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Stock market development and Economic Growth in Africa's Frontier Markets



BY

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A research report submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, Johannesburg, in partial fulfillment of the requirements of the degree of Masters of Management in Finance and Investment.

South Africa

Declaration

I, the undersigned, BOPHELO KANETSI, hereby declare that this research is my own, unaided work. It is being submitted in partial fulfillment of the requirements for the degree of Master of Management in Finance and Investment at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

I further declare that:

- I am aware that plagiarism (the use of someone else's work without their permission and/or without acknowledging the original source) is wrong.
- I have followed the required conventions in referencing the thoughts and ideas of others.
- I understand that the University of the Witwatersrand may take disciplinary action against me if there is a belief that this is not my own unaided work or that I have failed to acknowledge the source of the ideas or words in my writing.

……

(Bophelo Kanetsi)

Signed at ……

On the…… Day of……2014

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Special thanks to my friends, relatives and those that I hold dear to my heart.

Abstract

This study investigates the relationship between stock market development and economic growth in seven Sub-Saharan African countries. Previous studies found that causality runs from finance to growth, and that stock markets have had a positive impact on economic growth, particularly in countries with well-functioning financial institutions. This theory however, is not conclusive markets of Africa. The study therefore aims to bridge this knowledge gap, i.e. whether the development of their stock markets can be attributed to the rapid economic growth experienced in the last decade and/or vice versa. Using Vector Autoregressive Regressions and Causality tests from 1990 to 2012, the study found that the bourses under study are partially and in some countries marginally responsible for output growth. Only in Namibia was there bi-directional causality between stock market development and economic growth. After controlling for a host of factors that may affect the relationship between stock market development and economic growth, the study found that labour participation and exports of goods and services play a vital role in increasing gross domestic product.

A number of policy lessons arise: (a) countries that wish to develop bourses should first be extending credit to the private sector and improving the status of local banks. Given the weak relationship between stock markets in Africa's frontier markets and credit provided by banks, it is advised that policy makers develop their banking sector before developing bourses. (b) Another area worthy of note is the strong relationship between the number of listed companies and output performance. It was found in this study that privatisation, as partially measured by a number domestic of companies, and had a positive effect on GDP growth. It thus goes without saying that African governments could consider privatising state owned enterprises through the stock market as well as encouraging large corporations to list on local bourses, so as to improve domestic liquidity and resource allocation. This in the long term will attract foreign investors, which will in turn boost the economy.

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Chapter 1: Introduction

1.1 Background

Frontier markets are considered a subset of emerging markets that are less developed, less liquid and less accessible to foreign investors, as per the International Finance Corporation (IFC 1980) definition.

Nellor (2008) explains that the emerging markets of today were frontier markets in the 1980's. Capitalization is still small and they tend to have low correlation with larger markets (Lungu 2013). For a country to be considered a frontier market, growth should have taken off, driven primarily by the private sector. Most importantly, there must be a measurable foot print of financial markets.

According to African Securities Exchange Association (2013) some of the newer stock markets are listed in *Table1* below.

Table 1: Stock Market Openings in Africa

YEAR FOUNDED	COUNTRY	YEAR FOUNDED	COUNTRY
1989	Botswana	1997	Uganda
1990	Ghana	1998	Tanzania
1990	Swaziland	1999	Mozambique
1992	Namibia	2001	Cameroon
1994	Zambia	2007	Libya
1995	Malawi	2008	Rwanda

***Note:** *The year-founded is the year trading commenced, which may not necessarily be the year of inception* Frontier markets of Africa that form part of this study are: *Botswana, Ghana, Namibia, Swaziland, Uganda, Tanzania and Zambia,* based on the availability of complete data.

This study on frontier markets is of importance as Africa has seen unprecedented growth in the last decade. The average growth in Sub Saharan Africa was 4.9% for the year 2012, compared to only -0.6% in the Euro area (IMF, World Economic Outlook April 2013). In the same light, the formation of stocks exchanges has been rapid and widespread. Between 1990 and 2010, the number of stock markets has grown from 5 to 18 (Andrianaivo & Yartney 2010). Size and reach have also been remarkable, with some countries experiencing growth as high as 750% (Tanzania) in the number of listed companies and 1145% in Market capitalization per GDP (Namibia). In fact, some of these small bourses are doing so well that they have been awarded prizes. For example, the Ghana stock exchange was awarded the world's best performing market at the end of 2004 with a year return on 144 % (IMF, 2007). These two variables, the growth of bourses and economic seem to have occurred during the same time. The motivation, therefore, is to discover if these two have in anyway caused one another.

1.2 Motivation

The purpose of this study is to investigate the relationship between stock market development and economic growth of eight newly developed stock markets in Africa. The number of stock markets doubled in the continent from 9 to 18 between the years 1992 to 2002 (Adjasi and Biekpe 2006). Currently the number stands at 29, including two regional stock markets. It is of importance and relevance to investigate if these securities exchanges contributed to economic growth in these countries.

Even though the literature confirms that there is a positive relationship between stock market development and economic growth, Enisan and Olufisayo (2009); Adjasi and Biekpe (2006) and Singh (1999) found that more developed markets tend to contribute significantly to GDP as opposed to smaller markets. This therefore leaves a question mark on what kind of impact the bourses have on small markets.

Furthermore, the bulk of the literature covers 'financial development' as a whole. This study intends to narrow the focus to only a subset of financial development; stock market development. From early writers such as Goldsmith (1969) and McKinnon (1973), to more recent researchers like Levine (2005; 2007) and Naceur, Ghazouani&Omran (2007) focus on financial intermediaries as one group, made up

of banks, insurance, brokers and stock markets. Even though different techniques have been employed, yielding somewhat contrasting findings, majority of previous studies agree that some positive relationship exists.

Other literature focus on the factors that hinder stock markets development in developing countries. Hearn and Piesse (2010); Andrianaivo and Yartey (2010); Laderkarl and Zervos (2004) found that lack of governance, lack of a regulatory framework and political interference are some of the major issues that obstruct financial development (including stock exchanges) in Africa. They, however, do not investigate any relationship, but merely examine several factors that need to be addressed in Sub-Saharan Africa.

Additionally, this paper aims to determine the role of banks and other financial institutions in stock market development. Kenny and Moss (1998) assert that transparencies, efficiency, credibility of banks are contributing factors to the development of stock markets. They further point out there is a need for better regulation of financial institutions.

On a broader scale, the study also aims to aid central banks of the countries under consideration and Africa at large, particularly those nations that are considering the expansion of their financial sector or development of capital markets. Moreover, the findings will be useful to potential investors interested in emerging African markets.

Lastly, findings will hopefully provide an insight into what other mechanisms and improvements can be put into place to improve investability in these economies.

1.2. Problem Statement

To deduce whether the development of stock markets has led to growth in the economies of Sub Saharan-Africa in the period 1989 to 2012, previous research done in this region has combined these more developed bourses such as Kenya and Nigeria with smaller ones like Ghana in one study. Subsequently, a positive relationship between finance and the performance of an economy has been found for more advanced emerging markets. It, however, still remains blurry for newly founded a market; that is, developed in the 1990's onwards. For some researchers that focused on small economies, a test for causality was missing, leaving yet

another question whether the development of bourses in the countries is responsible for the remarkable surge in economic growth experienced in the last decade. This study aims to fill this gap using time series data from seven sub-Saharan African countries.

1.3.1 Research Questions

a) To what extent has the development of stock markets in Botswana, Ghana, Namibia, Swaziland, Tanzania, Uganda and Zambia had a significant contribution to economic growth, since their inception?
b) Do stock market indicators help predict future economic growth in Africa's Frontier markets?
c) To what extent does the real economy play a role in boosting the stock markets of the seven states?

1.3 Objectives and Hypothesis

1. To establish whether there is a correlation between development of stock markets in the above mentioned African states and economic growth, from 1989 or dates of inception (if after 1989) to the year 2012.

Hypothesis: There exists a significant relationship between stock market development and economic growth.

2. To evaluate the extent to which economic growth can be attributed to stock market development, amongst other economic factors.

Hypothesis: Causality runs from stock market developments indicators to economic growth.

3. To asses possible correlation between stock markets development variables and other economic variables, to suggest that these variables are highly required in the economy for bourses to have a significant influence on GDP.

Hypothesis: There is a correlation between other growth promoting economic variables and stock market development variables.

1.4 Outline of the Study

This paper is divided into five chapters. The first chapter provides some background and the importance of this study. It also presents the hypothesis; objectives and problem statement. Chapter two reviews the related literature. It is broken up into three sections. Section one discusses previous studies and their findings. Its purpose it's to highlight the gap in the literature as well as to present opposing views. Part two discusses extensively how financial intermediaries play a role in the economy; the positive effects of a securities exchange. The last section looks into factors that hinder stock market development in sub-Saharan Africa.

Thereafter follows chapter three; research methodology. This part of the paper encompasses data collection methods, econometric model and techniques, reliability and validity issues. Chapter four is a discussion of the findings. Chapter five concludes by linking results to objectives, comparing these to the literature, as well as making recommendations.

Chapter 2 Literature Review

2.1 Introduction

The first sub-Saharan stock market was in opened in South Africa in 1887. It was then followed by Zimbabwe in 1896. According to Ntim (2012) the last couple of decades have seen a rapid growth in the development of bourses. The number has increased from five 5 to 18 between 1980 and 2002. Since then, new ones have opened in Rwanda, 2005 and Zambia 2007.

The relationship between stock market development and economic growth is one that has been explored and analysed by many scholars. Some of the very early researchers were Walter Bagehot (1873) and Joseph A. Shumpter (1912). Even though their focus was banks, and not particularly stock markets, they made a startling discovery that would change the way economists viewed economic growth (Levine and Zervos 1998). Besides banks encouraging saving, they also aided capital allocation, governance and risk sharing as will be discussed in more detail later in the chapter.

Some economists however, beg to differ. Nobel Laureate prize winner Robert Lucas (1988) points out that 'finance-growth' relationship is overstressed. Joan Robinson (1952) concurs and reiterates that activity in the real economy usually drives finance, making his infamous statement that 'where industry leads, finance follows'. Some such as Merton Miller (1998) make the argument that the relationship between finance and economic growth is too obvious to study extensively (Levine 2005).

These opposing views therefore make this subject area one of interest and of ongoing research. Hereafter follows an extensive literature review organised as follows: The first part of this chapter discusses the knowledge gap in this area of financial economics. This will then be followed by a theoretical background of the benefits of developing bourses in developing economies. And lastly, the author will look at the factors that hinder stock market development in Africa. These are referred to as Housekeeping (macro-economic variables) and Plumbing issues (legal frame work), as suggested by Laderkarl and Zervos (2004).

2.2 Does finance cause economic growth?

Many developing countries across the globe engaged in what could be called financial de-repression during the 1980's and 1990's. This meant the liberalisation of financial systems from government control to a more market-oriented functioning. This came to be known as the M-S school, by McKinnon (1973) and Shaw (1973). It was found that high interest rate ceilings, high reserve requirements, amongst others, impede the process of financial development, subsequently limiting economic growth (Singh 1997; Demetriades and Hussein 1996; Pagano 1993).

This finance-growth nexus therefore sparked interest for many researchers. Besides studying the role of financial intermediaries in the economy, many scholars interest lied in the causality effect between the two variables. Using cross-sectional and time series data, many scholars found that a long run relationship exists, whereas in some countries' results were highly influenced by the business cycle and economic melt downs and therefore did not reflect any finance-growth relationship. This took place particularly in South America, with Argentina being a good example.

Here forth, previous research in the area of financial development is discussed. As mentioned earlier, many studies focus on financial intermediaries as a whole. For this research paper however, the focus is stock markets in the realm of financial institutions.

2.2.1 Previous studies

Odedokun (1994) undertook a study for 71 developing countries employing a two sector model that dichotomises the economic activities into financial and non-financial services. It was found that financial intermediary promotes economic growth in 85% of the countries. Other proxies for development were real exports, labour force growth and share of capital formation to GDP. Results showed that financial intermediation growth performs relatively the same with export growth as well as share of capital formation in 44% and 51% cases, respectively. Labour force growth, which is pegged to population growth, was found to have a lesser impact than financial intermediary, in about 65% of the countries studied. What is more interesting about Odedokun's study was that growth promoting effects on financial

intermediation are predominant in the low-income than in the high-income developing countries. In conclusion, it was found that financial intermediation has a greater impact on economic growth in smaller economies than larger ones.

Contrastingly, Hassan, Sanchez and Jung –Suk Yu (2010) found that Sub-Saharan and East Asia & Pacific, causality runs from growth to finance. This is also referred to as demand-driven growth. Financial markets were not developed enough to have a significant causal effect on growth, even though some long run relationship existed. Domestic savings was found to also be a good tool for boosting economic growth. Outside finance, the most prominent growth promoting variable in low income countries is trade. It has the highest impact on economic growth. Hassan *et al*. (2011) study was quite vast study covering low-income, middle income countries to high income countries for a period of 1980-2007, performing multivariate time series models in the framework of Vector auto regression (VAR) analysis.

For causality studies done in this subject area, Kagoshi, Nasser and Kebede (2013) found one way causality running from economic growth to bank development indicators and a two-way causality test between stock market development indicators and economic growth. Kagoshi *et al.* (2013) employed panel granger causality tests for seven sub-Saharan African countries[1] for the period 1991 to 2007. Other variables included in the regression model are average years of schooling (as a measure of human capital) and life expectancy. The size of the banking sector is measured using liquid liabilities to GDP, bank assets and private credit. Stock market development is measured using the market capitalization as a percentage of GDP; value traded and turnover ratio.

Their findings are as follows: i) short-run causality from private credit to economic growth, suggesting that bank credit to the private sector stimulates growth. The latter supports the demand pulling theory, that expansion of real economic activities creates a demand for financial services. In addition it was found that the banking sector is not developed adequately in the region to support sustained economic growth. This is in line with Hassan *et al* (2010) findings.

[1] **Botswana, Cote-d'Ivoire, Ghana, Kenya, Nigeria, South Africa and Swaziland**

For stock market development and economic advancement, bi-directional causality was found. This suggests that increased output in the real economy initially permits financial development. When a certain stage is reached, financial sector directly stimulates economic growth .i.e. causality is reversed.

Similarly, Enison and Olufisayo (2008) examine a long run causal relationship between stock market development and economic growth using an auto-regressive distributed lag (ADRL) and Granger causality tests in seven African countries[2]. The sample size was based on year of establishment of the stock market, denoting those founded on or before 1980. Market capitalization and value traded measured size and liquidity of the stock exchange. Other economic contributors selected are discount rate and openness ratio. The former is a monetary tool that is used to adjust banking and economic activities while the latter reflects the openness of the economy, measured by a ratio of total imports and exports to nominal GDP.

Enison and Olufisayo (2008) found that there is a uni-directional causality running from stock market development to economic growth. However, three of the seven countries indicated a bi-directional relationship. Long run co-integrating relationship was found for only Egypt and South Africa. Nigeria showed an interesting result, of causality running from the economy to its bourse. This can attributed to the high oil revenues gained during some of the years under consideration, which encouraged the expansion of its stock market.

Christopoulos and Tsionas (2003) carried out a study on ten developing countries in Africa and South America for the period 1970-2000. They investigate the long run relationship between financial depth and economic growth using panel unit root tests and panel co integration analysis. Unlike previous literature, this study combines time series data and cross-sectional data.

Financial depth is defined as the level of development of financial markets. The variables used to measure financial depth are i) the ratio of total bank deposits' liabilities to nominal GDP and the share of gross fixed capital formation to nominal GDP. The latter is also referred to as share of investment.

[2] **Cote d'Ivoire, Egypt, Kenya, Morocco, Nigeria, South Africa and Zimbabwe.**

Christopoulos and Tsionas (2003) conclude time-series data yields more reliable data than cross sectional data, because of non-stationarily of data and inability to run causality tests. On the other hand, time series data may yield spurious results due to the nature of the data, usually short span or infrequent. However, time series test, in the first instance confirmed that causality runs from financial development to economic growth, and not the other way round. Secondly, the effect is experienced in the long run, rather than the short run. This can be attributed to the fact that financial markets impact the cost of external finance to the firm, and their effect materializes through facilitating the investment process itself, which does not take place immediately. Thirdly, a unique cointegrating vector was found between growth, financial development and ancillary variables, that is investment share and inflation.

Ghirmay (2004) explores causal links between financial development and economic growth in 13 Sub-Saharan countries[3]. Benin, Cameroon and Togo are often not included in such studies, which makes this a rather out of the ordinary study. Vector Auto-Regression (VAR) was the chosen econometric technique. It was found that in 11 out of the 13 countries, co-integration exists between the two phenomena, indicating a long run relationship. Further, causation ran from finance to economic growth in eight countries, reverse causation in nine countries, and bi-directional causality in six of the sample countries. Mostly importantly, as Odedokun (1994) found, in low income countries, finance causes growth.

Moving further north of Africa, Naceur, Ghazouani & Omran (2007) carried out a study in Middle East and North African (MENA) region[4]. The aim of their paper was to investigate the role of stock markets in the economy as well as to determine which other macroeconomic factors have an important influence on stock market development. Naceur *et al* (2007) use fixed effect and random effects model, coupled with F tests included the following explanatory variables: Income, Saving rate, Investment rate, credit to private sector, M3, value traded, turnover ratio and inflation change.

