Financial Development and Economic Growth: The Case of Nigeria

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Submitted to the
Institute of Graduate Studies and Research
in partial fulfillment of the requirements for the Degree of

Master of Science
in
Economics

Eastern Mediterranean University
September 2012
Gazimağusa, North Cyprus

Approval of the Institute of Graduate Studies and Research

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ABSTRACT

The link between the financial development and economic growth is a widely investigated area in economic literature. Most cross-country studies established a positive relationship between financial development and economic growth pioneered by McKinnon and Shaw (1973). However, empirical research in low income countries, especially in most African and Latin American countries did not support the positive link hypotheses despite the liberalization of their financial markets. This raised questions on the strength of the relationship as large capital flows encouraged by financial liberalization made the countries more prone to crises exerting even negative impacts on such economies. This research seeks to explore any possible relationship between financial development and economic growth in Nigeria within a vector autoregressive (VAR) framework and also study the direction of causation. Following Demirguc-Kunt and Levine (1979) different channels of financial development are studied by distinguishing between the banking and the stock market development. The empirical results indicate that the banking sector plays an important role in the long-run contributing positively to economic growth while the stock market exerts no impact to long-run economic growth. Based on the bivariate models there is strong evidence of a unidirectional Granger-causality relationship from money supply to economic growth and a weak support for other financial development variables. Considering higher dimensional system, there is strong evidence of a feedback effect among economic growth and financial development variables over the sample period.

Keywords: Financial Development, Economics Growth and Nigeria.

ÖZ

Ekonomik büyüme ve finansal gelişme arasındaki ilişki ekonomi literatüründe sıkça irdelenen konular arsında yer almaktadır.Çoğu ülkelerarası çalışmalar, Mckinnon ve Shaw'ın (1973) öncülüğünü yaptığı finasal gelişme ile ekonomik büyüme arasındaki positif ilişkiyi desteklemiştir. Ancak, düşük gelirli ülkeler, özellikle Afrika ve Latin Amerika için yapılan ampirik çalışmalar finansal serbestleşmeye rağmen pozitif ilişki hipotezini desteklememiştir. Bunun sonucunda, ekonomik büyüme ve finansal gelişme arasındaki ilişkinin niteliği hakkında kuşkular uyanmıştır. Bu çalışmada, 1961-2010 yılları arasında vektor otoregresif (VAR) yaklaşımı kullanılarak Nijerya'daki ekonomik büyüme ile finansal gelişme arasındaki ilişki incelenmektedir. Demirguc-Kunt and Levine'in (1979) önerileri çerçevesinde bu ilişkide bankacılık ve hisse senetleri piyasalarındaki gelişmelerin etkileri ayrıca dikkate alınmaktadır. Çalışmanın ampirik bulgularına göre, ekonomik büyümede bankacılık sektörünün önemli bir rol oynadığı, hisse senetleri piyasasının katkısının olmadığı görülmüştür. Granger nedensellik test sonuçları ise para arzının tek taraflı anlamlı olduğu diğer finansal değişkenlerin ekonomik büyüme ile Granger nedensellik ilişkisinin zayıf olduğu bulunmuştur. Değişkenlerin birbirleriyle ilişkilerini dikkate alan tüm sistem içindeki Granger nedensellik test sonuclari ise ilişkinin heriki yönde ve tüm değişkenler arasında oldukça anlamlı olduğunu göstermiştir.

Anahtar kelimeler: finansal gelişme, Ekonomik Büyüme ve Nijerya.

In loving memory of my late dad Prof. Isidore E. Eyo

ACKNOWLEDGEMENT

I would like to say a big thank to my supervisor Assoc. Prof. Dr. Gulcay Tuna Payaslioglu for her care and guidance throughout the period of this research. Without her valueable oversight, the work would not have been successful.

To the members of staff of the Department of Economics, colleagues, friends and well wishes in EMU, I am grateful for all the support, love and understanding throughout my stay in EMU. Without you all, will not have gone this far.

To my family, for all their love and support both financial and otherwise, will love to say thank you for believing in me. Your believe and trust motivates me and gives me the will to go on. Without you all, would not have made it this far.

Finally, thanks to the Almighty God for his guidance and protection throughout my stay.

