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Capital Market-Growth Nexus in Selected SSA Countries: A Panel and Time

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Abstract

In the past two decades, there has been an increasing interest in the finance-growth nexus and a strengthening in the argument that developed capital markets have a positive impact on real economic activity. Sub-Saharan African (SSA) countries, once characterized by an almost inexistent financial sector, have since the early 1990s undergone substantial financial sector reforms in order to facilitate the establishment of capital markets. The question that arises is: does capital markets' establishment spur economic growth? This paper investigates the impact of financial development in general and capital markets in particular, on the economic growth and development of

selected SSA countries (1060-2009). The empirical analysis was first conducted using a macro econometric model that aims to assess the relationship between financial development variables and economic growth. Different fixed-effect regression techniques were adopted and the results confirm the main hypothesis: financial development and economic growth are significantly and positively correlated. The second part of the empirical analysis involved a time series investigation of the effect of capital markets on economic growth. A major outcome of the analysis is that in South Africa and Nigeria, capital markets development indeed spurs economic growth. The results confirm that stock market development spurs economic growth in SSA and stress the need to develop the capital markets through appropriate regulatory and macroeconomic policies.

INTRODUCTION

1.1 Background

Despite a heavy inflow of several types of aid—institutional, private and humanitarian—, Sub-Saharan Africa (SSA) remains the poorest region in the world (See

Appendix 1 and 2). Populations live in dire poverty and in 2005, about 51 percent of the SSA population lived with $1.25 or under per day (WorldBank Povcalnet). At this rate, Africa is not on track to meet the Millennium Development Goal target of cutting the rate of extreme poverty—benchmarked at $1.25 a day— in half by 2015 (UN, 2010). This poverty statistic was the highest regional percentage globally, followed by South Asia, with 40% of its population living under $1.25 a day. As part of their development strategies, several SSA countries underwent cycles of privatizations of the publicly owned companies and a restructuring of the financial system. Since the early 1990s, there have been successions of capital market implementations, following instructions of international financial institutions such as the International Monetary Fund (IMF).

The 21st century is now witnessing a surge in the African economies and the *Economist magazine* describes the continent as being one of the "world's fastest growing region in 2011 (…) Over the past decade sub-Saharan Africa's real GDP growth rate jumped to an annual average of 5.7%, up from only 2.4% over the previous two decades" (The Economist). This increase in the rate of growth of the economy has been attractive to foreign investors who are looking more and more into emerging markets. This situation was exacerbated by the financial crisis that severely affected the US and European markets that have yet to recover. Although there are still some improvements that need to be made to strengthen the economies, mainly investment in infrastructures,

there is no doubt that Africa is at the forefront of technological progress and economic growth.[1]

In that respect, from the early 1990s, African countries have experienced several waves of privatization and market liberalization. The governments sold most of their stakes of public companies in order to spur the growth of the private sector. Such drastic changes towards a more productive private sector were contingent on the development of capital markets in order to facilitate the privatization of government owned companies. However, what was once a requirement by international institutions is now becoming a wide spread phenomenon with the number of stock exchanges on the African continent increasing from 9 stock exchanges 1990 to 22 in 2010.

Capital markets are considered an indicator for foreigners to evaluate a country's entire economy. They hence hold a vital role in providing information on a country's stage of development, welfare distribution, and savings and investment pattern's among others. Accurate information upon a country could bring about a stronger interest in investment, which will then contribute positively to the growth of the country.

[1] Based on neoclassical growth models that suggest that long term growth occurs through comes technological progress

Scholars have extensively researched the finance and growth nexus, looking at the impact of financial development on economic growth. The term financial development refers to the development of the entire financial sector and has for main component the banking sector and financial markets. The question is to what extent financial development and economic growth are related and what the direction of the causality is. In theory, economic growth stems from an increase in the productivity of an economy achieved through improved institutions and infrastructures such as the education system, roads, power etc. In order to have the funds necessary for investments in infrastructure and institutions, an economy needs to increase its rate of capital formation. Capital formation necessitates a system in which funds can be transferred from those with excess funds to those in need of capital.

Capital markets constitute an attractive marketplace where lenders and savers can transfer in which lenders meet savers channel. Indeed, capital markets allow for easy transfer of the funds by providing investors with liquid investments to diversify their portfolio. A resulting premium of this diversification is a reduction in the investment risk that investors bear. Given that in theory, investors can easily substitute one holding with another, the investment risk is transferred from risk-averse to risk prone-investors. By generating liquidity, and facilitating transfers of funds, efficient capital markets enable capital formation, a condition for economic growth.

This present study will attempt to qualitatively and quantitatively look closely into this debate to first see whether financial development in general and capital markets in particular have an impact on economic growth in SSA countries. We will test our findings by looking into South African and Nigeria as case studies.

Strong advocates of capital markets do not fail to mention a set of policies and institutional conditions that must be concurrent with capital markets implementation. Following our qualitative and quantitative analysis, we will then review the literature to see what type of policies and economic structure SSA governments should implement to spur economic growth.

1.2 Subject overview

Many of the 53 African countries rely heavily on the banking sector to raise funds for investment. However, as witnessed by the poor infrastructure and the clear lack of funds in many economies, the banking sector has not succeeded in linking savings to investment. In most African countries, the banking sector is highly concentrated, which does not facilitate market competition and enforce proper market driven price mechanism. For instance, even a country such as South Africa, with a relatively more diverse financial sector, has a concentration ratio of 81% (Beck 2000). There also has been a high spread between the lending and deposit rates, which results in a high cost of capital for the private sector (see Appendix 3 and 4). Interest rate spread is a measure

of the cost of capital and large spreads are synonymous to high cost of credit in African countries. The reasons for such large spreads are mainly due to high credit risk from the small size of the market. According to a study sponsored by the OECD[2], "African economies are caught in a vicious circle where low incomes and difficulties accessing credit hinder growth, thereby lowering household savings which, in turn, depresses investment and domestic resource mobilization"(9).

Another consequence is the excess of liquidity due to a lack of ideal investment environments and low average return projects. Domestic investment is very low since banks do not necessarily give credit access to small and medium enterprises, which make up the real sector of most African countries. In some cases, like in Botswana and Namibia, "more of the private sector credit is increasingly being granted to households to finance consumption instead of businesses for productive investments" (qtd. in Aziakpono 2005 11)[3]. Private borrowers and even governments turn to private Foreign Direct Investment (FDI) and financial institutions, such as the IMF and the World Bank, to raise funds for financing needs. This, however, works to the disadvantage of African economies, as debt-servicing cost is high and foreign aid forces government to be highly dependent with no attempt at self-sufficiency. In 2008, total debt-servicing cost was on average 225% of GNI in Sub- Saharan Africa (SSA) compared to 130% for Latin America

[2] The Organization for Economic Cooperation and Development

[3] For a more in depth analysis see Genesis Analytics (2003) Access to Financial Services in Botswana, FinMark Trust Research Paper No. 1, 2 , 3 and 4

and the Caribbean (World Dev. Indicators 2010). As suggested by Dambisa Moyo in her book *Dead Aid*, a solution for Africa is to rely on market-based schemes, private capital markets and financing means such as bond issues, foreign investment, etc. An effective primary market is an ideal platform for companies to issue securities in order to raise cash for financing.

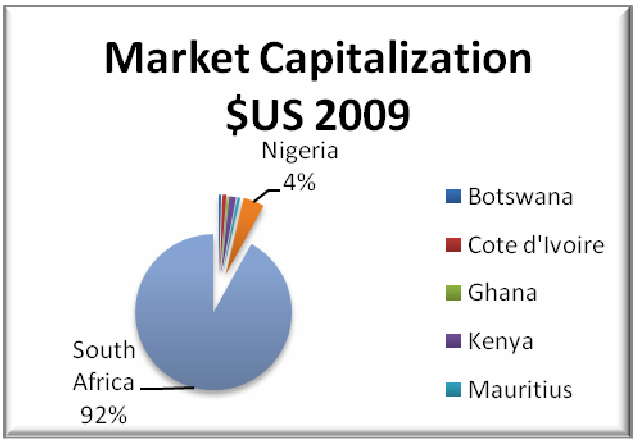
The capital markets are mainly divided into two distinct markets. The market where debt instruments are traded is the debt market, and the market where stocks and other equity instruments are traded is the equity markets. Capital markets also consist of primary and secondary markets. The primary market is the platform where newly issued securities are sold while secondary markets deals trades previously issued securities. Previously issued securities are traded in the secondary markets. Therefore, transactions in the secondary market constitute an exchange of holder for existing assets. Most of the liquidity of the capital markets is provided through the secondary markets. They are the platform where investors can acquire or relinquish their holdings for cash according to their investment preferences. Secondary markets, through frequent trading of assets, also provide information to investors and issuers on the performance of financial securities traded. The absence of such information results in an asymmetric information problem whereby issuers and market insiders hold information that investors need for adequate investment decision. Hence, liquidity of

the secondary market is essential for an efficient functioning of the capital markets and reduces the asymmetric information problem by providing investors more information on the functioning of local companies. Illiquid secondary markets render investors reluctant to make use of such platforms. Through this, one can understand that an illiquid secondary market can severely impede on the functioning of capital markets and not allow for the capital accumulation necessary for economic growth. Thus in SSA, the establishment of liquid capital markets, would indeed spur economic growth.

Although the issue studied applied to the entire continent, the large number of countries and the diversity between them does not allow for easy comparison. In this study, we will first attempt to see whether or not the development of the financial sector has a positive impact on economic growth. Then we will look at the impact of capital markets specifically on the economic growth of SSA countries looking first at selected SSA countries and then focusing on two countries, South Africa and Nigeria as case study countries. To better explain our choice of these two countries, we need to better understand the economic geography of the African continent. If we take a look at the continent, in term of capital markets, we must rule out North Africa from our study (Egypt, Libra, Marocco). This is because these financial markets are part of the MENA (Middle East North African) capital markets group. Most of their trading is intra-regional, or with the global markets and they are of dimensions not necessarily comparable to SSA markets.

"According to Standards & Poor's, an equity market is characterized as emerging if it meets at least two of the following criteria: being a low-, lower-middle-, or upper-middle-income economy as defined by the World Bank for at least three consecutive years and having a low investable ratio of market capitalization to gross domestic product (GDP) relative to other emerging markets"(Lagoarde-Segot 2). SSA capital markets are classified, within this broader emerging markets group, as frontier markets–with the exception of South Africa considered an emerging market.

There are 22 recognized stock exchanges in Africa, however, most of the exchanges in SSA are very shallow with little trade flow and small numbers of listed stocks. The BRVM (West African Francophone stock exchange) lists about 39 securities for 8 countries, when the EGX (Egyptian Stock Exchange) lists about 232 securities. South Africa is an SSA country that distinguishes itself by its strong economic performance. It also has a very well-established capital market and is considered to have the most advanced capital market structure in SSA.



Source: *World Development Indicators 2011* and author's own computations

Following the

apartheid period, South Africa has experienced a phenomenal improvement in its financial and economic policies. It is the SSA country with the most macroeconomic stability. The government that came into power after the 1994 first interracial elections, adopted prudent policies, avoided excessive fiscal spending and worked towards reducing the Debt to GDP ratio and spur economic growth. This led to a stable landscape for capital markets implementation. The Johannesburg Stock Exchange (JSE) was created in 1887; a period where South Africa was still under apartheid, to provide companies with financing means for expansion, mainly in the mining sector. Until 1994, the date when it underwent major reforms, the "JSE suffered from illiquidity, lack of accurate information, fairly high transaction costs as well as inefficiency of price information" (qtd. in Mkhize & Mswell-Mbanga,2) [4].

The JSE plays a key role in the commercial and economic development of South Africa. It is a strong driver of the South African economy and the companies listed on the JSE represent a sizeable part of South Africa's economic activity. Companies across the range of industry and commerce meet to raise the public capital needed to expand their businesses and n doing so, they create new jobs, products, services, wealth and economic opportunities (Mkhize & Mswell-Mbanga 2). It currently has about 400 companies listed with a market capitalization of R6,633.6 billion as of March 25, 2011, the strongest performance in SSA (World Dev. Indicators 2011). According to a press

[4] For more in depth information see Financial Mail survey, 1992: 4

release by the African Capital Markets news, in 2010, JSE revenues increased 9% year-over-year to R1, 255 million in 2010 (2009: R1, 156 million) despite a challenging environment.

As for Nigeria, it is the most populated country in Africa and its large population is often considered as one of its main resources. Its economy also relies on the oil and agriculture industries. Following a dictatorial military regime, strong fiscal policies were implemented to reduce the external debt to GDP ratio and a Fiscal Responsibility Act was voted to improve the federal states finances in November 2007. There has also been a very strict banking sector restructuration "initiated to enhance competition, reduce distortion in investment decisions and evolve a sound and more efficient financial system". (CBN, 2006)

The Nigerian Stock Exchange (NSE), first known as the Lagos stock exchange, was established in 1962 with 19 securities listed. Most of the companies listed on the exchange have foreign or multinational affiliations. They represent a cross-section the economy, ranging from agriculture through manufacturing to services but exclude the Oil sector companies. Both South Africa and Nigeria, as described above, have the strongest performing capital markets in Africa. South Africa is ranked first in the region, followed by Nigeria. This is the rationale for focusing on these two countries in our study.

1.3 Thesis statement

From the end of the colonial period until the late 1980s, the financial markets were mainly a state affair in many of the African countries. Most companies were either owned by the government or subsidiaries of foreign companies. However, due to the poor performance of many of these companies and the negative economic growth of African countries in their majority, international institutions such as the World Bank and the IMF have been advocating for the increasing involvement of the private sector in African countries.

Since the early 1990s, "donors, governments and development practitioners have exhibited changing attitudes towards the role of the private sector in the development of African economies and acknowledged the need to facilitate private sector development." (qtd. in Wambui Kibuthu, 3)[5]

Following the promotion of growth led by the private sector, there have been increasing reforms among SSA countries in order to implement policies towards fostering private sector development. In several SSA countries, the actions undertook consisted in

[5] See Peter G. Rwelamira, "The Critical Role of the African Stock Exchanges in Mobilizing Capital for African Private Enterprises." (Nairobi: 1993)

implementing capital markets that would better channel savings, compared to a rather inefficient banking sector.

The purpose of our study would be to see if the establishment of capital markets a right tool for finance-led growth in SSA. We will do so by:

- First assessing whether or not financial development and economic growth are strongly correlated in SSA.
- Second, we want to look at the impact that capital markets specifically have on economic growth and the goal is to see whether there is a positive correlation between capital markets and economic growth in SSA.
- Finally, we will conduct case studies to see whether the strongest performers in the South African and Nigerian capital markets are the within industries that greatly contribute to the economic growth of the country.

Throughout this study, the main hypothesis will be that capital market activity, measured by market capitalization, market value of traded securities and turnover ratio, is positively correlated with the real GDP of a country.

1.4 Limitations of Research

It is worth noting at this point that there are several limitations to this research. First, although it has been researched and argued that capital markets have a link with economic growth, the direction of the causality is not completely certain. Friedman and Schwartz (1963) argued that an increase in financial development comes about an increase in the M2/GDP[6], which is the inverse of the money velocity measure. Hence if we see a positive correlation between financial development and economic real GDP (growth), it could come from a decrease in the velocity of money, which shows an increase in the elasticity of money demand. Hence the causality will go from the GDP to financial development through money demand.

Along similar lines, according to some scholars, it is a growth in the real sectors of the economy that creates an increasing need for financing through the financial sector (Gurley & Shaw 258). In his paper, Robinson (1952) says it is economic activities that lead financial intermediaries to finance enterprises. Thus it is sometime believed that "where enterprises lead, finance follows"(86). Analyzing a study by Greenwood and Jovanovic (2003) who also looked at the dynamic of the interactions between finance and economic growth, Levine states:

> *"Financial intermediaries produce better information, improve resource allocation, and foster growth. There is a cost to joining financial intermediaries, however. Growth means*

[6] This variable captures the degree of monetization in the financial system. The ratio GDP/M2 determines the velocity of money in a given economy.

> *that more individuals can afford to join financial intermediaries, which improves the ability of financial intermediaries to produce better information with positive ramifications on growth" (Finance and Growth 8).*

Greenwood and Jovanovic's study concluded that there is a two- way interaction between finance and growth.

Patrick (1966) reconciles the different causality views and argues that the direction of the causality changes with respect to time. He distinguishes between the supply-leading and demand-following phenomena. The supply-leading growth is an opportunity for the economy to make use of favorable financial, legal and institutional means to spur economic growth. In the demand-following case, financial development comes about an increasing need for companies to require external funds to sustain the economic growth rate. The term describes the phenomenon by which there is a creation of modern financial institutions and asset classes to respond to the demand by investors. He also claims that the nature of the demand for financial development depends on the level of the real output growth. "As a consequence of real economic growth financial markets develop, widen and become more perfect thus increasing the opportunities for acquiring liquidity and for reducing risk, which in turn feeds back as a stimulant to real growth." (Patrick 175) A supportive conclusion has been reached by (Jung, 1986) whose study of a panel of 56 countries of which 19 where industrial countries concluded that for Least Developed Countries (LDCs), the causality went

from financial development to economic growth and the reverse causality holds for developed countries.

To deal with the nuanced direction of the causality, we will also conduct a time series analysis for specific SSA countries. Although not easy to determine from a panel study, a country specific analysis could give us some guidance on the direction, if any, of the correlation between capital markets development and economic growth.

Secondly, although the research on the topic is quite extensive, there has not been much on SSA, especially in terms on quantitative research. Countries selected in datasets that scholars study are mainly the Western capital markets, Latin America and Asia. The lack of an array of previous studies of African markets makes academic research not easy to conduct. To deal with this issue, we consult a number of results from previous studies conducted on the developed markets as well as other emerging markets. Although different, scholarly studies of the capital markets and economic growth nexus in MENA countries for example, could be of great guidance when studying SSA countries.

Another major limitation to this research is a severe lack of reliable data on the African capital markets and economies. At first, the empirical research of this thesis was supposed to be looking at a panel study of the 22 African capital markets. The databases that were more readily available were the World Bank and the IMF. Although there is some data available, it is very much notable that the World Bank and IMF have missing

data for some years and some variables. To avoid misleading result in the regression analysis, we needed to focus only on countries that have data available for the variables we were looking at. This severely restricted the scope of this research and decreased down the dataset. There was also a need to find local experts to get specific data, at both the micro and macro level, for the countries analyzed in the case study section. Although the data is available, it is not widely distributed and only few institutions hold data of good quality. There was therefore a need to reach out to local authorities and bankers to get the data needed to run the regressions.

Since we are looking at whether the variations in capital markets activity have an impact on economic growth, we ideally would need to link micro and macro data. Our analysis requires accurate financial markets indicators and macroeconomic data for the individual countries. Also related to the data issues, because more than one source was used to compile the dataset, we should not rule out potential inconsistencies and measurement problems that tend to result from different dataset measurements.

1.5 Definition of key terms

Financial sector: The OECD financial glossary defines the financial sector as being "the set of institutions, instruments, and the regulatory framework that permit transactions to be made by incurring and settling debts; that is, by extending credit. The financial system makes possible the separation of the ownership of wealth from the control of

physical capital." As a country grows and develops, the financial sector grows and deepens and we talk about financial development.