[3]Benin, Cameroon, Ethiopia, Ghana, Kenya, Malawi, Mauritius, Nigeria, Rwanda, South Africa, Tanzania, Togo and Zambia

[4] Bahrain, Egypt, Iran, Jordan, Kuwait, Lebanon, Morocco, Oman, Qatar, Saudi Arabia, Tunisia, and Turkey

M3 is a measure of the size of the banking sector in relation to the economy as a whole whereas credit to private sector measures the role of the financial intermediaries in provision of longer-run financing of investment projects by private corporations. Inflation change is a measure of macroeconomic stability. It is expected that the higher the volatility of inflation rate, the less incentive companies would have to put their money in the stock exchange, thus negatively affecting advancement of the bourse. Alternatively, this paper did not use GDP per capita as *y*, the dependent variable, but rather used market capitalization.

Naceur *et al.*(2007)'s findings were as follows: saving's rate, domestic credit to private sector, value traded to GDP ratio have a positive and significant impact on stock market development. Income and investment rate, however seemed to not have any positive effect, demonstrating that wealthier citizens do not necessarily help a bourse expand.

As for measures of financial intermediary, as much as M3 has a positive relationship with market capitalization; domestic to credit to private sector is a better predictor of stock market development. Moving on to the two measures of liquidity, turnover ratio's coefficient was insignificant, demonstrating that value traded to GDP is plays a more important role in explaining stock market capitalization. Lastly, as expected the macro-economic stability has a negative effect on stock market development.

From this study one learns that stock markets thrive from a larger proportion of the population putting money away for consumption in the future. Credit offered to the private sector helps in expanding private firms, which may lead to listing publicly in the long term.

Nazir, Nawaz and Gilani (2010) explored the relationship between stock market development and economic growth in Pakistan for the period 1986 to 2008. Pakistan is an interesting case as it had suffered a long period of low economic activity as a result of low foreign investment. The current decade however has seen a surge in financial development, with the Karachi stock exchange (KSE) being declared the best performing stock market for 2002. In the same light, economic growth had been stable emanating from trade liberalization, political stability and institutional factors.

Using multiple linear regression, their model comprised of foreign direct investment (FDI) as a percentage of GDP, human development index (HDI) of Pakistan, market capitalization/GDP and total value traded ratio as explanatory variables. It was found that FDI and HDI had a positive relationship on the growth on the economy. HDI improves the competitiveness of the economy. Stock market development indicators also influence economic growth, the study found. The impact of size however was more prominent than that of liquidity. This led to the conclusion that market capitalization should be coupled with FDI and HDI to boost the growth process of the economy.

Adjasi and Biekpe (2006) used Generalized Method of Moments (GMM) to explore the role of stock markets in 14 African countries. [5] Market capitalisation/GDP, total value traded/GDP, turnover ratio were the selected stock market indicators while macro-economic indicators comprised of GDP per capita, GDP growth and Investment. The countries were classified into low income countries (e.g. Zimbabwe), low-middle income countries (e.g. Tunisia) and upper-middle income countries (e.g. Botswana).

Results show that investment, past growth levels and stock market development indicators together play a significant role in the economy. Furthermore, an increase in stock market activity (value traded) through higher liquidity improves GDP growth by 3.7%. Conversely, turnover ratio does not have a significant impact on economic growth. Lastly and most importantly, enhancing frequency and efficiency, that is the number of share traded, boosts economic growth by a whopping 3.7%.

The results discussed above are a summary for all the countries grouped as one. When broken down into the three classifications, the results were somewhat interesting.

i) None of the stock market indicators is significant in influencing economic advancement in small economies. Investment and how the economy had been performing prior to data collection were the only significant ones.

[5] **Ghana, Kenya, Nigeria, Zambia, Zimbabwe, Cote d I'voire, Egypt, Morocco, Namibia, Swaziland, Tunisia , Botswana, Mauritius and South Africa.**

ii) Stock market influence economic growth only in moderately capitalized markets. Elaborately, in order for countries to reap the rewards economically from the development of a stock market, they must first devote their efforts into the development of these markets. Once developed to a certain level, stock markets then drive the economy to some level. Upper-middle countries, being Botswana, Mauritius and South Africa benefit from the existence of their stock market.

iii) Market capitalization/GDP and vale traded significantly influence growth.

To sum up, the above three points signal the importance of liquidity in economic growth. Frequently traded shares improve the investor's perception of a country. The theory that well developed markets benefit their economies is as opposed to underdeveloped ones is consistent with Hassan's (2010) and Singh's (2007) findings.

Yartey (2008) undertook a study to analyse the factors that determine stock market development in emerging economies and if South Africa is any different. The paper employs Calderon-Rossell model, to determine the role of the banking sector development, political risk and private capital flows on the stock market development. The dependent variable, *y*, therefore is market capitalization to GDP other than output as done in other studies. One set of explanatory variables are macroeconomic factors such as foreign direct investment as percentage of GDP, macroeconomic stability, private capital flows, stock market liquidity, gross domestic stability and income level. Stability is measured through current inflation and real interest rate.

Unlike other researchers, Yartey (2008) includes a third set of institutional variables. These include political risk, corruption, law and order, democratic accountability and bureaucratic quality.

Through the use of Generalized Method of Moments, applied to three models (for each set of variables) the study found the following:

i) Banking Sector Development and Macro-economic environment

Bank credit, stock market liquidity, current inflation and gross domestic savings have a positive effect on stock market development. Private capital flows as a percentage of GDP, income level and private credit are also positively significant.

ii) Institutional Quality

GDP per capita, domestic investment, value traded and political risk are significant and positive. Political risk also appears to have a large negative influence on stock market growth.

Interestingly, Yartey (2008) found that high levels of bank development are associated with lower growth levels of stock market development. This shows that over time, domestic agents substitute debt for equity. The stock market is complimentary in the beginning, but becomes an alternative source of financing investments over the long run. Second, curbing political risk appears to be imperative for emerging markets to grow their stock markets. The impact of banks increases after controlling for political risk. Mitigating political risk is believed to encourage investor confidence and boost the growth of bourses in developing economies. Likewise, improving liquidity in a stock market may help its growth substantially, the study found.

Yartey's research is important to this study because it brings to light some interesting aspects in stock market development that have not been found by other researchers. An important one is the role of regulatory and institutional variables in developing bourses. From the study, the researcher can gather which macro-economic variables are expected to correlate with stock development indicators. Further, the argument stock markets serve as competition to banks is also new and worth exploring.

Demirgűc-Kunt and Levine (1996) examined 43 developed and developing countries for the period 1986 to 1993 and found that high income countries, with well-developed financial intermediaries tend to have higher levels of stock market development.

The objective of Demirgűc-Kunt and Levine's paper was to give an empirical measure to the term 'stock market development'. The different proxies for market

size, market liquidity, concentration, volatility, institutional development and integration with world markets are explored.

It was found that large markets are more liquid, less volatile and more internationally integrated than smaller markets. Countries that have strong information disclosure laws, internationally accepted accounting standards and unrestricted international capital flows tend to have larger equity markets. Correlations between stock market development indicators and the development of efficiently functioning banks, private insurance companies and pension funds were found in many countries. This shows that in order for stock markets to grow, there needs to be well functioning banks, pension funds and insurance companies.

When it comes to volatility and liquidity, stock markets that are highly concentrated; that is with a few shareholders in the listed corporations, are more volatile and less liquid and often promote inaccurate asset pricing. International integration is measured using Asset Pricing Theory (APT) and International Capital Asset Pricing Model (ICAPM) and it can be seen that less developed markets tend to have higher incidences of pricing error. Additionally, their stock returns do not follow those of world markets, i.e. low integration.

2.2.2 Conclusion

From the above-mentioned studies, it can be seen that the finance-growth nexus is one that has been explored, analysed and criticized by many. Many studies done in this area concur- a long run relationship between stock market development and economic growth exists. The debate, however, still lies in the size of the economy and financial markets of countries. There seems to be no real consensus as to how low income countries behave when stock markets are developed or if the recent development of their stock market has enhanced economic growth. Some researchers find a causal relationship while others assert that financial intermediaries as a whole are not developed enough to have a significant influence on stock market development.

In addition, the role of the banking sector also presents many opposing views. Many studies as discussed above found that financial intermediation variables are highly

correlated with equity markets indicators, indicating a need for one to exist to adequately boost the other. The question that remains however is which indicator is most suited with stock market development? It could be M3, credit to the private sector or investment. Which of the three should policy makers focus on in order to speed up equity markets growth in frontier markets?

Exploring the previous literature has helped identify the knowledge gap in the literature. As mentioned in Chapter 1, not one study has focused on Africa's frontier markets. Many have combined regions of the world (e.g. Hassan 2011); focused on a specific country (e.g. Naceur *et al* (2010) or a certain geographical area (e.g. Ghirmany 2004).

Al-Yousif (2002) does, however, warn that various macro-economic factors are at play in different countries therefore leading to different results albeit similar sized economies and same geographic location. In a study of 30 developing countries, great variations in results were found. This is attributable to the country specific economic policies as well as the efficiency and functionality of the intuitions that implement them. Moreover, some countries exhibited negative correlation between financial development and economic growth, a result that is has been unheard of so far.

The subsequent section explores the linkages of financial intermediary and the broader economy; the role that it plays and how it can help boost economic growth. It will also review some theory against stock market development.

Chapter 3: The Role of Financial Intermediaries in the Economy

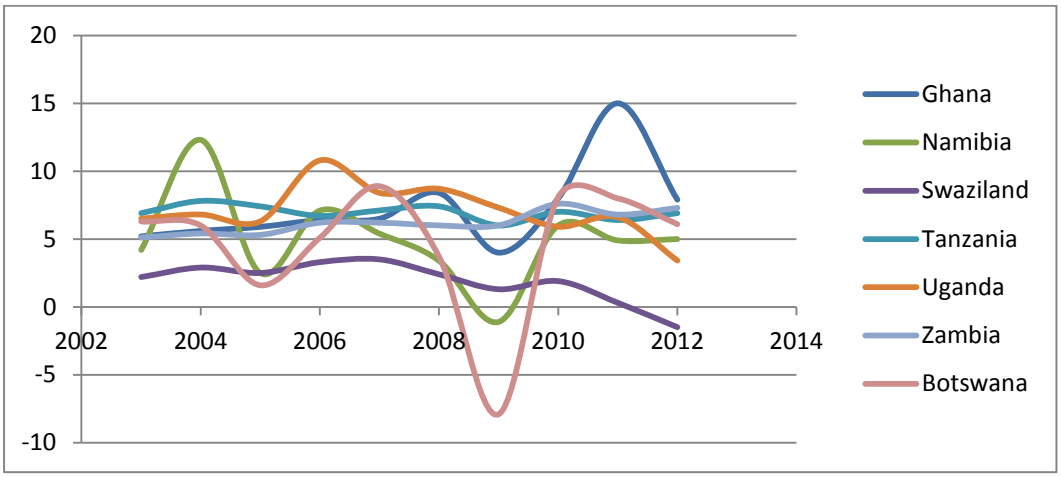
The African markets covered in this study have experienced rapid growth in the last decade. Many of them, ironically has also established their stock markets in the last two decades. This growth may have emanated from other sectors of the economy. If however, stock market development has played a significant role in this, then it is worth investigating further how these markets can be strengthened to accelerate GDP growth. If indeed there is a positive relationship, then other countries such as Lesotho, Burundi and Benin should be encouraged to follow suit and develop their own securities exchanges.

This part of the literature begins with some statistical diagrams on GDP growth in the eight African countries as well expansion of equity market size in the past decade. This is meant to paint a picture of how these indicators have been performing in the past few years. Subsequent chapters explore the theory behind financial intermediaries and economic expansion.

3.1 Economic growth in Africa's Frontier markets

Figure 1, below, is a graph that shows GDP growth in the last decade for the sample countries: Ghana, Namibia, Swaziland, Tanzania, Uganda, Zambia and Botswana. It is followed by Figure 2 which illustrates economic performance for the seven countries from the year 2002 to 2012.

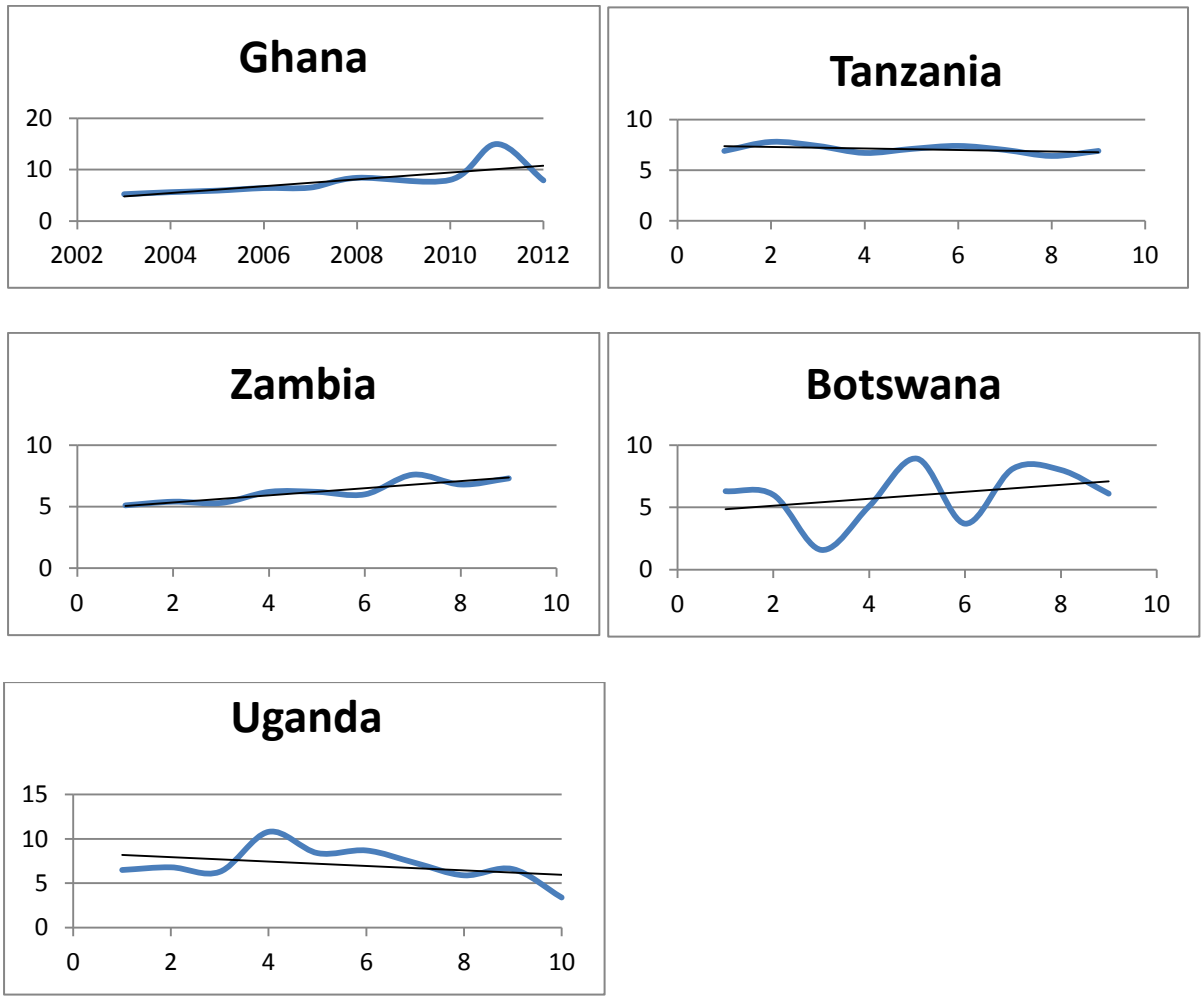
Figure 1- GDP Growth in Sampled Sub-Saharan Countries



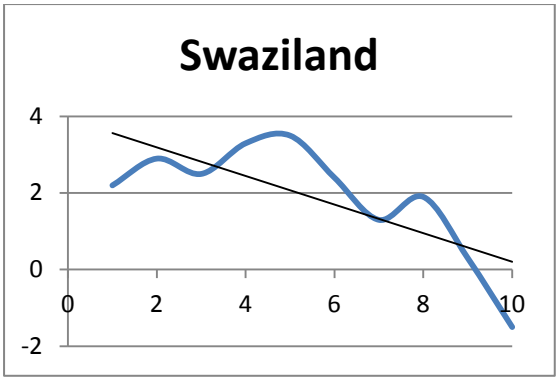
Ghana appears to have experienced the highest growth overall, with a peak of 15% growth in 2011. All economies contracted in 2009 due to the global economic crisis.