TABLE OF CONTENTS

Chapter 1

INTRODUCTION

There has been a long standing debate on the relationship between the financial development and the role which the financial system plays towards the economic growth of a country. The general concensus is that the financial development is not independent of long term economic growth. The financial system plays a crucial role in the allocation of resources in the economy. FitzGerald (2006) said that long-term sustainable economic growth is a product of the accumulation of physical and human capital and putting the whole resources into use ensures an improvement in the well being of the populace. In an economy, entreprenuers run businesses and industries and sometimes start off new ones. Thus, these entreprises require capital either for start off or expansion to meet the growing demand for the products or take advantage of the large returns to scale. A good financial system creates an avenue through which these entreprises can have access to capital funds either through the equity market or a pool of funds from individual savings.

Bagehot (1873) and Schumpeter (1911) one of the pioneers in the research on the relationship between the financial development and economic growth identified that a well functioning financial system stimulates and speeds up economic growth. Mckinnon (1973) also supported the idea stressing that for the financial system to have an impact on the economic growth, the financial system has to be sufficiently developed one.

Thus, with globalisation and financial liberalization, most countries have undergone through financial reforms to strengthen their financial systems, the strengthening of the

financial system can be seen in most developed countries such as United States, UK, Germany, Japan and countries that has transformed from less developed to developed such as Taiwan, Hong Kong, Singapore, South Korea which are refered to as the 'Asian Tigers'. South Korea and Taiwan are number one in the production of information technology while Singapore and Hong Kong are a force to reckon with in the financial stage. Their success stories have been models for many developing countries.

Some research carried out in the developing countries most especially in the sub-saharan Africa and Latin America showed that the impact of financial development on the economic growth were weak. After the financial liberalisation in the 1980s, most African countries were left worse off. This raised questions on the role of financial liberalisation and financial development in the economic growth of countries. Some researchers attributed this to insufficiently developed financial sector while others to high interest rate which meant high return and high risk on investment in the region as explained by Hanson and Ramachandran (2005). High returns on investments attracted foreign investors but because of the high risk on investment, they preferred investment in portfolio, which would give them easy access to their funds. However, the large inflow and outflow of capital had a negative effect on the economy of these countries. Therefore, there have been attempts to investigate the phenomenon and why it turned out differently in Africa and the East Asian countries.

In this respect, the empirical findings are mixed; most findings show that there is a strong relationship between financial development and economic growth in the developed countries Bagehot (1873), Schumpeter (1912), Goldsmith (1969) and McKinnon and Shaw (1973). However, this has not been the case in some less developed countries judging from the experience of financial liberalization in Africa and

Latin American countries. Some researchers although supported the idea that financial liberalization can promote economic growth, have also proposed that in economies with more liberal and developed financial sectors, in essence, countries can grow faster which is not the case for countries with weak financial system as reported in McKinnon and Shaw (1973), Demirguc-Kunt and Levine (2001). The empirical evidence led to the general consensus among economists that, countries which have liberalized their financial market can grow faster, however are more prone to financial crisis as in Levine (1997). For instance, Kaminsky and Reinhart (1999) investigate whether banking and currency crisis occur after financial liberalization. Furthermore, Klein (2005) evidences that financial liberalization contributes to growth in middle income countries but not in poor or rich countries. This fact brings to bear the distinction between the developed and developing countries in the analysis of the contribution of the financial development to economic growth. Furthermore, most recent studies find little or no effect between financial liberalization and economic growth, Rodrick (1988).

Nigeria is a developing country with a developing financial system. The stock market was established in 1960 and started operation in 1961 and being regulated by the Securities and Exchange Commission. The Nigerian stock market started trading with 19 listed companies and as of March 2007 had 283 listed companies with a market capitalization base of about 15 trillion Naira (125 billion USD). For the past 30 years of its existence, the market had experienced a significant development and in a bid to further strengthen the market, government removed all restrictions on foreign investment and there has been free flow of capital into the market. Presently, it is the third largest market in Africa and an affiliate member of the World Federation of Exchanges (FIBV) and a foundation member of the African stock exchange Association (ASEA).

The banking sector has also experienced significant development over the last 50 years. The first conventional banking in Nigeria started in 1952 and the Central Bank of Nigeria was established in 1958 to regulate the financial institutions. In 2004, the Central Bank of Nigeria further consolidated the banking sector by setting a minimum capital base of 25 billion Naira to further strengthen the sector which boosted peoples' confident in the banking system. As a result, there was an increase in savings by depositors which led to expansion in the amount of loan extended to the private sector. This shows that there has been a significant increase in the development of the banking sector in Nigeria.

