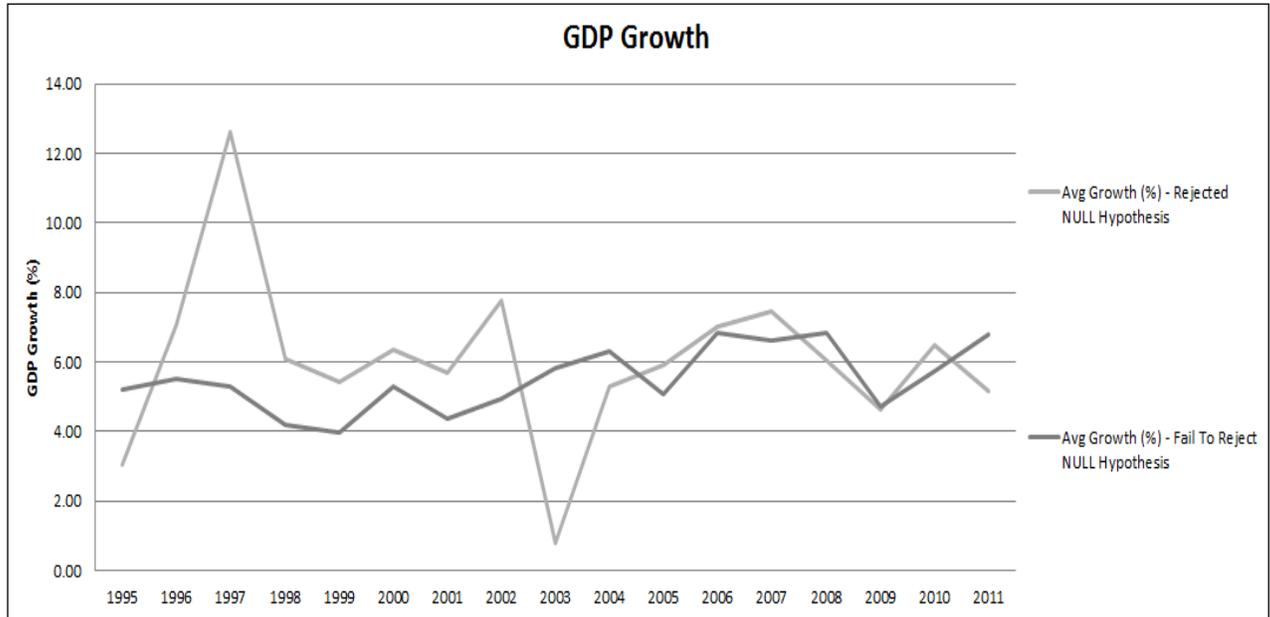
Initially, a sample of 20 countries was used to evaluate the fourth hypothesis. From the collected data, three countries (Mozambique, Namibia and Gambia) were removed from the hypothesis analysis due to missing data. Seven countries (Mauritius, Guinea, Ghana, Sudan, Uganda, Tanzania and Nigeria) failed to reject the NULL hypothesis ($p < 0.05$) (whether financial integration renders emerging economies vulnerable to exogenous shocks) since it was statistically significant. Therefore, there was no outright consensus for this hypothesis as almost the same number of countries rejected the NULL hypothesis as those that failed to reject the NULL hypothesis.

6.5.1 Evaluation of economic performance

The hypothesis was statistically significant ($p\text{-value} < 0.05$) for seven SSA economies which failed to reject the NULL hypothesis. These economies were Mauritius, Guinea, Ghana, Sudan, Uganda, Tanzania and Nigeria. The statistically significant economies were observed using time-series data over a 17-year period (1995 to 2011) to discern the phenomena that have been associated with financial integration of emerging economies with the SSA economies as performance measures. The economies that were statistically significant displayed lower economic growth than the economies that were not rendered vulnerable by financial integration with the global economy, as illustrated in Figure 6.8, by the mean growth rate year-on-year.

These results for statistically significant SSA economies were not consistent with Korinek (2011) who argued that emerging economies are vulnerable to boom-bust cycles and volatility in their economic growth. However, for SSA economies that rejected the NULL hypothesis, this finding was consistent with Kose et al. (2006) in that these economies experienced high levels of economic growth with high volatility. Figure 6.8 also indicates that the 2008/09 global financial crisis affected both sets of economies equally, with the economies that were vulnerable to exogenous shocks displaying a faster recovery rate after the crisis.