Financial markets: Is a broad term that describes "any marketplace where buyers and sellers participate in the trade of assets such as equities, bonds, currencies and derivatives. Financial markets are typically defined by having transparent pricing, basic regulations on trading, costs and fees and market forces determining the prices of securities that trade" (Investopedia.com).

The four main financial markets are the foreign exchange market, the bond market, the equity market and the derivatives market.

Capital markets: "Financial markets that work as a conduit for demand and supply of (primarily) long-term debt and equity capital. It channels the money provided by savers and depository institutions (banks, credit unions, insurance companies, etc.) to borrowers and investees through a variety of financial instruments (bonds, notes, stocks) called securities. A capital market is not a compact unit, but a highly decentralized system made up of three major parts: stock markets, bond market, and money market. It also works as an exchange for trading existing claims on capital in the form of shares" (Investopedia.com).

1.6 Research method

In social sciences, research approaches can be either qualitative or quantitative. The qualitative approach makes use of a non-empirical approach to study and understand the topic being researched. For studies such as ours, the qualitative method relies mostly on a review of the literature and could also include an analysis of some statistical figures. The quantitative approach however is based on an empirical work and aims at understanding the subject by analyzing a selected set of data.

In this research, to first understand the linkage between capital markets and economic growth, we will make use of the qualitative approach by reviewing the existing literature in the topic. We will then make use of the quantitative approach using a selected dataset to empirically assess the theory and study the impact of capital markets and economic growth. In essence, we want to know whether capital market establishment, as suggested by Dambisa Moyo among others, is an alternative that leads to economic growth in SSA.

1.7 Thesis organization

This thesis is structured as follow:

Chapter 2 is an extensive review of the literature published on financial development and economic growth. There has been several research conducted on the linkages between financial development and economic growth. Both the theoretical and

empirical evidences available are examined. This approach will then lead us to look into the literature on financial development and economic growth in SSA. In addition, we will specifically review the literature on capital markets and economic growth and then pinpoint the specific case of SSA.

Chapter 3 explores the theory that subtends our empirical analysis. We develop a small econometric model that aims to capture the correlation between economic growth and different economic and financial aggregates. We then use different panel regression methods to estimate the coefficients needed for our analysis.

Chapter 4 first contains a review of the literature for time series analyses and then, for each country, a time series analysis is conducted to first test for the relevance of our variables and then looking at the direction of the correlation between capital markets and economic growth for each variable that determines it.

Finally, chapter 5 suggests some tools and policies needed for increased economic growth yielding activities.

Chapter 2 Literature review

2.1 Financial sector development

Although, as mentioned above, there is still a debate as to what is the direction of the causality between financial development and economic growth. However, the

channel through which financial development spurs economic growth is based on the functions of financial intermediaries. First, financial intermediaries efficiently allocate capital, which is an incentive for an increase in savings hence, investment. Second, financial intermediaries mobilize savings with an increased diversity in substitutes to cash (diverse investment instruments, assets etc.). Third, financial intermediaries help diversify risk and channel it to those who are more ready to bear it. There are two main types of risk: liquidity and idiosyncratic risk. Liquidity risk arises because high return projects require long-term financing. However, investors are not ready to keep their savings in the system for such long time periods and would favor liquid transactions. Idiosyncratic risk is the risk associated with unexpected events in a firm, country, year, industry or simply individual corporate finance projects. Financial intermediaries provide a way to pool and diversify those risks (Levine 1997, 691).

Fourth, there exist asymmetric information between borrowers, lenders, and experts in the financial system (bankers and brokers). Asymmetric information between borrowers and lenders, can cause adverse selection, moral hazard, and act as externalities that prevent market adjustment mechanism to function properly to determine prices through demand and supply interactions.

Financial intermediaries, through research, monitoring and screening, facilitate the availability of information on specific firms, projects etc. Investors require a large amount of information before making investment decisions, and high information cost

can be a disincentive for efficient capital allocation.

Finally, by providing financing to better return projects, financial intermediaries create an incentive for technical progress and increased efficiency. Higher efficiency means that with a given amount of capital, firms are able to make higher profits which acts as an incentive for specialization of labor. Thus the quantity and quality of production increases which positively feeds into economic growth. Therefore, financial intermediaries are contributing to the economic growth of the country.

Most of the literature looks at the importance of financial development, meaning, the development of the financial sector as a whole. That mostly includes financial markets and the banking sectors, core components of the financial sector: if one or both subsectors experiences high returns it boosts the whole financial sector.

Goldsmith (1969) argued that "one of the most important problems in the field of finance, if not the single most important one, (…) is the effect that financial structure and development have on economic growth"(390). In his study, he came to the conclusion that there was a positive correlation between financial sector development and the level of a country's economy through an increase in the marginal productivity of capital. However, in his paper, he does not tell us whether the growth comes either from the banking sector, or the non-banking sector.

Schumpeter (1911), Goldsmith (1969) (also see McKinnon (1973), Shaw (1973)) are strong advocates of the theory that financial development promotes economic growth. Schumpeter realized that through a good allocation of resources and a selection process that identifies revenue-generating projects, financial development spurs technological progress, hence economic growth. Goldsmith (1969) confirmed that theory by concluding that there was a correlation between economic and financial development. Looking at a sample of available data for 35 countries between 1860 and 1963 he noticed that the time periods that saw increased economic growth are also periods of rapid financial sector development. King and Levine (1993) attempt a similar research but improved the method by looking at a larger sample of countries, and created variables to more accurately capture the concept of financial development. They found a strong positive correlation between the variables they used to measure financial development and economic growth. Using a sample of 43 countries, Rajan and Zingales (1996) showed that industries that that make the most use of external financing grow faster in countries that have a developed financial sector compared to firms in countries that have a very weak financial sector.

In his attempt at proving the important role of financial development, Goldsmith (1969) also looked at the role of capital accumulation. He suggest that financial development influences growth through the mobilization of capital, by reducing market friction which then increases savings thus capital investments. From this study, he

concluded "a rough parallelism exists between economic and financial development in the long run". Also, Spiegel (2001) looked into the relationship between financial development and economic growth using panel data regression. He concluded that financial development indicators have an impact on productivity growth, physical and human capital. Based on neoclassical growth model theory, these are strong determinants of economic growth.

Similarly, Rousseau and Wachtel (2000) and Beck and Levine (2004) conclude that bank and stock markets development have a large economic effect on the endogenous determinants of economic growth.

Despite the argument advanced by scholars mentioned above, there are researchers who do not believe that financial development has an impact on economic growth. Lucas (1988) stated that there is an unfounded emphasis on the role of financial intermediaries in economic growth. To him, "the importance of financial matters is very badly over-stressed" in the literature and as such, we can understand that financial intermediaries' development is a passive result from economic growth in general and the growth of the real sector in particular (6). This result was empirically tested by Favara (2003) using a panel data of 87 countries from 1960-1998 to conclude that the between relation between financial development and economic growth, although positive, is weak and the causality does not necessarily run from financial

development to economic growth.

There are several reasons why it remains important to conduct a study on the impact of financial development and economic growth in SSA countries. First, most of the studies conducted that support the theory of Lucas (1988) do not include many SSA countries in their samples as the data is not easily available. In general, the countries under consideration are heterogeneous and for this reason, the results by Levine (2004) could apply to SSA countries when considered in isolation.

Also, there could be some threshold effect involved in the relationship between capital markets and economic growth. Most of the countries studied in the literature include developed markets or developing countries that are lower-middle income countries.[7] It is probable that financial development has a much larger positive impact on countries that are above a certain threshold of financial development (Deidda 2002). Thus, without proper weights given to countries that are at significantly different levels of economic development, the impact of financial development on countries above a threshold are diluted by countries below the threshold. This situation may apply to SSA countries given that several markets were recently established and are at the early

[7]This refers to the WorldBank income classification. Economies are divided according to their 2009 GNI per capita, calculated using the World Bank Atlas method (see http://data.worldbank.org/about/country-classifications/world-bank-atlas-method.) The groups are: low income, $995 or less; lower middle income, $996 - $3,945; upper middle income, $3,946 - $12,195; and high income, $12,196 or more.

stages of their development.

And finally, financial development could have a much larger short-term impact compared to the long term (Darat 1999). Most of the literature has focused on the long-run relationship when the contemporaneous relationship could be greater. Here we could also have a dilution effect where strong short-term impacts are diluted by low long-term positive impact. When looking at capital markets, it can be argued that in the short term and early stages of capital market development, there is a strong correlation between capital markets and economic growth. However, as companies grow, they become more profitable and fewer firms are in need of external capital. At this point, there is a decoupling capital markets with respect to the rest of the economy and the impact is lessened. Therefore, in the long-term, the impact of capital markets on economic growth could be weak but that does not imply an insignificant short run effect.

2.2 Financial sector development in Africa

Despite several policy changes towards improving their economy, several African countries have seen a decline in their economic performance in the 1990s and early 2000a (See Appendix 4). When asked about the reasons for the high level of poverty in the African continent, a Ghanaian citizen states: "Africa is poor because our

leaders are very poor-minded people."[8] Therefore can mainly be explained by very poor policymaking, corruption and political turmoil explains much of the bad economic performance of SSA countries.

Since to the 1980s, aggregate indicators of financial development in the 1990s and early 2000s have mostly stagnated or declined on average. The three variables in consideration display similar trend. However, the trend changed towards the late 2000s as the money circulation, the financial sector deposits and the credit to the private sector increase. A note that the credit to the private sector dropped substantially in 2008, reflecting the severe hit that African financial sectors underwent during the financial crises. With relatively less credit available, companies cannot expand at the required rate for proper economic growth.

It is worth noting that if we observe the economic performance data (Appendix 4) one should notice that South Africa has had a much stronger economic performance and a more developed financial sector compared to the rest of SSA countries, which suggests possible biases in average analysis. Botswana and Kenya are among the good performers, with the credit to the private sector in 2008 representing about 21% and 30% respectively but they do not match the size of South Africa of 145.15% (World Dev. Indicators 2010)

[8] Cozay.com

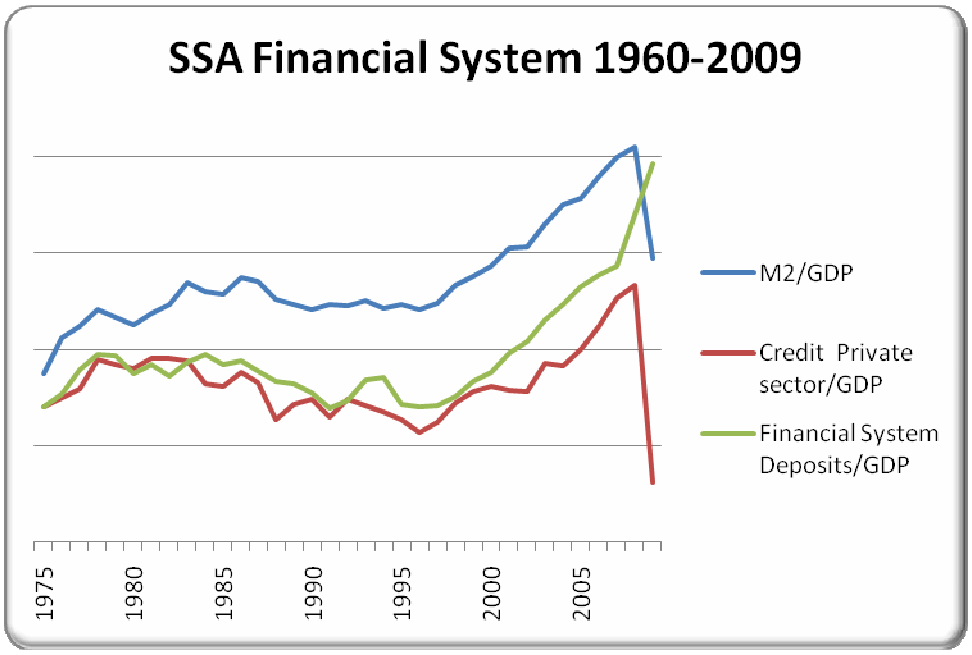
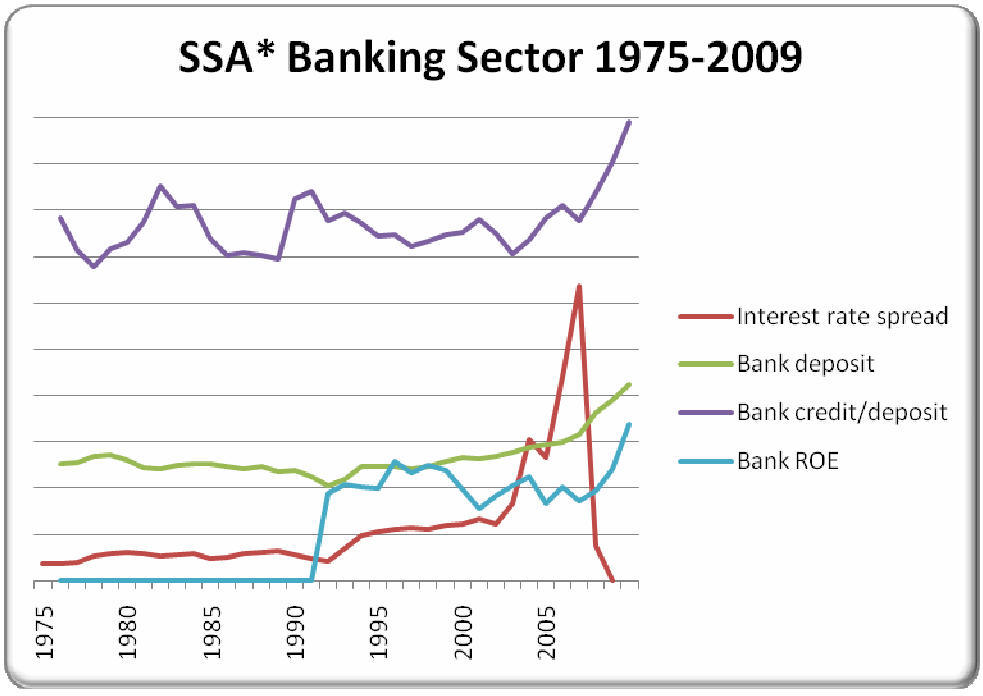


Figure 1
Source: Worldbank Indicators and author's computation



Source: *Worldbank Indicators 2010* and author's own computation.
*SSA countries with well established capital markets. Includes Botswana, Ivory Coast, Ghana, Kenya, Mauritius, Nigeria, South Africa Swaziland, Tanzania, Zambvia and Zimbabwe

A characteristic of many SSA countries is a high concentration of the banking sector with the bank concentration variable mostly close to 100%, even in countries with established capital markets. A study by Beck, Demircunt-Kunt and Levine (2007), averaging the bank concentration variable (a measure of the share of total banking system assets held by the three largest banks) found that in most African countries the bank concentration equals 1.0 South Africa has the lowest value in SSA (0.77) and yet is still high if we compare it to the USA that has a value of 0.19.

African economies are known to heavily depend on the banking sector for firms to get external financing. Regarding capital markets specifically, Miller (1998) has argued that structured and strong financial markets will allow a country to reduce its dependence on the banking system, which is the most source of financing that spurs economic growth in the developing countries. Although the banking sector is predominant and important, it is also a crisis prone sector as we have seen during the 2008 financial crisis.

This is because most of the African banks have full or majority ownership by foreign banks and were affected by what can be called the "contagion effect". Foreign banks that were highly affected reflected so in their reduced support of local banks. This lack of support had a negative impact, mostly on countries with a higher percentage of foreign ownership.

In an empirical study conducted on selected SSA countries using OLS regression techniques, Ndebbio (2004) looks into financial deepening and economic growth in SSA countries. He used M2/GDP, a measure of the degree of financial intermediation and the growth rate of per capita real money balances. He concluded that a development of the financial sector with spur a sustainable growth in a country's economy.

Finally, in his empirical studies, Ghirmay (2004) found out that long-run relationships between financial development and economic growth in several countries studied proved that in low-income African countries, financial development spurs economic growth.

2.3 Capital markets

Capital markets, through a perfect competition scheme, have a price making role in the sense that the interaction of buyers (investors) and sellers (borrowers) determine the price of assets traded. The fact that investors have a platform to sell assets or convert them to some other more favorable asset types gives capital markets a liquidity provider role. Finally, it allows investors who are more risk prone to take some risk off the risk-averse investors resulting in a risk-transferring role. All this primary roles make capital markets a great contributor to economic growth and development. According to several scholars (Patrick, 1966) well performing capital markets are the final stage of

financial development and their strong performance point is correlated with the age of an economy.

In a presentation at the Africa Economic Conference, Murinde (2007) argued that capital markets prices and yield are a benchmark against which the cost of capital and the return on investment can be judged, even if the project is not financed through the stock market. Cost of capital is the blend of a corporation's capital base, and the cost of debt and equity as defined by the Weighted Average Cost of Capital (WACC). It is the expected return on the asset of a company, and is equal to a weighted average of the returns on the individual assets (Bryan et al. 2008). Hence, a high cost of capital is a signal and represents a challenge, especially in industries where production relies heavily on financing availability such as the industrial sector. "In many aspects (…) a capital market is a vast information exchange which efficiently reduces cost transaction cost" (Murinde 2007 Slide 15)

SSA Africa has about 16 stock exchanges and the majority of them were established in the 1990s.

Country	Year established	Number of companies listed		Annual Growth 1992-2002	Stock Market Capitalization (%GDP)		Total Traded Value (%GDP)		Turnover Ratio		Number companies listed (per 10k population)	
		1992	2002		90s	00s	90s	00s	90s	00s	90s	00s
Botswana	1989	11	19	72.7	0.093	0.352	0.007	0.010	0.073	0.029	0.076	0.097
Côte d'Ivoire	1976	27	38	40.7	0.072	0.277	0.002	0.005	0.023	0.017	0.020	0.021
Ghana	1989	15	24	60	0.153	0.165	0.006	0.005	0.032	0.028	0.010	0.012
Kenya	1954	57	50	-12.3	0.146	0.277	0.005	0.023	0.032	0.068	0.021	0.015
Mauritius	1988	22	40	81.8	0.300	0.600	0.015	0.024	0.045	0.077	0.275	0.380
Nigeria	1929	153	195	27.5	0.073	0.152	0.002	0.025	0.021	0.106	0.016	0.015
South Africa	1887	683	472	-30.9	1.486	2.141	0.251	1.107	0.163	0.443	0.165	0.101
Swaziland	1990	3	5	66.7	0.164	0.078	0.001	0.001	0.003	0.012	0.045	0.051
Tanzania	1998	2	5	150	0.024	0.046	na	0.002	0.020	0.046	0.001	0.002
Zambia	1994	2	11	450	0.099	0.137	0.002	0.004	0.020	0.049	0.007	0.011
Zimbabwe	1896	65	77	24.12	0.249	0.697	0.023	0.101	0.089	0.141	0.055	0.060

Table 1
Source: World Development Indicators 201.1
Walle (2008): " *Establisment of Capital Markets in Least Developed Countries: The Case of Ethiopia* p.18
Note: Countries selected on the basis of data availability

Although, as mentioned above, it was mainly due to pressure from international organizations for better economic performance through the capital markets functions outlined above, there also were non-technical reasons for establishing capital markets in Africa.