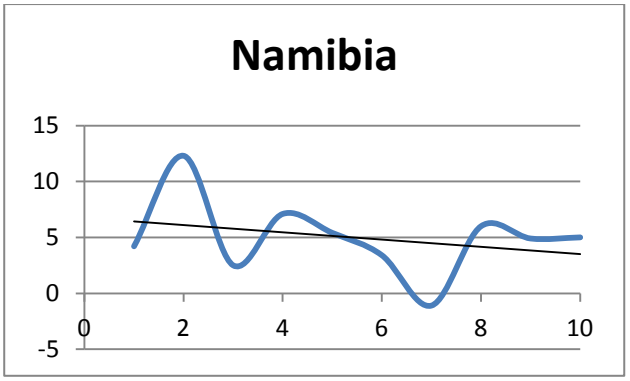
Namibia seems to have the most volatile growth rates, ranging from 12.3% in 2004 to as low as 1.1% in 2009. Ghana, the leader of the pack, grew its GDP by 15% in 2012. Swaziland on the other hand, has grown very slowly in the last decade, with its highest in 2007 at 3.5% and contraction on 1.5% last year. Botswana had the most severe hit during the 2009 financial crisis. To look at the trend in economic growth, 2009 data will be omitted and country specific growths trends are shown below.

Figure 2- Economic Trends [6]



[6] The numbers 2 to 10 symbolise the years 2002 to 2012 as depicted in the diagram for Ghana





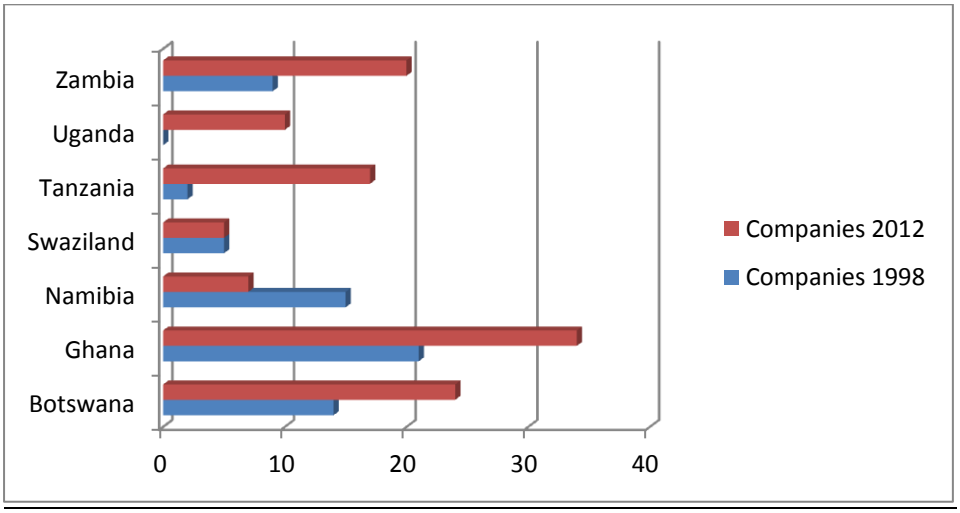
Namibia, Swaziland, Malawi and Uganda seem to have very volatile growth, very high in some years and low on the following one. The overall trend is downwards. Ghana, Tanzania, Zambia and Botswana show an upward trend. This growth however, has been higher than other regions in the world. Sub-Saharan Africa, excluding Nigeria and South Africa, had GDP growth of 4.3%. Other developing regions such Eastern Europe with central Asia was 2.2% and 3% in Latin America, (World Bank Indicators, 2013). Once again this highlights the need for further research in the area of the globe.

One of the measures of stock market development is the number of listed companies. Below is a table that shows the number of local listed companies in these African stock exchanges in 1998 in comparison to a year ago. This indicator does not include investment companies, mutual funds, or other collective investment vehicles. This is followed a graphical presentation

Table 2: Growth in the Number of Listed Companies

Country	***Number of listed companies in 1998***	***Number of listed companies in 2012***
Botswana	14	24
Ghana	21	34
Namibia	15	7
Swaziland	5	5
Tanzania	2	17

Uganda	2 (in 2001)	10
Zambia	9	20



Overall there has been an increase in the number of domestically incorporated companies. Tanzania has performed the best at 750% growth, followed by Uganda with 400%. Namibia and Swaziland however has struggled to grow, with Swaziland only having 5 companies in 2012 as 15 years ago. Already there is a correlation with *Figure 2*, whereby the two country's GDP growth was either very volatile or declining. The researcher therefore expects different results from the rest of the sample for Namibia and Swaziland.

With this brief overview of economic and stock exchange performance, this report will now turn to the theoretical underpinning of financial intermediaries.

3.2 The Role of Financial Intermediaries: Theoretical Background

Financial institutions play a vital role in stock market development. Financial intermediaries facilitate savings, borrowings and provide access to an array of financial instruments. An establishment of a sound financial sector is imperative to developing an efficient, trusted stock market. Prior to 1989, there were only five stock markets in Sub-Saharan Africa. The 1990's saw a surge in the many African economies due to liberalization. Yartey and Adjasi (2007) suggest that financial liberalization was encouraged by the following:

i) Deregulation of financial markets

ii) Internalisation

iii) Introduction of new financial products

iv) Emergence and increasing number of institutional investors

Kenny and Moss (1998) concur by highlighting that changes in policies in African states have aided this liberalisation. Ghana, in its attempt to build credibility, established the Financial Sector Adjustment Program (FINSAP), whose aim was to improve the banking sector and develop financial markets.

The development of the financial sector plays an important role in stimulating economic growth. Banks encourage and facilitate local savings (Kagoshi *et al.* 2013). Singh (1997) agrees that higher saving rate lead to better quantity and quality of investments which leads to better resource allocation.

Demirgűc-Kunt and Levine (1996) found that countries with well-functioning stock markets have well-functioning, efficient banks and non-bank financial institutions. Other important role players are pension funds and private insurance companies.

Haan, Oosterloo and Schoemaker (2012:6) define financial intermediaries as bodies 'that obtain funds from savers and use these savings to make loans to a sector in need of finance. These financial intermediaries are banks, insurance companies, mutual funds and pension funds.

There are two ways in which a financial system can be operated; Direct finance and indirect finance. The direct finance system is also known as the market-based system, whereby funds flow directly from savers to markets borrowers. The indirect method, also called bank based makes use of financial intermediaries such as banks to convert savings into loans Haan *et al.* (2012). Majority of countries use the bank based system.

Merton and Bodie (1998) assert that financial markets comprise of foreign exchange, fixed income and derivatives.

There are four main functions of financial intermediaries, Levine (2005, 2007):

a) Reducing information asymmetry and transaction costs

b) Trading, diversification and management of risk.

c) Improve resource allocation

d) Monitor managers & exert corporate governance

The savers, also referred to as the lenders, may not have the time or resources to look for potential borrowers. The intermediary facilitates the gathering of this information on wide array of investment opportunities available, good or bad, and therefore improving resource allocation, which is explained further below. Levine (2005) concurs that intermediaries provide the much needed information on investment worthy projects. Without intermediaries, it would be difficult and costly for lenders and borrowers to find each other. Wurgler(2000) also found that larger markets, such as in Japan and the United states have more informative prices and lower transaction costs.

Secondly, financial intermediaries' role is to manage risk and create diversification. This is done by financial institutions pooling funds. This pooling, investors would have to buy whole companies, or invest their funds till the end of a project to reap the rewards. However this pooling allows investors to buy part of a company, and withdraw funds as soon as they need them, even before maturity. This facility also aids liquidity, as savers can withdraw their savings without interrupting industrial production. This benefit is important because the investor's savings are not tied to a project until the end; they can reap the rewards when they wish. (Haan *et al.* 2012).

Levine (2005) remarks that financial intermediaries allow investors to hold a diversified portfolio, buy allowing them to invest in higher risk projects as well as low risk-low return projects. Furthermore, financial institutions also offer securitisation, a process in which illiquid assets are grouped together to form a security. A simple example of this would be mortgage backed security, secured by a collection of mortgages (Shin 2009).

Thirdly, resource allocation as described by Wurgler (1999) as capital being invested in areas with expected high returns and withdrawn from areas of poor prospects. It

is found that countries that invest heavily in their declining industries happen to be the ones with the least developed financial markets, such as Bangladesh and Turkey. Financial development assists in making investors make better decisions; and allows players to take advantage of the best investment opportunities.

Wurgler (1999) also found that capital allocation increases as the state involvement lessens. For state owned enterprises, capital allocation is driven my social needs and political motives rather than value maximisation. Conversely, strict budgets and close monitoring in private firms allow managers to select projects with the highest expected return.

Lastly, the legal and regulatory environment of a country is of high importance for investor protection, and subsequently, economic growth. Investors are likely to continue to provide capital if they are guaranteed that managers are acting in the shareholders' best interests i.e. maximizing returns. Without this reassurance, the efficiency capital allocation is compromised and economic growth is disrupted. Additionally, Levine (2005) also found that stock markets force managers to act in the best interest of the firm, in fear of a take-over by another firm. Additionally debt instruments reduce the amount of free cash flow available to firms, which is likely to reduce slacking from management, thus increasing productivity.

To some degree, intermediaries may be seen as monitors of innovative activities amongst firms, whereby companies must compete for resources, in addition to monitoring how well funds are being employed. This creates competition amongst businesses, encouraging them to become more innovative, thus adding to growth.

Levine (2005) highlights that in an economy whereby entrepreneurs solicit capital, and intermediaries have information about the resources available; funding becomes available thus fostering economic growth. King and Levine (2003) agree that the most innovative entrepreneurs are identified by the intermediary, and allocated the much needed funding to grow their ideas into useful products and services.

So far this report has covered financial intermediaries, particularly banks. The author will now explore the link between financial development and stock market development and additional importance of developing bourses.

3.3 The Special Role of the Stock Market

Stock markets are only just a part of the overall financial system (Naceur *et al.* 2007). They are however important because they provide corporations with an alternative source of financing equity as opposed debt. One major advantage is that it attracts foreign capital and provides valuation for firms.

Levine (1997) points out that those countries with large banks and liquid, developed stock markets have grown quickly in the last decade, after controlling for other growth factors. Industries and firms grow quicker in these economies because of access to a variety of funding. Singh (1999:347) identifies how 3 ways in which stock markets may contribute to economic growth:

a) Increasing savings and investments

b) Improving the productivity and of investments

c) Raising the profitability of existing capital

Stock markets expose investors to a wider variety of savings instruments. Another benefit is the stock market pools together the small savings from hundreds of individuals and converts them into large investments.

According to Adjasi and Biekpe (2006) stock markets enable growth in the macro economy in numerous ways. The liquidity of stock enables firms to acquire much needed capital quickly, resulting in capital allocation, investment and growth. They further contribute by reducing investment risk due to the ease in which equities are traded. If foreign investors are involved, they also can also improve the transparency and disclosure in developing countries. This is because they demand accountability of management and clear shareholder rights as a way to protect themselves (Kim and Singal 2000).

Stock markets bring about a takeover mechanism, whereby firms that struggle to utilize their assets efficiently, are acquired by those that do the job better (Singh 1999). Acemoglu and Zilibotti (1997) show that due to availability of portfolio diversification, firms have the opportunity to specialize in production activities thus increasing firm efficiency.

Growth can also spur from research and development. This need arises because information about a firm's performance, financial instruments, prices, profits of listed shares becomes a necessity to the public.

3.4 Equity Markets Development: Opposing Views

The preceding section discussed the additional value that an equity market brings to an economy vis-à-vis other financial intermediaries. There is evidence of stock markets boosting economic growth, as debated earlier in the literature review. On the other hand, some theorists argue that stock market development can actually hurt the economy as it is a costly, unessential development. This sub-section discusses mainly the works of Ajit Singh who has written extensively on the disadvantages of bourses, particularly for developing countries.

The text book theory, as discussed in the previous sub-section suggests that the stock markets promotes savings rate and also creates a platform for takeovers; that is, larger more resource efficient corporations taking over less efficient, smaller markets. Singh (1999) however opposes this view in relation to developing countries. He puts forward that many firms follow the pecking order hypothesis: that is, the use of internal funds rather than issuing external equity to finance new projects. In this case, this stock market does not act like as saving vehicle, as one would expect.

In cases where the stock market has been able to provide much needed funds to large corporations, thus expanding them, this growth had not been translated to the rest on the economy. Interestingly what actually took place was portfolio substitution; individuals moving from bank savings to the purchase of shares. There was no real increase in an economy's aggregate savings and investments (Singh and Hamid 1992). A good example of this occurrence was in Mexico, whereby large capital inflows ($91 billion) were injected in the 1980's. This generated a stock market boom, mainly caused by herd behaviour. The Mexican economy expanded at 3.5% per annum despite a widening current account deficit. Eventually the bubble burst in 1994 and the results were catastrophic for the economy.

Singh (1999) further warns that large capital flows into a developing country increase the vulnerability of that country. Because of the confluence of the currency market

and the stock market, the country is exposed to both external and internal shocks. Moreover, the economy may grow as a result of international funds, and not necessarily local production. The euphoria that the creation of stock markets creates is often short-lived economic boom that eventually ends in calamity, when stock prices and interest rates start to dwindle.

Kim and Singal (2000) concurs that, financial liberalization; the allowance of foreign investors to purchase and own local stocks, is beneficial, but has its drawbacks. 'Hot money' is the international flow of funds that is sensitive to differences in interest rates and expected returns from holding securities. Because of this high sensitivity, a small shock in a developing economy can lead to a volatile change in fund flows, which exacerbates the shock and further destabilizes the domestic economy.

Kim and Singal (2000) further point out that the high volatility of foreign stocks may cause domestic stock to also fluctuate. This heightened volatility in stock prices makes investors apprehensive. They in turn demand a higher risk premium, which implies a higher cost of capital and fewer investments for firms ultimately deterring economic growth.

Other than the above reasons, stock market development may be perceived negatively by locals. Banks might be fearful of stock market development as they fear that it will reduce the volume of their business, because it provides an alternative source of funding for firms (Demirgűç-Kunt and Maksimovic 1996). Also, policy makers may fear their currency appreciating when there is larger inflow of capital. For export-orientated countries, an appreciation of the local currency would threaten the global competitive position. Furthermore, the ensuing excess capital will fuel inflation.

The above arguments are parallel with Hassan's findings and views on the equity markets. In poor countries, the economy drives finance and not the other way around. Financial markets may help, but do not suffice in creating a steady economic growth.

Lastly, it appears as though there are crucial elements in an economy that must precede successful stock market development, which leads us to the next section.

As Perotti and Oijen (2001) found, privatisation of previously state-owned enterprises may encourage bourse development due to the perceived reduced risk in a particular country. Privatisation shows a commitment by political forces to withdraw from governance of economic activity. Privatisation may also require the institutional changes that contribute significantly to the strengthening of the legal framework.

Other than lack of privatisation, there are other issues in the macro-environment that may hinder the success of stock markets in developing countries, particularly Sub-Saharan Africa. This section is important to this research report because the latter's focus is in an area that is under-researched i.e. newly developed markets of Africa. The issues raised here may surface in the subsequent chapters when reporting the finding. Our attention now turns to factors that hinder stock market development in African economies.

3.5 Hurdles to Stock Market Development in Africa

African markets are characterized by illiquidity, low correlation with larger stock markets and low capitalization, Andrianaivo and Yartey (2010) compared to counter partners in Asia, MENA and South America. The turnover ratio stood at 3.7 in Namibia compared to 70.2 in Thailand in 2007.

One may argue that equity markets were established long before African exchanges in Asia, and that the former are only in their embryonic stages. As mentioned earlier in the text, other political and macro-economic factors maybe at play. The following table shows the issues an investor considers before he or she invests in a country (Laderkarl and Zervos 2004:290).

Ladekarl and Zervos (2004) identify housekeeping and plumbing issues that determine how investasble a country is. These criteria then help investors establish whether a country is a 'must invest', 'may invest' or 'cannot invest'.

Housekeeping factors relate to the macro-economic environment and plumbing relates to security and availability of the asset. It mainly deals with the risk, cost and quality of executing sales, registrations and transfer of ownership. These are described in detail below. In addition to housekeeping and plumbing issues, an investor may also consider size, which refers to GDP and population.

Housekeeping

Macro-economic Conditions	**Political economic stability**
• GDP Growth • Inflation • Trade and the current account • Financing of the current account	• Access to information and policy makers • Smooth process of changing the government • Reliable system of paying obligations after change of government
Quality of local financial Markets	**Corporate Governance**
• Health, quality and stability of the financial system • Depth and breadth of local investor	• High transparency • Alignment of interests between management and minority shareholders

Plumbing

Legal and regulatory framework	**Custody, clearing and settlement**
• Strength of Judiciary • Legal documents available in English • Consequence of non-compliance clearly defined • Rule of Law and infrequent change rule of law	• Recognition of sub custodians • Sub custodian able to present interest of the owners • Low settlement costs • Clear separation of client and propriety assets.
Taxes	**Other Plumbing Factors**
• Clear tax code • Repo's ability of local investments	• Personal safety and adequate amenities

Laderkarl and Zervos (2004) found that investors consider corporate governance practices as the most crucial for investibility decisions in emerging markets. Cannot-invest-countries are usually those sanctioned from trading with the international community. Zimbabwe falls in this category, but none of the countries in this sample.

Hearn and Piesse (2010) study looks at barriers that hinder the development of stock markets in small African economies. They found that African stock markets offer a very limited range of tradable instruments compared other markets due to limited technological infrastructure. Unlike other exchanges that serve as a useful platform for initial public offering (IPO's) thus offering an opportunity for companies to raise capital, African exchanges seem to be concentrated with multi nationals and former government entities in their stock exchanges. Hearn and Piesse (2010) further point out that the JSE is the only one in Africa that serves as a real competitor to the London Stock Exchange for raising capital.