Figure 6.8 Hypothesis 4: Mean average GDP growth

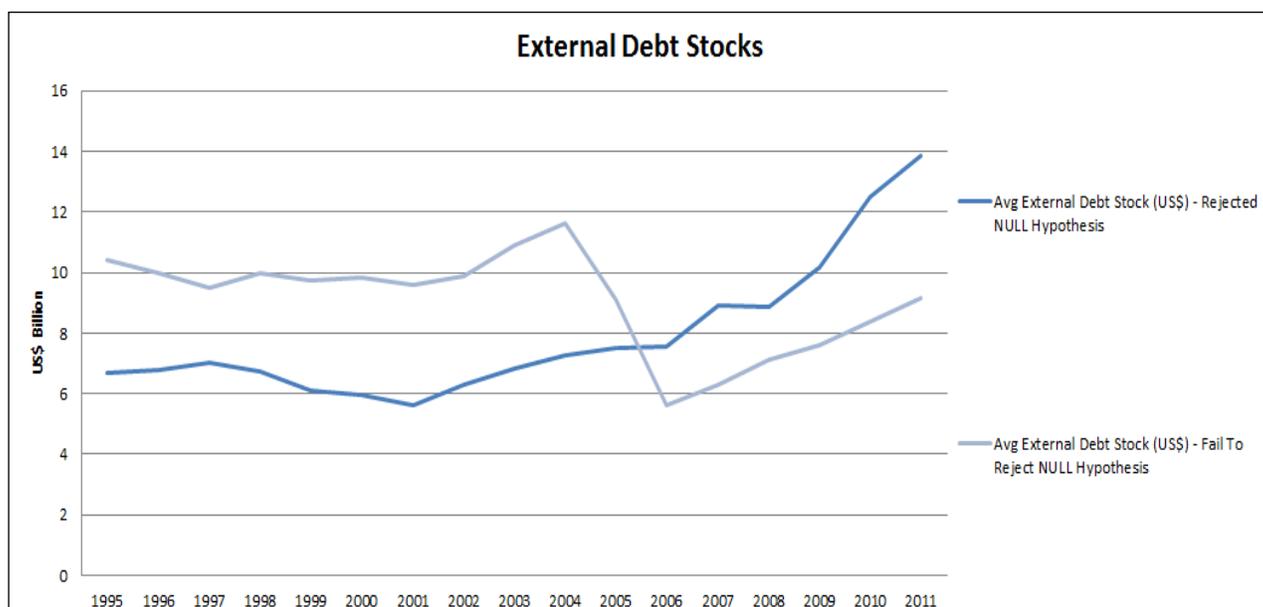


Mougani (2012) stated that financial integration provides emerging economies with access to capital markets, and this enables economies with capital allocation across capital markets. SSA economies that were statistically significant ($p\text{-value} < 0.05$) for the NULL hypothesis, and hence rendered vulnerable to exogenous shocks due to their financial integration in the global economy, illustrated higher external liabilities pre-2004. This is seen in Figure 6.9 showing the mean external debt stocks for statistically significant economies.

The observation by Mougani (2012) for financially integrated economies was demonstrated by the sharp decrease in external debt stocks, as illustrated in Figure 6.9. According to The World Bank (2005), a Multilateral Debt Review Relief Initiative was undertaken at a G8 summit meeting in Gleneagles, Scotland to cancel the debt of heavily indebted developing countries of which many of the SSA countries were recipients. This had a significant impact for the statistically significant economies in that the average mean external debt stocks decreased from US\$12 billion in 2004 to under US\$6 billion. This

occurrence displayed one of the advantages that emerging economies enjoy as a result of their financial integration in the global economy even though these economies are vulnerable to global economic shocks as well.

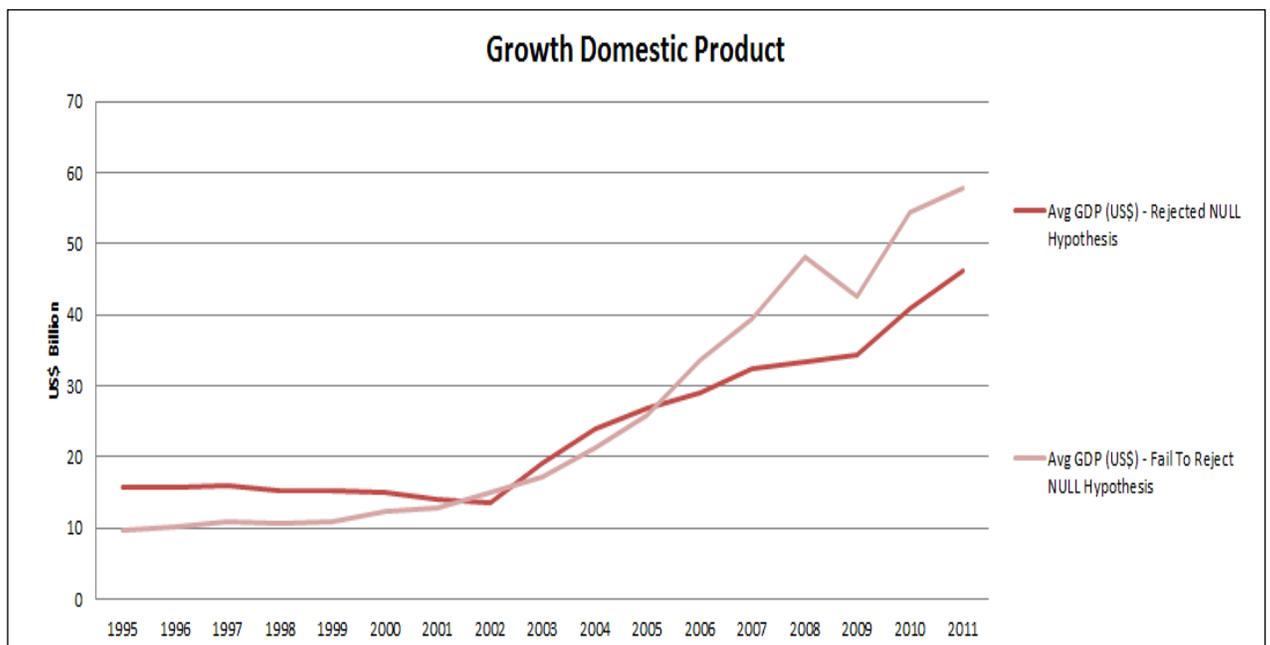
Figure 6.9 Hypothesis 4: Mean average external debt stocks



Reviewed literature on the subject of financial integration of emerging economies, such as Korinek (2011), Mougani (2012) and Kose et al. (2006), explored the impact of financial integration on emerging economies' economic growth, increased volatility and impact on FDI. However, in this study based on the SSA region, a critical observation was discovered based on the economies that were rendered vulnerable (statistically significant p-value) to exogenous shocks due to their financial integration in the global economy. Figure 6.9 illustrates the inflection point in 2005 when debt relief was granted to heavily indebted developing economies by the G8. This point was the same inflection point in 2005 when, according to Figure 6.9, these economies surpassed the mean average GDP of SSA economies that were not vulnerable to exogenous shocks (statistically insignificant p-value). This illustrated causation, bearing in mind the influence of other economic factors, as decreasing these economies' debt stocks led to significant increases in the size