On the other hand, the Nigerian economy has also experienced an economic growth since independence. The first decade after independence, 1960s saw the economy grow at the rate of 3.1% with agriculture as the main source of revenue. The second decade of 1970s was marked by the oil boom which Nigeria experienced and the neglect of the agricultural sector while the early part of the third decade of 1980s saw a negative growth in parallel to the sharp fall in the international price of crude oil. However, recovery and improvement of the economy were observed soon within the decade after some reforms have been initiated. The 1990s and the 2000s experienced growth at an average of 2.8 and 6.2% respectively. In general, Nigeria has exhibited a volatile but positive economic growth pattern since the 1960s.

This picture brings us to the question, whether the economic growth of Nigeria is related to growth in its financial sector (both stock market and the banking sectors), and if so, can the impact of financial development pattern be distinguished in the short-run and in the long-run?

1.1 Aim of the study

The aim of this study will be to examine the relationship between the financial develoment and economic growth in Nigeria from 1961 to 2010. This analysis will also emphasize the individual role of the development in the banking and the financial market, if any. The analysis will further establish the nature and the direction of the relationship with regards to the banking sector and financial market to see if the data support supply led or demand following economic growth and investigating its shot-run and long-run impact on the economy.

1.2 Structure of the study

This research work will be divided into six chapters. Chapter two will look into other related work in the literature on the relationship between financial development and economic growth. Chapter three will give us an idea of the general outlook of the Nigerian economy over the period of the study between 1961-2010. Chapters four and five will be on the data analysis and the VAR methodology used and presentation of the estimated results while chapter six will conclude including policy recommendations.

Chapter 2

LITERATURE REVIEW

2.1 Theoretical Literature

Most theoretical literature establishes a significant positive link between financial development and economic growth; Schumpeter (1912), Goldsmith (1969), McKinnon and Shaw (1973). Walter Bagehot (1873) and Schumpeter (1912) were the pioneers in the quest to understand the relationship between financial development and economic growth of a country. Bagehot (1873) was of the opinion that it was the financial system that was responsible for the industrial revolution that was experienced in England through the funding of innovations and Schumpeter (1912) believed that for inventions and technological innovations to be encouraged, there has to be a means through which it could be funded. These funds could be made available to entrepreneurs through the financial system which will encourage the growth of the country. However, over the years there has been much research done on this issue which has stirred up controversy. Ram (1999) suggested that there was no relationship that existed between financial development and economic growth while Romer (1986), Prescott and Boyd (1987) and Lucas (1988) believed that the role the financial system plays toward the economic growth is being blown out of proportion by economists. They stressed that it was the saving pattern that tend to affect the growth rate and the level of saving that determine the capital investment in an economy. Robinson (1952), Kuznets (1955) and Friedman

and Schwartz (1963) although accepted that there was a strong link between the financial system and economic growth but suggested that it was the economic growth that stimulate the financial development of an economy, stressing that it was the demand for goods and services in the economy that causes financial development. However, McKinnon and Shaw (1973) said that since the financial system creates an avenue through which savings can be invested into the economy, it was the financial development that motivated the economic growth. Patrick (1966) unlike Robinson (1952) and McKinnon and Shaw (1973) did not only categorize the economy as either demand-following or supply-leading but also described it as a stage or phase of economies pass-through. Patrick (1966) describes the demand-following economic growth as to arise as a result of the growth in the economy, thereby causing an increase in demand for services which in turn causes the growth in the financial system. On the other hand, he explains that the supply-leading economic growth occurs as a result of creation of new financial services by new financial institutions before the demand for them occurs in the market. According to Patrick(1966) the supply-leading phenomenon has an important role in the development process of a country because it transfers resources from traditional (non-growth) to modern sectors and thus help promote industrialization and economic growth which play a vital role in the initial growth of an economy which is then followed by demand-following type of growth as more financial services will be required as growth takes off.

Levine (1997) emphasized that although early results indicate that fast growth and financial development are interrelated with each other, however, recent empirical results find weak or no effect. McKinnon and Shaw (1973), Bencivenga and Smith (1991) and King and Levine (1993) although agree that there is a strong relationship

between financial development and economic growth, they have also identified that there was a weak relationship in the less developed countries. McKinnon and Shaw (1973) attributed the weak relationship to government intervention in the financial system. To that respect, they also tried to explore the negative impact that government interference had on financial development which in turn affected the economic growth negatively. Hanson and Ramachandran (2005) highlighted the main factor that are responsible for the financial liberalization in less developed countries as poor performance in economic growth, high cost of operating financial institutions and globalization in the world financial system.