Because of the low number of listings in African exchanges, liquidity can be a low as 0.04%, as the case in Swaziland. There are large gaps between buy and sell orders. To add oil to the fire, African stock markets also suffer from severe infrastructure bottlenecks. Adriavanaivo and Yartney (2010) further point out that some exchanges still operate on manual systems, resulting in transactions taking in weeks to execute. These clearing and settlement systems coupled with restrictions on foreign participation, make African exchanges unattractive and inaccessible.

Low liquidity also signals poor local support i.e. many companies are choosing not to list, subsequently impeding financial integration in the long run. Demirgűç-Kunt and Levine (1996) assert that liquidity is imperative for economic growth, as it aids resource allocation.

Another hindrance to development is the lack of benchmarks with which to provide pricing and risk measurement. Estrada (2002) proposes the use of Downside Capital Asset Pricing Model, otherwise known as the DCAPM. The DCAPM, unlike the conventional one, captures the increased downside experienced in developing markets, due to high volatility as well as political risk. With all these factors into account, investors are still sceptical about African developing markets.

Thirdly, investors place high value and importance on transparency. Accounting standards that provide information to outside investors make a country an attractive place. This goes back to the earlier discussion about the regulatory environment. The legal environment assures that managers' report accurately. Strong law enforcement provides investors protection and rights (Bruner *et al.* 2002).

Corruption is the disease of Africa. Controlling shareholder and government officials in Africa tend to have more power than in developed countries. Their influence distorts the decision making of management. The majority shareholders extract more benefits at the expense of minority shareholders. The regulatory environment should create agencies whereby foreign investors may lodge their complaints and protect their assets. Dyck and Zingales (2004) measure the extent of private benefits control. Countries where ownership is concentrated and private benefits are large, capital markets are less developed. Privatisation is also less likely to take place on a public offering. Private control stood at -4% in Japan as opposed to 65% in Brazil, an emerging economy. Corruption affects a firm in several ways. The most obvious is the expropriation of funds leading to reduced investment, which in turn reduces return on equity.

3.5.2 Summary Chapter

This last section is important as it brings to light some macro-economic variables that have hindered the advancement of finance in Africa. It is likely that issues discussed in this section will be picked up in the findings chapter. It is important to understand these hindrances as they affect data availability and reliability, subsequently spilling over to data collection for research. Ultimately the conclusions drawn and policies recommended may not be applicable to the African context.

The following chapter explores in detail the econometric techniques that will be used to analyse data. Data sources as well validity are discussed.

Chapter 4 Research Methodology

This chapter discusses the research data, collection procedures, econometric techniques and model specification that will be employed to carry out the analysis.

4.1 Data Collection Procedures

The data was collected from the World Bank Development Indicators. The choice of countries was based on availability of data and year founded. Even though Cameroon, Mozambique, Rwanda and Libya formed their bourses in the last two decades, they will not be included in the study because of the inaccessibility of data.

Stock markets founded in the 1990's as well as Botswana stock exchange, established in 1989 will form part of the study. Data was taken from January 1990 to December 2012, on an annual basis. For stock markets that were developed after 1990, the year of inception hence forth will be used (Uganda, Tanzania and Zambia). For the other half: Namibia, Ghana, Botswana and Swaziland, a 20 year sample will be drawn.

4.2 Econometric techniques

Economic growth is influenced by many factors. Enisan & Olufisayo (2009) highlight that the omission of these other variables would cause bias, and inflate or wrongly detect causality of stock market development on GDP growth. It is therefore advisable to include other variables such as labour force growth, export growth or share of investment in the GDP. Odedokun (1996) concurs by reiterating that at least one of these variables must be included in the regression equation. Further, time series data is more fruitful than cross sectional data, for studies of this nature (Arestis and Demetriades 1997).

The model will thus be expressed as follows:

$$y_i = \propto + \beta_1 X_i + \beta_2 Z_i + \beta_3 W_i + + \varepsilon_t \quad \text{.....[1]}$$

$$X_t = \propto + \beta_1 y_t + \beta_2 Z_i + \beta_3 W_i + + \varepsilon_t \quad \text{.....} \quad [2]$$

Economic Growth indicator- represented by Y in the equation =GDP per capita

- Gross Domestic Product (GDP) per capita - The total market value of all goods and services, produced in a country in a particular year after deducting all consumer and government expenditure. It is also referred to as GDP.

Stock Market Development indicators- represented by X in the equation comprise of:

- Market Capitalization to GDP- the total value of listed shares / constant GDP, measures the size of the stock market relative to the size of the economy. It is the product of the share price and the number of shares outstanding of all listed companies. It is important because it reflects the significance of the stock markets as a vehicle to mobilize funds & aid in the resource allocation process (El-Wassal 2005)

- Turnover ratio: Turnover ratio is a measure of the amount of trading that takes place relative to the size of the market. It is the product of share price and the number of shares traded. As an indicator of stock market liquidity, trading value complements market capitalization, hence better combined than used individually as a measure of the development of the stock market (El-Wassal 2005).
- Total Listed *Domestic* Companies- The number of only local companies listed on a country's stock exchange. Number of companies is a signal of level of privatisation of state-owned enterprises. The increase in number can spur from firm formation or corporations growing, but often, in developing economies, only large corporations, such as previously owned state enterprises are large enough to list on the stock market. (Perotti and Oijen 2001).

Bank Development Indicators- represented by Z in the model above

- Domestic credit provided by the banking sector: This is a proxy for development of financial intermediaries. It measures the role of banks in the provision of longer term financing to private corporations. This variable his important because it has been found that stock markets perform well

economies in which banks are well functioning. (Demirgűς- Kunt and Levine 1996a; Demirgűς- Kunt and Maksimovic 1996)

Other macro-economic factors: Exports to GDP.

- Labour Force Participation**:** Total labour force comprises of people aged 15 and older who meet the International Labour Organization (ILO) definition of the economically active population. It is the proportion of all people who supply labour for the production of goods and service to the total population of a country.

  Labour Force participation is another way of measuring employment rate. It is expected that the latter will have a positive impact on economic growth, as Choong *et al.* (2010) found. The more people are employed, the higher the national income, and the more likely it is for disposable income to increase. Consequently, individuals are more likely to save and to explore different investment vehicles such as the stock market. LFP therefore speaks to savings rate, or income level, whose data was limited for the sample countries.

- Exports of goods and services in US$: Economic growth can also spur from other sectors of the economy - the real economy. To avoid bias in the regression, exports of goods and services is included in the model as it contributes significantly to GDP. Export of goods and services as a percentage of GDP reflects the openness of the economy. It is a sign of an economy having overcome trade barriers, and experienced some amount of trade liberalization (Enisan and Olufisayo 2009; Stiglitz 2000)

4.3 Estimation Techniques

Time series is a set of observations collected at regular time intervals. Time series econometrics assumes that the underlying time series are stationary. Stationarity of a series is of high importance in the field of finance. Brooks (2008) explains that for a stationary series, a ‘shock’ or an unexpected event that occurs at a certain point in time dies away gradually. A non-stationary series on the other hand, its shocks are

persistent over time; the effect of the shock does not decrease with time .i.e. the variance of the residuals is not constant. A non-stationery series leads to an unreliable result, otherwise known as a spurious regression. This occurs when R^2 or estimation coefficient is very large even though the two series have no relation to one another. It could be coincidental that they are affected by the same unexpected events' in a certain time period. An Augmented Dickey Fuller will be employed to test stationarity. The Schwarz criterion is used to determine the optimum lag length. Once stationarity is attained, estimating the model follows.

Variance decomposition as well as Impulse response tests are employed as extensions of the Vector Auto-Regression (VAR). Variance decompositions show the proportion of the movements in the dependent variable that are due to their own shocks, versus to the shock of other variables. Similarly, the impulse response function shows the effect of a unit shock applied separately to the error of each equation of the VAR (Brooks 2008).

VAR has become common in modern econometrics for its ease of use. In a VAR equation, all variables are endogenous. The dependent variable y, depends on its own lagged values, as well as the lagged values of the explanatory variable x. In addition, each explanatory variable has its own equation containing lagged valuables of the dependent variable and other variable in the model. Because unrestricted VAR is used herein, the same number of lags is used for all the equations).

One of the main pitfalls, however of VAR is its sensitivity to lag length. Optimal lag length is determined through the use of information criteria. The model order that minimizes the value of the information criterion gives the optimum lag length. The three commonly used formulae are Akaike (AIC), Shwarz (SBIC) and Hannan-Quinn (HQ). For this research report, Akaike is employed as it is more efficient than the others for small samples (Gujarati 2005; Brooks 2008).

The tests discussed above may prove that a relationship exists between GDP and stock markets indicators, but do not really identify the direction of that relationship. Causality means that changes in x cause changes in *y,* but changes in *y* will not modify *x.* The latter describes unidirectional causality from *x* to *y.* Past values *of x* explanatory power *for y* (Koop 2006). When both variables have causal effects on

one another, then bilateral causality exists. Crucially, with the Granger Test, changes in *x* must occur before changes before *y*, otherwise causality would not be possible. Using F tests and critical values, the Granger causality test, it is expected that causality will run from stock market indicators to GDP.

4.5 External and Internal Validity; Limitations of the study

As with any research study, a measure of validity is imperative. *Validity* measures whether an instrument measures what it purports to measure (Ghauri & Gronhaug 2010). Mc Neil (1990) refers to validity as a problem of whether the data collected is a true picture of what is being studied.

External validity refers to the extent to which the findings of the study can be generalized to or applied to other groups or situations (Ghauri & Gronhaug 2010). This particular study looks at Africa's frontier markets, those that are considered to have taken off in terms of economic growth. The researcher would expect similar results for countries such as Cameroon which could not be included in the study because of lack of data collection. For countries in other regions of the world, the socio-economic climate is different, and similar research would probably yield different results. Furthermore, the results cannot be generalized to the rest of Africa, as there are large variations of financial development across the economies, with some like South Africa resembling that of first world.

Internal Validity, on the other hand reflects the extent to which a causal conclusion based on a study may be drawn. Also referred to as predictive validity, Polansky (1975) reiterates that it is a measure of some correlation, of one variable causing the other. The main objective of this study is to measure the extent to which economic growth is caused by developments of bourses. If the results are found to be true (positive), internal validity holds.

To obtain sufficient data from small countries may prove a difficult task. Consequently, the results may contain some bias (Odedokun 1996).The sample comprises of seven economies in Africa, the results may not necessarily be applied to other parts of the world, such as emerging markets in Asia or South America.

There are factors that are just unique to Africa, which could possibly stimulate growth in this part of the world. So growth stimulated by other sectors of the economy could influence the relationship under investigation. Not all of growth-stimulating variables are included in the study. Obscurely, there could be some that are correlated with stock market/banking development indicators that would make the study more comprehensive. This presents a limitation pf the study.

Finally, as stock markets become integrated, a shock in an economic giant such as the USA, may cause disruption in an African stock market. The study does not take into account external factors that could have hindered growth of small bourses at a particular point in time, thus affecting the end result. Moss and Kenny (1998) add that stock markets are largely reactive to crises, not causal.

4.6 Conclusion

The purpose of this chapter was to highlight the data collection methods and econometrics techniques that will be applied in the study. Hypothesis, a crucial part of this report, is also presented. It concludes by discussing the internal, external validity and limitations of the study. The next chapter represents the findings. These are derived from the tests mentioned above and provide useful information on relationship strength, extent of causality along with other interesting findings. The findings will guide the researcher to conclusion and recommendations.

Chapter 5: Data Analysis

This chapter displays and discusses the results of the Unit root tests, Variance decomposition and Impulse response, concluding with causality tests. To begin this section though, some descriptive tests are discoursed.

5.1 Descriptive Statistics

Table 3: Descriptive Statistics.

Country	Botswana				Ghana			
number of observations			n=23				n=22	
	Mean	**St.Dev**	**Skewness**	**Kurtosis**	**Mean**	**St.Dev**	**Skewness**	**Kurtosis**
GDP per Capita	8.28	0.36	0.6	-1.25	6.3	0.59	0.81	-0.91
Turnover Ratio (n-1)	2.93	0.68	-0.41	-1.19	1.04	0.53	1.16	-0.79
Market Capitalization	1.49	0.589	0.28	1.12	2.35	0.9	1.41	1.68
# of listed companies	2.2	0	-1.07	2.21	3.18	0.31	0.35	0.9
Labour Participation	4.32	0.01	-0.02	-1.44	4.27	0.03	-0.02	-1.39
Exports of goods & service	9.52	0.18	0.3	-1.37	21.88	0.84	0.63	0.26
Credit to private Sector	-29.94	28.41	-0.14	-1.06	3.23	0.25	-0.15	-1.1

Country	Namibia				Swaziland			
number of observations			n= 21				n=19	
	Mean	**St.Dev**	**Skewness**	**Kurtosis**	**Mean**	**St.Dev**	**Skewness**	**Kurtosis**
GDP per Capita	7.93	0.43	0.5	-1.41	7.53	0.33	0.36	-1.36
Turnover Ratio (n-1)	1.04	0.79	0.43	0.4	-1.3	2.53	1.84	4.52
Market Capitalization	1.9	0.8	-1.59	3.21	2.12	0.76	0.37	0.54
# of listed companies	2.23	0.43	-1.18	1.17	1.52	0.43	-2.48	7.25
Labour Participation	4.35	0.01	0.11	-1.54	4.03	0	1.13	1.81
Exports of goods & service	21.61	0.51	0.57	-1.44	20.99	0.45	0.1	-1.43
Credit to private Sector	3.88	0.08	-0.01	-0.78	2.5	0.52	-2.26	7.97

Country	Tanzania				Zambia			
number of observations			n= 15				n=18	
	Mean	**St.Dev**	**Skewness**	**Kurtosis**	**Mean**	**St.Dev**	**Skewness**	**Kurtosis**
GDP per Capita	5.97	0.25	0.48	-1.38	6.38	0.57	0.42	-1.63
Turnover Ratio (n-1)	1.05	0.58	3.07	10.6	1.06	0.86	0.18	1.1
Market Capitalization	1.49	0.41	-1.06	-0.01	2.33	0.86	-2.43	7.81
# of listed companies	1.97	0.63	-0.17	0.48	2.42	0.57	-1.66	3.91
Labour Participation	4.49	0	-0.44	-1.1	4.38	0	1.09	-2.27
Exports of goods & service	21.82	0.66	0.07	-1.27	21.44	0.83	0.53	-1.37
Credit to private Sector	2.55	0.41	0.36	-1.02	3.49	0.56	0	-1.86

Country	Uganda			
number of observations			n=11	
	Mean	**St.Dev**	**Skewness**	**Kurtosis**
GDP per Capita	2.55	0.14	-0.17	-1.66
Turnover Ratio (n-1)	2.27	1.83	0.34	-0.86
Market Capitalization	0.12	0.56	-0.62	1.47
# of listed companies	0.64	0.74	0.18	-1.97
Labour Participation	0.72	0.21	-0.7	-0.16
Exports of goods & service	1.9	0.01	0.95	-0.8
Credit to private Sector	1.03	0.16	-0.14	-0.64

The above table gives the results of the mean, standard deviation, kurtosis and skewness of the distribution, on the transformed values of all seven series'.

Mean: The mean is one of the measures of the central tendency and gives the value of the expected value. Standard deviation is a measure of dispersion, and is an indication how the values in a series are from the mean value. The third and fourth moments of a distribution are skewness and kurtosis. The former measures the extent to which a distribution is not symmetric about its mean value while the latter is measure how fat the tails of the distribution are. Kurtosis of the normal distribution is three.

Kurtosis: Looking at all the series in the figure above, most of the variables are a small negative, indicating a platykurtic distribution, that is, with thinner tails. A few series' however exhibit very fat, highly peaked tails, referred to as leptokurtic distribution. These are market capitalization of all countries except Tanzania. Some like Swaziland and Zambia exhibit high values above 7, showing a great deviation from normality. All other variables, negative or positive, do not follow the normal distribution as their values are far from normality (3). Only market capitalization of Namibia and number of listed companies of Zambia have results close to 3: that of normal distribution.

Standard Deviation*:* The dispersion about the mean for Exports of goods and Services, GDP and Number of listed companies tends to be low. The dispersion of the data, however for market capitalization and turnover ratio tends to be higher than all the other variables. This shows that the data is tends to differ a great deal from the expected values.

Skewness*:* A skewness of 0 indicates normality, or equal lengths of tails on either side of the mean. Looking at the results above, most series' are skewed to the right as they have a positive value. The only variable that is normally distributed is Zambia's 'credit to the private sector provided by banks'. Number if listed companies, except in Uganda, Zambia and Ghana, have a negative value, showing skewness to the left. The series that is skewed the most is Tanzania turnover ratio of 3.07.

From the above results, one can see that the series' are not normally distributed. Therefore an estimation method that assumes, such as OLS,[7] normality cannot be employed. VAR is thus suitable for the data at hand. For model estimation, unit root tests were carried out and results are given below.

5.2 Unit Root Tests

'First Diff' and 'Second' refers to differencing once or twice, respectively. The table reports the test statistic values. The null hypothesis ($H_{o:}$ Series has a unit root) is rejected when the test-statistic is more negative than the critical values, which are provided in the note below the table. For VAR estimation, the series has to be differenced at least once.