First, western markets were more and more saturated and no longer offered the rates of returns offered previously. There started to be a growing interest in the Emerging markets whose volatile prices could offer very high rates of return. For instance, during the 1990s, there was a clear shift towards Latin American and Asian markets. Hence, stock markets were a perfect way for African counties to get their share of the global investment flows and attract increased FDI.

Second, Africa is a highly resourceful continent and through the liberalization of its economy in the 1990s, there was a need to put the private and public sectors at the fore front, especially in the natural resource industry such as oil and mining.

A third reason is the economic geography of countries. In West Africa for example, until 1998 when the BRVM was established, only the Ivory Coast had a stock market. Because most of the Francophone African countries shared a single currency (CFA) and were part of the same economic region, (CEDEAO) there was a natural integration process that led to the establishment of a single stock exchange for 8 countries in West Africa located in Ivory Coast. Another example of this type of regional integration can be noted in East Africa. Since 1 July 2010, East Africa entered into a common market. The aim was to then evolve into a monetary union that will lead to an integration of the capital markets of Kenya, Tanzania and Uganda.

Also, countries and financial institutions that provide African countries with loans anticipate positive economic performances. Countries with observable reforms of the financial sector will get more currency flow which is an incentive for governments to establish capital markets and show a desire to modernize the financial sector.

In SSA, capital markets are therefore a fairly recent phenomenon initiated by the recommendations from International institutions under the structural adjustment programs. In the 1980s, there were only 8 established stock markets and the number more than doubled in by the late 1990s and early 2000s. We now can count 29 stock

exchanges for 38 countries. The same can be said about the performance of the stock markets.

If we look at the table above, we see that in general SSA capital markets have very small number of listed companies, and very low trading activity compared to the other emerging markets.

Concurrent to its stronger economic performance, South Africa also has the largest capital market in Africa with a market capitalization of $957 billion dollars as of December 31st, 2011 (Adigun,2011).

In comparison, the Zimbabwean stock exchange (ZSE) ended 2010 with a market capitalization of about $4 billion dollars.

Many of African capital markets were dormant with very little trade flow but are now are experiencing stronger activity. In 2010, the Kenyan market was up 36.7%, the Ghanaian market was up 36% and Nigeria experienced a gain of 16%. All these markets are smaller than South Africa and are experiencing larger gains (South Africa was only up 9%), which allows us to forecast a possible convergence of performance sometime in the future (Minney ab). If we compare the figures for Kenya for example with the table above, one can notice that the Kenyan stock market went from having negative annual return to being among the strongest performers.

However, as Ndikumana (2003) pointed out in his study, the good performances in the African capital markets were mostly "not accompanied by any systematic improvement in economic performance" (12). This raises concerns about the effect of capital markets development being severely dampened by other factors that negatively affect the economy such as inefficient institutions, lack of infrastructures, corruption, high debt level, etc.

Most of SSA capital markets are renown to be small, underdeveloped and highly illiquid. As They tend to operate in isolation from other markets, have low trading volumes, are sheltered from competition by national regulations and face barriers to capital mobility because of high costs of travel and communications (Asea).

Compared to developed and emerging market's capital, African capital markets are indeed very small. In 2009, Zambia's stock market capitalization was as low as 3.4% with respect to GDP and South Africa, the largest stock market in SSA, had a percentage of 338% when Hong Kong for instance had 742% (Beck et.al 2000).

In terms of the per capita number of companies listed, markets such as Malawi had in 2009 a ratio of 0.5%, and South Africa had a ratio of about 70%. When Chile has about 133%. As for the liquidity of the markets, Ivory coast, still in 2009, had a turnover ratio of about 0.1% and even South Africa had a ratio of 70%. In contrast, other emerging markets such as Taiwan have a ratio of over 200%.

Another major characteristic of capital markets in SSA is their very high volatility. The market capitalization of the stock exchanges volatility is mainly due to a high volatility of the share prices. Singh (1997)[9] conducted studies that confirm the adverse effects of high volatility in the financial sector and the economy of a country as a whole. More liquidity however stabilizes the required return on capital for investments as investors reduce the premium needed to undertake the liquidity risk they are bearing.

African capital markets products are mainly equities, government debt and corporate debt. There is a serious lack of secondary market instruments and derivatives' trading has barely been introduced with only South Africa is involved in those transactions.

Another characteristic of African capital markets is a crowding out effect from government borrowing and investments. Most of the government spending in African countries is financed through government debt, which raises interest rates. A rise in interest rates hinders the private sector since high interest rates means high cost of

[9] Cited in Ndikumana (2003)

capital, which makes projects no longer profitable. Crowding-out, in this case involves a lack of investment into the potentials of the private sector. It is considered negative only if the public sector is not as efficient in improving the rate of capital formation compared to the private sector and if the lack of knowledge capital gives no opportunity to substitute labor for capital. In most SSA countries, the public sector has been proven weak in generating capital and we can safely assume that the marginal return of capital of the private sector is higher with respect to the public sector. Also, it is reasonable to assume that the inputs in the production function of most African countries have fixed coefficient, meaning that there is so much capital available and government investment can very easily crowd out the private sector.

Since the private sector is one of the strongest sources of growth in an economy, given a high marginal productivity, if its performance is hindered by government's capital markets activity, it can negatively impact on the economy (Atukeren 308-309).

Although the markets are relatively small, illiquid and highly dominated by the public sector, there also has been a net improvement in capital markets activity. The foreign capital has high rates of returns in African markets and this encourages analysts to forecast high growth potential of the markets and positive repercussions on the economies of SSA countries. According to Sunil Benimadhu, the director of the African Stock Exchange Association, " based on an assumption of economic growth (GDP) of

5% a year and if African markets continue to follow trends seen elsewhere in terms of their share their economies (GDP) then both turnover and market capitalization could increase many times during the coming decade." (Minney a)

With a sustained growth in capital markets activity, any contemporaneous positive effect found on a study conducted on the actual state of the markets could be exacerbated as the markets improve.

2.4 Capital markets and economic growth

There are large numbers of scholars who argue in favor of the need for developed capital markets to spur economic growth. On the contrary, there are scholars who deny such claims, arguing that there is not such a strong link between capital markets and economic growth, especially for developing countries. The research that attempted to answer the question of financial development and economic growth led to a continuing debate on whether the financial structure of an economy should be market based or bank based. The question to ask, is whether capital markets impact on economic growth. Nobel Laureate Merton Miller argues that, "[the idea] that financial markets contribute to economic growth is a proposition too obvious for serious discussion."(14) Indeed, there are strong advocates of the use of capital markets, especially in developing countries.

Scholars used different approaches in considering the importance of financial markets on economic growth. As mentioned above, there has been a extensive amount of research that has been done on the impact of financial markets and economic growth. But only the most recent research tries to illustrate the manner in which financial markets affect economic growth. In a theoretical study, Singh (1998) found out in his studies that developing countries make much more use of new equity issuance for firms to finance their assets to expand than developed markets.

From this we can better understand the financial constraint theory that tells us that the extent to which external financing tools are provided will affect corporate investment and real economic activity (Greenwald and Stiglitz, 1993). Therefore, given that developing countries need more use of capital markets, there is a real need for well-developed and efficient capital markets to allow firms to expand and provide resources to boost national output.

In terms of the efficiency level needed for a proper functioning of the capital markets, there is a debate on whether or not larger and liquid markets are needed for economic growth. Intuitively, one could argue that it is the case since large markets increase liquidity and provide more competition and greater access to financing tools, which in turn will impact positively on economic growth. This analysis is consistent

with the view that stock market liquidity facilitates long-run growth (qtd. in Levine 2003 39)[10]. In fact, they argue that many investments with positive present value, requires sustained capital over the long-run and investors are often reluctant to relinquish control of their savings for long periods. "Liquid equity markets make long-run investment less risky and more attractive because they allow savers to acquire an asset (equity) and to sell it quickly and cheaply if they need access to their savings or want to alter their portfolios" (Demirgüç-Kunt and Levine 1996, 229). This is also beneficial to the firms who get permanent access to capital raised through an equity issue. Hence, capital markets affect economic growth by allowing for long term and profitable investments and making investments less risky and therefore increase investments, which we know is a component of the standard GDP equation.

Another way that capital markets can impact economic growth was through their role of information provider. They provide information on firms that are producing goods to boost output. Savers, who have better ways of monitoring their investments, are more incentivized to increase investments. This, intuitively will boost productivity at the micro level and have positive impact on economic growth in the long run.

Finally, we will consider the low transaction cost associated with capital markets. Since they act as an intermediary for trade transactions, it yields to lower transaction cost for

[10] See Levine, 1991; Holmstrom and Tirole, 1993; Bencivenga et al., 1995)

both investors and borrowers. Greenwood and Smith (1997) showed in their study that a decrease in transaction cost yields out more specialization. Thus, capital markets do positively impact economic growth through an increase in productivity gains due to the lower transaction cost.

Obstfeld (1994) also showed that capital markets are an important tool for economic growth. He shows that globally integrated capital markets have a positive impact on resource allocation and economic growth. This is due to a diversification of the risks associated with the investments through international risk sharing.

Although, as discussed above, several scholars have attempted to show that financial development in general and capital markets in particular foster economic growth, there is also a number of studies that showed otherwise. We will consider two sides to the argument applied to developing economies. First that capital markets do not positively impact economic growth and second, that market based economies do not function as well as bank based economies.

According to Demirgüç-Kunt (1996), many analysts view stock markets in developing countries as "casinos" that have little positive and potentially a large negative impact on economic growth. Furthermore, it is argued that as economies develop, self-financed capital investment first gives way to bank-intermediated debt finance and later to the emergence of equity markets as an additional instrument for raising external funds (229).

Hence, many developing countries being at the first or second stage of the pattern described above, not much corporate investment financing is done through equity issuance but instead, financing is acquired through banks (Mayer 1988 326). This makes capital markets costly and markets virtually irrelevant for economic growth. Also, increasing capital markets activity increases liquidity. As mentioned above, increased liquidity can have a positive impact on economic growth though an increase in wealth. However, increased wealth thorough increase in economic growth can lead to a reducing of savings rates by an income and substitution effect. As consumers become wealthier, they will substitute their savings and increase consumption. Second, by reducing the uncertainty associated with investment, greater stock market liquidity may reduce saving rates because of the ambiguous effects of uncertainty on savings. While less uncertainty makes an investment more attractive to risk-averse agents, less uncertainty also lower demand for precautionary savings. Thus, the ultimate impact of lower uncertainty on saving rates, produced by greater stock market liquidity, is uncertain. Third, stock market liquidity may adversely affect corporate governance. Very liquid markets may encourage investor myopia. Because more liquid markets make it easy for investors who desire to sell quickly, liquid markets may weaken investors' commitment and reduce investors' incentives to exert corporate control by overseeing managers and monitoring firm performance and potential.

It is also argued that when markets are large and liquid, there is not a lot of incentive

for good corporate governance since shareholders can easily resell their shares in case of poor governance (Bhide, 1993) The fact that capital markets can hinder corporate governance also could make them less attractive than banks. According to this view, enhanced stock market liquidity may actually hurt economic growth.

Aghion (2005) developed something that we can call a "convergence theory" where he argues that the impact of financial markets on economic growth comes about by a positive correlation between financial markets and productivity growth rather than technological progress. He further argues that the reason why poor countries do not converge in the long run with developed countries is not financial underdevelopment per se, but rather, the failure to converge is attributable to the lack of the proper institutional settings. For Aghion, the reason why there is a strong correlation between capital markets and economic growth is due to the fact that there are both positively correlated with strong institutional settings. Hence, one could think that the relationship is linear, but according to it is a spurious conclusion to draw.

Platt (1998) conducted a study where he looked at the relationship between the rate of growth of a country and its country risk measurement in order to analyze the impact of capital markets on the growth of the economy.[11] He concluded that countries' with established capital markets had higher GDP growth rates. However, countries with a larger initial level of income have better functioning capital markets. This could

[11] Country risk refers to a collection of risk that affects the investment environment in a specific country.

explain why some analysts do not necessarily believe that capital markets are beneficial to economic growth in developing countries because they are not as efficient as banks. Banks in general create very close and long-term relationships with firms and spend a considerable amount of resources in monitoring the performance of companies they invest in. Stiglitz (1985) pointed out that capital markets diffuse information at large to investors who then lack the incentive to research further on the firms they invest in. He called it the "free-rider problem" that is characteristic in the gathering of information in atomistic markets (143).

Also Rajan and Zingales (1999) emphasize that in bank-based systems, large banks that have closer ties to corporations may be more effective at exerting pressure on firms for debt repayment than atomistic markets than atomistic markets. Following these arguments, there also is an emphasis on the fact that capital markets reveal too much information to the public, which reduces the incentive for investors to more completely research companies. Therefore, capital markets exacerbate the information symmetries issue and strengthen the issues that result from asymmetric information.

According to these scholars, a bank-based system is better in a sense that through the more intrinsic link between the banks and firms would lead to a better allocation of resources (Stiglitz, 1985; Bhide, 1993).

According to the literature, there is no doubt that financial development influences positively on growth. But the question is what financial structure has a

stronger impact on economic growth and this is where opinions differ. In our study, we will look at whether capital markets have a positive impact on economic growth, but we will not exclude the presence of a well-established banking sector as well. In fact, there is no theory that advocates that both financial structures are mutually exclusive and in fact, the United States is a good example of how the banking and capital markets sectors are complementary.

2.5 Capital markets and economic growth in Africa

It has been discussed earlier that scholars such as Levine (2006) showed that stock markets can give a big boost to economic development through increased liquidity and easier circulation of assets. However, in Africa there is a debate on whether capital markets are positive for economic growth since markets tend to be in general, small and very illiquid.

Adjasi and Biekpe (2006) studied the impact of stock market development on economic growth in 14 African countries and concluded that there exists a positive relationship between stock market development and economic growth. They also indicated that the statistically significant relationship applied only to countries with the better capitalized markets. This implied that countries with less capitalized markets needed to develop their financial markets in order to witness some economic gains from

capital markets activity.

However, some scholars argue that capital markets could actually be detrimental to African economies when they are barely active and efficient. "Inactive markets are weak in terms of liquidity production and information production. An inefficient market becomes a barrier to raising capital in the primary market, and reduces the volume of trading in secondary markets. (Mensah 4)".

Singh (1999) ranges himself in the group that believes that capital markets can be detrimental to African economies. He argues that high volatility, increased financial liberalization and weak and inefficient banking systems are actually detrimental to SSA and there should not be a promotion of high cost capital markets activity but rather a strengthening of the banking sector. Critics of the role of capital markets on economic growth in SSA countries such as Singh, tend to focus on the fact that SSA countries do not have the required institutional settings to support a developed financial sector that can witness the expected benefits of capital markets implementation.

However, given the recent good performance that followed a series of financial sector reforms in some of the major SSA stock exchanges, have invalidated the conclusions of Singh 1999 and it is more and more accepted that capital markets implementation in SSA, along with the right set of regulations, institutions and infrastructure, would have a positive impact on economic growth. This positive impact

would be achieved through an easier flow of external funds into local companies, an efficient allocation of capital to the most productive sectors of the economy, a redistribution of wealth in the economy and finally and through proper governance and more transparency in the African companies' financial management.

Chapter 3: Empirical analysis

3.1 Model overview

At this point, it is worth noting that when we talk about the financial development and economic growth, there is not specific on the measurement of economic growth tied to the models in use. Although it is common to use the growth rate of GDP as a proxy for economic growth, it is also following the standard practice, (e.g.Gelb 1989; Roubini and Sala-i- Martn 1992; King and Levine 1993, Demetriades and Hussein 1996, Luintel and Khan 1999; Levine et al, 2000 and Aziapono 2005) to use the natural logarithm of per capita GDP as an indicator of economic growth.

A note that real GDP per capita is a better measure than total real GDP, because some of the errors that inherent from the in the estimation of the level of GDP and the total population tend to be offsetting (Heston 1994).

Ideally, our empirical analysis would consist of a stepwise approach to determine

the impact of capital markets on economic growth.

The first step would be to determine the Total Factor Production (TFP), using the Solow model of Economic Growth where economic growth is determined by technology, the capital stock and the quantity of labor. The components of growth mentioned are complementary in the sense that if one increases, the marginal contribution of the others increase and hence, forces that increase one factor is likely to stimulate an increase in the others (Nelson, 1981).

After determining the TFP, we would then adopt the following model for TFP:

$$TFP_{i,t} = O_t + \alpha X_{i,t} + residual$$

Where O is a country specific intercept, X is a vector of the time varying dependent variables and residual is an error term.

The TFP is usually referred to as technology, but it encompasses several aspects of the economy including improvements in " work organization, in the efficiency of government regulation, in the degree of monopoly in the economy, in the literacy and skills of the workforce, and in many other factors affect total factor productivity as well." (Growth acc.)

Unfortunately, data availability is really a very strong limitation to our model since it induced a change of our empirical approach. The lack of availability of micro variables makes it hard to have or proxy capital formation data. Several countries in our sample have data statistics heavily politically influenced and during unstable regimes,

the government can choose to report to the IMF or World Bank their statistics. Gross capital formation variables were not readily available and potential variables that could have been used to calculate it were also not available. For us to use our model, it is necessary to go to each of these countries and gather the data available locally. Time constraints did not allow so and we therefore tailored the model based on the data availability at the macro level.

In our final empirical approach we develop a small econometric model that aims to capture the correlation between economic growth and different economic and financial aggregates. An augmented production function approach of the form $Y = f(X, F, \dots)$ will be used. The omitted variables denoted by (…) represent an array of economic and other control variables. The equation used is as such:

$$Y_{it} = \beta_{0,i} + \beta_{1,i} Financial_{i,t} + \beta_{2,i} X_{i,t} + \varepsilon_{i,t}$$

- Y is the logarithm of the real GDP per capita.
- Financial is a measure of financial development. Many indicators of financial development have been used in previous studies. We will use two different types: general financial sector variables and capital markets variables.

- X is a vector of macroeconomic and institutional variables that we believe control the economy and have an impact on both the GDP and the financial development variables.
- ε is the error term.

The equation will then be subjected to a dynamic analysis where we use lagged variable to determine the movement of the causality between the independent and dependent variables. This would control for the possible endogeneity of the independent variables. As the base theoretical model, we will rely on neoclassical growth models such as the Solow-Swan model. In the neoclassical growth models, a change in any of the control variables we use affects the steady state of output per capital. To have an impact on the per capita GDP, our explanatory variables must induce a change in the rate of exogenous technological progress. We will also include state variables such as a measure of FDI and one of the political structures of the country. Analyzing research conducted by UNCTAD (1995, 1998-2000), Ndikumana (2003) suggested that the aggregate volume of FDI in Africa has increased over the 1990s and there also have been a diversification of the destination of FDI in African countries. It is no longer exclusively targeted at oil producing countries but more and more to countries with improved economic performance and developing financial sector (14).