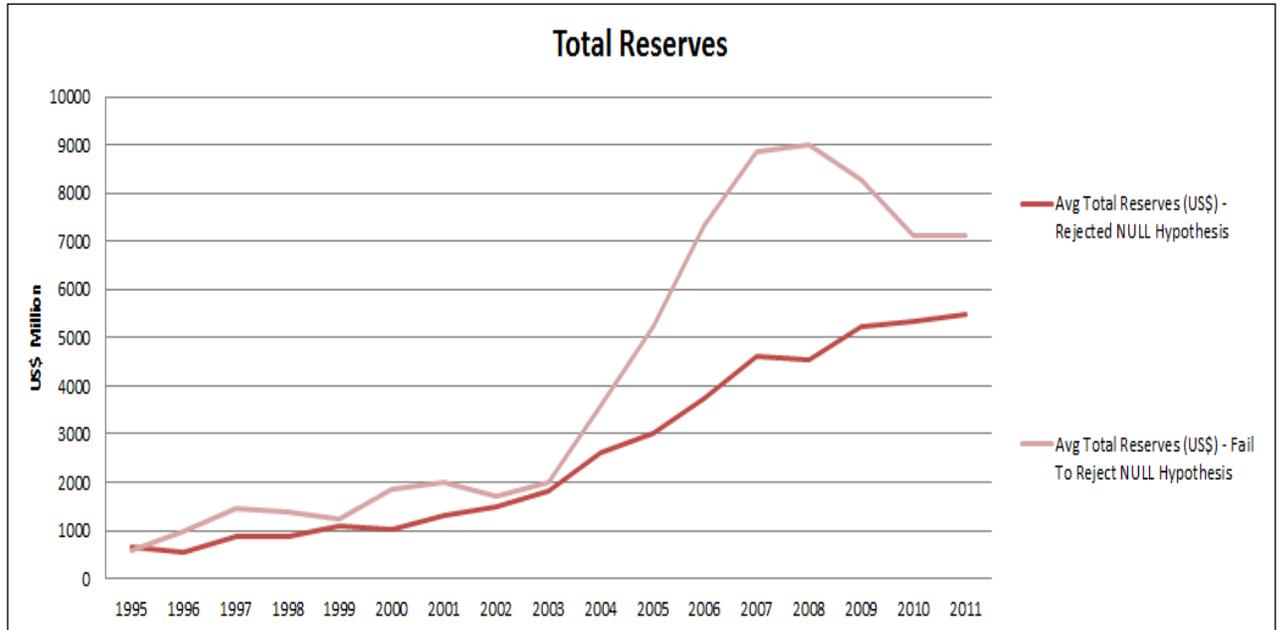
of these economies. Results illustrated on a time-series analysis in Figure 6.10 were also consistent with Korinek (2011) who argued that emerging economies that are financially integrated in the global economy are exposed to global economic cyclical changes. It was evident from Figure 6.10 that the 2008/09 financial global crisis caused a contraction in the sampled SSA economies.

Figure 6.10 Hypothesis 4: Mean average GDP



The SSA economies that were found to be vulnerable to exogenous shocks due to their financial integration were able to accumulate more international reserves, as shown in Figure 6.11, than the economies that were not vulnerable to exogenous shocks or statistically not significant. This finding was consistent with that of Kose et al. (2006) that these economies, even though they were vulnerable to economic shocks, had more access to capital markets.

Figure 6.11 Hypothesis 4: Mean average total reserves



6.5.2 Summary of hypothesis findings

Almost the same number of SSA economies was vulnerable due to financial integration as those that were not. Numerous aspects of these economies were explored to evaluate the conventional emerging economics theories against those of the SSA region. Korinek (2011) purported that emerging economies are exposed to boom-bust cycles owing to their financial integration. From the data analysis, this finding was detected although exposure was to a lesser extent when compared to SSA economies that were not seen as vulnerable to exogenous shocks due to financial integration in the global economy. However, findings were consistent with Korinek (2011) on the exposure of the statistically significant emerging economies to the 2008/09 global financial crisis. Kose et al. (2006) noted that emerging financially integrated economies experienced higher economic growth rates.

This research concurred with the finding that statistically significant SSA economies experienced higher GDP growth rates although the external debt stocks were much lower. This finding was also influenced by the critical decision by the G8 in 2005 to provide debt relief to many of the SSA economies, providing a turning point for the economies that had a statistically significant p-value for the hypothesis.

6.6 Summary of results

The analysis of the four hypotheses contributed to understanding the dynamics between the four selected economic factors that contribute to strengthening economic vulnerability and resilience of SSA economies. These factors were assessed with economic growth in mind as they have proved to be essential ingredients to attract FDI to the region according to the literature review. In the first hypothesis, SSA countries, contrary to the Asian economies, did not effectively utilise international reserves as a means of enhancing their resilience but instead relied heavily on borrowings through accumulation of external debt stocks. The Asian economies were able to accumulate international reserves while SSA economies were incurring current account deficits which would indicate investment in infrastructure or large amounts of FDI inflow.

The second hypothesis discovered that economic concentration was also not a useful means of enhancing resilience for SSA economies. Data analysis indicated that SSA economies were rendered vulnerable to demand changes in commodities and were severely affected by the global financial crisis. However, the low economic diversification allowed these economies to build competitive advantage in the products or commodities they exported with the exports fuelling rapid economic growth. The data suggested that enhancing resilience in the case of SSA economies essentially meant that these economies could not harness competitive advantage to ensure high GDP growth. Mauritius as the economy that was economically diversified achieved lower GDP growth, but managed to attract the highest amount of FDI relative to its GDP. This highlighted that investors were willing to investment in more economically stable SSA economies.

Trade openness was the third hypothesis that was assessed and indications were also that SSA economies were rendered vulnerable to exogenous shocks and were also severely affected by the financial global crisis as a result. Trade openness also meant lower growth rates for SSA economies, even though these economies managed to achieve high exports and build up current account surpluses. However, even these current account surpluses were quickly eroded during the global financial crisis while current account deficits increased beyond the global economic recovery, suggesting that trade openness allowed these economies to access their financial assets.