Table 4: Unit Root Tests

Unit Roots Tests: Augmented Dickey Fuller

	Botswana		Ghana		Namibia		Uganda		
	LEVEL	First Diff	LEVEL	First Diff	LEVEL	First Diff	LEVEL	First Diff	Second
GDP per capita	0.05	-4.28	-1.50	-3.58	-5.56	-8.09	-1.87	-2.91	
Turnover Ratio	-1.17	-4.73	-7.35	-6.13	-6.51	-7.05	-0.23	-2.63	-4.06
Market capitalization to GDP	-1.45	-5.60	-2.63	-4.64	-8.50	-10.39	-1.70	-4.11	
Number of listed companies	-1.43	-5.85	-1.73	-4.76	-3.88	-3.27	-1.90	-2.77	-4.75
Labour Particapation	-1.58	**-2.51**	-3.34	-1.23	-2.99	**0.33**	-0.60	-3.42	
Exports	-0.70	-5.00	-1.73	-4.76	-1.53	-3.69	-1.98	-1.99	-2.86
Credit to the private sector	-0.73	-3.54	-2.21	-4.59	-2.87	-3.62	-1.74	-4.28	

	Swaziland			Tanzania		Zambia	
	LEVEL	First Diff	Second	LEVEL	First Diff	LEVEL	First Diff
GDP per capita	-1.62	-3.35		1.25	-2.80	-2.07	-3.84
Turnover Ratio	-2.65	-2.65	-6.23	-31.79	-10.83	-2.34	-5.78
Market capitalization to GDP	-4.41	-3.02		-4.01	-4.31	-6.44	-4.32
Number of listed companies	-4.85	-5.73		-1.75	-3.43	-12.03	-9.75
Labour Particapation	0.18	-1.87	-5.60	-8.39	-1.90	-5.45	-0.97
Exports	-3.74	-4.40		0.24	-6.57	-2.22	-4.23
Credit to the private sector	-3.67	-3.98		0.24	-6.57	-3.40	-2.72

Note: Stationerity for Botswana's Labour Participation & Namibia's Labour Participation was reached after the second differencing (Test Statistics: -7.28 and -5.60, respectively)

ADF critical Values: -2.63, -3.00 and -3.75 for 10%, 5% and 1% significance level, respectively.

[7] Ordinary Least Squares

Table 5: Optimal Lag Length

Information Criteria				
Akaike and Shwartz	* value that minimizes the information criteria			
Country	AIC		SBIC	
	Value*	# of lags	Value*	# of lags
Botswana	-7.803520*	3	-5.254867*	3
Ghana	-198.5998*	5	-196.2820*	5
Namibia	0.104925*	2	1.843249*	2
Tanzania	-190.0228*	3	-189.1151*	3
Uganda	-2.643945*	1	-2.584363*	1
Swaziland	0.493557*	3	0.775486*	1
Zambia	-4.592649*	3	-3.223240*	3

- Akaike information criteria is used to estimate VAR henceforth

5.3 Impulse Responses, Variance Decomposition and Causality Tests

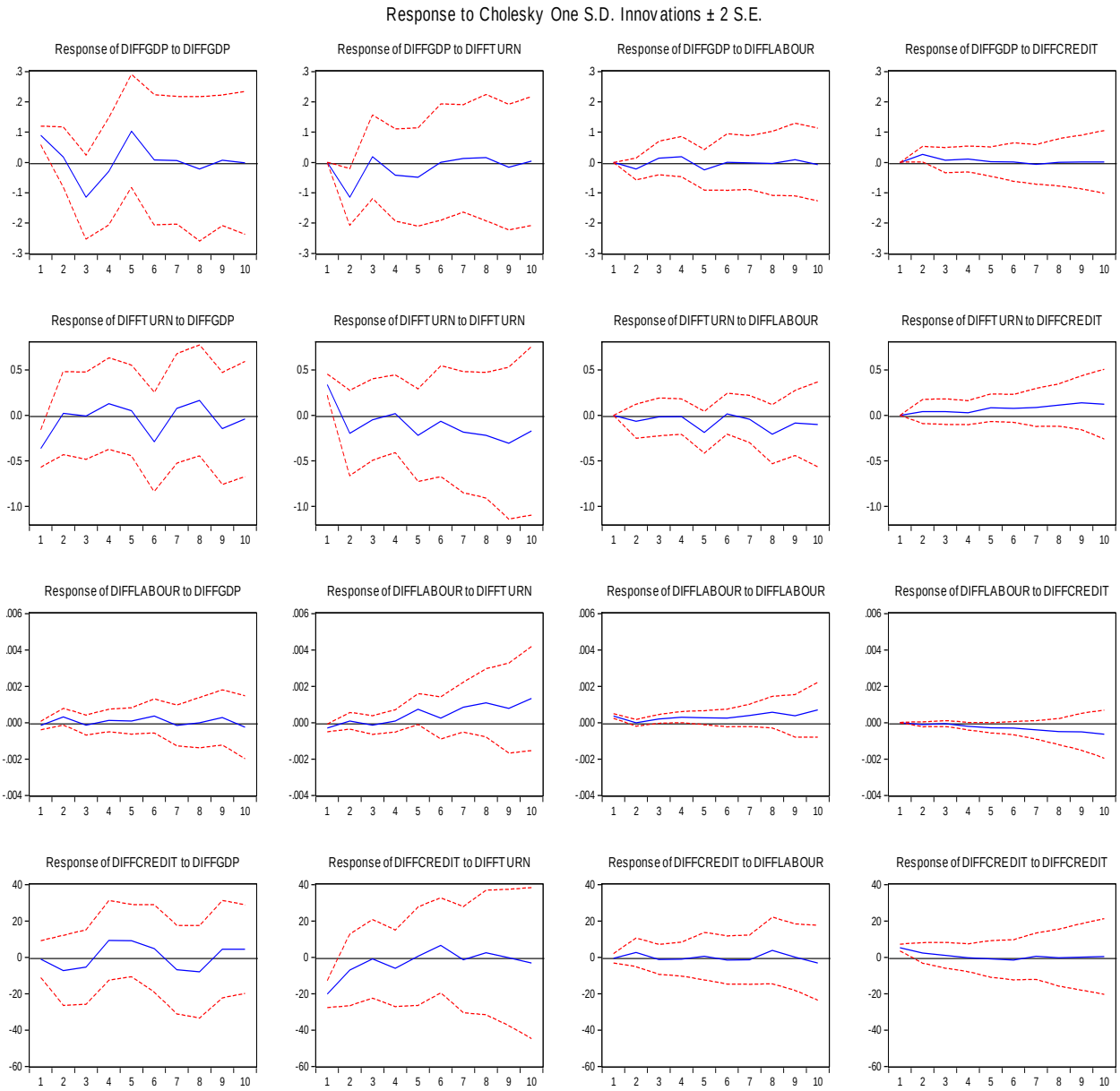
GDP	GDP per Capita
Turn	Turnover ratio of the stock market
Cap	Market Capitalization as a % of GDP
Companies	Number of domestic listed companies
Labour	Labour Force Participation
Exports	Exports of goods and services in US$
Credit	Credit to the private sector provided by banks
Diff	Differenced values of the variable
S.E	Standard Error

Note: *Impulse response* traces out the responsiveness of the dependent variables in the VAR to shocks to each of the (independent) variables. Following a shock applied to the error term, the effects upon the VAR system over time are noted. *Variance Decomposition* on the other hand, gives the proportion of the movements in the dependent variables that are due to their own shocks compared to other variables in the VAR system (Brooks 2005).

For interpretation of the VAR, the researcher considers variability of 25% and above as significant. The graphs of the impulse response give the magnitude of the movements on the vertical axis, against time on the horizontal axis.[8]

5.3.1 Botswana

***Figure 3*: Impulse responses for Botswana**



[8] **The researcher only presents the relevant findings, not all E-views outputs.**

The graphs above show that there is no relationship between credit provided by banks and turnover ratio. Shocks in either cause very little movement is another.

There is however a relationship between turnover ratio and GDP, as shocks to either causes movements in one for 7-8 years before it dies out. GDP shocks further cause fluctuating movements in credit, even though credit does not have the same effect on GDP.

And finally past values of turnover affect have some explanatory power on turnover, as seen in the graphs below. The effect is still large ten years after the shock.

Table 6: Variance Decomposition for Botswana

Variance Decomposition of GDP:

Variance Decomposition of EXPORTS:

Period	S.E.	GDP	EXPORTS	COMPANIES	CAP
1	0.102539	**63.74419**	36.25581	0.000000	0.000000
3	0.125805	46.00662	34.74000	18.98107	0.272313
5	0.151467	32.65521	28.11675	21.63093	17.59711
7	0.173081	29.07212	33.62548	20.97409	16.32831
10	0.201655	**32.45845**	28.94693	22.76634	15.82828

Variance Decomposition of COMPANIES:

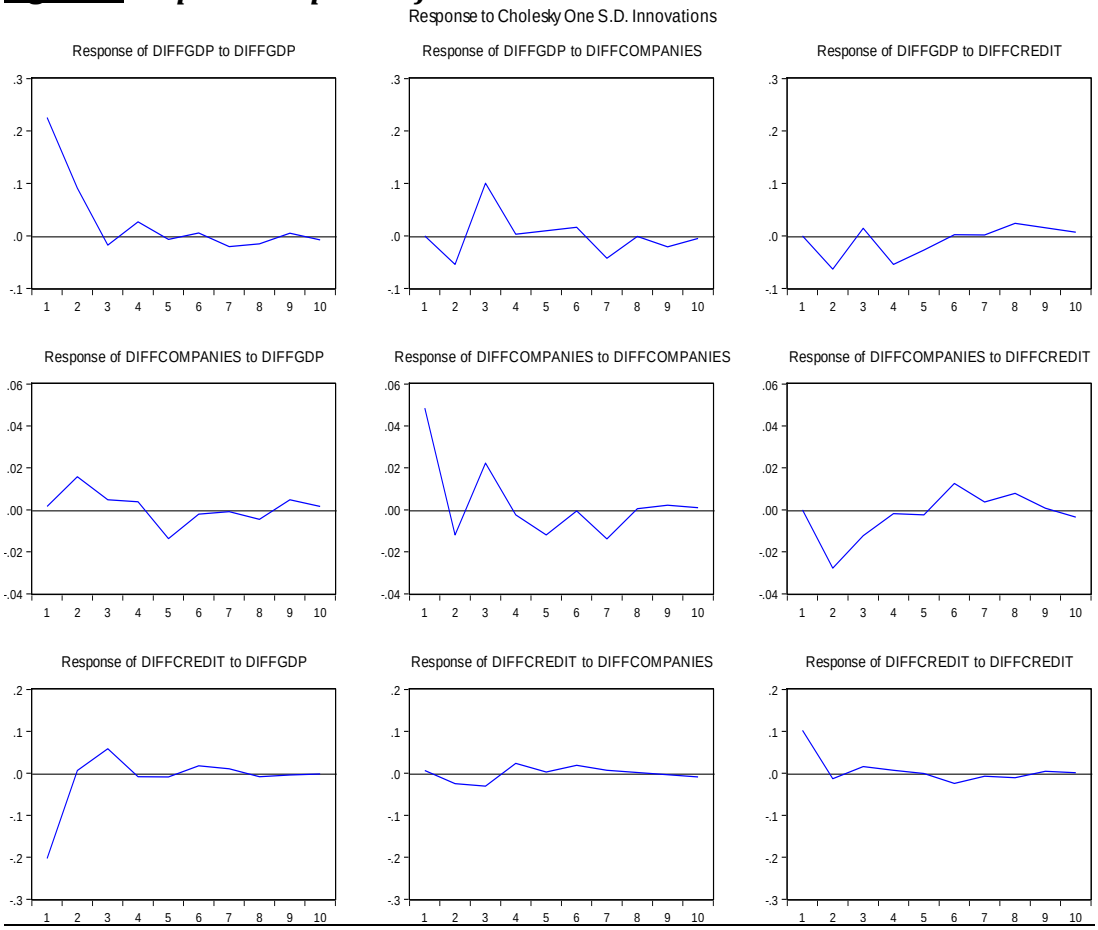
Period	S.E.	GDP	EXPORTS	COMPANIES	CAP
1	0.053295	**44.46211**	6.347117	49.19077	0.000000
3	0.077249	44.97581	10.97810	23.86485	20.18124
5	0.085939	40.37419	17.46919	24.94292	17.21370
7	0.104461	35.55301	20.90118	17.82884	25.71697
10	0.133699	**35.28201**	19.71590	24.20664	20.79545

Cholesky Ordering: GDP EXPORTS COMPANIES CAP

There is a relationship between Exports and GDP, as shown in the first part of the table, where a shock in Exports is accountable for the variability in GDP 10 yrs later. Interestingly, when there is an unexpected event in listed companies, 35% of the variability in GDP is still due to the shock in companies 10 years after.

5.3.2 Ghana

***Figure 4*: Impulse Responses for Ghana**



When there is a shock to credit, GDP is negatively affected for about 6 years until the shock dies out. The same shock in credit affects number of listed countries negatively for 4 years, followed by some fluctuations until it dies out. A shock applied to companies causes fluctuations in GDP and Vice-versa indicating a relationship.

Table 7: Variance Decomposition for Ghana

Variance Decomposition of LABOUR:

Period	S.E.	GDP	LABOUR	EXPORTS	TURN	CAP
1	0.002823	**38.10270**	61.89730	**0.000000**	0.000000	0.000000
2	0.006127	**82.05119**	13.41378	0.000112	3.691121	0.843799
5	0.018900	19.24253	3.541656	64.96891	5.543322	6.703580
8	0.036731	16.37242	6.842912	71.15935	3.678340	1.946978
10	0.046792	**16.96991**	6.919652	**71.19037**	3.675726	1.244337

Variance Decomposition of EXPORTS:

Period	S.E.	GDP	LABOUR	EXPORTS	TURN	CAP
1	0.110592	0.029137	**6.766774**	93.20409	0.000000	0.000000
2	0.153081	0.424476	20.74020	72.01172	6.434236	0.389369
5	0.349928	21.64259	20.16169	49.75754	6.567807	1.870362
8	0.505860	23.76126	29.15946	37.85830	5.916850	3.304123
10	0.561591	20.62109	**32.33007**	38.25546	5.354009	3.439375

Variance Decomposition of TURN:

Period	S.E.	GDP	LABOUR	EXPORTS	TURN	CAP
1	0.604663	4.712057	**34.60012**	16.25397	44.43385	0.000000
2	0.721325	10.40875	24.73274	17.25493	43.34282	4.260753
5	1.281050	18.75773	47.66301	9.639056	16.87747	7.062732
8	1.670746	22.16892	48.72660	10.78424	11.63742	6.682818
10	1.930885	22.30931	**49.56583**	9.288031	12.90715	5.929676

Variance Decomposition of CAP:

Period	S.E.	GDP	LABOUR	EXPORTS	TURN	CAP
1	0.398508	3.729896	**34.90742**	1.033786	1.801281	58.52761
2	0.438604	4.814829	29.59738	5.836228	7.065584	52.68598
5	0.713350	9.748489	26.69484	21.55445	5.162482	36.83975
8	0.972522	12.43857	27.36242	33.55169	4.250284	22.39704
10	1.131116	15.85397	**25.95633**	36.71441	4.683519	16.79177

Cholesky Ordering: GDP LABOUR EXPORTS TURN CAP

This entire table for Ghana shows that Labour Force Participation is correlated to GDP, Exports, Turnover ratio and Market Capitalization. However, the objective of this paper is not to measure some of these relationships. A thorough discussion is given in the subsequent chapter.

5.3.3 Namibia

Impulse Responses

A shock to the liquidity on the Namibia's stock exchange, turnover ratio, results in large fluctuation in output, companies and capitalization. The effect of the shock on output lasts for nine years. This shock causes changes in the number of listed companies for seven years until it dies out. Lastly, it causes considerable fluctuations in market capitalization, which reduce over time, then die out at eight years. There is a slight movement of three years in capitalization when there is a shock in GDP and vice-versa, indicating a week relationship.