2.1.1 Evidence in Developed and Less Developed Countries

As mentioned above, as early as the eighteenth century, there was an awareness of the importance of the financial development to economic growth and the benefits of proper allocation of savings to the most productive inventions or technological innovations, see Schumpeter (1912) among others. Thus, considering the evolution and the spread of liberalization process, as there was advancement in technology, increase in international trade and the means of transportation which made migration easier from one part of the world to another, there was also the need for proper allocation of capital funds, not just within the country, but among regions for productive investments around the world. This brought about increase in capital flow across borders after the First World War. During that period, there was a steady and gradual liberalization of the financial system mostly in Western Europe and North America which gave the financial system the opportunity to grow strong without pressure. This period was marked by a rapid economic growth within the region.

Different countries adopted the financial liberalization policy at different times and different pace which was successful in developed and middle income countries but failed in some regions such as the Latin American and the African countries. Rajan (2002) highlighted the benefits of financial liberalization as: (a) better allocation of resources for better productivity in the financial system; (b) healthy competition among the financial institutions which will increase efficiency among them; (c) government avoiding wasteful policies so as not to destabilize the market; (d) the absence of manipulations of the market by government; (e) benefits from two or more payoff in trade as a result of access to global financial markets; (f) gains by proper portfolio diversification globally. Between 1970s and 1990s, in general, the developing countries were running mostly state-led development plans and avoided financial liberalization type outward oriented policies. Financial repression in such economies led to low interest rates which discouraged mobilization of finance, inefficient allocation of loan leading to difficulties in repaying or default and corruption in the system. Also, the increased trade openness, travel and improved communication put a pressure on towards financial liberalization in these countries as reported in Hanson and Ramachandran (2005). Hence, there was an urgent need for liberalization of the financial system. Based on the advice of the International Monetary Fund (IMF) and the World Bank they adopted the financial liberalization as prescribed in the Washington consensus.

In Africa, the policy was adopted in the 1990s and in the 1970s in Latin America as a reform program with the assistance of the International Monetary Fund and the World Bank to reform the financial system and to incorporate them into the global market. Singh (2000) highlighted the processes to be put in place for effective implementation of the financial liberalization as: (1) allowing the interest rate to be

determined by the forces of demand and supply; (2) acquisition of financial institutions by the members of public; (3) non-restriction of foreign investors into the domestic market; (4) removal of credit control; (5) market based instruments for monetary control; (5) free flow of capital in and out of the country. Based on this, most of the LDCs adopted the policy in the 1980s and 1990s. Theoretically, the policy had a simple layout and when followed should lead to economic growth but practically, it worked in East Asia and South Asia, but not in places like Africa and Latin America.

2.1.2 Why the policy failed in Africa and Latin America.

The major factor in moving to financial liberalization was the need to give markets a greater role in development by increased financing opportunities. In Africa, financial liberalization was adopted in the 1990s when the financial repression was getting clearer in the region with the support of the World Bank and IMF. Latin America countries adopted the program much earlier in the 1970s, but there was still persistence of the financial impression in the 1980s driven by high inflation, trade deficit and high debt. In this respect, one of the major criteria adopted by the IMF was free flow of capital. However, financial liberalization in the LDCs also involved some risks. For instance, due to the large capital inflow, expansion in credits may lead to deterioration of bank balance sheet that may increase vulnerability in the financial market as reported by Calvo et al (1993). Also, any political or macroeconomic instability in such economies may reverse capital flow leading to difficulties in sustaining current account deficits and make the country more prone to crisis. In practice, it is observed that, generally there was macroeconomic instability in the LDCs and money supply grew tremendously as foreign assets increased but these assets were not well allocated into the economy to finance competing industries, which resulted in trade deficit. All these problems

increased despite the condition met as described by Singh (2000). Willet and Dillon (2002) said that for a market to compete favorably, there are some infrastructures, law and institution which must be put into place and in the absence of economic incentives liberalization will most likely fail. Dooley (1996) and Demirguc-Kunt and Detragiache (1998) noted that the negative effect of the financial liberalization only happen in countries with weak institutions that does not have adequate bank regulatory and supervisory framework and are poorly managed by corrupt officials/leaders.

2.1.3 Financial development in East Asia

Most of the countries within this region adopted the liberalization policy of the financial system in the 1980s and some as early as the 1970s like in the case of Indonesia. Financial liberalization of the financial system in East Asia recorded a huge success. The process was marked by low inflation unlike Africa, which kept interest rates at a level acceptable in the economy. In adopting the liberalization policy, the region has created an efficient financial system strong enough to block future crisis. The region was able to allocate capital to improve their industrial sector thereby exporting their products into the world market. Their concentration was not on getting capital flow into the market but rather on exporting goods into the world market. This was achieved through education and accumulation of human resources and import of technological knowhow which enable them to compete favorably with the rest of the world.