Most of the African countries such as Botswana, that have experienced positive and steady growth rates have done so because of a well handled trade openness policy, political stability and other economic and institutional factors among others. It can be argued that FDI and political stability are two variables that lead the country to reach such sustained level of economic growth. It does not mean that these are the only factors that contributed to such positive results but rather that they are the ones we judge more important. The assumption is that there are several variables that affect economic growth. As Nelson (1981) points out, it is rewarding to consider that all the several sources of growth as needed.

FDI allows for technological progress through a transfer of technology from developed countries to developing countries that have yet to enjoy access to certain technological tools. FDI also improves a country's management of its economical activity and facilitates access to international markets. According to the UNCTAD (1999), Botswana is among the countries that have gradually seen an increased in FDI and "reaching absolute levels never attained before and comparable to those of other well performing developing countries" (20). Reasons for such good FDI inflow in Botswana is mainly political stability, compared to many other African countries. In 2007, a World Bank[12] study on governance matters placed Botswana 16 out of 212 and

[12] Reported by Palapye.com and retrieved from http://palapye.wordpress.com/2007/07/18/botswana-a-leader-in-political-stability/ on May 2nd, 2011

above all the G8 countries and in 2002, FDI inflow were as high as 33.1% of gross capital formation. Stability and "predictable policy and macroeconomic environment is an important factor in attracting FDI -- as well as a stable and predictable framework regarding FDI and a high degree of investment protection" (23).

3.2 Data

"There are not neatly separable sources of growth, but rather a package of elements, all of which would need to be there" (Nelson 1055)

Our study examines the impact of capital markets on total factor productivity in SSA for a total of 35 countries at first and then 6 countries with established capital markets.[13] The other countries used in the panel regressions are SSA that have active capital markets and for which data was available. We will use a panel regression.

This study adopts a model similar to King and Levine (1993) but the variables were selected to suit our study of SSA countries in terms of financial development in general and capital markets development in particular. The choice of variables was also restricted by the lack of data and for certain measurements such as the measure for investment, proxies were used.

Dependent variables.

[13] The set of 35 countries was used to conduct research on the impact of financial development in general and the 6 countries for the stock market variables impact. A note that although SSA has 22 capital markets the different establishment dates and the lack of data, an accurate panel regression analysis can be conducted only if the sample size is greatly reduced.

Our dependent variable will be the logarithm of real GDP per capita. The Real GDP per capita is a per head measurement of total goods and services in a given country at a given time measured in real terms. It is often argued that there are few shortcomings to the use of the real GDP per capital.

The reason why we are using a log function is because GDP exhibits growth that is approximately exponential meaning that the series grows by a certain percentage and the logarithm is therefore approximately linear (ref Watson book). Also, the standard deviation, that is the average deviation from the mean, is proportional to its level and therefore, the standard deviation of the log of GDP will be approximately constant, allowing for more stationarity of the variable.

In their study, King & Levine (1993) used per capita GDP decomposed into per capital physical capital formation and the efficiency of the financial sector, which they assumed to be the part of growth that is unexplained by capital formation. This variable included factors such as technological growth, human capital growth, and other determinants of growth.

Independent variables

Macro variables

Macroeconomic climate has an important impact on factor productivity because of its relation to investment with will directly affect the growth of the capital labor ratio.

As an indicator of the macroeconomic environment, we use inflation, total FDI inflow and trade. Inflation is defined as a rise in the general level of prices of goods and services in an economy over a period of time (Glossary). Inflation causes uncertainty in future interest rate and prices and eroding the value of an asset. It therefore results in a decrease in the value of savings and has a negative impact on reduces the value of savings. Uncertainty also increases risk of investment and the combination of these effects has a negative impact on investments. Inflation is expected to have a negative impact on capital markets activity. Specifically, the market capitalization of the stock market should decrease as inflation increases, the value of trades should also decrease as inflation increases. It is also expected that the market liquidity will decrease when inflation increases.

In African capital markets, the investor base is relatively small and composed mainly of institutional investors. Not many African companies have a strong local investor base that is usually composed of a handful of local banks. Therefore, most of the investors in African capital markets are foreign companies and individuals. To account for that effect, the net inflow of FDI is used, capturing the proportion of funds that flow into the market. FDI calculations include different kinds of capital

contributions from foreign entities, such as the purchases of stocks, as well as the reinvestment of a parent company's earnings subsidiary abroad, and the lending of funds to a foreign subsidiary. FDI comes into capital markets in several ways. When foreign companies invest into their subsidiaries for expansion and improved productivity, they indirectly impact capital markets given that the subsidiary will then invest in local securities to strengthen their balance sheet. Also, as mentioned earlier, capital markets in SSA are of important use to help local companies go through privatization processes. FDI inflow flows directly into the system because most of the private owners are foreign investors. Therefore, it is expected that the FDI inflow variable to have a positive correlation with capital markets activity.

Notes that in the literature, growth regression models often times include the log of the initial per capita GDP as an independent variable. This measure is used to capture convergence. In general, such analysis is conducted on countries that are at different stages of their development, which does indeed lead to some distortion in results and explains the need to add that variable. Indeed one would expect a negative relationship between the logarithm since countries with a lower per initial GDP should have higher growth rates. On the contrary, our study covers countries that highly similar in terms of their development level. They mostly all fall under lower income in the World Bank income classification and this will eliminate distortion that result when countries are

not similar and explains the omission in our study of a convergence measurement. [14] Another variable used in the literature is the logarithm of the lagged GDP growth rate. The reason why this variable is not included in the model is because we want to conduct a pure explanatory variable analysis and not include any autoregressive scheme. By not introducing a trend in our model, we make sure that the dependent variable is truly explained by the explanatory variables.

We also incorporate a trade variable that measures the percentage of trade in total GDP. For this variable, we should expect a positive relationship. This is because trade increases income by increasing the level of capital (physical and human) which leads to increasing output. Trade is a big component of African economies who exports a lot of the natural resources that they possess and import final goods.

Monetary and financial markets variables

As a measure of the monetary policy, we will look at the ratio of broad money to GDP (M2/GDP). It is one of the most consistent monetary variables across developing countries and is taken as a measure of the size of the overall financial sector. In inflation prone SSA countries, M2/GDP is also a measure of the monetization and a high ratio

[14] Except for South Africa which explains why we removed it in part of our study to avoid a bias in the analysis

does not necessarily mean that the financial sector is deepening but more that the money is being stored due to a lack of attractive investments (Khan and Senhadji, 2003). To deal with this issue, the ratio of banking deposit liabilities to GDP is used. However, because this study is also interested on the impact of capital markets, using banking deposits minus M2 would not capture the depth of the capital markets. A second proxy for financial sector deepening is the total financial sector deposit as a percentage of GDP, a measure of the amount of wealth available for savings (hence investment) in the financial sector. We are assuming all along that savings equal investment.

Monetary policies are important to measure as they provide a certain stability to the overall economy and make sure that money is not an issue that would hinder the economy. The interest rate spread (difference between lending and deposit rates) will be used, and the percentage of the credit to the private sector as a percentage of GDP. These variables influence lending and will tell us how available credit is. The World Bank database define the interest rate spread as the interest rate charged by banks on loans to prime customers minus the interest rate paid by commercial or similar banks for demand, time, or savings deposits. The higher the spread the more expensive credit is. This in turns makes investing expensive and we therefore expect a negative correlation with capital markets activity and real GDP per capita. The credit to the private sector as a percentage of GDP is a proxy for monetary policy. For instance, an expansionary monetary policy is possible through an increase of domestic credit from

the central bank to the banking sector. This can be achieved through a reduction on discount rate, reserve requirements or reduction in the call rate[15] which will lead to more financial activity, lending operations and economic growth—given that the economy is below full employment level. Hence, we should expect a positive correlation between the credit to private sector variable and the real GDP per capita.

A note that one could argue that it would be more accurate to look at the total domestic credit from the financial sector. Total credit is of two folds, public and private credit. However, in African countries, credit to the public sector is generally not channeled efficiently into the economy through investments. They are instead wasted source of financing or prone to corrupted leaders investment in political programs, which then does not result in positive economic activity. Therefore, it has also been empirically proven that credit to the public sector not often a source of economic growth (Beck 2005; Levine 2002). This therefore explains why we would focus solely on the credit to the private sector in our research.

For the banking sector variables, we have will use BANKCONC a variable that measures the concentration of the banking sector. It is calculated using the assets of three largest banks as a share of assets of all commercial banks. We hypothesize a

[15] The interbank interest rate for short-term loans.

negative correlation with economic growth. SSA countries are characterized by highly concentrated banking sectors with very little competition. Research conducted on some SSA (Okheahalam, 2002) countries confirmed the Structure-conduct-performance hypothesis (SCP) suggests "bank concentration and other impediments to competition create an environment that affects bank conduct and performance in unfavorable ways from a social viewpoint." (Allen et al. 1). High concentration leads to the formation of very few powerful banks that "can stymie innovation by extracting informational rents and protecting firms with close bank-firm ties from competition (…)[this] may collude with firm managers against other creditors and impede efficient corporate governance" (Levine, 2002).

For the financial markets variables, ideally we will look both at the debt and equity markets. However, the debt market of SSA is relatively small compared to the stock markets and data is very hard to gather accurately. The theory does not necessarily suggest a specific measurement of stock markets activity. However, as mentioned above, it has been proven that stock market size, liquidity, and the internationalization of capital markets may affect economic growth (Demirguc_Kunt and Levine, 1996). A variety of capital markets measurements will be used to diversify the range of results of the relationship between capital markets and economic growth.

The variables are from the Standard and poor's emerging market database[16] and measure the size and liquidity of the capital markets through measurements of the market capitalization of the stock markets, the total value of stocks traded and the number of listed companies per 10k[17].

Another variable we will use is the turnover ratio to assess the liquidity of the markets. The turnover ratio is the total value of shares traded during the period divided by the average real market capitalization for the period. [18]For all the stock market activity variables, we would expect a positive coefficient in our regression model.

Institutional variables

We will include in our variable list a measure of the political environment of the countries. Indeed, investors are not attracted to war- prone environment. Therefore, political instability and civil wars have a negative impact on growth and can hinder capital markets activity. We use the Polity2 variable from the Polity IV database as our measurement of political environment. It is a Combined Polity Score [19]that ranges from +10 (strongly democratic) to -10 (strongly autocratic). (Marshall et. Al)

A political environment measure is important to include as improvement in political

[16] Compiled by Beck ref

[17] The market capitalization of the stock market is the value of listed shares to GDP, calculated using the following deflation method: {(0.5)*[Ft/P_et + Ft-1/P_et-1]}/[GDPt/P_at] where F is stock market capitalization, P_e is end-of period CPI, and P_a is average annual CPI.

[18] The denominator is deflated using the following method: Tt/P_at/{(0.5)*[Mt/P_et + Mt-1/P_et-1] where T is total value traded, M is stock market capitalization, P_e is end-of period CPI P_a is average annual CPI.

[19] This variable is computed by subtracting the autocracy score from the democracy score to determine the competitive political participation.

regimes is conducive to an environment where the rule of law is enforced property rights would be well defined and therefore be an incentive for increased investment and growth (Barro, 2004).

It has also been argued by economists that the education policy of a country is also important and to a lesser extent, the regimes of regulations and the welfare state of the country. Indeed, rigid regulations have a tendency to drive away investors as rising welfare states could lead to a decrease in the labor force since it can act as an incentive to not work. These are not easily empirically verifiable theories as they are more of a sociological analysis but they are nevertheless strongly believed to be qualitative variables that will affect economic growth (Nelson, 1981).

Ideally, the equation would include the average schooling years of the population to measure the availability of human capital. However, the data is either missing for our sample countries, or it is only available at a 5 years average. Including it in the regression equation will create errors in the results.

3.3 Empirical analysis

The panel represents a cross-section of countries surveyed annually from 1960-2009. Citing Gujarati (2003, 638), Yaffee (2003) says that "with repeated observations of

enough cross-sections, panel analysis permits the researcher to study the dynamics of change with short time series. The combination of time series with cross-sections can enhance the quality and quantity of data in ways that would be impossible using only one of these two dimensions (1)"

The analysis has both spatial and time dimensions. The spatial aspect of our panel data is the SSA countries under consideration. This allows for increased observations and more degrees of freedom. For instance, if we have 10 countries over a time span of 10 years, our pooled dataset will have 10*10= 100 observations. One advantage of panel datasets is that it controls for variables that we cannot measure or observe such as cultural difference, and other country specific endogenous variables. It also controls for "variables that change over time but not across entities (i.e. national policies, federal regulations, international agreements, etc.). Therefore, it accounts for individual heterogeneity" (Torres-Reyna).

Because our dataset on SSA countries has several missing values for variables due to the lack of availability, our panel dataset will be unbalanced. We will be using two main types of regression models:

- Random effect: A random effect model is used when differences across countries have no impact on the real GDP per capital. The country specific effects that vary

from one country to another are random and uncorrelated with the independent variables.

- Fixed effect: The fixed effect model was used because we are looking at the effect of time variant variables. Because country specific effects can have or not an impact on the real GDP per capita, the fixed effect regressions controls for it. The fixed effect regression, by controlling for effect of the time-invariant characteristics of the independent variables, will give us a net effect of the explanatory variables under consideration and avoid risks of omitted variable bias.

3.3.1 Empirical results

Recall that FINDEP represent the total deposits in the financial system as a percentage of GDP, CPS is the total credit to the private sector as a percentage of GDP, M2 is the broad money measure, NIM the net interest margin of banks and BANKCONC the banking sector concentration.

VARIABLES	CPS	M2	FINDEP	NIM	BANKCONC

CPS	**0.00436*** **				
	-0.000629				
M2		**0.00827*** **			
		-0.00107			
FINDEP			**0.891*** **		
			-0.104		
NIM				**-0.733** **	
				-0.306	
BANKCONC					**-0.316*** **
					-0.0584
Constant	5.960***	5.851***	5.779***	6.317***	6.547***
	-0.134	-0.146	-0.154	-0.182	-0.189
Time fixed effect	**No**	**No**	**No**	**No**	**No**
Observations	659	659	611	217	247
N °countries	31	31	29	21	22

The table above shows the results of a random effect regression conducted on the SSA countries for which data were available. The number of countries used ranges from 31 to 22 depending on the variable in consideration. The F-statistics of our regression is less than 0.05, which tells us that our model is suitable. Because macro variables are highly interconnected, we regress each variable at the time to avoid multicollinearity[20] issues. When the explanatory variables are correlated, the precision of the estimator is affected and the single effect of a variable becomes hard to measure.

The result, as predicted, tells us that CPS, M2 and FINDEP have a statistically

[20] Multicollinearity occurs when two or more predictors in the model are correlated and they provide a redundant and provide redundant information

significant impact on the real GDP per capita. More explicitly, if CPS for instance increases by 1 unit, the real GDP per capital will increase by 0.4%.

Similarly, we can observe that banking sector variables, NIM and BANKCONC, have an important negative impact on real GDP per capita. This says that if the banking sector becomes too concentrated, it will have a negative impact on the economy.

According to Beck & Demirgüç-Kunt (2009), higher levels of net interest margins and Indicate lower levels of banking efficiency. As banks incur higher costs, there is a higher wedge between lending and deposit interest rates. They further realized that poorer countries have typically higher net interest margins.

The Haussmann test was used to assess whether one or more explanatory variables in the regression model is endogenous. If so, then a fixed effect model must instead be used.

The results (see appendix 6) suggest that we should look into the fixed effect as well since the χ^2 statistic is significant (0.012). A time-fixed effect test was also used. It is an F-test that determines whether or not the time dummy variables a statistically equal to 0. We fail to reject the null hypothesis, which suggests that our model should include a time fixed-effect.

Following the results from the test run, we analyze the model using a regression with time-fixed effect

VARIABLES	CPS	M2	FINDEP	NIM	BANKCONC
CPS	**0.00269*** **				
	-0.00062				
M2		**0.00513*** **			
		-0.00111			
FINDEP			**0.570*** **		
			-0.114		
NIM				-0.244	
				-0.225	
BANKCONC					-0.0882
					-0.0609
Constant	6.146***	6.122***	6.076***	6.445***	6.560***
	-0.15	-0.15	-0.112	-0.0762	-0.101
Time fixed effect	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Observations	659	659	611	217	247
R squared	24%	25%	25%	63%	56%
N °countries	**31**	**31**	**29**	**21**	**22**

The results are consistent with our hypotheses. As expected the two-tail t test on our explanatory variables suggests that CPS, M2 and FINDEP have a positive and statistically significant effect on economic growth. However, the results suggest that NIM and BANKCONC under the fixed effect model, are statistically insignificant.

Hence, there is not enough evidence for a strong analysis of the impact of banking sector variables on the log of real GDP per capita in the SSA countries under consideration.

It is observed that a one-unit increase in financial development proxied by FINDEP leads to a 0.57% increase in the real GDP per capita.

Every fixed effect regression gives a rho value. Rho is a measure of the intraclass correlation. It can be considered as the weight of the standard deviation of the countries' standard error with respect to the overall error term. For both models, the value of rho is greater than 0.97, which tells us that over 97% of the variance is due to differences across panels. Hence, differences in real GDP per capita can be greatly explained by country specific effects.

Following the study on the financial system variables, the next stage in the empirical study is to specifically examine the relationship between capital markets and economic growth. For that purpose, we need to retain in our dataset only the countries that have a capital market and where data is available. The countries retained are Botswana, Ivory Coast, Ghana, Kenya, Nigeria and South Africa.[21] The model, as previously defined, will be a fixed effect regression. To refine our model choice, a test for different characteristics that the data could display .

[21] South Africa represents an outlier and had to be removed in some instances to avoid distorted results.

First we test for group wise heteroskedasticity since it is a panel data. Heteroskedasticity occurs when the variance of the error terms differ across observations. Under heteroskedasticity the t-statistics will be biased and it becomes difficult to accurately determine whether or not the coefficient estimates are statistically significant.

The Lagrange-Multiplier test for serial correlation is also conducted. Serial correlation occurs when error terms from different time periods, or cross-section sections, are correlated meaning that the errors associated with a given time period carry over into future time periods. Serial correlation does affect the consistency of OLS estimators, it affects their efficiency and fir positive serial correlation for instance, the OLS estimates of the standard errors will be smaller than the true standard errors (Serial Corr. A brief Overview).

To test for serial correlation, a Wooldridge Test is conducted. The F-statistic of 83.33 which corresponds to a probability value of 0.0008 confirms that we have serial correlation. Because there is heteroskedasticity and autocorrelation there is a need to use a panel corrected standard error (PCSE) model that estimates for linear cross-sectional time-series models. PCSE produces larger standard errors that lead to more conservative estimators compared to regular OLS regressions. More specifically, with this model, the standard errors are assumed to be display heteroskedasticity and

contemporaneously correlated across the panel.

A run of four distinct versions of the PCSE model will include:

1. A PCSE model with no fixed effect
2. A fixed effect regression with no time effect, just a country effect to better asses the impact of time specific effects.
3. A fixed effect with both a time and country effect control
4. A fixed effect with both a time and country effect control and a correction for a first order autocorrelation. The correction is done using a Prais Winsten transformation.