Figure 5: Impulse Response for Namibia

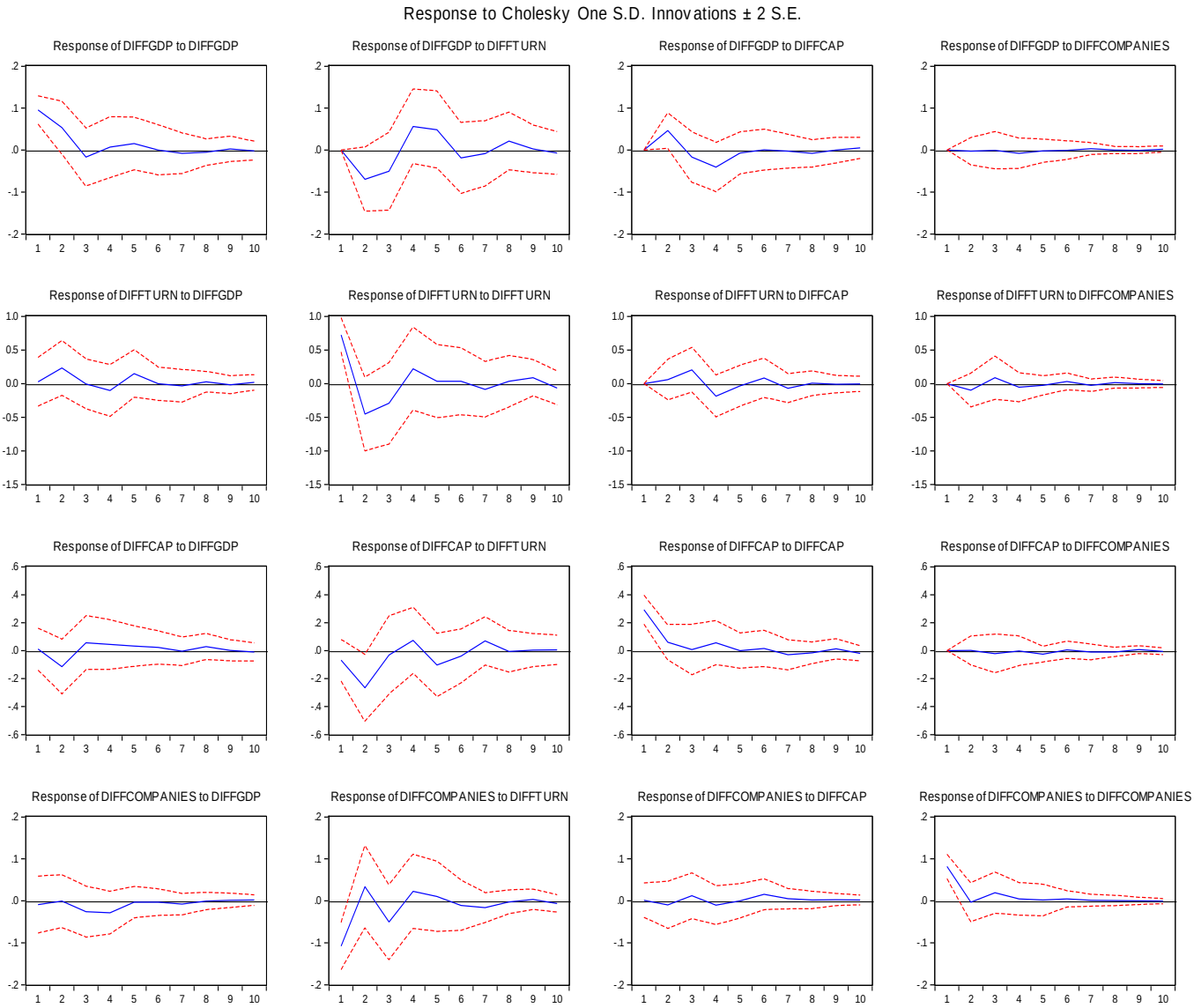


Table 8: Variance Decomposition for Namibia

Variance Decomposition of GDP:

Period	S.E.	GDP	EXPORTS	LABOUR	CREDIT	TURN
1	0.083274	100.0000	0.000000	**0.000000**	0.000000	0.000000
3	0.138962	54.83479	18.54835	23.56736	2.344116	0.705376
5	0.281406	16.43676	13.00557	69.63456	0.746119	0.176983
7	0.288697	18.12079	13.74777	67.00431	0.911543	0.215582
10	0.294812	18.51608	13.78405	**66.55141**	0.927073	0.221385

Variance Decomposition of EXPORTS:

Period	S.E.	GDP	EXPORTS	LABOUR	CREDIT	TURN
1	0.087743	19.38413	80.61587	0.000000	0.000000	0.000000
3	0.181646	51.80900	35.01706	6.022354	5.788602	1.362976
5	0.298970	23.50603	18.92267	**53.65018**	3.192031	0.729089
7	0.313257	25.09802	17.70155	53.08748	3.350265	0.762673
10	0.320070	25.17627	17.25260	**53.46674**	3.344123	0.760276

Variance Decomposition of LABOUR:

Period	S.E.	GDP	EXPORTS	LABOUR	CREDIT	TURN
1	0.001050	**38.00699**	0.451195	61.54182	0.000000	0.000000
3	0.002418	29.74396	1.348297	68.78472	0.095781	0.027233
5	0.002940	23.13691	2.442288	74.09019	0.263629	0.066981
7	0.003050	23.21627	2.295801	74.10814	0.306073	0.073716
10	0.003078	**23.03106**	2.333845	74.24607	0.313995	0.075037

Variance Decomposition of TURN:

Period	S.E.	GDP	EXPORTS	LABOUR	CREDIT	TURN
1	0.838370	3.062856	23.77855	**47.68335**	19.33879	6.136455
3	1.142874	12.58791	17.15267	43.73566	20.20749	6.316270
5	1.306593	16.19837	14.55979	48.60237	15.71584	4.923637
7	1.342934	15.78655	17.52138	46.41405	15.44295	4.835068
10	1.368662	16.15620	17.53356	**46.52101**	15.07094	4.718292

Cholesky Ordering: GDP EXPORTS LABOUR CREDIT TURN

The table above shows that labour is correlated to all other variables in the VAR system. Similarly a shock to credit has lasting effects on labour participation. The effect fluctuates around 50% during the ten years after the shock. Finally, a shock to turnover results in 46% variability in labour.

5.3.4 Tanzania

Impulse Response

When there is a shock in the turnover ratio, the labour participation reacts negatively, and finally the shock dies away after ten years. When there's a shock to turnover,

exports of goods and services fluctuate in the first 14 years and stabilize in the 15th year. There seems to be no relationship between turnover and the other three variables.

***Figure 6:* Impulse Response for Tanzania**

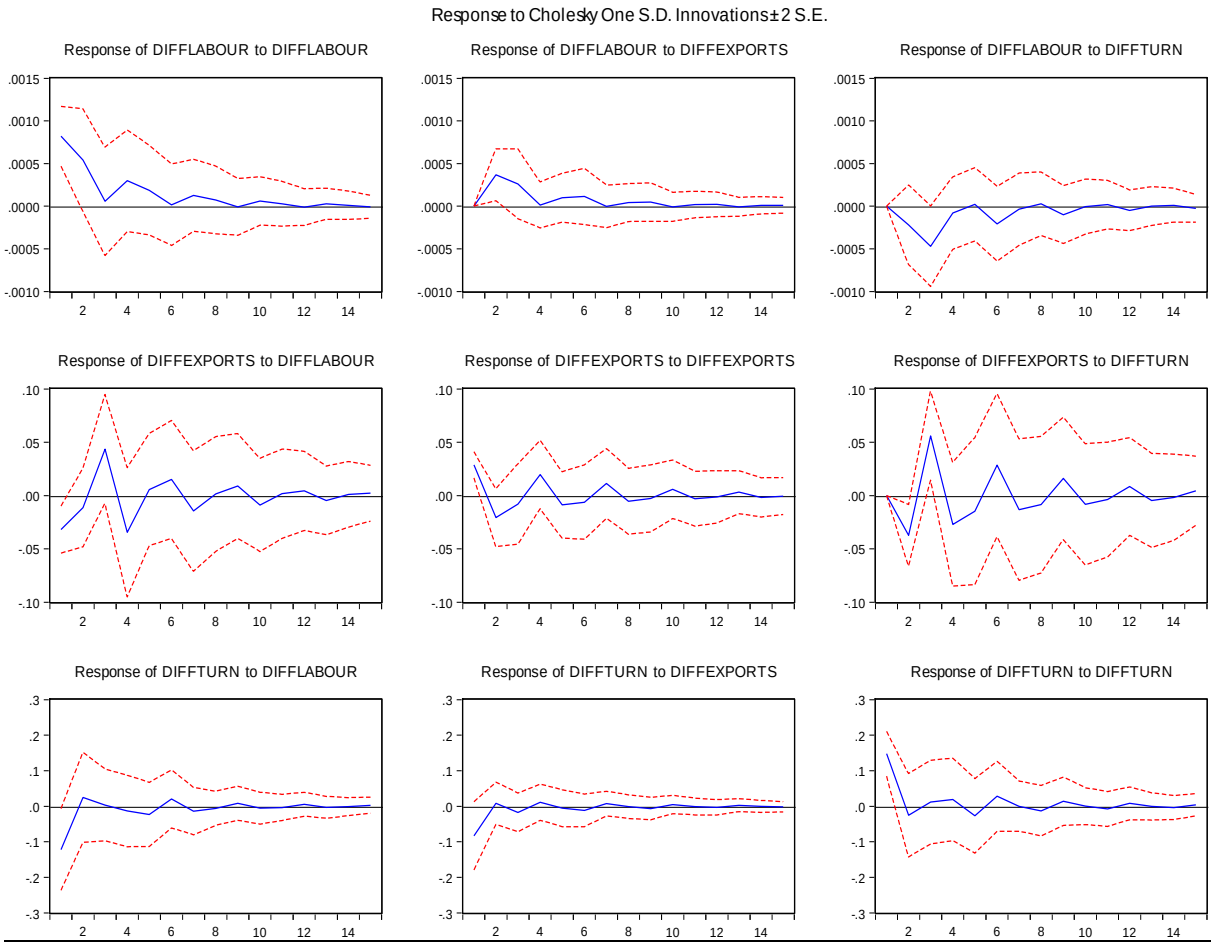


***Table 9:* Variance Decomposition for Tanzania**

Variance Decomposition of GDP:

Period	S.E.	GDP	CREDIT	COMPANIES
1	0.060975	100.0000	0.000000	**0.000000**
3	0.066941	83.98291	4.127042	11.89005
5	0.078180	73.83745	13.56362	12.59894
7	0.085456	62.36737	12.16970	25.46293
10	0.109020	47.85193	17.86335	**34.28472**

Variance Decomposition of CREDIT:

Period	S.E.	GDP	CREDIT	COMPANIES
1	0.191381	**55.95576**	44.04424	0.000000
3	0.222526	48.69586	45.59889	5.705249
5	0.224176	48.25561	45.98174	5.762654
7	0.225124	47.88437	45.91642	6.199209
10	0.226475	**47.60956**	45.77446	6.615983

Variance Decomposition of COMPANIES:

Period	S.E.	GDP	CREDIT	COMPANIES
1	0.150364	**23.92438**	2.499937	73.57568
3	0.237236	39.56366	25.09994	35.33640
5	0.335917	24.87397	22.18329	52.94274
7	0.440002	29.53100	27.69035	42.77865
10	0.604103	**26.81731**	25.37670	47.80598

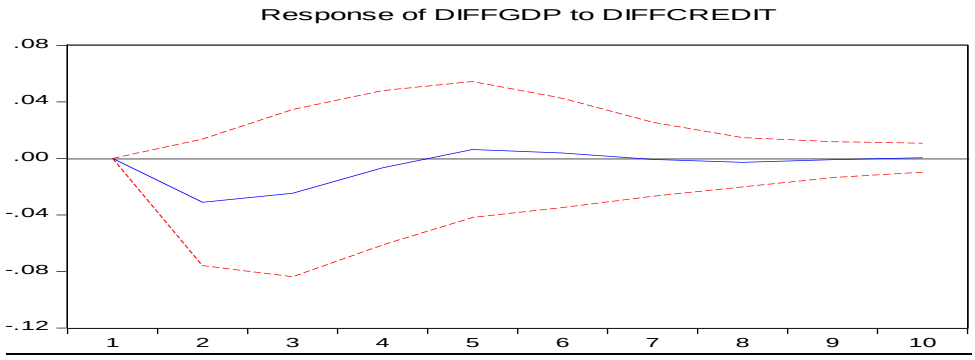
Cholesky Ordering: GDP CREDIT COMPANIES

There is a correlation between GDP and credit provided by banks to the private sector. A shock to credit leaves a lasting effect on credit, with 47% of the variability of shock still being present 10 years after the shock. GDP also responds to a shock to companies. 26% of variability in GDP is due to a shock that happened ten years before. In turn, 34% of the variability in companies is due to a shock in GDP. This effect is however not strong.

5.3.5 Uganda

Please note that due to the short time horizon i.e. since inception in 2001, only 5 periods will be looked at for the Impulse responses and Variance decomposition.

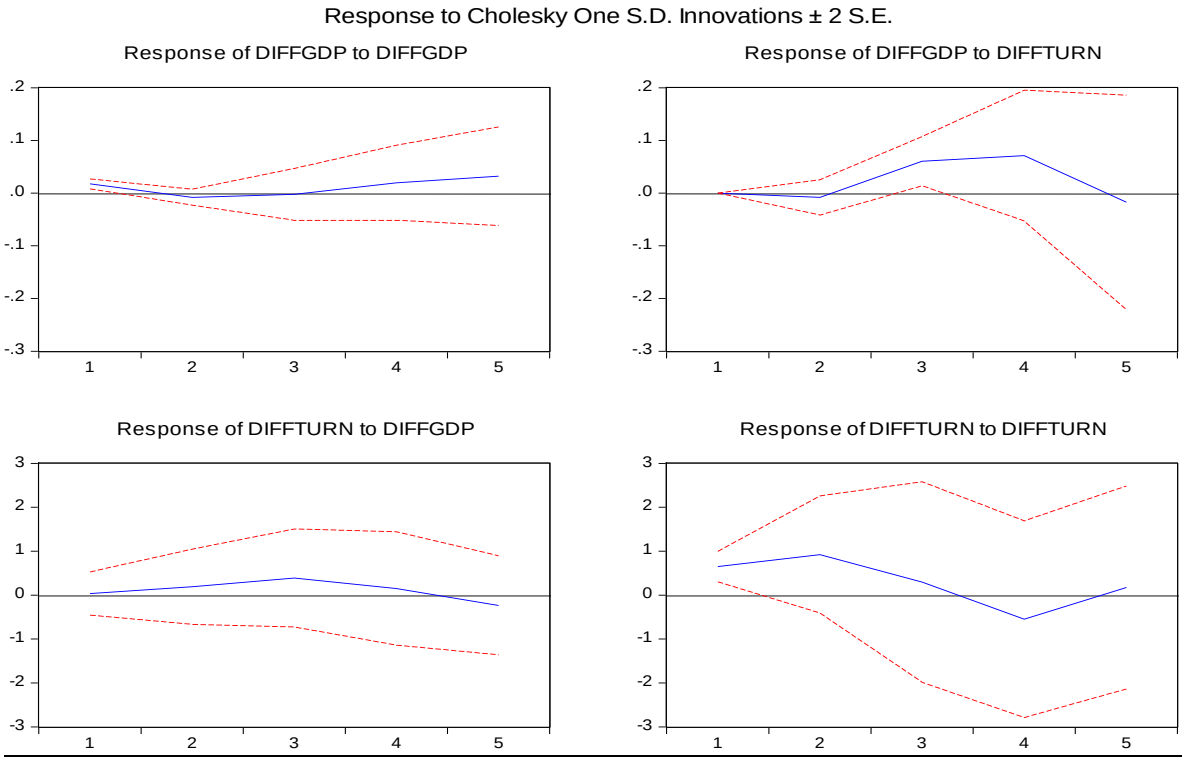
Figure 7.a) Impulse Response for Uganda



An unexpected event in the ability of banks to provide credit to the private sector would result in a negative reaction to GDP. The magnitude of the shock is small and quickly returns to stability at four and half years.

The diagram below show the relationship between turnover ratio and output. A shock to turnover initially has no effect on GDP per capita until two years after the shock. The magnitude of GDP's response is not large, but significant and would probably fluctuate after the 5 years.

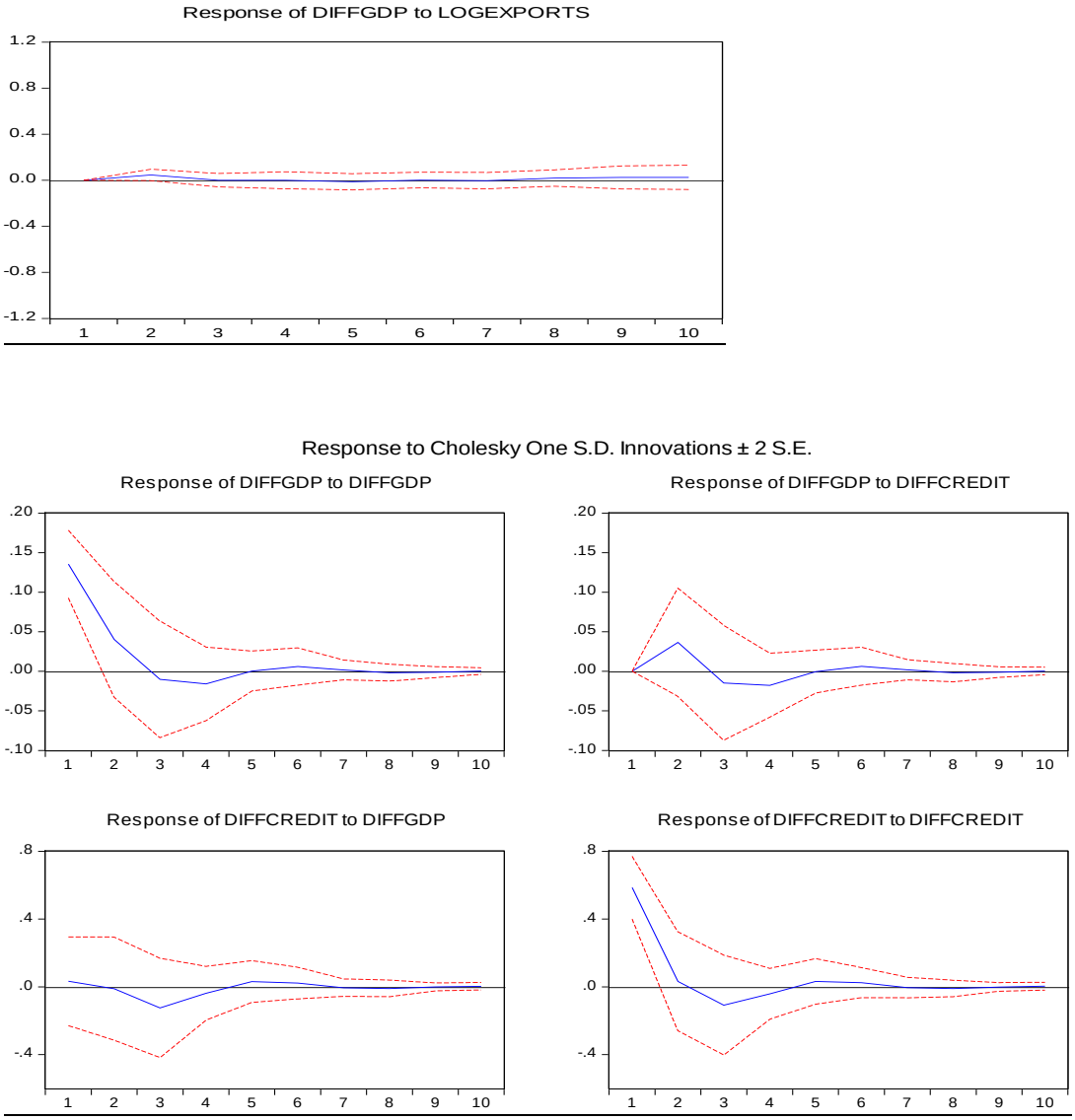
Figure 7. b): Impulse Response for Uganda



The variance decomposition results do not sure any significant relationship between variables and are therefore not shown here.