2.2 Sectors of the financial system

In the financial system, there are two sectors which make up the system. The bank-based sector deals with the demand and supply of loans to creditors while the stock market deals with the demand and supply of funds in the money market. Therefore, money is created and enterprises are funded through the banking sector and the stock

market. Stock market promotes the mobilisation of domestic and foreign savings through the development of the financial instruments for the diversification of portfolio and creating an avenue for investment capital at minimal cost. The banking sector on the other hand, has been identified as a major contributor to economic growth through the allocation of savings, providing credit to entrepreneurs for innovation of ideas and expansion of businesses. Levine and Zervos (1996), argued that since the banking sector and the stock market provide different services to the financial system, these two sectors actually complement each other contributing differently to the economy. Dermirguc-Kunt and Levine (2001) categorised countries based on their financial system as bank-based or stock market-based depending on which played a more vital role towards the development of their economy. Accordingly, in bank-based systems, such as Germany and Japan, it is the banking sector that play a major role in channelling savings and allocating capital while in market-based financial systems such as England and the United States, it is the securities market that dominate the financial market in pooling funds for the expansion of businesses. Although, in the literature, the adventages and disadvantages of such different financial structures are still unresolved, (see Allen and Gale (2000) and Levine (1999)), Demirguc-Kunt and Levine (2001) underlined some stylized facts about the financial structure of countries based on a cross-country study of upto 150 countries including both developed and less developed; financial-sector development is greater in richer countries, financially underdeveloped economies are mostly bank-based and as countries develop, their financial structures become more market-based. The authors show Chile, Mexico, Turkey and the Phillipines as examples as they have experienced significant development in their stock markets within the second half of 1980s. It is worth noting here that, in analysing the differences in the

financial structure of richer and less developed countries, they showed that it is not the size of market but it is the activity and efficiency of indicators that matter.

2.3 Empirical Literature

There are many empirical studies done on the relationship between the financial sector and economic growth. Atje and Jovanovic (1993) made a cross-country analysis with 40 countries from 1980 to 1988 to investigate if there is any significant correlation between the financial market and the Gross Domestic Product of these countries. They found a significant correlation between the variables. Levine and Zervous (1996) made further contribution to the research by increasing the number of countries by 20% and doubling the number of years. This was to investigate if there was a relationship between stock market, banking sector and economic growth of a these countries. This study also looked for a correlation between the stock market and physical capital accumulation, advancement in production and the private saving rates. To achieve this, they had to find measures for stock market liquidity, stock return volatility and stock market integration in world capital market. They found a positive relationship between these factors after controlling for economic and political factors. Rodrik (1998) in his regression analysis of GDP per capita against capital account openness of 100 countries concluded that there was no significant relationship between capital flow and long term economic growth. In his research he controlled for other determinants of growth and used both developed and developing countries together in his cross-country study. This idea was supported by Kraay (1998) who in his own research increased the number of countries to 117 with data ranging between 1985 and 1997, in an attempt to know the link between capital account liberalisation represented by a binary variable and economic growth. His conclusion was that the relationship between capital account liberalisation and growth

was weak. However, Quinn (1997) criticised this proxy used for the capital account liberalisation for its inability to capture the different level of capital control. Klien and Olivei (1999), Quinn (1997) and Edwards(2001) identified that these results of cross-country analysis have been derived from mixed countries including both developed and less developed countries in the sample and thus were not robust. When there are more developed countries in the sample, the analysis will show a positive relationship and vice-versa. This has raised questions about the generalisation of the empirical results derived from cross-country studies with no distinction among developed and less developed countries since all these countries has different characteristics in there financial system and level of development.

As mentioned in the previous section, in an attempt to overcome this challenge, Demirguc-Kunt and Levine (2001) attempted to classify these countries into groups as underdeveloped bank-based, underdeveloped market-based, developed banked-based and developed market- based. The analysis showed that developed countries with strong financial system have greater stock market activity and that the developing countries became more market-based as they grow. They attributed this result to good regulatory and supervisory framework, transparency and accountability of their activities and increase in the protection of shareholders rights. However, due to inability to eliminate the challenges faced as a result of the differences in the financial system of different countries, the findings from cross-country analysis can not be generalised.