Financial integration, the fourth hypothesis, provided mixed results with integration rendering the same number of SSA economies vulnerable to exogenous shocks as those that rejected this hypothesis. The economies that were rendered vulnerable to exogenous shocks were those that had significant FDI relative to their GDPs, signalling that investment capital could be easily withdrawn during a financial crisis, as was evident in the data analysed. These economies also experienced higher volatility in their GDP growth as a result. The economies that were not rendered vulnerable to exogenous shocks as a result of financial integration were not affected by the global financial crisis. However, they could also not benefit from financial relief efforts by global financial bodies such as the World Bank and the IMF.

Overall, through the methodology undertaken to study the vulnerability and resilience of SSA economies, the model was significant and applicable across seven of the economies.

CHAPTER 7 Conclusion

7.1 Summary of main findings

The increased importance of the SSA region in the context of FDI flow in the global economy, more so in the aftermath of the global financial global crisis, has been highlighted to be of paramount importance. The literature review suggested that investors do not only seek high returns but also secure, stable returns on their investments when investing in emerging or developing economies. Resilience and vulnerability concepts emerged as topics of interest in improving SSA economies' stability since the majority of these economies have been achieving high economic growth outputs. However, the global financial crisis eroded hard-fought-for gains in the growth of these economies. The literature review also revealed that emerging economies still rely heavily on commodities to grow their economies. This is a concern for the finance ministers of these economies with formal agendas in the recently held World Economic Forum formulating strategies to enhance dynamic resilience for developing economies.

Possible predictors that would have a direct impact on vulnerability and resilience of emerging economies were selected as hypotheses. Most of the predictors were extrapolated from Asian economies where extensive research had been undertaken. The four constructs centred on the accumulation of international reserves, economic diversification, openness to trade and integration of the financial sector in the global economy. These predictors were of interest to emerging economies primarily because the global financial crisis was as a result of a failure in the the financial system of developed economies which had spillover effects for emerging or developing economies.

The main finding was that SSA economies were vulnerable to exogenous shocks and were volatile even though they had managed to achieve high economic growth rates. Unlike the Asian economies that had accumulated large amounts of international reserves after the Asian crisis as a resilience mechanism, SSA economies did not accumulate these

external assets but instead relied on external debt to cope with the recent economic shock. The finding on the non-accumulation of international reserves was that it did not render SSA economies vulnerable to exogenous shocks. This was supported by the financial integration of these economies in the global financial system in that the SSA economies were able to access credit lines and increased their external debt stocks.

In light of the heavy reliance of emerging or developing economies on commodities, with SSA economies being no exception, most research studies advocated economic diversification as a form of resilience since commodities are highly volatile due to price and demand changes. Fewer research studies suggested maintaining competitive advantage through less economic diversification. The finding in the case of the SSA region was that SSA economies were highly concentrated and resilience was compromised as a result. However, the high economic concentration allowed these economies to increase exponentially their exports due to the competitive advantage that they had managed to establish. Volatility in exports and economic growth was also found to be very high. The few economies that managed to diversify, such as Mauritius, achieved very low exports along with correspondingly low economic growth output. However, this economy reinforced the notion that investors are indeed looking for stable emerging or developing markets as the economy attracted the largest FDI in the SSA region.

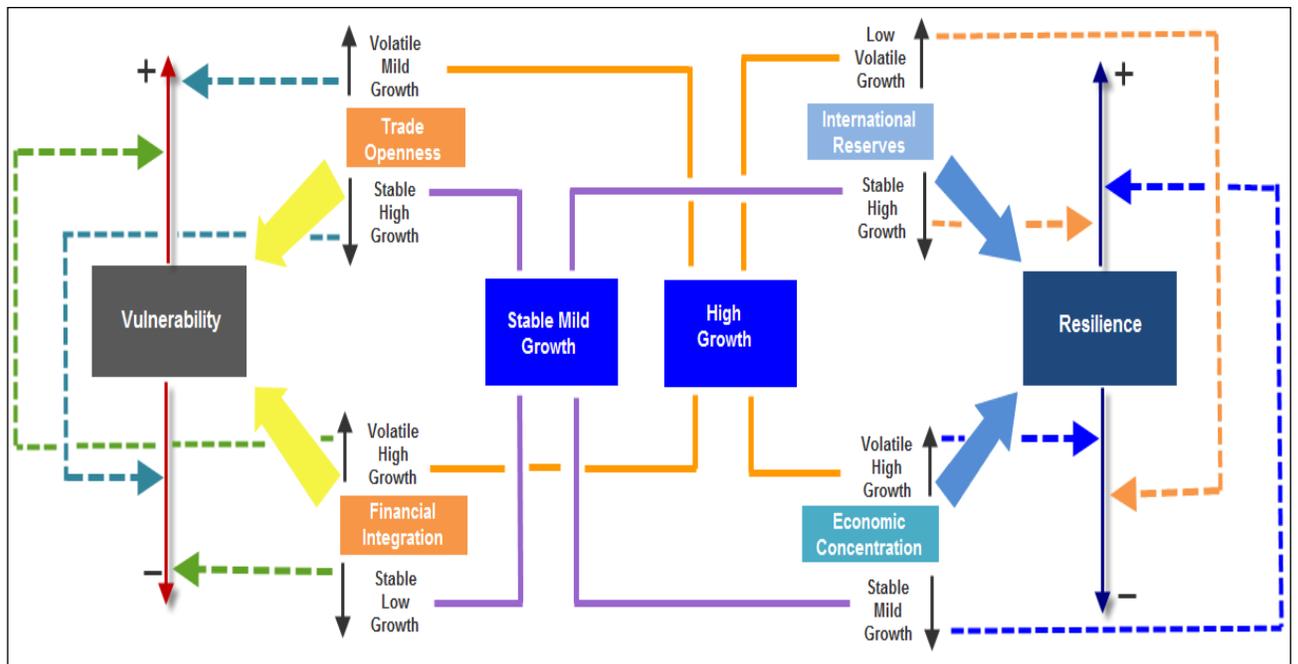
Most SSA economies were highly open to trade and, as a result, were highly exposed to exogenous shocks. This, together with the high economic concentration factor, rendered most SSA economies vulnerable. The few economies that were not exposed to exogenous shocks were found to be protectionist economies based on the low trade export volumes and GDP growth was thus stable with no signs of economic recession during the financial global crisis. Financial integration presented mixed results in the evaluation of vulnerability due to SSA economies' integration in the financial global economy. The results were not conclusive for financial integration as economies that attracted significant amounts of FDI were rendered vulnerable to exogenous shocks. Although negatively affected by the global financial crisis, the recovery in economic growth output was instantaneous, signalling investors were willing to re-invest in the economies. Financial integration also allowed SSA