The smaller sample also confirms that positive link between the credit to the private sector variable and economic growth proxied by the log of GDP per capita (see Appendix 5 for table). A note that although the signs are all positive for the four models, the results show that it is not always significant statistically. This is not to say that the variable is irrelevant, but there are not have enough evidence to empirically ascertain that the credit to the private sector is a strong component of economic growth in our five countries. This positive but uncertain result confirms the work by Giuliano and Riuz-Arranz (2005). They found that proxies for financial development such as credit to private sector have a statistical significance only for with intermediate and high level of financial development but that for countries with less availability of

capital, remittances are a large capital inflow and a substitute for financial development.

VARIABLES	Model (1)	Model (2)	Model (3)	Model (4)
FINDEP	**1.140*** **	**1.722** **	**0.993** **	**0.499***
	-0.39	-0.696	-0.464	-0.285
Year			**-5.091*** **	-0.00319
			-0.875	-0.00342
Year2			**2.563*** **	0.00714**
			-0.44	-0.00344
Botswana		-1.177***	-1.310***	0
		-0.122	-0.104	0
Ghana		-2.414***	-2.564***	-2.324***
		-0.217	-0.165	-0.136
Kenya		-2.123***	-2.178***	-1.832***
		-0.117	-0.107	-0.167
Nigeria		-1.862***	-2.022***	-1.839***
		-0.107	-0.0951	-0.114
Constant	5.096***	7.616***	5,064***	0
	-0.144	-0.282	-870.4	0
Observations	**120**	**120**	**120**	**120**
R-squared	**63%**	**96%**	**97%**	**100%**
N °countries	**5**	**5**	**5**	**5**

Unlike the CPS variable, we here have positive and statistically significant coefficients, which confirms the hypothesis that says that the size of the financial intermediaries sector is relevant to economic growth. This table tells us that a one percent increase in the financial depository base will increase GDP per capital by about 1.72 percent if we do not include a time effect but given the significance level of the time variable, we know that the effect of the financial depository base is lower (about 1 and

0.5% respectively) for model 3 and 4.

Now we review capital market variables to assess their empirical impact on economic growth.

VARIABLES	Model (1)	Model (2)	Model (3)	Model (4)
STOCKMKTCAP	**1.498***	**0.668*****	**0.0927**	**0.142***
	-0.803	-0.0917	-0.122	-0.077
Year			-1.33	-0.0161***
			-2.055	-0.00337
Year2			0.68	0.0202***
			-1.028	-0.00338
Ghana		-2.241***	-2.241***	-2.165***
		-0.0551	-0.0388	-0.04
Nigeria		-2.151***	-2.259***	-2.210***
		-0.025	-0.0227	-0.0269
Constant	3.465***	8.200***	1309	0
	-1.301	-0.129	-2054	0
Time-fixed effect	No	No	Yes	Yes
Observations	45	45	45	45
R-squared	65%	100%	100%	100%
N °countries	3	3	3	3

The table above ascertains that stock market capital ratio as a percentage of GDP, has a positive and statistically significant impact on the economic growth of the countries we are looking into.[22]

Our analysis revealed that the proxy for capital market development that most strongly contribute positively to economic growth is the per capital number of listed companies. The table below shows that there is a positive correlation between the number of

[22] The third model actually displays a positive relationship but does not confirm statistical significance

listings and economic growth. This confirms our hypothesis: an increase in the number of companies listed tells us that there are more companies that make use of capital markets for financing purposes. These boost productivity in the economy and supports economic growth. Hence the size of the capital market will strongly have an impact on economic growth. If the market capitalization to GDP ratio and the number of companies listed increase, real GDP per capita will be positively impacted.

As for the impact of the other control variable, we see in (appendix 5) that inflation has a negative impact on economic growth. Indeed, countries with lower inflation rate. Rousseau and Watchel (2000) had concluded in their study that inflation has a negative impact on economic growth due to its negative impact on financial depth. "Nevertheless, the tripartite relationship is particularly important because inflation is related to financial repression. Inflation can repress financial intermediation by eroding the usefulness of money assets and by leading to policy decisions that distort the financial structure. The channel by which inflation effects growth may run, at least in part, through the financial sector" (2).

VARIABLES	Model (1)	Model (2)	Model (3)	Model (4)
NUMCIELISTED	**26.43*** **	**11.06*** **	**6.674*** **	**4.801*** **
	-0.547	-2.6	-0.903	-0.872
Year			**-**6.250***	-0.0201***
			-1.185	-0.00194
Year2			3.136***	0.0240***
			-0.592	-0.00196
Ghana		-1.151***	-1.663***	-1.768***
		-0.219	-0.0867	-0.0845
Nigeria		-1.279***	-1.704***	-1.841***
		-0.219	-0.0814	-0.0762
South Africa		0	0	0
		0	0	0
Constant	5.705***	7.259***	6,235***	0
	-0.186	-0.325	-1187	0
Time-fixed effect	No	No	Yes	Yes
Observations	46	46	46	46
R-squared	**99%**	**100%**	**100%**	**100%**
N °countries	**3**	**3**	**3**	**3**

To strengthen the analysis, we now look at selected results from running the regressions now using lagged variables. If we look at the stock market variable, it is statistically relevant at the one year lag and the coefficients are positive as well and consistent with our previous results. Here the statistical significance applies to all four models unlike the non-lagged variable. A similar observation can be done using the

number of companies listed lagged on period.

VARIABLES	Model (1)	Model (2)	Model (3)	Model (4)
NUMCIELISTED (LAGGED)	**26.52*** **	**11.92*** **	**5.296*** **	**4.522*** **
	-0.72	-2.05	-1.029	-0.931
Year			-4.419***	-0.0190***
			-1.175	-0.00212
Year2			2.221***	0.0229***
			-0.586	-0.00214
Ghana		-1.052***	-1.759***	-1.782***
		-0.189	-0.103	-0.0927
Nigeria		-1.217***	-1.822***	-1.866***
		-0.171	-0.0916	-0.081
Constant	5.592***	7.116***	4,403***	0
	-0.198	-0.276	-1177	0
Observations	46	46	46	46
R-squared	**99%**	**100%**	**100%**	**100%**
N °countries	**3**	**3**	**3**	**3**

It is noticeable that the coefficients across all four models remains generally unchanged or with very insignificant increases. Although it does not confirm that there is a strong lagged effect of the stock market variables, it does reject any potential reverse

causality hypothesis. Although the fact that lagged values of stock market variables have a similar coefficient than their contemporaneous variable does not make a case for the direction of the causality going from capital markets development to economic growth. However, it rules out the possibility of reverse causality taking place in our model. If that were the case, the results of the regression would display significantly lower estimates as the independent variable is changed from the contemporaneous to the lagged variable.

The total value traded and the turnover ratio variables provided inconsistent mixed results accross four models and are therefore not reported. There were generally two type of results: either the signs where inconsistent across the models or the variable were not significant. This result persisted even with the removal of South Africa from our sample to avoid biased estimated. Because the proxy for capital market development is not strictly determined in the theory, a log function of the total value traded as a percentage of GDP and the turnover ratio were used instead of the linear function. This would be analyzing the impact of the elasticity of real GDP per capital with respect to the explanatory variables. We still got insignificant results which do not allow us to conclude on the impact of liquidity on economic growth. One could expect better results if only the late 2000s were used in our analysis but that would significantly reduce our number of observations.

The remaining variables such as the interest rate spread, inflation, FDI and politics have varying signs and statistical significance across the model. This could be due to the heterogeneity of the African countries. Although the level of real GDP per capita could be similar, there are inherent differences in economic policies, financial liberalization, investment environment (hence investment risk levels) that could explain the divergence of the results. To better analyze the relationship between capital markets and economic growth, it is important to consider countries independently for more accurate results.

Chapter 4: Capital markets and economic growth: A time series analysis

The empirical study conducted reveals a positive correlation between capital markets and economic growth but a survey of the literature shows no definite conclusion of the causality and its dynamic remains ambiguous. This ambiguity could be explained by the fact that financial development does not have a strictly direct impact on economic growth and instead influences growth through its effect of capital

formation and total productivity. Thus, we do not have a linear relationship between financial development and economic growth and, as stated above, the channels are numerous.

This resulted in an increasing amount of studies of country-specific effects of capital markets on economic growth. The heterogeneity of the intercept and slope of this relationship could make the country specific study more accurate in terms of the direction of the causality. This chapter follows on our study of the effect of capital markets on economic growth in SSA countries, focusing on South Africa and Nigeria as case studies.

4.1 Time series analysis: literature review

There is in the literature a large amount of studies that have conducted time series analysis on financial development and economic growth.

Wadud (2009) looked at the relationship between financial development and economic growth for India, Pakistan and Bangladesh. He made use of a cointegrated vector autoregressive model to assess the long-run relationship between financial development and economic growth. The empirical findings indicate causality between financial development and economic growth, with the causality going from financial development to economic growth.

For Nigeria, Adam(1998), Odekokun (1989) and Agu & Chukwu (2008) have looked into the causality of financial development and economic growth. Specifically, Agu & Chukwu (2008) empirically looked at the causal relationship between "bank-based" financial development and economic growth using the Toda- Yamamoto non causality procedure.

Azege (2004) examined the empirical relationship between financial development and economic growth. He focused on the effect of deposit money bank assets to the GDP and concluded that there was a positive link between financial development and economic growth. As a result, he recommends a further development of financial intermediaries' institutions in Nigeria.

Odiambho (2004) investigated the role of financial development on economic growth in South Africa. He used the Johansen cointegration approach and vector error correction model to empirically conclude that there the supply- leading hypothesis—financial development to economic growth causal relationship—in South Africa. In fact, the Granger causality tests on the three variables for financial development measures, confirmed that the causal relationship runs from economic growth to financial development thus suggesting that the demand-following phenomenon is predominant in South Africa.

Adam (1998) used a 2-staged least square model to examine the impact of financial intermediation and assess the efficiency of financial intermediaries in Nigeria's growth

performance. The empirical results show that financial intermediation did not necessarily impact positively on economic growth.

Ndako (2010) examined the casual relationship between banks, stock markets and economic growth in South Africa through a Vector Auto regression (VAR) approach. His research concluded that there is bidirectional causality between financial development and economic growth in terms of the banking sector. When we look at the stock market variables however, we have a unidirectional relationship that runs from economic growth to the capital markets.

Following a similar procedure than the studies outlined above, a VAR approach is used to find a cointegration relationship between capital markets and economic growth. Then, a Granger causality test with the financial markets variables will be conducted to see if there is some a causal relationship, Granger in this case, between capital markets and economic growth both in South Africa and Nigeria.

4.2 Overview of the South African Capital Markets

The South African stock market is the largest and most developed capital market in SSA. It has one exchange, the Johanesburg Stock Exchange (JSE), established in 1887 by the colonial government to finance the locally created companies and subsidiaries of multinationals present in South Africa.

In 2008, the South African financial system has been ranked 25th in the world by the World Economic Forum First Development Report ahead of India, Russia and Brazil which ranked 31st 36th and 40th respectively (Ndako Sec 2) "South Africa's sophisticated financial system is sound; the system is diversified and spans a broad range of activities that are supported by elaborate legal and financial infrastructure and generally effective regulatory framework." (IMF 2008 6)

Nowadays, in terms of market capitalization, it is one of the largest in the world and is included in indices such as the Morgan Stanley Index and the International Finance Corporation (IFC) Emerging markets indices.

The JSE is also a much diversified market comparable to western markets. It has developed a derivative market and an agricultural products market, which is an innovation in SSA where most capital markets are mainly stock markets. It is reported that the JSE's Single Stock Futures market is the fourth largest in the world and trades 135 futures. It comprises 73% of the derivatives traded on the exchange (South Africa.info). At the moment, trade that occurs through the exchange concerns products such as maize, wheat, sunflower seeds and soybean futures and options contracts. According to the South Africa Reserve Bank report (2008), the JSE operated the twelfth largest derivatives exchange in the world in terms of volume and remained the largest global participant in single-stock futures based on the number of contracts traded.

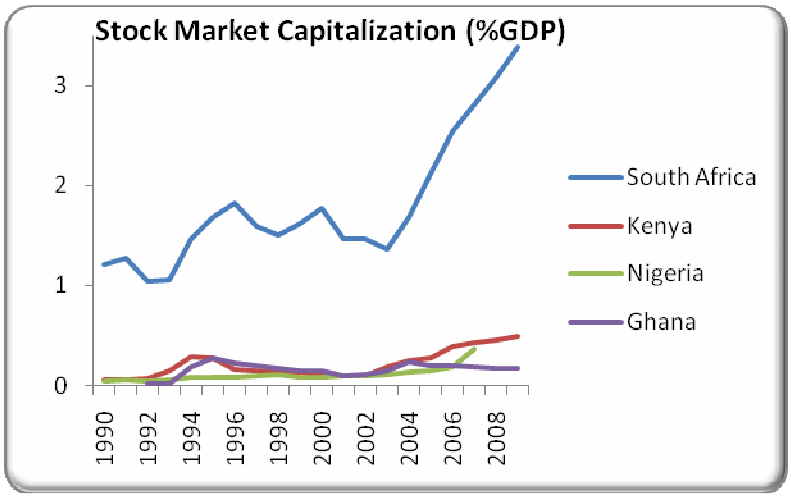
South Africa is one of the African capital markets with the strongest bond-trading component. In 1996, the Bond Exchange of South Africa was licensed to trade and within the same year, in 1996/97, more than 430 000 stocks with a nominal value in excess of US $704 billion were traded. BESA currently has an annual liquidity 38 times the market capitalization, making it one of the most liquid emerging bond markets in the world.

The JSE underwent several reforms that boosted its performance and allowed for greater internationalization. In 2008, the Share Transactions Totally Electronic – STRATE allowed South Africa to be in line with advanced international practice and enhanced the security of settlements in the equities market by switching from paper to electronic settlements

The JSE also took on several other reforms that led to a steady growth in market capitalization. In 2002, all listed securities were migrated to the STRATE electronic settlement environment and this greatly improved consumer confidence as it provided a signal of market transparency and integrity.

In May 2002, the JSE commenced trading on London Stock Exchange and currently, South African securities are traded simultaneously in Johannesburg, London, New York, Frankfurt and Zurich. This liberalization of the JSE has resulted in a steady increase in stock market turnover and the improved liquidity led to an increase in the foreign investment in local financial assets. As a result, the JSE has outperformed all the

other African stock exchanges and its market capitalization is among the largest in the emerging market (see Figure 3 and 4)



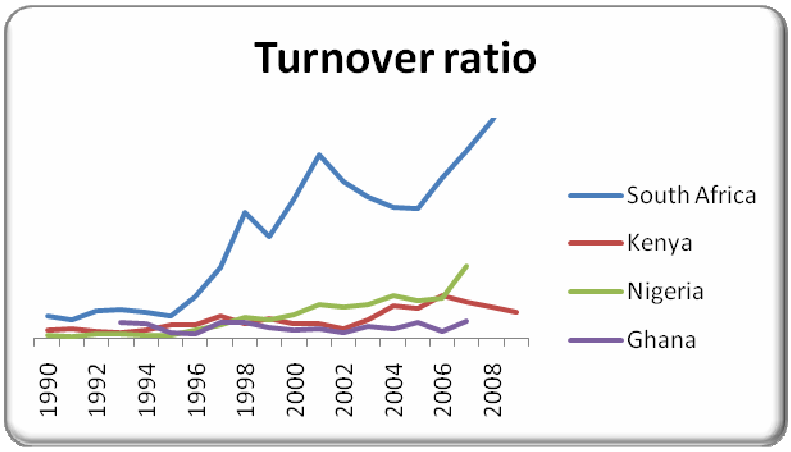


Figure 3 and 4
Source: World Development Indicators 2011

4.3 Overview of the Nigerian Capital Markets

The Nigerian Stock Exchange (NSE) was established in Lagos in 1960. It started with 19 securities listed and nowadays has almost 300 companies listed.

Over the years, branches opened up in several sites and there are now branches in Kaduna (1961), Port Harcourt (1978) Kan (1980) Onitsha Ibadan (1990) Abuja (1999) and Yola (2002). "The Nigerian stock exchanges a private, non-profit making organization, limited by guarantee. It was incorporated via the inspiration and support of businessmen and the federal government through the CBN, but owned by about 300 members" (Impact Nig. Stock Mkt Crises chapter 1). There are about 200 dealers of all kinds (stockbrokers) who buy and sell shares both locally and internationally.

The Lagos Stock Exchange is a Self Regulated exchange (Self-Regulated Organization) which makes and enforces rules for its members. It also is subject to government regulations through the SEC (Securities and Exchange Commission). The SEC's role is to maintain surveillance over the securities market to ensure orderly, fair and equitable dealings in securities, in order to protect the integrity of the securities market against abuses that may arise from insider trading (Clark 1998)

The companies listed in the NSE represent all the economic sectors ranging from the primary markets (agriculture) to tertiary activities (services). They are both local and foreign companies (local affiliated or subsidiaries of multinationals). In terms of the securities traded, the NSE has both first and second tier securities. Goldman Sachs defines a first tier security as an eligible money market security, which receives the top short-term rating from any two Nationally Recognized Statistical Rating Organizations

(NRSROs). Also, a second tier security as an eligible money market security that is not a First Tier security and receives one of the top two short-term ratings from any two NRSROs. (Goldman Sachs.com)

Cited in the article *The Impact of the Nigerian Stock Market Crises on the Nigerian Economy,* Oladejo, R. (2003) argues that the Nigerian capital markets have indeed benefited the country by:

1. Helping the economy increase in capital formation
2. Providing funds to government and companies at more attractive terms,
3. Providing best source of funding for SME growth,
4. Subjecting firms to market discipline thus enhancing chances of success and
5. Providing the necessary elements to manage financial risks and ensuring continuity of the enterprise long after the founder. This is verified by the improved performance of the NSE.

The Exchange maintains an All-Share Index formulated in January 1984 (January 3, 1984 = 100). It is therefore a value-relative, meaning that the daily values reflect relative values and not the absolute value of the total listings. In terms of market capitalization performances, for period spanning 1990-2009 the average market capitalization was N14.21 billion with highest capitalization of N86.3 billion in 2007 and lowest capitalization of N1.03 billion in 1993. Looking just at the past decade (2000-2009) the

average market capitalization was N26.1 billion with highest capitalization of N86.3 still in 2007 and a lowest capitalization of N4.2 billion in 2000. This illustrates an increasing trend in the market capitalization of the index.