In recent times, there have been efforts to carry out research on individual countries or regions with similar financial sector characteristics. Arestis et. al. (2001) in an effort to find the relationship between the financial development and economic growth in the developed countries did a time series analysis using ratio of domestic bank

loan to the private sector, ratio of market capitalisation to real GDP for five developed countries the United States, United Kingdom, Germany, Japan and France. They used quarterly data from 1969 to 1998 and found that in UK, although the causality was weak in the long-run, it showed a unidirectional causality moving from the banking sector to the stock market development. In the USA, there was no relationship in the long-run. In France, they found that both the stock market and banking sector were significantly related to real GDP stressing that the banking sector contributed more. While in Japan and Germany they indicated that the causality was bidirectional. In Japan, the direction of causalition was from banking sector to the stock market while in Germany the direction of caustion was from the banking sector towards economic growth. Antonio (2010) performed Granger-causality test between the German stock market and economic growth for the period of 1965 to 2007. He found a unidirectional causality between the stock market and the economic growth with more direction from the stock market development to economic growth. Singh (2008) analysed the relationship using bivariate VAR between the financial development and economic growth in India from 1951/52 to 1995/96. He found a bidirectional relationship between them. Ang (2008) tried to examine the connections between the financial development and economic growth in Malaysia using aggregate output, foreign direct investment, private savings, saving-investment relationship and private investment. He found a strong relationship both in quantitative and qualitative channels.

De Gregorio and Guidotti (1995) in a research carried out in the Latin American region between 1970 and 1980 show that there was a negative relationship between the financial development and economic growth which he attributed to poor regulatory and deposit insurance laws which brought about excess credit and later led to a banking

crisis. Andres et al. (1999) and Leahy et al (2001) in their study for the OECD countries found that there was no significant correlation between banking sector and economic growth in the region. It could be argued that they used only one sector of the financial system. Capasso (2006) did a more recent analysis of most advanced OECD countries using 24 countries and covered the period over 1988 to 2002. He found the stock market development and economic growth to be significantly correlated. The author concluded that when the economy grows to a certain size with a resonable amount of capital accumulation, stock market starts emerging and developing.

Chapter 3

NIGERIAN ECONOMY

3.1 Nigerian History

To have a good understanding of the economic conditions in Nigeria, a summary of the political developments over the period of study will be helpful.

Nigeria gained her political independence from the British colonials on the 1st of October, 1960 and became a republic in 1963. In Africa, Nigeria is the most populated country with an estimated population of about 153 million (World Bank est.), and was almalgamated in 1914 under the British colonials. The name Nigeria was coined from the word Niger Area because of its location. After its independence, The country was divided into three geopolitical regions: the Northern region which is prodominately Hausa and Fulani tribe; the Western region which is prodominately the Yorubas and the Eastern region which comprises mostly the Igbos. The political scene was dominated by the Northern region which spelt out the dominance for years to come. On the 15th of January, 1966, Nigeria experienced its first coup and on the 16th of January, 1966, Nigeria had its first Head of State. The following year, Nigeria's civil war started as the Eastern region (Biafria) wanted independence from the entity Nigeria for reasons of injustice. The civil war lasted for three year from 1967 to 1970. After the civil war, there was still a continuation of the military rule for the following nine years before an election was organised in 1979.

The transition of the government from the military rule to a democratically elected government in 1979 marked the begining of the second Republic in Nigeria. A new constitution was formed and an American style of governance was adopted by the government. However, the democracy was short lived due to the emergence of a military coup towards the end of 1982 with reasons that the adminstration was corrupt and incompetent which led to the occupation of the government by the military until 1993. A new constitution was drafted in 1989 which usher in the begining of the third Republic. The government made a pronoucement that it was going to hand over to a civilian president by 1990 after it must have put some reforms in place, a date which was later moved to 1993. Nigeria had an election in 1993, an election that was later annulled by the Head of State and an interim government was constituted. That year also marked another coup that brought in a new Head of State. Following the death of the Head of State in 1998, elections were conducted in 1999 and a new president and commander-in-chief of the armed forces installed. 1999 was the begining of the fourth republic after the adoption of a new constitution.

3.2 The Nigerian Economy

The Nigerian economy has experienced growth over the past five decades though it has also experienced chanellages throughout the period. Presently, it is the third largest economy in the continent (after South Africa and Egypt) and produces most of the goods in the West African region. After Nigeria's Independence in 1960, Nigeria's main source of revenue came from the agricultural sector with major exports as groundnut, cocoa and palm oil which contributed about 64.4% of Nigeria's Gross Domestic Product (GDP).

Table 1. Sectorial contribution to GDP in the Nigerian economy (1960-2009).