economies to access borrowings in the form of external debt stocks, which compensated the lack of international reserves.

7.2 Research recommendations

Results from Chapter 6 provided insight into resilience and vulnerability levels for SSA economies. An application model, illustrated in Figure 7.1 and based on the results from Chapter 6, is recommended for managers and investors who could use the model to assess the drivers of resilience and vulnerability on which investment decisions can be based. The model can also be used as a guideline for monetary and fiscal policy formulation for SSA countries and as a predictor based on the four economic pillars under evaluation.

Figure 7.1 Resilience and vulnerability model for sub-Saharan African economies



The model combines all the concepts under evaluation and their overall impact on the stability and performance of SSA economies. The model assumes that vulnerability can either be reduced or can expose the economy to exogenous shocks, while resilience can either be enhanced or compromised.

For vulnerability, trade openness and financial integration are viewed as drivers. According to the model, an increase in trade openness results in an increase in vulnerability with mild volatile economic growth. A decrease in trade openness with the global economy decreases the economy's vulnerability with stable, relatively high economic growth.

The model suggests that an increase in financial integration in the global economy introduces more vulnerability to exogenous shocks with volatile high economic growth as a consequence. A decrease in financial integration reduces vulnerability and exposure to exogenous economic shocks with an output of low but stable economic growth.

For resilience, the model uses international reserves and economic concentration as levers. Data evaluated for SSA economies suggests that increasing international reserves compromises and reduces the economy's resilience to exogenous shocks with low volatile economic growth output. A decrease in international assets or reserves enhances the economy's resilience against shocks with stable high economic growth output.

The second driver of resilience is economic concentration. An increase in economic concentration (in other words, an over-reliance on main products, services or commodities) reduces the economy's resilience to exogenous shocks and results in high but volatile economic growth. A decrease in economic concentration (diversifying the country's exports) enhances resilience against exogenous economic shocks and results in mild but stable economic growth output.

The model also provides recommendations for SSA policy makers by bringing all the pillars together to propose high-level actions to produce stable, mild economic growth by reducing vulnerability while enhancing economic resilience by reducing trade openness,

reducing financial integration, reducing international reserves and reducing economic concentration. On the other end of the spectrum, to produce high economic growth output, policy makers can (as the model suggests) increase trade openness, increase financial integration and increase economic concentration for competitive advantage. However, with this approach, the ensuing result would be reduced resilience and increased vulnerability to exogenous shocks.

7.3 Research limitations

Due to the limited scope of the study, limitations to the study were identified and are listed below:

- The study focused on emerging economies and the SSA region was used as a case in point. Hence, the findings may not be applicable to other regions or developing economies as they may have inherently different structures to the economies assessed in this study.
- The selected methodology used to evaluate the economies was a multiregression analysis instead of regression analysis to assess each country on an individual basis so as to eliminate any possibility of multicollinearity.
- It is possible that there are many more economic parameters that may render economies vulnerable or resilient apart from the four that were selected for this assessment. The model was developed based on the results of these economic parameters. As such, the model may not be entirely accurate as there are many other factors that may influence or determine economic vulnerability and resilience.
- The results of regression analysis may not prove causality but may determine correlation between the input variables.

- A number of economic evaluations for the stated hypotheses were not statistically significant. Therefore, had more economies been included in the study, then different results might have been obtained.

7.4 Recommendations for future research

Limitations of this research study were identified above. The following suggestions could be implemented in future research to add to the body of research in this area:

- Expand the number of economies in the study to increase the statistical significance and accuracy of the results.
- Select more variables that were considered in this research study and compare the results with the results obtained in this study.
- Emerging or developing economies from different continents could be selected to reduce the likelihood of studying homogeneous economies and to eliminate strong characteristics associated with the SSA economic region so that the results are applicable across a wider context.
- A different research methodology could be selected to improve the reliability and validity of results, and to eliminate auto-correlation that is associated with evaluating numerous independent variables when using regression analysis.

7.5 Conclusion

The aim of this study was to evaluate and assess the economic vulnerability and resilience of emerging economies to adverse exogenous shocks using the SSA region as a case in point. The outcomes of this research have expanded the body of research on the concepts

of vulnerability and resilience for the SSA region as most of the previous research had focused on emerging or developing economies in Asia and Latin America.

The model developed from this research provides the basis for a decision-making framework for macroeconomic policy formulation which can later be expanded through future research in this area. Analysis using the methodology followed has added to existing literature in the area of developing strategies for developing economies to be better prepared for unknown future adverse events and to minimise the loss of hard-fought-for economic gains.

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Appendix A: Detailed country figures for FDI-to-GDP ratio

Appendix A provides the FDI-to-GDP ratio for each of the SSA countries sampled from the SSA region as discussed in Section 5.2.