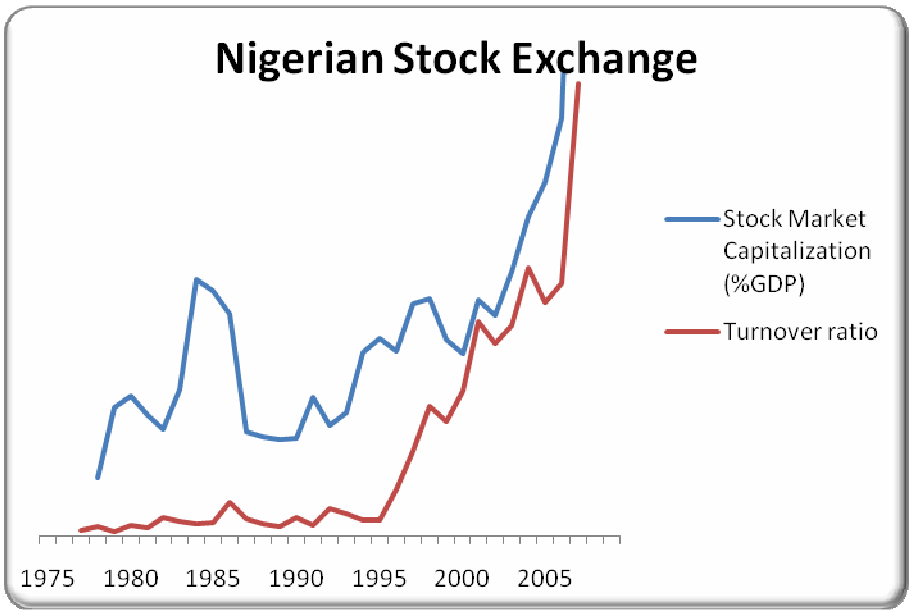


Figure 5
Source: World Development Indicators 2011

Despite some good stock market performances, there is still a large number of Nigerian companies that have yet to list on the exchange. There are a couple of factors that account for lack of interest by Nigerian companies to list on the exchange. First, there is a high cost of public quotation and stringent requirements for listing. Second, the interest rate structure in the past favored debt financing over equity financing, and finally, there is a clear reluctance to dilute ownership and control through public quotation (Adeyemi, 1998). To that extent, the government is undertaking several

actions to reassure management of the non listed companies and increase the number of listings. This will have a positive impact both on the market capitalization and the liquidity of the exchange.

As mentioned above, the liquidity of a market tells us how readily investors can get rid of assets they no longer want to hold and diversify their portfolio risk to the desired level. High liquidity markets are more attractive and to investors and contributes positively to the economic performance of a country. As defined above, the turnover ratio is used as an index of comparison for market liquidity rating and level of transaction costs. It equals the total value of shares traded on the stock market 9 divided by market capitalization. It is measures the value of securities transactions relative to the size of the securities market. As illustrated in figure 5, the NSE has experienced an increase in the turnover ratio. However, the numbers are quite low compared to other emerging markets. For instance, in 2009, Brazilian markets had a turnover ratio of about 60% when the Nigerian market turnover ratio averaged 13%. This striking difference between the two figures illustrates the relative illiquidity of the markets.

During the beginning of our study period, NSE only had 19 listed companies and now there are 292 listed companies. The growth trends of the number of companies listed (proxied by the number of companies listed per 10k) are illustrated in the table.

From our dataset and the survey of the NSE done by Osinubi (2004) we can notice that the index has several periods of both increasing and decreasing trends over the years. The exchange experienced an "astronomical increase of 131% from 2,205 in 1994 when it closed at 5,092.2 in 1995. The increasing trend in the index continued until 1998 when it decreased from 6,440.5 in 1997 to 5,716.1 in 1998 and 5,266.4 in 1999 (Osinubi 2004). According to Osinubi (2004) the drop in the index value in 1998 is associated with a series of upward adjustments in the Minimum Rediscount Rate (MRR). [23] This effect, associated with other economic problems associated with the high interest rates in the economy during the following decade, attracted funds away from the capital market. In April 1999, the Nigerian Stock Exchange launched its Automated Trading System (ATS). This new computerized system was designed not only to make the market more efficient and transparent, but also allow for the internationalization of the exchange.

Unlike South Africa**,** the Nigerian market is quite small compared to other emerging markets, with only roughly 220 securities listed and a market capitalization of approximately N8 trillion. However, in the African context, it ranks 4th behind South Africa, Egypt and Morocco in term of market size. It therefore ranks second in SSA.

[23]Defined as the rate at which the minimum rate of interest charged to member banks when they borrow from the Central Bank

Among the emerging markets, Nigeria's share of emerging market capitalization out of 54 markets covered by Standard and Poor's was just 0.1% at the end of 1999 (qtd in. Osinubi)[24]

There are several reasons we can identify to be the possible reasons for the smallness of the Nigerian stock exchange. First, there is a high transaction cost associated with stock market transactions. High transaction costs occur in uncompetitive markets and, given the small amount of dealers and experts in the NSE, it is understandable that transaction cost is higher compared to other countries. Second, the NSE is characterized by its lack of transparency. The NSE has been impacted by several insider trading issues such as the AP debt concealment, Nestle Foods and Unilever shares scam. Third, several banks and major companies listed have been accused of submitting false (and inflated) revenues and return numbers. These led to a severe drop in investor confidence on the Nigerian stock market.

Finally, we can mention the poor economic performance that Nigeria has had during the 1990s.The Nigerian economy relies heavily on oil exports. Following the oil crisis in 1980s which saw a drop in prices, Nigeria was ruled for two decades by a series of dictatorships with a very poor economic management. The dictatorship regime heavily impacted per capita income, and "despite steady economic growth since the return to

[24] see Standard and Poor's Emerging Stock Markets Factbook (2000)

civilian rule in 1999, 2004 per capita income was only $500 (in current U.S. dollars), one-quarter of the mid-1970s levels" (USAID 2006 3)

In *The Nigerian Stock Market in Operation* (1986), Alile and Anao, mention that one of the reasons why the Nigerian stock market is small is that local entrepreneurs were not too keen to go public due to fear of losing control.

The government took several actions to solve these problems which include controlling for the high transaction costs. In 2008, the SEC enforced reduction of the broker fees by 50% in order to reduce transaction cost. To remedy the small size of the market, the Second-Tiers securities market was created (SSM). This was done to ease the entry requirements and allowed medium and small-sized enterprises to participate in the capital market. Osinubi (2004) identified further actions taken to improve the resource base of the stock market in Nigeria: the privatization of Public Enterprises, the link up of the exchange with Reuters Electronic Contributors System for on line global dissemination of stock information, the launch of the exchange's Intranets System (CAPNET), and the transition of the exchange from manual call-over Trading System to Automated System (ATS) in April 1999. It is also expected that the present democratic dispensation and the upcoming elections will have a positive on the turnover of the exchange.

4.4 Empirical analysis

Time series data, a data sample selected for a single entity over multiple points in time, can also be used to answer to same questions that we addressed using panel data series. This is to say that, using time series data, the contribution of capital markets to national output can be determined. The time series will be used to analyze the dynamics of the causality of the link between capital markets and economic growth. As mentioned earlier, it is not very clear in the literature what is the direction of the causality. Some scholars argue that it is unidirectional from either capital markets to economic growth or from economic growth to capital markets development. However, it is also argued that it is a bidirectional relationship and a dynamic analysis of the time series data can help us answer those questions for the considered countries. The dataset consists of data from 1975-2009 from the World Bank databank. Economic growth is proxied by the real GDP per capital. Capital market's activity is measured by the market capitalization as a percentage of GDP (stockcap), the total value traded as a percentage of GDP (valtraded), the per capita number of companies listed (numcielisted), and the turnover ratio (turnover). The ultimate aim of our empirical study is to test for the data and see if capital markets establishment leads to economic growth. Such a test will be preceded by a series of test that assess whether or not there

exist a long-term relationship between capital markets and economic growth in Nigeria and South Africa.

The first step involves testing whether or not capital markets and economic growth variables contain a unit root and if they display a co-integrating relationship. If the sets of variables contain a unit root, then the series contain a stochastic trend and any shock will have a permanent and long-term effect. Using the usual regression techniques to investigate the relationship between the variables, the results can be highly misleading if they are not cointegrated (Stock and Watson 1988). The variables could appear to be related when in fact they are not. If the sets of variables do not have a unit root, they are said to be stationary. The probability distribution of the variable in consideration to stay constant over time and any shocks in the variable has only a short-term effect.

To test for the stationarity of the variables in the time-series analysis two main techniques are used.

4.4.1 Unit root test

The Augmented Dickey- Fuller (ADF) test and the Phillips-Perron (PP) test are applied at the 1%, 5% and 10% to test for the stationarity of capital markets and economic growth variables. For the ADF test three cases were considered. In the first case, no constant and trend terms are included, then only a constant term is included and finally, both a constant and a trend term are included. The PP test considers the

case where the error terms are serially correlated and heteroskedastic. It also involves different cases that include or not a deterministic trend and a constant into the equation. The lag lengths are determined mainly using the Akaike Information Criterion (AIC) and the Standard Impedance Boundary Condition (SIBC). The null hypothesis of our test is that there exist a unit root in our variable and the alternative hypothesis is that there is no unit root.

For both countries, both the ADF and PP test suggest that the real GDP per capita and the stock market variables are non-stationary. This leads to a need for a test on the first difference of the variables to see if there exists a second unit root.

The results for the second unit root test are displayed below:

South Africa: Unit root test results

Variable	*ADF statistic*	*Critical Values*	*PP statistic*	*Critical Value*
DLNGDP	*-2.57 (drift)*	*-2.47 (1%)* *-1.71 (5%)* *-1.31 (10%)*	*-17.69 (constant)*	*-17.44 (1%)* *-12.76(5%)* *-10.36(10%)*
DSTOCKCAP	*-1.962 (no constant)*	*-2.66 (1%)* *-1.95 (5%)* *-1.60 (10%)*	*-13.414 (no constant)*	*-11.90 (1%)* *-7.30 (5%)* *-5.30 (10%)*
DTURNOVER	*-2.921 (no constant)*	*-2.66 (1%)* *-1.95 (5%)* *-1.60 (10%)*	*-13.221 (no constant)*	*-11.9 (1%)* *-7.30 (5%)* *-5.30 (10%)*

For South Africa, the results of the unit root test show that economic growth, proxied by the log of the real GDP per capita and the stock market capitalization and turnover ratio are stationary at first difference in an Augmented Dickey-Fuller (ADF) test and a Phillips- Peron (PP) test conducted at the 1%, 5% and 10% significance level.

Nigeria: Unit Root test results

Variable	*ADF statistic*	*Critical Values*	*PP statistic*	*Critical Value*
DLNGDP	*-1.689 (drift)*	*-2.50 (1%)*	*-30.884 (constant)*	*-17.74 (1%)*
		-1.71 (5%)		*-12.76 (5%)*
		-1.32 (10%)		*-10.36 (10%)*
DStockcap	*Inconclusive*		*-9.737(no constant)*	*-12.02 (1%)*
				-7.35 (5%)
				-5.32 (10%)
DTurnover	*-2.342(no constant)*	*-2.65 (1%)*	*-24.376 (no constant)*	*-12.06 (1%)*
		-1.95 (5%)		*-7.364 (5%)*
		-1.60 (10%)		*-5.33 (10%)*

For Nigeria, we get similar results with the LNGDP, Stockcap and the Turnover variable being the series that are first-order integrated. The Value Traded variable was found to be integrated at the second level, therefore, it cannot be included in our cointegration analysis since our variables must all be cointegrated of the same order.

4.4.2 Cointegration test

If economic growth and stock market variables being non stationary, it means that the variables when taken individually have long-term effects. It is therefore important to test whether or not two sets of variables share a common trend in order to have a cointegrating relationship. According to Engle and Granger (1987) two variables are co-integrated of order 1, if each variable individually is stationary in first difference, but a linear combination of the variables is stationary (integrated of order 0). If this is the case, then it is possible to model the data using a VAR (p-1) model to remove long run equilibrium dynamics. To test for the presence of a cointegrating relationship, it is important to first conduct a residual based cointegration test that aims to determine whether or not the residual of the OLS regression is stationary. If that is the case, then there exist a long-term relationship between the variables and that can be estimated using an Error-Correction Model (ECM).

The results of the residual based test are displayed below

Country	*ADF statistic*	*Critical Values*	*PP statistic*	*Critical Value*
South Africa	*-1.698 (no constant)*	*-2.66*	*-7.495 (no constant)*	*-11.9*
		-1.95		*-7.3*
		-1.6		*-5.3*
Nigeria	*-2.048 (no constant)*	*-2.658*	*-26.654 (no constant)*	*-12.02*
		-1.95		*-7.348*
		-1.6		*-5.324*

The test concludes that there is a long-term relationship between the stock market capitalization, the turnover ratio and the real GDP per capita for both countries, as two tests revealed the stationarity of the error terms.

In addition to the residual based test, the multivariate Johansen-Juselius cointegration test procedure that makes use of a trace test and a maximum eigenvalue test is applied.

In essence, the test is related to the rank of the matrix formed by the cointegrating vector. If the rank of the matrix is 0, then there is no cointegration, but if the rank is 1 we have cointegration of order 1 and the resulting matrix determines the equilibrium relationship of the variables. The Johansen method consists of two likelihood ratio tests: a trace statistic test and a maximum eigenvalue test. The trace statistic (λ_{trace}) tests the likelihood of the data fitting in a model that exhibits a rank of r (null hypothesis) against an alternative hypothesis of the rank being equal to n. The maximum eigenvalue test tests the null hypothesis of the matrix having a rank of r against an alternative hypothesis of a rank of r+1. The trace statistic is calculated as follow

$$J_{trace} = -T \sum_{i=r+1}^{n} \ln(1 - \hat{\lambda}_i)$$

Where T is the sample size and the sequence of λ_i are the least value eigenvectors.

The null hypothesis for this test here is that there are (n− r) unit roots. This corresponds to the residual based test aforementioned, where we have n = 2 and we test for 1

cointegrating relation. The trace statistic is expected to be close to zero if there are at most r cointegrating vectors (Sorensen 1997).

The maximum eigenvalue test is calculated as follows:

$$J_{\max} = -T\ln(1-\hat{\lambda}_{r+1})$$

This equation tests whether or not there are r+1 cointegrating vectors instead of 1 with the idea being that if the (r + 1)th eigenvalue can be accepted to be zero, then all the smaller eigenvalues are also zero.

Following our tests, the relationship between capital markets and economic growth can be represented using a VECM (Vector Error Correcting Model)

$$\Delta Zt = \Pi_{t-1}Z_{t-1} + \Gamma_1\Delta Z_{t-1} + \Gamma_2\Delta Z_{t-2} + ... + \Gamma_{p-1}\Delta Z_{t-p+1} + e_t$$

Where $\Delta Z_t = [\Delta Dep, \Delta Ind_1, ..., \Delta Ind_n]$. Here, 1,…n denote s the independent variables that are integrated of the same order than the dependant variable.

$$\Pi = -\left(1 - \sum_{i=1}^{p} A_i\right) \text{ and } \Gamma_i = -\left(1 - \sum_{j=1}^{i} A_j\right)$$

For i=1, . . ., p−1, the Γ_i measures the short run dynamics and the Π tells us about the cointegrating relationship.

Here, 1,…n denotes the independent variables that are integrated of the same order than the dependant variable.

If Π equals zero, it means that there is no cointegration and although the variables may be integrated of order 1, the non-stationarity can be corrected by taking the difference.

If Π has full rank— largest rank possible— then all the series must be stationary since the variables on both sides of the equation are stationary.

When Π has less than full rank but is not equal to zero, the variables are cointegrated with rank r.

South Africa : Johansen Cointegration test results

Null Hypothesis	*Alternative hypothesis*	*Trace statistic*	*Critical Value (5%)*
r=0	*r=1*	*25.21*	*24.31*
r≤1	*r=2*	*8.55*	*12.53*

Null Hypothesis	*Alternative hypothesis*	*Maximum Eigenvalue*	*Critical Value (5%)*
r=0	*r=1*	*16.66*	*17.89*
r≤1	*r=2*	*5.89*	*11.44*

Nigeria: Johansen cointegration test results.

Null Hypothesis	*Alternative hypothesis*	*Trace statistic*	*Critical Value (5%)*
r=0	*r=1*	*33.09*	*24.31*
r≤1	*r=2*	*5.52*	*12.53*

Null Hypothesis	*Alternative hypothesis*	*Maximum Eigenvalue*	*Critical Value (5%)*
r=0	*r=1*	*27.58*	*17.89*
r≤1	*r=2*	*4.87*	*11.44*

The trace test results from above suggest that we can reject the null hypothesis of no cointegration between our variables. Hence we have one cointegrating equation at the 5% level of significance. The maximum eigenvalue test was conducted based on the assumption that we have no trend or constant in the model and a maximum lag in underlying VAR model of 2. The results above are consistent with the trace test and suggest a rank of 1 for our cointegration matrix. Therefore, the Johansen integration test tells us that there is a long-run relationship between economic growth—proxied by the log of real GDP per capita— and the stock market variables proxied by the stock market capitalization and the turnover ratio (both as a percentage of GDP. Our cointegrating equation tells us that the change in real GDP per capital is positively correlated with the capital markets activity of South Africa and this suggests that we have a causal relationship in at least one direction (Engle & Granger, 1987).

It is worth noting that in the case of both, South Africa and Nigeria, the unit root test on the total value traded (%GDP) its first and its second difference implied that the variable is non-stationary.

4.5 Granger Causality test

Using this converted form of the VAR model, a Granger causality test is conducted to assess the long-term relationship between capital market development and economic growth. The Granger causality test is done by calculating the *F*-statistics based on the null hypothesis that the coefficients on the lagged values of the independent variable are not statistically different from zero. If the null hypothesis is rejected, then we can conclude that the independent variables do Granger cause the dependent variables.

South Africa: Granger Causality Test results

Cause and effect	*F statistic*	*P value*
LNGDP does not Granger causes Stockcap	*1.56*	*0.339*
Stockcap does not Granger causes LNGDP	*7.44*	***0.039***
LNGDP does not Granger causes Turnover	*0.79*	*0.587*
Turnover does not Granger causes LNGDP	*4.11*	*0.099*

The results above suggest that the finance-led theory holds in the case of South Africa. Indeed, there is evidence the rejection of the null hypothesis in favor of the alternative hypothesis and state that stock market capitalization Granger causes economic growth. However, there is no evidence to confirm the growth led theory that says that economic growth has an impact on stock market activity. Therefore, there is a unidirectional relationship that goes from the capital markets to economic growth.

Nigeria: Granger Causality Test Results

Cause and effect	*F statistic*	*P value*
LNGDP does not Granger cause Stockcap	*1.78*	*0.193*
Stockcap does not Granger cause LNGDP	*1.61*	*0.223*
LNGDP does not Granger cause Turnover	*1.32*	*0.313*
Turnover does not Granger cause LNGDP	*3.45*	***0.036***

The table above displays the results of our Granger causality test for Nigeria. From the results, it can be inferred that the turnover ratio Granger causes economic growth with no feedback. This indicated us that an increase in the liquidity of the capital markets has a strong and positive lagged effect on the growth of the Nigerian economy.

The fact that there is no evidence that economic growth Granger causes the stock market capitalization and the turnover ratio (with no feedback in the case of stock market capitalization), implies that the size of the capital markets does not have a lagged effect on the economic growth. The results, although refuting the demand-led theory (economic growth leads to financial development with a lag), do not imply that there is no causal effect from one direction to another when contemporaneous or future values of the variables are evaluated. In the case of Nigeria, the lack of impact of the size of capital markets and economic growth could be explained by the fact that the high revenues generated from the from the oil exportations are sufficient to meet most financing needs.