5.8.6 Swaziland

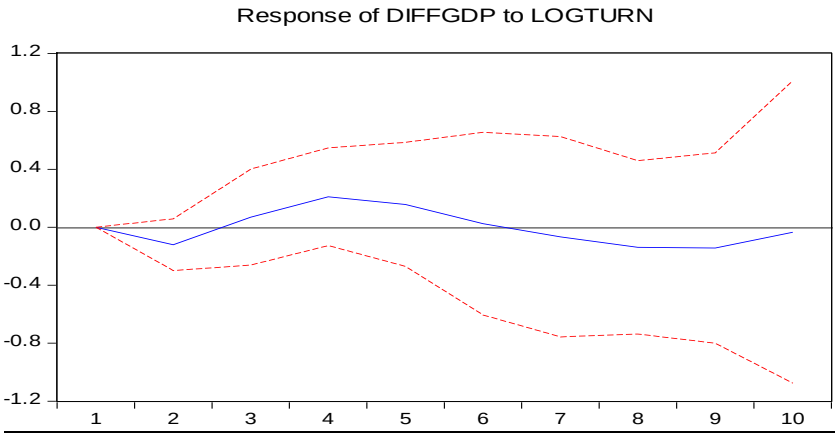
Figure 8: Impulse Response for Swaziland



The first above graph shows that credit provided by banks to the private sector is not at all affected by shocks in the Output of Swaziland.

GDP however, takes five years to stabilize after a shock to itself. Credit reacts in the same way when there is a shock to itself; an exponentially declining effect of the shock, following a jump when the shock took place. There seems to be a weak relationship credit and GDP, as a shock to either causes slight movements for 5 years before.

Figure 8 .b) Impulse Response for Swaziland



The only variables that seem to have some amount of correlation are GDP per capita and the turnover ratio. A reduction in the liquidity of the stock market creates an effect in GDP, but one that lasts over a long period of time.

Table 10: Variance Decomposition for Swaziland

Variance decomposition of GDP

Period	S.E.	GDP	EXPORTS	LABOUR	COMPANIES
1	0.141265	100.0000	0.000000	0.000000	0.000000
3	0.274483	56.08948	5.332321	**33.46832**	5.109879
5	0.482617	42.65974	**12.79762**	**39.90661**	4.636022
7	0.764220	42.80988	7.934781	**45.64210**	3.613246
10	1.223051	23.73122	**38.71780**	**31.19038**	6.360591

Variance Decomposition of EXPORTS:

Period	S.E.	GDP	EXPORTS	LABOUR	COMPANIES
1	0.188843	**78.63820**	21.36180	0.000000	0.000000
3	0.419588	39.74375	25.47516	32.06305	2.718041
5	0.878989	35.78462	16.50742	**43.33294**	4.375024
7	1.395334	39.08418	8.403135	**50.20455**	2.308129
10	2.513039	**16.58173**	52.67243	22.19349	8.552359

Variance Decomposition of LABOUR:

Period	S.E.	GDP	EXPORTS	LABOUR	COMPANIES
1	0.001692	20.89887	**19.10459**	59.99654	0.000000
3	0.003601	**45.11924**	6.406786	47.53192	0.942058
5	0.006150	**47.82034**	3.046327	47.35191	1.781431
7	0.008464	**43.19789**	5.057015	50.39873	1.346367
10	0.016120	18.33293	**51.82215**	20.52300	9.321915

Variance Decomposition of COMPANIES:

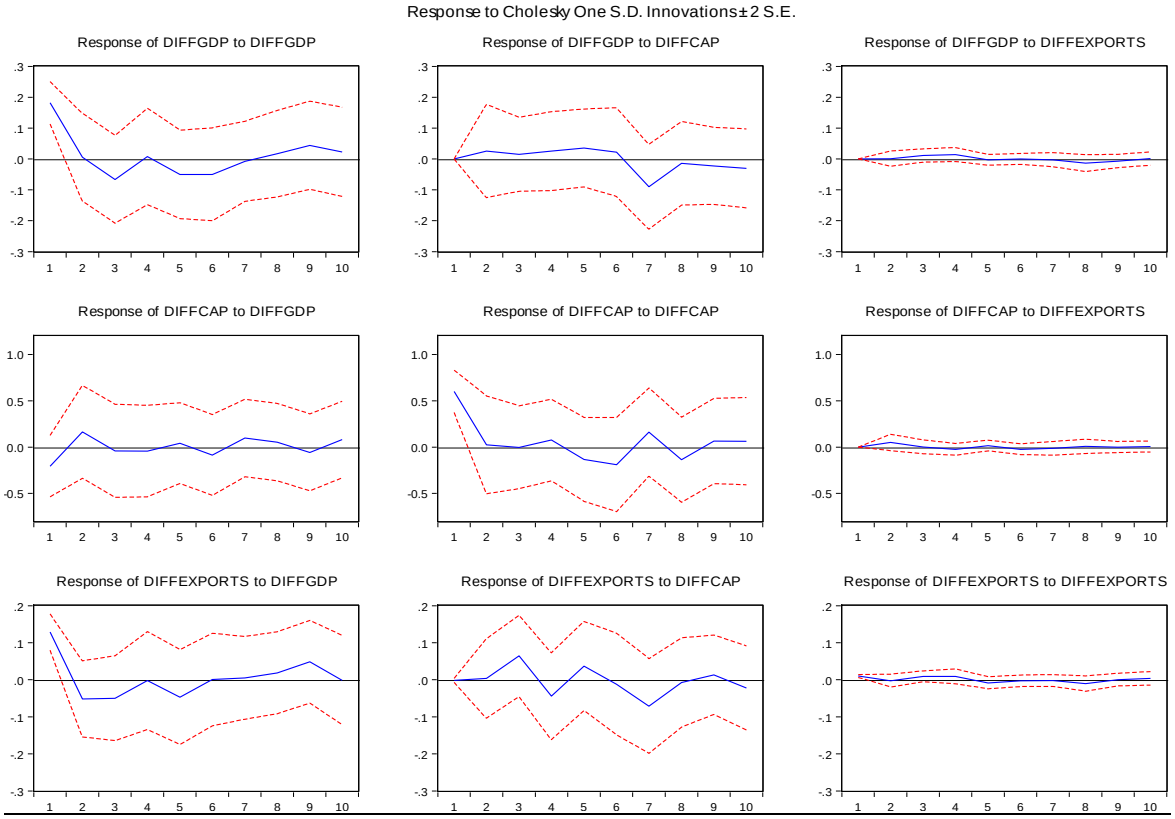
Period	S.E.	GDP	EXPORTS	LABOUR	COMPANIES
1	0.277594	12.66961	11.14768	0.630286	75.55242
3	0.348809	15.26808	11.50209	**14.86940**	58.36043
5	0.435876	24.35395	23.18747	11.52146	40.93712
7	0.624435	26.95189	20.96586	**28.26111**	23.82114
10	1.041352	34.26757	10.88414	**45.33021**	9.518080

Cholesky Ordering: GDP EXPORTS LABOUR COMPANIES

The variance decomposition table indicate that there are relationships between output and control variables as well as between latter and stock markets development indicators. Firstly, between Exports and GDP, followed by labour and exports, and some relationship between companies and labour- with 45% of the movement is labour caused by movements caused by shocks in companies. These are however not of relevance to meeting the objectives of the study.

5.3.7 Zambia

***Figure 8*: Impulse Response for Zambia**



Impulse Response

The graphs below show very interesting results. GDP does not respond to shocks in GDP, while exports, on the other hand, respond to GDP. The high fluctuations in exports in reaction market capitalization show a strong relationship between the two. Furthermore, exports are highly correlated to GDP as shown by the fluctuations that still exist ten years after the shock.

Table 11: Variance Decomposition for Zambia

Variance Decomposition of GDP:

Period	S.E.	GDP	TURN	CREDIT
1	0.155974	100.0000	0.000000	0.000000
3	0.230807	62.49308	**31.66955**	5.837368
5	0.411815	53.18538	36.22483	10.58978
7	0.965224	51.24166	37.11177	11.64657
10	3.883831	51.12020	**36.91303**	11.96677

Variance Decomposition of TURN:

Period	S.E.	GDP	TURN	CREDIT
1	2.289818	2.696368	97.30363	0.000000
3	5.011604	**42.82214**	45.17542	12.00243
5	12.57026	50.09571	37.29954	12.60474
7	31.92278	50.70661	37.16231	12.13108
10	130.2585	**51.10118**	36.90873	11.99009

Variance Decomposition of CREDIT:

Period	S.E.	GDP	TURN	CREDIT
1	0.322351	**17.44178**	**50.60893**	31.94929
3	0.937185	45.64494	41.14794	13.20712
5	2.431777	50.57910	37.40035	12.02056
7	6.241775	51.10808	36.87644	12.01548
10	25.53105	**51.10635**	**36.91522**	11.97843

Cholesky Ordering: GDP TURN CREDIT

The table above shows that there is a relationship stock turnover ratio and GDP. A shock in either is responsible for 31-51 % of movement in another. When there is an unexpected event in credit, 36% and 51% of variability is due to this for turnover and GDP, respectively 10 years after its occurrence.

5.4 Causality Tests

The table below shows the causality tests for all seven countries. The figures in bold are significant and therefore the null hypothesis is rejected. It can be noted that for Botswana, Ghana and Zambia, .all the p-values are insignificant and therefore none of the stock market/ banking development indicators Granger cause GDP, or vice versa.

Table 12: Results of Causality Tests

Results of Causality Tests P values							
TEST	Botswana	Ghana	Namibia	Tanzania	Uganda	Swaziland	Zambia
TURN does not Granger GDP	0.341	0.917	0.564	0.477	0.647	0.343	0.248
GDP does not Granger cause TURN	0.578	0.185	**0.074**	0.571	**0.08**	0.461	0.571
CAP does not Granger cause GDP	0.805	0.981	**0.049**	0.904	0.307	0.889	0.107
GDP does not Granger cause CAP	0.425	0.422	**0.078**	0.351	0.79	0.999	0.402
Companies does not Granger GDP	0.939	0.208	0.651	**0.083**	0.428	**0.015**	0.265
GDP does not Granger cause Companies	0.255	0.376	0.311	0.218	0.628	0.827	0.589
Credit does not Granger GDP	**0.017**	0.429	0.749	0.231	0.437	0.973	0.792
GDP does not Granger Credit	0.734	0.769	0.909	0.325	0.826	**0.048**	0.505

Chapter 6- Discussion of Findings and Policy Recommendations

This chapter summarises the results from chapter 4. It aims to answer the research questions in Chapter 1 by giving a thorough interpretation of the results. It concludes by giving recommendations on developing stock markets in Africa and related issues.

6.1 Summary of Results

6.1.1 Relationship between GDP and stock market indicators

The purpose of carrying out Impulse Responses and Variance Decomposition (VD) tests was to determine whether a relationship exists between GDP and stock market (SM) indicators. This addresses objective one in chapter 1 and research question no.1.

Please note for VD tests, variability is considered significant if it is over 25%.

Table 13: Responses to Shocks in GDP

Shocks applied to GDP or any of the SM indicators	**Country**
Significant Response of Cap	Namibia, Tanzania, Zambia
Significant Response of Turn	Botswana, Namibia, Tanzania, Uganda, Swaziland Zambia
Significant response of Companies	Botswana, Ghana, Namibia, Swaziland, Tanzania

The results above suggest that Turnover ratio has a relationship with GDP per capita for 6/7 countries in the sample. Market Capitalization has a relationship with GDP in 3/7 countries. Number of domestically listed companies has some relationship in 5/7 sample countries.

Only in Namibia do all the stock market indicators have a relationship with output. In Swaziland and Tanzania, two of the stock markets indicators have some amount of correlation with GDP per capita.

Turnover ratio is an indication that investors trade frequently; they want to grow their money. When the economy is booming, unemployment lowers, allowing civilians of a country to put away money as savings. With an increased access to the stock market, a higher than usual number of investors will trade in an attempt to maximise profits during a boom. This will in turn increase the liquidity in stock market. These results are contrary to what Adjasi and Biekpe (2006) found that turnover ratio does not have a significant impact on economic growth.

Turnover, as a measure of liquidity, influences output. Impulse responses do not, unfortunately show the direction of the relationship, and therefore other tests are carried out to determine the extent to which GDP growth was due to stock market indicators; Causality Tests.

6.1.2 Causality Tests

The table below summarises the results of the causality tests.

Table 14: Summary of Causality Tests.

Test	Null Hypothesis rejected
GDP granger causes TURN	Namibia* Uganda*
CAP granger causes GDP	Namibia**
GDP granger causes CAP	Namibia*
COMPANIES grangers cause GDP	Tanzania* Swaziland**
CREDIT granger causes GDP	Botswana **
GDP granger causes CREDIT	Swaziland*

Note: ***1%, ** 5%, * 10% significance level.

The second objective of this research (and 2nd research question) is to ascertain whether stock markets are responsible for economic growth in the seven Sub-Saharan African countries. From the above table, it can be seen that the development of these equity markets has not really 'caused' economic growth i.e. stock markets do not help in determining future values of output. Causality ran from

stock market development indicators to GDP per capita in five of the countries. Number of listed companies and turnover ratio are better predictors of stock market development than market capitalization as a percentage of GDP.

Causality runs from growth to stock market indicators only in Namibia; Output granger causes market capitalization and turnover ratio in Uganda as well.

Namibia's stock exchange was developed in 1992. As noted in Chapter 3 (page 18), Namibia showed an upward trend in GDP growth . As a percentage of GDP, market capitalization has also grown from 0.74% to 9.98% in the last two decades; growth that is noteworthy. Growth in market capitalization as a measure of size of the stock market, signals improved resource allocation. Alternative to credit, firms are now able to acquire less risky financing from the equity markets (Levine 2005; 1997). The ownership of shares and returns derived from them allows civilians of a country, Namibia, to increase their wealth and consumption, thus stimulating growth.

Uganda's stock market was developed in 1997. Its economic performance has been flat since then upto 2012. GDP having predictive power over turnover ratio shows that when the economy is in its expansionary phase, investors envisage that this will continue into the future and therefore develop greater confidence in that economy. For this reason, there will be more trading, as Yartney (2008) also found.

In Swaziland, number of domestic listed companies' granger causes GDP per capita. In turn GDP per capita granger causes credit provided to the private sector by banks. This result is rather interesting for Swaziland. Its stock market commenced operations in 1990, spanning over two decades of trading. Only one company was listed then and the number now stands at 5. The highest number of listings was seven in 1999 and 2008. From the results, it can be seen that when the state privatises or domestic companies decide to list in order to have access to additional equity, it enhances output. This growth possibly spurs from investments made by companies. Similarly GDP also granger causes credit provided to the private sector by banks. When the economy is booming, consumers and corporations are more likely to take on credit for consumption, long term assets and investments, respectively to meet the additional demand for goods and services. These results

however contrast with Cook and Uchida (2003), in which privatisation had a negative effect on growth in developing economies.

Furthermore, GDP granger causes credit in Swaziland. In this highly debated finance-growth nexus, this result speaks to the notion of 'finance follows growth.' These results disagree with Christopulos and Tsionas (2004) findings that financial development cause growth. When the economy is booming, individuals and firms net income is increased. Funds can be put aside for long term investments. This growth in savings allows financial intermediaries, such as banks to issue more credit to households and firms, hence the positive relationship.