Table A Sample countries FDI-to-GDP ratios

Country name	Country code	Indicator name	FDI-to-GDP (%)
Mauritius	MUS	Foreign direct investment (% of GDP)	119.0666729
Liberia	LBR	Foreign direct investment (% of GDP)	84.94215122
Sierra Leone	SLE	Foreign direct investment (% of GDP)	24.04865279
Guinea	GIN	Foreign direct investment (% of GDP)	18.76888267
Mozambique	MOZ	Foreign direct investment (% of GDP)	16.37734931
Sao Tome and Principe	STP	Foreign direct investment (% of GDP)	13.97687941
Seychelles	SYC	Foreign direct investment (% of GDP)	12.90846621
Ghana	GHA	Foreign direct investment (% of GDP)	8.15540319
Namibia	NAM	Foreign direct investment (% of GDP)	7.584165744
Lesotho	LSO	Foreign direct investment (% of GDP)	5.608355665
Cape Verde	CPV	Foreign direct investment (% of GDP)	5.457383953
Sudan	SDN	Foreign direct investment (% of GDP)	4.772190513
Uganda	UGA	Foreign direct investment (% of GDP)	4.740949149
Tanzania	TZA	Foreign direct investment (% of GDP)	4.588229531
Zambia	ZMB	Foreign direct investment (% of GDP)	4.329366108
Gambia, The	GMB	Foreign direct investment (% of GDP)	4.007468168
Nigeria	NGA	Foreign direct investment (% of GDP)	3.289171006
Morocco	MAR	Foreign direct investment (% of GDP)	2.268329384
Ethiopia	ETH	Foreign direct investment (% of GDP)	2.071286776
Rwanda	RWA	Foreign direct investment (% of GDP)	1.666071239
South Africa	ZAF	Foreign direct investment (% of GDP)	1.480196295

Appendix B: Detailed results for Hypothesis 1

Appendix B provides detailed results for Hypothesis 1 referred to in Section 5.4.1.

Table B Hypothesis 1: Results

Country	Parameter	Unstandardised coefficients		Standardised coefficients	t	Sig.	95.0% Confidence interval for B		Correlations		
		B	Std. error	Beta			Lower bound	Upper bound	Zero-order	Partial	Part
Liberia	internationalreserves	-2.99E-08	0	-0.018	0.021	0.984	0	0	-0.127	-0.006	-0.006
Sierra Leone	internationalreserves	-5.77E-09	0	-0.026	0.043	0.966	0	0	0.113	-0.012	-0.012
Guinea	internationalreserves	2.11E-10	0	0.005	0.008	0.994	0	0	-0.208	0.002	0.002
Namibia	internationalreserves	2.12E-08	0	0.857	1.288	0.22	0	0	-0.014	0.336	0.332
Sudan	internationalreserves	-1.85E-09	0	-0.078	0.608	0.555	0	0	-0.008	-0.173	-0.061
Uganda	internationalreserves	-1.33E-08	0	-0.752	5.821	0	0	0	-0.334	-0.85	-0.501
Tanzania	internationalreserves	5.94E-09	0	0.65	2.004	0.068	0	0	0.596	0.501	0.236
Zambia	internationalreserves	4.15E-09	0	0.155	0.289	0.778	0	0	0.598	0.083	0.061
Nigeria	internationalreserves	-1.96E-10	0	-0.17	0.486	0.636	0	0	-0.01	-0.139	-0.08
Morocco	internationalreserves	6.34E-11	0	0.045	0.119	0.907	0	0	-0.118	0.032	0.031
Ethopia	internationalreserves	-2.67E-10	0	-0.007	0.016	0.988	0	0	-0.129	-0.005	-0.004
Rwanda	internationalreserves	-5.35E-08	0	-0.35	1.133	0.278	0	0	-0.544	-0.3	-0.255
South Africa	internationalreserves	4.64E-10	0	1.095	1.142	0.274	0	0	0.018	0.302	0.28

Appendix C: Detailed results for Hypothesis 2

Appendix C provides detailed results for Hypothesis 2 referred to in Section 5.4.2

Table C Hypothesis 2: Results

Model	Parameter	Coefficients		Standardised coefficients	t	Sig.	95.0% Confidence interval for B		Correlations		
		B	Std. error	Beta			Lower	Upper	Zero-	Partial	Part
Mauritius	concentration_ratio1	22.82	8.7	0.623	2.623	0.021	4.024	41.617	0.261	0.588	0.3
Liberia	concentration_ratio1	-77.973	79.99	-0.358	-0.975	0.349	-252.255	96.31	-0.122	-0.271	-0.268
Sierra Leone	concentration_ratio1	-12.764	22.316	-0.217	-0.572	0.578	-61.387	35.86	-0.198	-0.163	-0.161
Guinea	concentration_ratio1	-0.377	13.639	-0.015	-0.028	0.978	-30.093	29.339	0.268	-0.008	-0.007
Mozambique	concentration_ratio1	0.731	4.094	0.032	0.179	0.861	-8.113	9.575	0.234	0.049	0.029
Ghana	concentration_ratio1	3.107	9.953	0.066	0.312	0.759	-18.24	24.455	0.365	0.083	0.059
Namibia	concentration_ratio1	18.115	20.273	0.303	0.894	0.388	-25.683	61.912	0.05	0.241	0.23
Lesotho	concentration_ratio1	1.227	6.877	0.029	0.178	0.861	-13.522	15.976	-0.057	0.048	0.029
Cape Verde	concentration_ratio1	6.123	6.138	0.205	0.998	0.335	-7.041	19.287	0.145	0.258	0.204
Sudan	concentration_ratio1	-4.851	3.096	-0.403	-1.567	0.143	-11.595	1.894	0.052	-0.412	-0.158
Gambia	concentration_ratio1	1.504	6.623	0.066	0.227	0.824	-12.701	15.709	0.02	0.061	0.06
Uganda	concentration_ratio1	-2.143	1.399	-0.196	-1.532	0.149	-5.164	0.879	0.113	-0.391	-0.132
Tanzania	concentration_ratio1	0.335	10.945	0.006	0.031	0.976	-23.512	24.182	-0.675	0.009	0.004
Zambia	concentration_ratio1	-1.451	10.561	-0.048	-0.137	0.893	-24.462	21.559	0.112	-0.04	-0.029
Nigeria	concentration_ratio1	7.111	27.344	0.094	0.26	0.799	-52.466	66.688	-0.263	0.075	0.043
Ethopia	concentration_ratio1	-13.251	17.135	-0.304	-0.773	0.454	-50.584	24.082	-0.389	-0.218	-0.198
Rwanda	concentration_ratio1	11.828	19.845	0.166	0.596	0.561	-31.044	54.7	0.243	0.163	0.134
South Africa	concentration_ratio1	-30.118	62.439	-0.268	-0.482	0.638	-165.01	104.775	0.227	-0.133	-0.118