Indeed, "Nigeria's oil exports rose 46 percent to N9.15 trillion ($59 billion) in 2010 as prices increased and companies raised output on improved security in the Niger River delta. (…) It is the top oil producer in Africa and earned $196 billion from oil and gas exports in the four years through 2010. (…)Oil exports represent more than 80 percent of government revenue and 95 percent of foreign-exchange income. " (Bloomberg). According to a study conducted by the African Development Bank, the oil and gas portion of the Nigerian economy's revenue accounted for 15% of the GDP in 2009 and rose to 21.6 % in 2010 and Intuitively, one could think that the oil revenue should sustain the economy and the government should make use of it for the financing

needs of the SMEs of the real sector. Therefore, it could be the case that the revenues are being invested into the private sector and firms with access to such revenues do not need to make substantial use of the capital markets. However, one should be aware that this is a hypothetical explanation as it is now common knowledge that in Nigeria, due to a high level of corruption and revenue mismanagement, the revenues from oil did not substantially and positively affect the economy.

To verify our claims, a new variable variable, oil rents (% GDP), is introduced. Indeed, we find that the oil rents do not Granger cause economic growth, proxied by the log of real GDP per capita. This confirms our assumption that oil, although the highest revenue-generating sector in the economy, is not channeled properly into the economy to spur economic growth.

From the results it can inferred that the capital market supports the non-oil sector part of the economy. To that effect, we will create a non-oil GDP variable by subtracting the percentage of GDP that is due to the oil sector. We then run a Granger test which gives us the same conclusion: the size of the capital markets does not Granger cause economic growth.

To strengthen our results, we also test for a contemporaneous relationship between the market capitalization of the Nigerian markets and the non-oil sector GDP. We first run a white noise test and a Durbin Watson test (DW) for autocorrelation. The

D-W test suggested the presence of serial correlation. To correct for it, a regression analysis based on a Prais-Winsten transformation is conducted but the results remain inconclusive. Finally, several a logarithmic and square root functional form of the stock market capitalization variable are introduced in the equation but again, both results were inconclusive. This suggests that the size of the capital markets does not have a statistically significant impact on the Nigerian economy.

However, liquidity does have both a contemporaneous and a lagged impact on economic growth. This result can be explained through the functional importance of liquidity in capital markets. As mentioned earlier, investors are attracted liquid platforms as they allow easy conversion of the assets. This allows for a diversification of risk in general and a reduction in liquidity risk in particular. Most of the investments in developing countries come from foreign direct investment and other sources of external funds, often channeled through the capital markets. If an FDI investor experiences high liquidity risk, he would sell his investment regardless of the returns and productivity. Therefore, a lower risk profile increases the foreign direct investor base, which will then increase investments. Since investments have a positive effect on economic growth, it is understandable that an improvement in the liquidity of the Nigerian capital markets has a positive effect, as well as a Granger causality effect on economic growth. Hence, the results could suggest that if the oil revenue was appropriately used to facilitate the expansion of companies and the economy, we could

have had a Granger relationship of one direction. Indeed, taking a close look at the companies listed on the Nigerian stock market, the absence of the large cap and high revenue generating companies of the oil and gas industry is highly noticeable. The fact that they are not listed could explain the lack of a large impact of capital markets in the growth of the economy since the oil industry, as mentioned earlier, is the main driver of Nigerian economy. To correct this negative effect and improve the capital markets activity, the Nigerian government recently put out a Petroleum Industry Act that will restructure the sector to improve the efficiency of the oil companies. It is believed that the current system lacks transparency, good governance, and is not aligned with international practices. Chapter 29 of the Act states that "in order to accelerate the expansion of the Nigerian insurance and capital market, the Directorate shall support policies that would make it mandatory for operators in the petroleum industry in Nigeria to first utilize the Nigerian insurance and capital markets before resorting to the international market, for the purpose of insuring their assets and raising capital." This bill encourages a higher involvement of oil companies in the Nigerian capital markets that could favor the financing of manufacturing and other Small and Medium Entreprises (SMEs) with the revenues from the oil sector. Capital markets will then be able to fulfill its capital transfer role from those in possession of large funds to those in need for financing. Capital markets' impact on both the non-oil and the whole GDP sector in general will be expected to be strongly positive.

Chapter 5: Recommendation and conclusion.

5.1 Policy recommendation

The results are consistent with the confirming that financial development indeed spurs economic growth. More specifically, it has been found that economic growth is positively correlated with the size and liquidity of the African capital markets. Therefore, policy makers should consider measures that aim at reducing the narrowness and increase the liquidity and efficiency of the stock markets.

Positive trends can already be witnessed in countries like Kenya where the capitalization growth is 12times bigger, while the market capitalization of the Mauritian market has risen from 30% to 80% of GDP even as the economy has also grown by 5% a year (Minney a). Also, the Ghana Stock Exchange was considered one of the world's best performing markets in early 2004, with a year return of 144 per cent in US dollar terms compared to 30 per cent return by Morgan Stanley Capital International Global Index, 26 per cent return by Standard & Poors in the USA and 32 per cent return in Europe amongst others (qtd.in Adjasi 2006 145)[25] .

[25] See Databank 2004

Despite the further growth prospects, on average, African markets are currently [2011]trading at less than 11 times trailing Price-Earnings ratio[26], compared to a trailing PE ratio of 16 times in developed markets (Minney a). As mentioned earlier, there are several obstacles to the development of SSA capital markets including their size and the lack of strong institutions. There is also a large informational asymmetry between the investors and the insiders of the financial markets. The information is skewed towards one group and the lack of sound data on companies makes investors quite reticent to invest in African capital markets.

As part of policies designed to improve capital market activities, there is a need to increase their size by increasing the level of savings from the local population. In SSA countries, most of the asset base and deposits are from foreign investors or assets of foreign parent companies. The aggregate savings in the financial system does not include most of the wealth of the local population that either keeps it as cash or invest it in land, cattle etc. For example, in South Africa, only half of the adult population has a bank account, and the United Kingdom's Department for International Development (DFID) estimates that the unbanked population Africa-wide is between 80 percent and 90 percent (qtd in Applegarth)[27]. Domestic savings are very low in the financial system

[26] A measure of valuing a share price compared to last year's net profits.

[27] Nicol Degli Innocenti, "Half of South Africa's Population Do Not Have Bank Accounts," Financial Times, November 11, 2003.

and policies to mobilize funds and increase savings could have a strong impact on the economic growth of SSA countries.

Policies should also aim at macroeconomic stability for a better investment environment. As mentioned earlier, government activity in the capital markets create a crowding out effect by exerting upward pressure on the interest rates and making investments less profitable. The government should adopt programs that rely more on long-term sources of financing through the issue of medium-term to long-term bonds. This will stabilize interest rates and encourage greater private participation in the securities market (Ziorklui).

Also, as shown by both the quantitative and qualitative, the banking sector still remains important in African countries. Nigeria being a good example, where most of the players in the capital markets are banks.[See appendix 12]

Therefore, the development of the capital markets should be contingent with the development of the banking sector. "At the early stages of its establishment the stock market is a complement rather than substitute for the banking sector. Developing the financial intermediary sector can promote stock market development." (Yartey 287). In their study, Demirguc- Kunt and Levine (1996) concluded that several stock market indicators are highly correlated with well- developed financial intermediaries. For SSA countries, Yartey (2007b) regressed stock market and banking sector variables,

controlling for macroeconomic variables, level of economic development and legal and political institutions. He concluded that a percentage point increase in banking sector development increases stock market development in Africa by 0.59%.

Another tool to increase the size and liquidity of African markets is to increase the number of financial instruments available to investors. Indeed, most African stock exchanges solely offer stocks and even bond markets remain very small. An increased amount of financial instrument could be achieved by creating a second tier market just like Nigeria did in 1985 by creating the Second-Tier Securities Market (SSM). Diversifying instruments and introducing derivatives trading could better mobilize savings. Also, diverse instruments would increase the attraction of both local and foreign investors. Products such as options, futures, convertibles, preferred shares etc., are risk management tools (considering how risky are African markets), this would make SSA stock exchanges more attractive. A note that given the recent turmoil in the global financial services, it may be the case that an increase in derivatives trading in SSA markets would not have the expected positive impact on foreign investors. However, certain derivatives such as futures for agricultural goods will make SSA markets more attractive to firms in the agricultural sector that still represent the largest industry group in many SSA countries.

As De Soto has argued in his book *The mystery of Capital*, stronger institutions are needed in SSA countries. SSA countries, with few exceptions, are not considered politically stable with good governance systems. Stronger institutions are important for stock market development because efficient and accountable institutions tend to be more appealing to investors. Yartey (2007) states that good quality institutions such as law and order, democratic accountability, bureaucratic quality are important determinants of stock market development in Africa because they reduce political risk and enhance the viability of external finance.(qtd in Yartey 2007 17)[28]. Political risk is considered by many scholars one of the biggest hindrances to investment in SSA markets. The high political risk faced in many African countries constitutes a premium on the cost of equity that could be detrimental, as it will weight negatively on the net present value of local projects. Policies should therefore aim at reducing it.

According to a study by the UNITR[29], the restructuring of African capital markets and the re-education of Africans and African institutions for the process, will attract both local and foreign investors investor interest, in investing in Africa and thus spur economic growth. Indeed, much of the local African population and even the more

[28] See The Institutional and Macroeconomic Determinants of Stock Market Development in Africa," in Okpara, John, ed., "*Management and Economic Development in Sub-Saharan Africa: Theoretical and Applied Perspectives*," London: Adonis and Abbey.

educated ones have a poor understanding of the functioning of capital markets. Most African stock markets should mirror the JSE that publishes basic educational materials on capital markets and financing instruments that are easily accessible on their website. To that effect, the Nigerian government, for example, operates a "Nigerian Banks SME Funding Scheme" where all Nigerian Banks must learn about the equity markets to better understand the products, its functioning, regulations and method of operations. This was a great stepping-stone in increasing awareness on the equity markets and deepened the understanding of the structure, the regulations and their mode of operation. These schemes create more experts who can better advise the populations on alternative savings means and increase the local and foreign investor base.

Since most of the SSA capital markets are narrow, integration should be promoted. Integration favors a pooling of resources that creates economies of scale in the capital market. An example of an integrated capital market is the BRVM that comprises of most of the countries that form the West African Monetary Union (OMOA) of the Francophone West African countries. A potential merger of the West African Monetary Union that will bring in the Anglophone West African countries, could also strengthen the markets by increasing the liquidity of the smaller markets and improve on the economic growth of the entire West African region.

Another major point that needs to be improved is the information disclosures to reduce information asymmetries. The fact that only insiders in the local African markets can get decent information on companies listed is a major hindrance to investment. Foreign investors' confidence is severally reduced by the lack of information. Due to the absence of rating agencies and of a well-established regulatory system, it is difficult for investors to assess companies' risk before undertaking any investment. SSA governments should work towards establishing rating agencies, equity research companies to evaluate the companies accurately and provide proper pricing of the listed stocks. The proper pricing will act as a signal to investors and enable them to assess the risk of the companies before making investment decisions.

In general, the financial sector in SSA countries are still heavily dependent on the informal sector. Capital markets should account for it and work with microfinance institutions to help them scale up activities while developing financial products for Small and Medium Enterprises (SMEs). Innovative financial tools that use technology such as mobile banking (well developed in Kenya for instance) can also help reduce the scope of traditional financing tools and the informal services and reach a larger population.

Finally, the bond market also needs to be further developed. Bond markets are

relatively underdeveloped in Africa's capital markets, yet they have the potential of mobilizing significant amounts of capital. They can also give African stock exchanges a tremendous boost in turnover as bonds are usually more attractive to investors than stocks. According to the African Development Bank's Financial Markets Initiative, Africa will need USD 20 billion in infrastructure investment per year which can only be sustainably financed through long-term bonds (qtd in OECD NEPAD 15).[30]

Therefore, a strengthening of the bond markets in certain countries (Nigeria) and a complete development in others (BRVM) will allow for local transactions that can reduce the debt service cost and keep certain stability in the interest rates.[31] Financial intermediaries such as insurance companies, should be encouraged to invest in the local bond market. By the government disengaging itself from statutory funds and putting in place adequate legislation to encourage the emergence of private insurance and pension funds could achieve this result.

All of the suggestions mentioned above, if enforced, could greatly improve the African economies through an increase in Foreign Portfolio Investment.[32] Investors in

[30] Mapping of Current Ongoing Initiatives related to Bond market Development in Africa. African Development Bank. 22 June 2009 http://www.afdb.org/en/news-events/article/donor-workshop-on-african-bond-market-4443/ .

[32] The Foreign portfolio investment represents passive holdings of securities such as foreign stocks, bonds, or other financial assets, none of which entails active management or control of the securities' issuer by the investor.

general will gain confidence in African capital markets and take more advantage of the larger returns. For an emerging country, FPI can help the economy move quickly to take advantage of the economic opportunities and create new jobs and generate significant wealth gains (Globalization.org). However, when a country's economic situation takes a downturn, sometimes just by failing to meet the expectations of international investors, the large flow of money into a country could quickly turn into a large outflow. Given the low local African Stock Exchanges' low investor base outflows of funds, should be avoid by enacting a set of policies as outlined above, in order to foster investors continent and sustain the increasing trend that have recently been occurring.

5.2Conclusion

Since the early 1990s, many SSA countries underwent substantial adjustments to their economic and financial policies in order to spur growth through a dormant private sector. Through policies that aimed at improving the private sector productivity, many SSA countries established capital markets in order to provide capital for financing needs. Capital markets constitute a market place that can efficiently channel savings to corporations in need of long-term financing. This paper has examined the relationship between capital markets and economic growth in selected SSA countries. A set of variables that measure the size and liquidity of the capital markets, as well as other

controlling variables, were used first in a fixed effect panel regression model and then in a time series analysis. The results of the panel analysis suggested first that financial development and economic growth indeed have a strong positive correlation. It was also concluded that capital markets, through size and the numbers of companies listed, have a significant positive relationship between economic growth. The results hold also when we introduce a lagged effect of the independent variable. Similar results were found in the time series analysis that suggests a long-term relationship between capital markets and economic growth. Although the results of the causality test were different for each country studied, the analysis confirmed that stock market development Granger cause economic growth in South Africa. As for Nigeria, the study revealed that it is the stock market development Granger cause economic growth through the improved liquidity that capital markets provide.

SSA capital markets are generating increased growth in market capitalization and stronger returns. However, more needs to be done to overcome the challenges that are still being faced and improve institutions, infrastructures and regulatory systems in order to better develop the capital markets and reach the performance level of other developing and emerging markets such as neighboring MENA capital markets. [33]

[33] This comment excludes South Africa.

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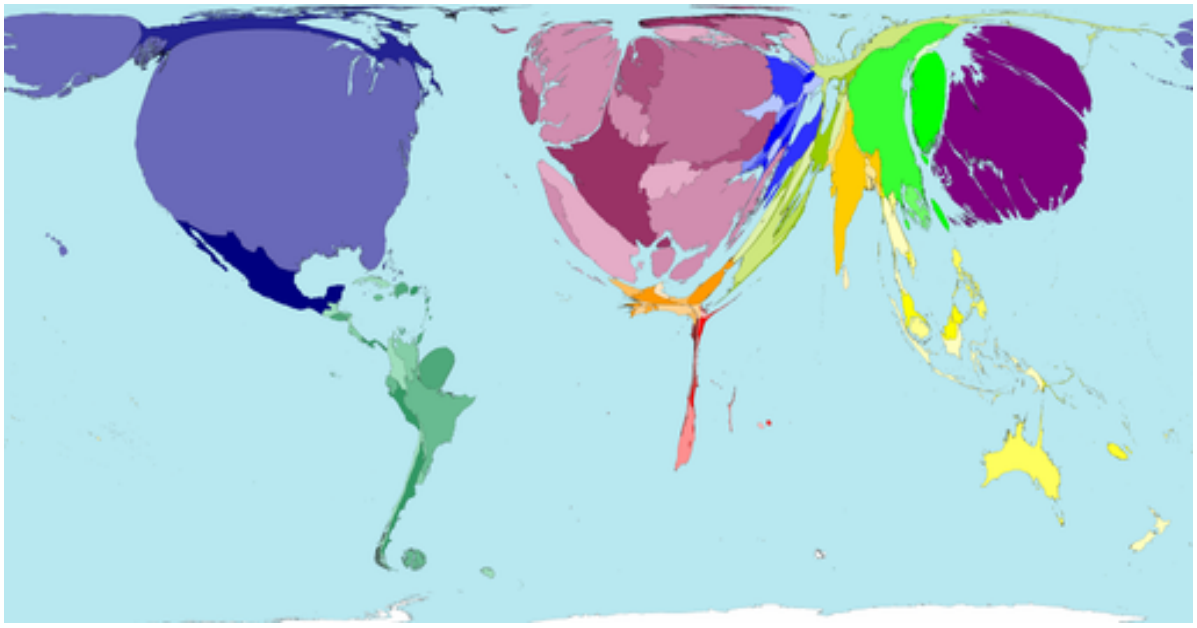
APPENDIX 1: Map of Sub-Saharan Africa (SSA)

Source: Action is necessary, a WordPress page

Retrieved from http://actionisnecessary.files.wordpress.com/2011/01/sub-saharan-africa.gif

Botswana	Ghana	Rwanda
Burkina Faso	Guinea	Sao Tome and Principe
Burundi	Guinea-Bissau	Senegal
Cameroon	Kenya	Seychelles
Cape Verde	Lesotho	Sierra Leone
Central African Republic	Liberia	Somalia
Chad	Madagascar	South Africa
Comoros	Malawi	Sudan
Congo, Dem. Rep.	Mali	Swaziland
Congo, Rep.	Mauritania	Tanzania
Cote d'Ivoire	Mauritius	Togo
Equatorial Guinea	Mayotte	Uganda
Eritrea	Mozambique	Zambia
Ethiopia	Namibia	Zimbabwe