Sector	1960-1970	1971-1985	1986-1999	1999-2009
Agricultrural	55.1%	29.4%	37.2%	41.1%
Petroleum/Industry	11.8%	39.9%	39.3%	27.1%
Others	33.1%	30.7%	23.5%	31.8%

Source: World Bank

The oil boom in 1971 led to a sharp fall in the contribution of the agricultural sector to GDP from 48.23% in 1971 to 21% in 1977 and a more dependency on oil revenue. At a point, government budget became highly dependent on the price of crude oil in the international market. Table 1 above presents sectoral contribution to GDP over four sub period. Before the discovery of oil, the GDP of the country had an estimated growth rate of about 3.1% while during the oil boom period in the early 1970s growth rate was about 6.2% in the early 1970s.

Table 2. GDP growth in Nigeria

Year	1960-1970	1971-1980	1981-1990	1991-2000	2001-2010
GDP growth	3.1%	4.8%	4.0%	2.8%	6.5%

Source: World Bank

This growth rate was not long lived as the population growth rate increased which over shadowed the economic growth and did not allow for economic diversification and structural transformation. In the 1980s, the Organisation of the Petroleum Exporting Countries (OPEC) exprienced crisis due to the sharp fall in the oil prices and this affected Nigeria adversely as a result of its over dependency on crude oil; the GDP

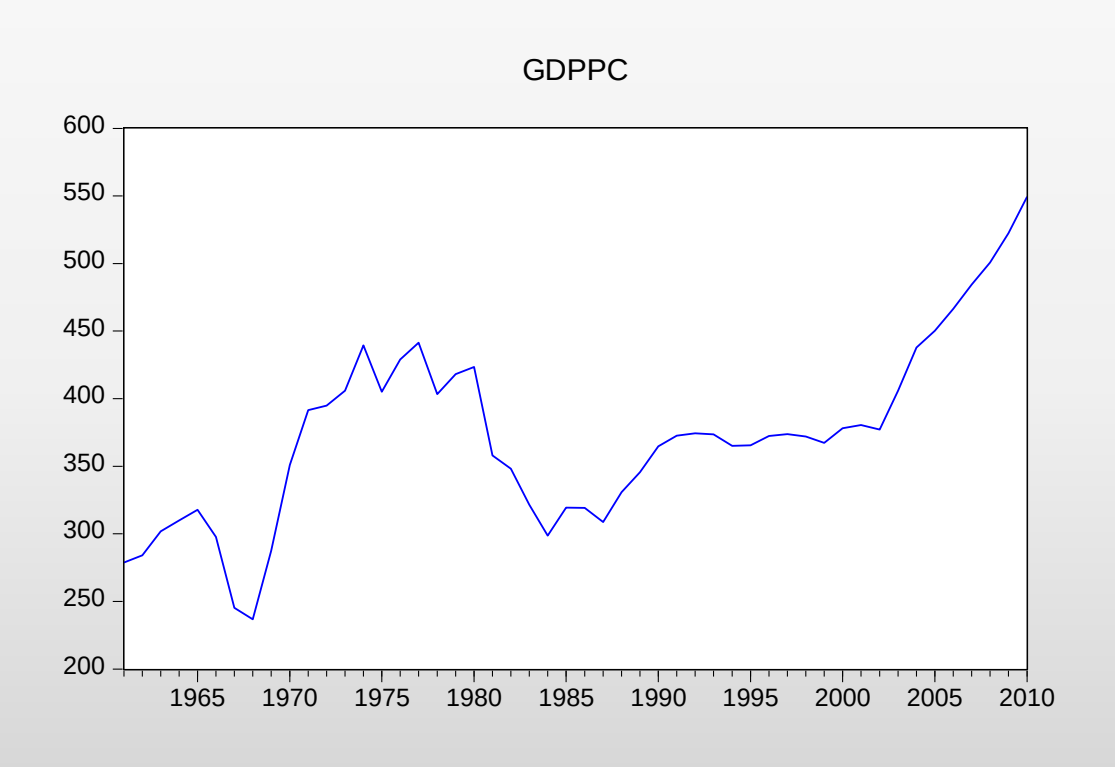
droped from 0.35% in 1982 to -5.18% in 1984 (World Bank). This forced the government of the day to adopt a program as prescribed by IMF, the Structural Adjustment Program (SAP) for the liberalisation of the economy between 1988 and 1997 to help raise the standard of living in the country. Since then the GDP has been growing especially between 2005 and 2010 at an average 6.71%. Table 2 above summarises GDP growth rate over five sub period.