Appendix D: Detailed results for Hypothesis 3

Appendix D provides detailed results for Hypothesis 3 referred to in Section 5.4.3.

Table D Hypothesis 3: Results

Country	Parameter	Unstandardised		Standardise d	t	Sig.	95.0% Confidence interval for B		Correlations		
		B	Std. error	Beta			Lower	Upper	Zero	Partial	Part
Mauritius	openness	-3.40E-10	0	-0.246	-1.244	0.236	0	0	-0.74	-0.326	-0.142
Liberia	openness	-1.64E-07	0	-0.363	-0.389	0.704	0	0	-0.147	-0.112	-0.107
Sierra Leone	openness	2.70E-09	0	0.04	0.057	0.955	0	0	0.148	0.016	0.016
Guinea	openness	-7.75E-10	0	-0.235	-0.282	0.783	0	0	-0.381	-0.081	-0.075
Mozambique	openness	-2.31E-09	0	-0.459	-2.326	0.037	0	0	-0.71	-0.542	-0.376
Namibia	openness	-2.91E-09	0	-0.846	-1.412	0.181	0	0	-0.156	-0.365	-0.364
Cape Verde	openness	-1.01E-08	0	-0.632	-3.083	0.008	0	0	-0.613	-0.636	-0.629
Gambia	openness	-2.73E-09	0	-0.114	-0.394	0.699	0	0	-0.088	-0.105	-0.105
Sudan	openness	1.03E-09	0	0.69	2.525	0.027	0	0	-0.196	0.589	0.255
Tanzania	openness	-1.19E-09	0	-0.557	-2.09	0.059	0	0	0.274	-0.517	-0.247
Zambia	openness	2.44E-09	0	0.555	1.132	0.28	0	0	0.664	0.311	0.238
Nigeria	openness	9.80E-11	0	0.237	0.428	0.676	0	0	-0.242	0.123	0.071
Ethiopia	openness	6.82E-10	0	0.083	0.206	0.84	0	0	0.099	0.059	0.053

Appendix E: Detailed Results for Hypothesis 4

Appendix E provides detailed results for Hypothesis 4 referred to section 5.4.4.

Table E Hypothesis 4: Results

Country	Parameter	Unstandardised coefficients		Standardised coefficients	t	Sig.	95.0% Confidence interval for B		Correlations		
		B	Std. Error	Beta			Lower	Upper	Zero	Partial	Part
Mauritius	integration	-9.42E-09	0	-0.873	-4.367	0.001	0	0	-0.557	-0.771	-0.499
Liberia	integration	2.79E-08	0	0.132	0.268	0.794	0	0	-0.045	0.077	0.074
Sierra Leone	integration	3.20E-09	0	0.088	0.222	0.828	0	0	0.036	0.064	0.062
Mozambique	integration	-8.53E-10	0	-0.454	-2.124	0.053	0	0	-0.719	-0.508	-0.343
Ghana	integration	-4.01E-09	0	-0.669	-3.142	0.007	0	0	-0.699	-0.643	-0.599
Lesotho	integration	-3.59E-09	0	-0.792	-4.797	0	0	0	-0.789	-0.788	-0.787
Cape Verde	integration	-4.68E-08	0	-0.882	-1.469	0.168	0	0	-0.692	-0.39	-0.282
Sudan	integration	-2.41E-09	0	-1.158	-8.064	0	0	0	-0.892	-0.919	-0.815
Uganda	integration	-7.14E-09	0	-0.912	-10.073	0	0	0	-0.74	-0.942	-0.868
Tanzania	integration	-2.16E-09	0	-0.687	-3.409	0.005	0	0	-0.877	-0.701	-0.402
Zambia	integration	6.04E-10	0	0.144	0.474	0.644	0	0	0.096	0.135	0.1
Nigeria	integration	-4.11E-10	0	-0.923	-2.842	0.015	0	0	-0.816	-0.634	-0.469
Morocco	integration	-9.65E-11	0	-0.225	-0.594	0.562	0	0	-0.193	-0.157	-0.156
Ethiopia	integration	-1.25E-09	0	-0.29	-0.552	0.591	0	0	-0.3	-0.157	-0.141
Rwanda	integration	-8.56E-09	0	-0.274	-0.941	0.364	0	0	-0.405	-0.252	-0.212
South Africa	integration	-1.69E-10	0	-1.085	-1.497	0.158	0	0	-0.241	-0.383	-0.367

Appendix F: Detailed Results of Multi- Collinearity

Appendix F provides detailed analysis for multicollinearity analysis as discussed in Section 5.5.