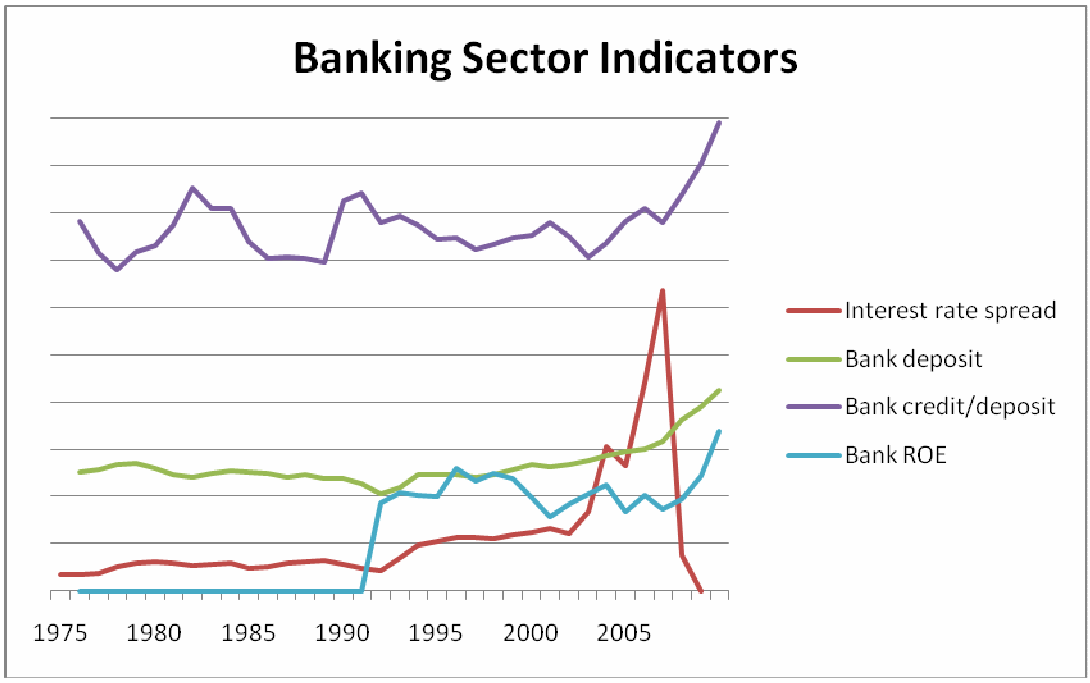
APPENDIX 2: WORLD GDP MAP



Source: *Ancelovici*. Wordpress.com

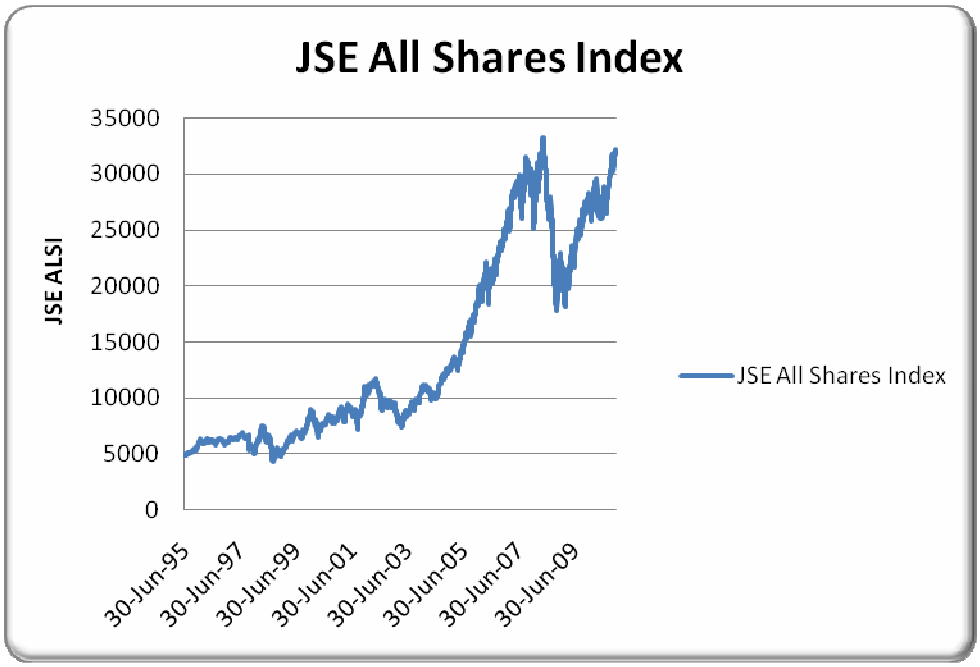
APENDIX 3: Banking Sector Indicators

Period	Sub- Saharan Africa (35 countries)					SSA without South-Africa (34 coutnries)				
	M2	Credit Pricvate sector (%GDP)	Financial System deposits (%GDP)	Bank Concentration ratio	Interest Rate Spread	M2	Credit Pricvate sector (%GDP)	Financial System deposits (%GDP)	Bank Concentration ratio	Interest Rate Spread
1960-69	23.57	9.29	0.08			25.70	11.78	0.11		
1970-79	17.67	14.41	0.14		5.75	19.42	16.43	0.16		5.93
1980-89	21.06	16.18	0.17		6.23	22.53	18.21	0.18		6.35
1990-99	21.08	13.81	0.16	0.86	9.63	22.50	16.99	0.17	0.89	9.78
2000-09	25.31	15.99	0.20	0.78	16.97	26.90	19.87	0.22	0.81	17.16
Average annual % change:										
60s to 70s	-0.33	0.36	0.44		1.00	-0.32	0.28	0.32		
70s to 80s	0.16	0.11	0.15		0.08	0.14	0.10	0.10		0.07
80s to 90s	0.00	-0.17	-0.04	1.00	0.35	0.00	-0.07	-0.05		0.35
90s to 00s	0.17	0.14	0.22	-0.09	0.43	0.16	0.14	0.22	-0.10	0.43



Data consists of the countries in Appendix 8

APPENDIX 4:JSE PERFORMANCE



APPENDIX 5: Full regression table of selected results

VARIABLES	CPS	M2	FINDEP	NIM	BANKCONC
CPS	0.00436***				
	-0.000629				
Inflation	-0.000913***	-0.000794***	-0.000831**	-0.000452	-0.000472*
	-0.00028	-0.000275	-0.000408	-0.000283	-0.000253
IntRate Spread	-0.000195	-0.00133*	0.0000688	-0.0000621	-0.000779
	-0.000811	-0.000806	-0.00161	-0.000868	-0.000652
Trade	0.00178***	0.00196***	0.00232***	0.00103*	0.00188***
	-0.000439	-0.000432	-0.000464	-0.000596	-0.000576
FDI	-0.000508	-0.000782	-0.000838	0.00214	0.000668
	-0.00161	-0.00159	-0.00166	-0.00158	-0.0015
Politics	0.000793	0.00242	0.00332**	0.0110***	0.00863***
	-0.00155	-0.00154	-0.00167	-0.00299	-0.00311
M2		0.00827***			
		0%			
Findep			0.891***		
			-0.104		
NIM				-0.733**	
				-0.306	
Bankconc					-0.316***
					-0.0584
Constant	5.960***	5.851***	5.779***	6.317***	6.547***
	-0.134	-0.146	-0.154	-0.182	-0.189
Observations	659	659	611	217	247
N °countries	31	31	29	21	22

VARIABLES	CPS	M2	FINDEP	NIM	BANKCONC
CPS	**0.00436*** **				
	-0.000629				
Inflation	-0.000913***	**-0.000794*** **	-0.000831**	-0.000452	**-0.000472***
	-0.00028	-0.000275	-0.000408	-0.000283	-0.000253
IntRate Spread	-0.000195	-0.00133*	0.0000688	-0.0000621	-0.000779
	-0.000811	-0.000806	-0.00161	-0.000868	-0.000652
Trade	0.00178***	0.00196***	0.00232***	0.00103*	0.00188***
	-0.000439	-0.000432	-0.000464	-0.000596	-0.000576
FDI	-0.000508	-0.000782	-0.000838	0.00214	0.000668
	-0.00161	-0.00159	-0.00166	-0.00158	-0.0015
Politics	0.000793	0.00242	0.00332**	0.0110***	0.00863***
	-0.00155	-0.00154	-0.00167	-0.00299	-0.00311
M2		0.00827***			
		-0.00107			
Findep			0.891***		
			-0.104		
NIM				**-0.733** **	
				-0.306	
Bankconc					**-0.316*** **
					-0.0584
Constant	5.960***	**5.851*** **	5.779***	6.317***	**6.547*** **
	-0.134	-0.146	-0.154	-0.182	-0.189
Observations	659	659	611	217	247
N °countries	31	31	29	21	22

VARIABLES	CPS	M2	FINDEP	NIM	BANKCONC
CPS	**0.00269*** **				
	-0.00062				
Inflation	**-0.000513***	-0.000402	-0.000117	**-0.000453****	-0.000351*
	-0.00028	-0.000279	-0.000419	-0.000207	-0.00021
Intrate Spread	-0.00223***	-0.00308***	-0.00403**	-0.00148**	-0.00176***
	-0.000853	-0.000851	-0.00188	-0.000627	-0.00055
Trade	0.00102**	0.00123***	0.00150***	0.000484	0.00116**
	-0.000432	-0.000434	-0.000483	-0.000432	-0.000469
FDI	-0.00321**	-0.00335**	-0.00337**	-0.00225*	-0.00268**
	-0.00157	-0.00156	-0.00167	-0.00116	-0.00123
Politics	-0.00451***	-0.00344**	-0.00287	-0.00334	-0.0017
	-0.00166	-0.00169	-0.0019	-0.00241	-0.00265
Year 2008					
	-0.158	-0.159	-0.124	-0.075	-0.0864
M2		0.00513***			
		-0.00111			
Findep			**0.570*****		
			-0.114		
Nim				**-0.244**	
				-0.225	
Bankconc					-0.0882
					-0.0609
Constant	6.146***	6.122***	6.076***	6.445***	6.560***
	-0.15	-0.15	-0.112	-0.0762	-0.101
Observations	659	659	611	217	247
R-squared	24%	25%	25%	63%	56%
N °countries	31	31	29	21	22

APPENDIX 6: Stata Output Hausman Test

	Coefficients (b) random	(B) fixed	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
cps	.0043608	.0041541	.0002068	.00009
inflation	-.0009129	-.0009102	-2.72e-06	.0000461
interestra~d	-.0001954	-.0001217	-.0000737	.000134
trade	.0017815	.0016269	.0001546	.0000553
fdi	-.0005077	-.0003287	-.000179	.0002664
politics	.0007928	.0006159	.000177	.0002443

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(6) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 16.32
Prob>chi2 = 0.0121

APPENDIX 7: Aggregate Financial sector Indicators

Period	Sub- Saharan Africa (35 countries)					SSA without South-Africa (34 coutnries)				
	M2	Credit Pricvate sector (%GDP)	Financial System deposits (%GDP)	Bank Concentration ratio	Interest Rate Spread	M2	Credit Pricvate sector (%GDP)	Financial System deposits (%GDP)	Bank Concentratio n ratio	Interest Rate Spread
1960-69	23.57	9.29	0.08			25.70	11.78	0.11		
1970-79	17.67	14.41	0.14		5.75	19.42	16.43	0.16		5.93
1980-89	21.06	16.18	0.17		6.23	22.53	18.21	0.18		6.35
1990-99	21.08	13.81	0.16	0.86	9.63	22.50	16.99	0.17	0.89	9.78
2000-09	25.31	15.99	0.20	0.78	16.97	26.90	19.87	0.22	0.81	17.16
Average annual % change:										
60s to 70s	-0.33	0.36	0.44		1.00	-0.32	0.28	0.32		
70s to 80s	0.16	0.11	0.15		0.08	0.14	0.10	0.10		0.07
80s to 90s	0.00	-0.17	-0.04	1.00	0.35	0.00	-0.07	-0.05		0.35
90s to 00s	0.17	0.14	0.22	-0.09	0.43	0.16	0.14	0.22	-0.10	0.43

Author's computations from *World Development Indicators 2010*. c

APPENDIX 8: SSA Capital Markets

Country	Year established	Number of companies listed		Annual Growth 1992-2002	Stock Market Capitalization (%GDP)		Total Traded Value (%GDP)		Turnover Ratio		Number companies listed (per 10k population)	
		1992	2002		90s	00s	90s	00s	90s	00s	90s	00s
Botswana	1989	11	19	72.7	0.093	0.352	0.007	0.010	0.073	0.029	0.076	0.097
Côte d'Ivoire	1976	27	38	40.7	0.072	0.277	0.002	0.005	0.023	0.017	0.020	0.021
Ghana	1989	15	24	60	0.153	0.165	0.006	0.005	0.032	0.028	0.010	0.012
Kenya	1954	57	50	-12.3	0.146	0.277	0.005	0.023	0.032	0.068	0.021	0.015
Mauritius	1988	22	40	81.8	0.300	0.600	0.015	0.024	0.045	0.077	0.275	0.380
Nigeria	1929	153	195	27.5	0.073	0.152	0.002	0.025	0.021	0.106	0.016	0.015
South Africa	1887	683	472	-30.9	1.486	2.141	0.251	1.107	0.163	0.443	0.165	0.101
Swaziland	1990	3	5	66.7	0.164	0.078	0.001	0.001	0.003	0.012	0.045	0.051
Tanzania	1998	2	5	150	0.024	0.046	na	0.002	0.020	0.046	0.001	0.002
Zambia	1994	2	11	450	0.099	0.137	0.002	0.004	0.020	0.049	0.007	0.011
Zimbabwe	1896	65	77	24.12	0.249	0.697	0.023	0.101	0.089	0.141	0.055	0.060

Source: World Development Indicators 2011
Walle (2008): " *Establisment of Capital Markets in Least Developed Countries: The Case of Ethiopia* p.18

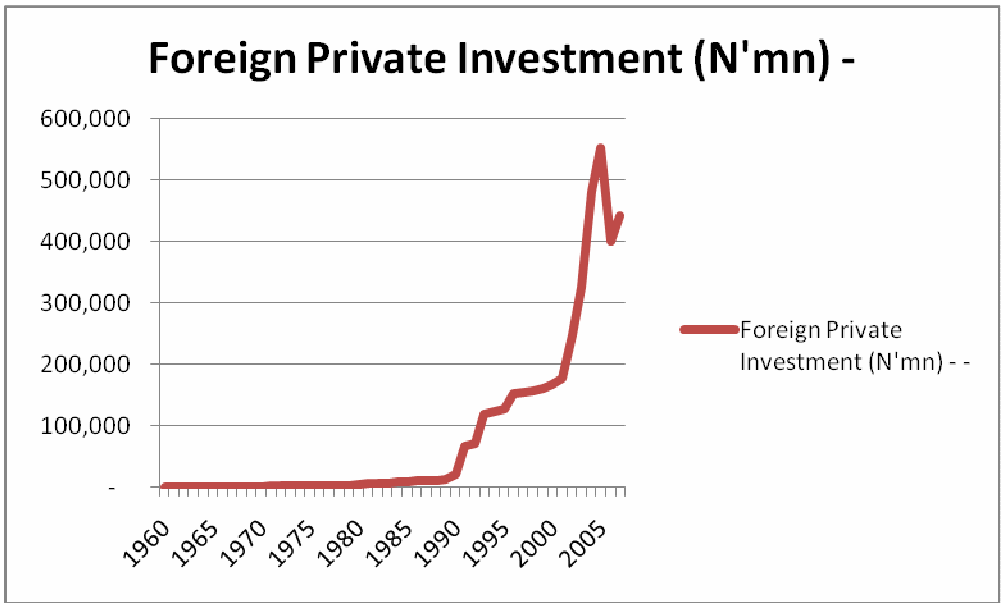
APPENDIX 9: Aggregate Economic Performance

Period	Sub-Saharan Africa (35 countries)					Sub-Saharan Africa (35 countries)				
	Real GDP capita ($US)	Inflation rate	FDI (%GDP)	Governemnt Consumption (%GDP)	Trade (%GDP)	Real GDP capita ($US)	Inflation rate	FDI (%GDP)	Governemnt Consumption (%GDP)	Trade (%GDP)
1960-69	547.82	4.40		13.56	52.61	477.36	4.48	-	13.64	52.64
1970-79	779.82	13.56	1.34	16.07	65.22	700.34	13.73	1.36	16.14	65.58
1980-89	857.68	18.42	0.93	16.85	70.00	782.93	18.55	0.96	16.84	70.53
1990-99	921.48	116.02	1.90	15.61	68.85	860.94	119.37	1.93	15.50	69.55
2000-09	1056.40	105.61	4.32	14.95	78.08	988.41	108.53	4.40	14.81	78.67
Average annual % change:										
60s to 70s	0.30	0.68	1.00	0.16	0.19	0.32	0.67	-	0.15	0.20
70s to 80s	0.09	0.26	-0.44	0.05	0.07	0.11	0.26	-0.43	0.04	0.07
80s to 90s	0.07	0.84	0.51	-0.08	-0.02	0.09	0.84	0.50	-0.09	-0.01
90s to 00s	0.13	-0.10	0.56	-0.04	0.12	0.13	-0.10	0.56	-0.05	0.12

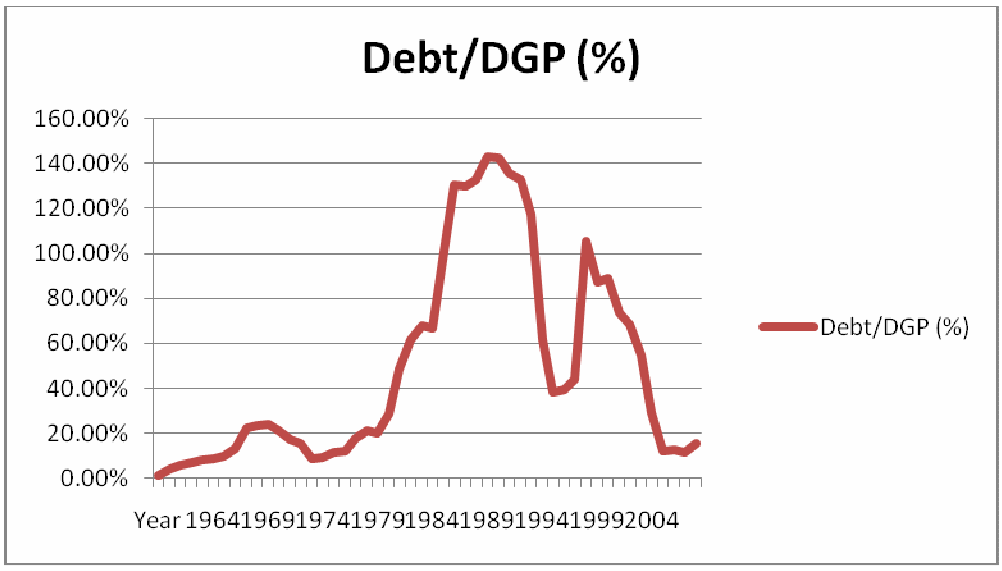
Author's computations from *World Development Indicators 2010*.c

Note: Countries selected on the basis of data availability

APPENDIX 10: Nigeria FPI



APPENDIX 11: Debt/ GDP (Nigeria)



APPENDIX 12: Top 20 Companies in NSE by Market Capitalization

Company	Market Cap. (N'bn)	Sector
First Bank of Nigeria Plc	407.54	Banking
Nigerian Breweries Plc	401 29.8	Consumer goods
Zenith Bank Plc	341.6	Banking
Guaranty Trust Bank Plc	289.13	Banking
UBA Plc	232.81	Banking
Guinness Nigeria Plc	188.05	Consumer goods
Dangote Sugar Refinery	181.2	Consumer goods
Benue Cement Company	168.41	Industrials
Nestle Nigeria Plc	158.2	Consumer goods
Stanbic IBTC Bank Plc	140.1	Banking
Ecobank Transnational	130.4	Financials
Access Bank	124.92	Banking
First City Monument	116.5	Banking
Diamond Bank	107.12	Banking
Lafarge Cement WAPCO	90.05	Industrials
Oando Petroleum	85.1	Oil and gas*
Union Bank of Nigeria	81.1	Banking
PZ Cussons Nigeria	79.41	Consumer goods
Ecobank Nigeria	76.73	Banking

Unilever Nigeria	70	Consumer goods

* Oando is a Marketing and Trading firm of energy goods and not a large cap oil exploitation company