Tanzania's stock market was developed in 1998, so just a decade and a half in operation. The number of companies has increased from 2 to 17 from 1998 to 2012. This proves the theory of Hearn and Piesse (2010) that a limited amount of state control has a positive impact on GDP. In this short space of time, other than privatisation of state controlled entities, other domestic firms seem to have grown large enough to list. Probably other institutional factors, as indicated in chapter 3, have made the stock market of Tanzania more attractive as an investment/financing vehicle.

In Botswana, turnover ratio granger causes GDP per capita. Liquidity of the stock market indicates some amount of investor's confidence as well as good organization, and possibly infrastructure. As Demirgűç-Kunt and Levine (1996) hypothesised; liquidity is imperative for economic growth, as it aids resource allocation.

The other two countries, namely Ghana and Zambia show no causal effects between stock market development or financial intermediary indicators (credit to private sector) to GDP growth. This is synonymous with Hassan, Sanchez and Jung –Suk Yu (2010) study that found that some long run relationship exists between the variables, but financial markets are not developed enough in these countries to have a causal effect.

6.1.3 Correlations between other macro- economic variables and stock market indicators

The table below is a summary of Table 1 in the Appendix

Table 15: Summary of other relationships between variables

Relationship	Countries	Total Number
Labour and Turnover	Ghana and Tanzania	**2**
Labour & Market Capitalization	Ghana	**1**
Labour and Companies	Swaziland	**1**
Credit and Turnover	Zambia	**1**
Credit and Companies	Ghana	**1**
Exports and Turnover	Tanzania	**1**
Exports and Market Capitalization	Zambia	**1**
Exports & GDP	Botswana, Swaziland, Zambia	**3**
Credit &GDP	Botswana, Ghana, Tanzania, Uganda, Swaziland, Uganda, Zambia	**6**
Labour & GDP	Ghana, Namibia	**2**

IR and VD are crucial in trying to determine whether the other variables in the real economy are in anyway correlated with stock market indicators; to suggest that the former is necessary for the growth of the latter. This last part of the chapter addresses objective three and research questions: To what extent does the real economy play a role in boosting the stock markets of the seven states?

- *Correlation between Labour Force Participation and other stock market development indicators.*

In Ghana, Tanzania, and Swaziland labour force participation is correlated with the three stock market indicators: Turnover, Market Capitalisation and number of local listed companies. Labour force participation as mentioned earlier is a measure of employment, the higher the labour participation ratio, the lower the

unemployment rate. Labour participation gives an indication of the number of people that have an income; an income to purchase goods and services, but most importantly to save, and re-direct their saving towards the stock market as an alternative to bank accounts.,

For Ghana, Swaziland and Tanzania, labour force participation (LFP) has had a positive relationship on the growth of stock markets and subsequently GDP growth in Ghana, as shown in the last column of Table 15. This is similar to what Odedokun (1994) and Nazir *et al.* (2010) found.

- *Correlation between credit provided to the private sector by banks and stock market indicators.*

Credit provided by banks measures the role of financial intermediaries in providing long term financing. In Zambia and Ghana banks have had a positive relationship on the stock market. This positive impact spilled over to output in all three countries. . A plausible explanation for this is provided by Naceur *et al*. (2007), that financial intermediaries help stock markets grown in that credit provided to the private sector helps firms expand, why may lead to listing in the long term. From an institutional perspective, if banks are providing a lot of credit, it is an indication of good functionality, corporate governance and perhaps prudential supervision. This creates a good image for the country and consequently attracting international investors, ultimately leading to more trading on the exchange as well as more investors companies listing.

This is also in agreement to what Adjasi and Biekpe (2006) and Demirgűc-Kunt and Levine (1995) findings, that banks and other financial institutions play a vital role in the boosting an economy. The proposition introduced by Patrick (1966) and later confirmed by El-Wassal (2005), that finance leads in the early stages of growth, and reverse happens later maybe true. The development of banks in these four countries has benefited their economy.

- *Correlation between stock markets development indicators and exports of goods and services*

In Tanzania and Zambia, exports are correlated to turnover ratio and market capitalization, respectively. The other 5 countries do not indicate a relationship. The rationale behind this relationship is that when export manufacturing does well, the effect is transmitted to the stock market. These companies are likely to list so as to expand their businesses. This inturn promotes the amount of trading activity at the bourse. Additionally, the more companies list, the higher the market capitalization. This relationship is important because it highlights the importance of the real sector in the development of stock markets, as Kagoshi *et al. (2013)* earlier highlighted. 'The expansion of real economic activities creates a demand for financial services.'

- Correlation between credit provided by banks and GDP per Capita

Even though this relationship does not address the objectives of the study, it is worth noting that in six out of seven countries, credit had an impact on output. From what has been discussed in the literature, banks play a major role in resource allocation. The credit provided is used for expansion of businesses, which in turn produce more good and services for consumption (Levine 2007).

Exports, as expected, boost output. Only in Zambia do they enhance stock market development and exports. Based on the above findings, the researcher will now make some recommendations.

6.2 Policy Recommendations

One of the aims of the study was to investigate what other factors needed to be in place in order for stock markets to thrive in small Sub-Saharan African economies. It was found that the exports, labour force participation and credit provided by banks play a role. African economies are therefore advised to focus on growing their export market and improving unemployment rates by promoting entrepreneurship.

In 6 out of the 7 seven countries, credit provided by banks is correlated with GDP. For other countries that wish to develop bourses, their main objective should first be extending credit to the private sector and improving the effeciency of banks in their economies. Due to the weak relationship between stock markets and credit provided by banks, it is advised that African markets first develop their banking sector before developing bourses in order to fast track GDP growth.

Privatisation, as partially measured by number domestic of companies, was seen to have had a significant relationship to GDP in five out of the seven countries. African governments must consider privatising state owned enterprises as well as encouraging large corporation to list, so as to improve resource allocation. This in the long term will attract foreign investors, which will inturn boost the economy.

Hassan *et al.* (2011) as discussed in Chapter 2, highlight the importance of trade in frontier and emerging markets. Apart from finance, the real economy creates value and sustainable growth. The four other frontier markets are therefore advised to exploit the resources at hand and create manufacturing for exporting of goods. This will in turn boost their stock market.

Stock market performance has predictive power over GDP per capita in Namibia. Labour is also correlated to GDP in the country but not stock market development indicators. This raises some speculation on what Namibia could be doing differently to the other African States.

6.3 Recommendations for Further Research

The short time horizon since inception, for some of the bourses, presented a challenge in the study. A similar research can be carried out 5-10 years from now, time when more data is available on these stock markets.[9] African bourses are also strongly encouraged to keep record of the banking and stock market indicators, in addition to other macro- economic measures. This will be of great value for research & development, as well as policy making.

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[9] ***Notes on Limitation:**

i) The inherent weakness of the VAR causes a few analysis problems and limitations. The ordering of the variables is very important for impulse response and variance decomposition. A different ordering could result in different results. The Cholensky ordering results in the firstly ordered variables 'soaking up' a lot of explanatory power (Becketti 2013). in To counteract this problem, the author always used GDP/ per capita as the first variable in all the tests. Reason being that it is the dependent variable, the effects of other variables on the latter is the objective of the research.

ii) Missing data: For some countries, data was missing for the years, so interpolation and extrapolation had to be done in order to fill the gaps. This could have possibly influenced results and analysis.

Chapter 7: Conclusion

From the works of Shumpter (1912), Patrick (1966) and McKinnon (1973), the finance-growth link is one that has been debated over many centuries and will continue to stimulate research into the area in the future.

Africa is viewed as the next investment destination, and its financial markets must be developed accordingly. This study follows the impact of stock market development on economic growth in 7 Sub-Saharan states from the period 1989 to 2012.

i) There is a relationship between stock markets and economic growth in Africa. Liquidity and privatisation have greater positive impact on GDP than the size of the stock market.

ii) The low causality results indicate that stock markets in Africa do not help predict future output in the respective economies, except in Namibia. It can also be said that that number of locally listed companies help predict future economic performance in 2/7 countries, while market capitalization and turnover ratio can only do this only 1/7 countries each. In Namibia there is mutual causality from GDP to stock market indicators.

iii) Credit, in the same light positively influences GDP in six out of the seven countries. These relationship is causal in only 1/7 countries but does highlight the important role that banks play in enhancing output. Labour and credit provided by banks impact both the stock market and GDP, indicating the importance of employment and role of banks in economic growth.

It is therefore advisable for Africa's economies to sort out the risks, the corporate governance, perceptions and political instability in order to fully benefit from their stocks exchanges. Other Africa's frontier economies should rather work on developing their financial systems first before developing stock markets as well as job creation through entrepreneurship.

8. References

Adjasi, C. K. & Biekpe, N. B., 2006. *Stock Market Development and Economic Growth: The case of selected African Countries.* Durban, Blackwell Publishing.

Al-Yousif, K. Y., 2002. Finacial development and economic growth: another look at evidence from developing countries. *Review of financial economics ,* 11, 131-150.

Andrianaivo, M. & Yartey, C., 2010. Understanding the growth of African financial markets. *African Development review,* 22, 394-418.

Anon., 2013. *World Economic Outlook,* Washington DC: International Monetory Fund.

Anon., 2013. *www.dataworldbank.org.* [Online]
Available at: www.data worldbank.org/data-catalog/world-development-indicators
[Accessed 1 July 2013].

Arestis, P. & Demetriades, P., 1997. Financial Development and Economic Growth: Assessing the Evidence. *The Economic Journal,* May, 107, 783-799.

Beck, T., Demirguc-Kunt, A. & Levine, R., 2010. Financial Insitutions and Markets across countries and over time: the updated financial development and structure database. *World Bank Economic Review ,* January, 24(1), 77-92.

Broadman, H. G., 2008. China and India Go to Africa: New deals in the Developing World. *Foreign affairs,* 87(2), 95-109.

Brooks, C., 2008. *Introductory Econometrics for Finance.* 2nd ed. New York: Cambridge University Press.

Bruner, R. F. et al., 2002. Intoduction to 'Valuation in emerging markets'. *Emerging Markets Review ,* 3(4), 310-324.

Chen, N.-F., Roll, R. & Ross, S. A., 1986. Economic Forces and the Stock Market. *The Journal of Business,* Jul, 59(3), 383-403.

Choong, C.-K., Baharumshah, A. Z., Yusop, Z. & Habibullah, M. S., 2010. Private Capital flows, stock market and economic growth in developed and developing coutries: acomparitive Analysis. *Japan and the world economy,* (22), 107-117.

Christopolous, D. & Tsionas, E., 2004. Financial development and economic growth:evidence from panel unit root and cointegration tests. *Journal of Development Economics ,* (73), 55-74.

Cook, P. & Uchida, Y., 2003. Privatisation and economic growth in developing countries. *The Journal of Development ,* 39(6), 121-154 .

Demetriades, O. P. & Hussein, K. A., 1996. Does financial development cause economic growth. *Journal of Development Economics ,* 51(2), 387-411.

Demetriades, P. & Hussein, K. A., 1996. Does financial development cause economic growth? Time series from 16 countries. *The Economic Journal,* 51(2), 387-411.

Demirguc-Kunt, A. & Maksimovic, V., 1999. Stock market development and financing choices. *The World Bank Economic Review,* 10(2), 341-369.

Dermirguc-Kunt, A. & Levive, R., 1996. Stock market development and financial intermediaries: stylized Facts. *The world bank economic review ,* 10(2), 291-321.

El-Wassal, K. A., 2005. Stock market growth: An analysis of cointegration and causality. *Econmic Issues,* 10(1).

Enisan, A. A. & Olufisayo, A. O., 2009. Stock market development and economic growth: Evidence from seven sub-Sahara Afrian countries. *Journal of Economics and Business,* Issue 61, 162-171.

Estrada, J., 2002. Systematic Risk in emerging markets: the D-CAPM. *Emerging Markets Review,* 3, 365-379.

Ghauri, P. & Gronhaug, K., 2010. *Research Methods in Business Studies.* 4th ed. London: Pearson.

Ghirmay, T., 2004. *Financial developemnt and economic growth in sub-Saharan African countries: evidence from time series analysis,* Malden: Blackwell Publishing .

Gujarati, D. N., 1992. *Basic Econometrics.* 3rd ed. New York: McGraw Hill.

Haan, J., Oosterloo, S. & Schoenmaker, D., 2012. *Financial Markets and Institutions.* 2nd ed. New York City: Cambridge University Press.

Hassan, K. M., Sanchez, B. & Jung-Suk, Y., 2011. Financial development and economic growth: new evidence from panel data. *The Quartely Review of Economics & Finance,* (51), 88-104.

Hearn, B. & Piesse, J., 2010. Barriers to he development of small stock markets: A case of Swaziland and Mozambique. *Journal of International Development,* 22, 1018-1037.

Jefferis, K. & Smith, G., 2005. The changing efficiency of african stock Markets. *South African Journal of Economics,* 73(1).

Kablan, S., 2009. Banking effeciency and financial development in sub-saharan Africa SSA. *African Finance Journal ,* 11, 28-50.

Kagoshi, J. M., Al Nasser, O. M. & Kebede, E., 2013. Does financial development hold the key to economic growth? The case of economic growth. *The Journal of Developing Areas,* 47(2), 61-79.

Kenny, C. J. & Moss, T. J., 1998. Stocks Markets in Africa: Emerging Lions or White Elephants?. *World Development,* 26(5), 829-843.

Kim, H. E. & Singal, V., 2000. Stock Market Openings: Experience of Emerging Economies. *Journal of Business,* 73(1), 25-66.

King, R. G. & Levine, R., 1993. Finance and Growth: Schumpeter might be right. *The Quaterely Journal of Economics.*

Laderkarl, J. & Zervos, S., 2004. Housekeeping and Plumbing: the investibility of emerging markets. *Emerging Markets Review,* (5), 267-294.

Levine, R., 1997. Financial development and economic growth: views and agenda. *Journal of Economic Literature,* 35(2), 688-726.

Levine, R., 2005. Finance and growth: theory and evidence. In: *Handbook of economic growth.* Providence: Elsevier, p. chapter 12.

Levine, R. & Zervos, S., 1998. Stock markets, banks and economic growth. *American Economic Review,* 88(3), 537-558.

Lungu, E. O., 2013. Connections between frontier markets. *The Romanian Economic Journal ,* (48).

McKinnon, R. I., 1973. *Money and Capital in Economic Development.* 1st ed. Washington: Brookings Institution Press.

Miller, M., 1998 . Financial Markets & Economic Growth. *Journal of Applied Corporate Finance ,* 11(3).

Naceur, S. B., Ghazouani, S. & Omran, M., 2007. The determinants of stock market development in the Middle East and North Africa region. *Managerial Finance,* 33, 477-489.

Nazir, M. S., Nawaz, M. M. & Gilani, U. J., 2010. Relationship between economic growth and stock market development. *African Journal of Business Management ,* November, 4(16), 3473-3479.

Nellor, D. C., 2008. The Rise of Africa's Frontier Markets. *Finance and Development,* September.

Ntim, C. G., 2012. Why Afircan markets should formally hamornise and intergrate thier operations. *African Review of Economic and Finance,* 4(1).

Odedokun, M., 1996. Alternative econometric approaches for analysing the role of ther financial sector in growth: Time-series evidence from LDCs. *Journal of Development,* 50, 119-146.

Pagano, M., 1993. Financial markets and growth: An overview. *European Economic Review ,* 37, 613-622.

Perotti, E. C. & Oijen, P. v., 2001. Privatization, political risk and stock market development in emerging economies. *Journal if International Money and Finance ,* (20), pp. 43-69.

Polansky, N. A., 1975. *Social Work Research.* Chicago: University of Chicago Press.

Robinson, J., 1952. The model of an expanding economy. *The Economic Journal ,* 62(245), 42-53.

Shin, H. S., 2009. Securitisation and financial stability. *The Economic Journal,* 119, 309.

Singh, A., 1997. Financial Liberalisation, Stock Markets and Economic Development. *The Economic Journal,* May, 107(442), pp. 771-782.

Singh, A., 1997. Financial liberalization, stock markets & economic development. *The Economic Journal,* 107, 771-782.

Singh, A., 1999. Should Africa prmote stock market capitalism. *Journal of International Development,* 11, 343-365.

Stiglitz, J. E., 2000. Capital markets liberalization, economic growth and instability. *World Development,* 28(6), 1075-1086.

Wurgler, J., 2000. Financial markets and the allocation of capital. *Journal oif Financial Economics,* 58(1-2), 187-214.

Yartey, C. A., 2008. *The Determnants of Stock Market Development Emerging Economies: Is South Africa.* 1st ed. Washington: International Monetory Fund .

Yartey, C. A. & Adjasi, C. K., 2007. *Stock Market Develpment in Sub Saharan African: Critical Issues and and Challenges,* Washington : International Monetory Fund .

Appendix: Table A

Other economics variables and stock market development indicators								
RELATIONSHIPS	Botswana	Ghana	Namibia	Tanzania	Uganda	Swaziland	Zambia	Total Number of Countries with this relationship
Labour and Turnover		1		1				2
Labour and Market Cap		1						1
Labour and Companies						1		1
Credit and Turnover							1	1
Credit and Market Cap								
Credit and Companies		1						1
Exports and Turnover				1				1
Exports and Market Cap							1	1
Exports and Companies								
Exports and GDP	1					1	1	3
Credit and GDP	1	1		1	1	1	1	6
Labour and GDP		1	1					2