Table F1 Mauritius: Pearson correlation

		GDP change	Concentration ratio	International reserves	Trade openness	Economic integration
Pearson correlation	GDP change	1	0.261	-0.717	-0.74	-0.557
	Concentration ratio	0.261	1	-0.624	-0.559	0.573
	International reserves	-0.717	-0.624	1	0.952	0.112
	Trade openness	-0.74	-0.559	0.952	1	0.167
	Economic integration	-0.557	0.573	0.112	0.167	1

Table F2 Mozambique: Pearson correlation

		GDP change	Concentration ratio	International reserves	Trade openness	Economic integration
Pearson correlation	GDP change	1	0.234	-0.666	-0.71	-0.719
	Concentration ratio	0.234	1	-0.138	-0.057	-0.388
	International reserves	-0.666	-0.138	1	0.962	0.619
	Trade openness	-0.71	-0.057	0.962	1	0.549
	Economic integration	-0.719	-0.388	0.619	0.549	1

Table F3 Ghana: Pearson correlation

		GDP change	Concentration ratio	International reserves	Trade openness	Economic integration
Pearson correlation	GDP change	1	0.365	0.288	0.285	-0.699
	Concentration ratio	0.365	1	0.79	0.661	-0.446
	International reserves	0.288	0.79	1	0.902	-0.284
	Trade openness	0.285	0.661	0.902	1	-0.357
	Economic integration	-0.699	-0.446	-0.284	-0.357	1

Table F4 Lesotho: Pearson correlation

		GDP change	Concentration ratio	International reserves	Trade openness	Economic integration
Pearson correlation	GDP change	1	-0.057	-0.819	-0.793	-0.789
	Concentration ratio	-0.057	1	0.075	0.008	0.11
	International reserves	-0.819	0.075	1	0.934	0.902
	Trade openness	-0.793	0.008	0.934	1	0.954
	Economic integration	-0.789	0.11	0.902	0.954	1

Table F5 Cape Verde: Pearson correlation

		GDP change	Concentration ratio	International reserves	Trade openness	Economic integration
Pearson correlation	GDP change	1	0.145	-0.529	-0.613	-0.692
	Concentration ratio	0.145	1	0.076	0.095	0.105
	International reserves	-0.529	0.076	1	0.965	0.877
	Trade openness	-0.613	0.095	0.965	1	0.94
	Economic integration	-0.692	0.105	0.877	0.94	1

Table F6 Namibia: Pearson correlation

		GDP change	Concentration ratio	International reserves	Trade openness	Economic integration
Pearson correlation	GDP change	1	0.05	-0.014	-0.156	
	Concentration ratio	0.05	1	-0.459	-0.165	
	International reserves	-0.014	-0.459	1	0.864	
	Trade openness	-0.156	-0.165	0.864	1	
	Economic integration					1

Table F7 Gambia: Pearson correlation

		GDP change	Concentration ratio	International reserves	Trade openness	Economic integration
Pearson correlation	GDP change	1	0.02	-0.056	-0.088	-0.069
	Concentration ratio	0.02	1	0.387	0.397	0.302
	International reserves	-0.056	0.387	1	0.992	0.965
	Trade openness	-0.088	0.397	0.992	1	0.975
	Economic integration	-0.069	0.302	0.965	0.975	1

Table F8 Nigeria: Pearson correlation

		GDP change	Concentration ratio	International reserves	Trade openness	Economic integration
Pearson correlation	GDP change	1	-0.263	-0.01	-0.242	-0.816
	Concentration ratio	-0.263	1	-0.433	-0.633	0.304
	International reserves	-0.01	-0.433	1	0.763	-0.022
	Trade openness	-0.242	-0.633	0.763	1	0.314
	Economic integration	-0.816	0.304	-0.022	0.314	1

Table F9 Morocco: Pearson correlation

		GDP change	Concentration ratio	International reserves	Trade openness	Economic integration
Pearson correlation	GDP change	1		-0.118	-0.15	-0.193
	Concentration ratio		1			
	International reserves	-0.118		1	0.948	0.723
	Trade openness	-0.15		0.948	1	0.854
	Economic integration	-0.193		0.723	0.854	1

Table F10: Rwanda: Pearson correlation

		GDP change	Concentration ratio	International reserves	Trade openness	Economic integration
Pearson correlation	GDP change	1	0.243	-0.544	-0.528	-0.405
	Concentration ratio	0.243	1	-0.385	-0.399	0.211
	International reserves	-0.544	-0.385	1	0.993	0.473
	Trade openness	-0.528	-0.399	0.993	1	0.457
	Economic integration	-0.405	0.211	0.473	0.457	1

Table F11 South Africa: Pearson correlation

		GDP change	Concentration ratio	International reserves	Trade openness	Economic integration
Pearson correlation	GDP change	1	0.227	0.018	-0.196	-0.241
	Concentration ratio	0.227	1	0.677	0.256	0.227
	International reserves	0.018	0.677	1	0.783	0.826
	Trade openness	-0.196	0.256	0.783	1	0.961
	Economic integration	-0.241	0.227	0.826	0.961	1

Appendix G: Detailed Results of Standardised Coefficients

Appendix G refers to detailed analysis for standardized coefficient analysis, as discussed in chapter 6.

Table G Standardised coefficients

	concentration_ratio	international_reserves	openness	integration
Cape Verde	0.228	0.559	-0.345	-0.882
Ethiopia	-0.304	-0.007	0.083	-0.29
Gambia	0.151	2.061	-2.861	0.686
Ghana	-0.104	0.424	-0.289	-0.728
Guinea	-0.015	0.005	-0.235	-0.199
Lesotho	0.022	-0.602	0.066	-0.31
Liberia	-0.358	-0.018	-0.363	0.132
Mauritius	0.637	0.053	-0.287	-0.879
Morocco	.	0.06	-0.021	-0.218
Mozambique	0.077	1.002	-1.361	-0.562
Namibia	0.303	0.857	-0.846	.
Nigeria	0.094	-0.17	0.237	-0.923
Rwanda	0.18	-1.197	0.854	-0.268
Sierra Leone	-0.217	-0.026	0.04	0.088
South Africa	-0.532	1.534	0.953	-2.303
Sudan	.	-0.135	0.319	-1.024
Tanzania	0.006	0.65	-0.557	-0.687
Uganda	-0.201	-0.774	0.02	-0.91
Zambia	-0.048	0.155	0.555	0.144
Avg Mean	-0.005	0.233	-0.213	-0.507