Table 3. Selected Indicators on economic development from 2003 to 2010

Indicator	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Real GDP growth rate (%)	9.57	6.58	6.51	6.0	6.5	6.4	6.7	6.2
GDP per Capita (USD)	503	644	803	1,015	1,129	1,375	1,091	1,278

Source: CBN Annual Report and Statement of Accounts Various Issues

Table 3 below shows GDP growth rate as well as GDP per capita between 2003 and 2010



Source: CBN Statistical Bulletin

Figure 1. GDP Per Capita of Nigeria (million Naira) from 1961 to 2010 (2000=100)

3.2.1 Development Policy/Plan in Nigeria

Over the years, Nigeria like every other nation has adopted plans on the way to bring economic growth. The first Development Plan adopted was in 1962 which lasted till 1968. The objective of the plan was to increase the manpower ability, put Nigeria on the path of modernising the agricultural sector so that it can be less dependent on crude oil. But this plan was short lived because of the outbreak of the civil war in 1967. It had to be put on hold to make way for the process of intergrating the country again through reconstruction and reconcilliation.

After the civil war, a second Development plan was adopted in 1970 which was strictly on the rehabilitation and reconstruction of the infrastructure destroyed during the civil

war. This process was expected to help in raising the economic standard of living especially in the Eastern region.

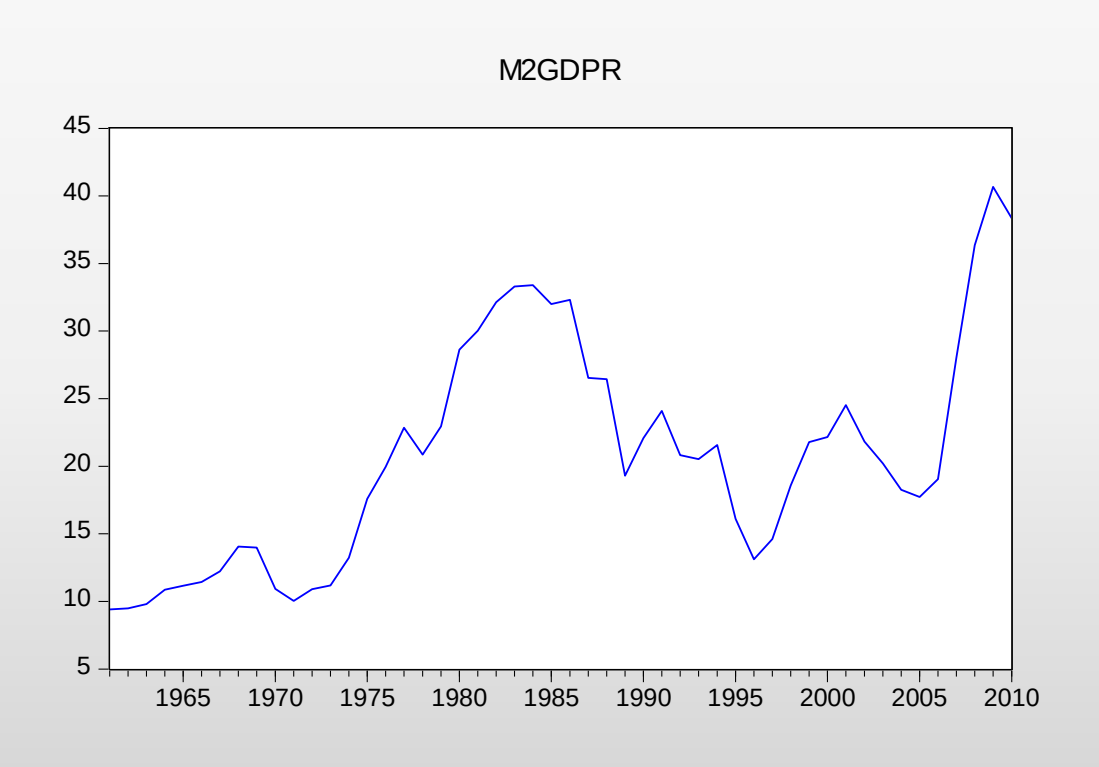
In 1975, when Nigeria was still enjoying the oil boom, the Third Development plan was roled out and was implemented in a better financial environment which lasted till 1980. The fourth Developmetal plan was adopted in 1981 and was interrupted by the sharp fall in the world oil price so the government had to initiate an economic stabilisation act as a solution to the decline in national revenue. This did not improve the economic condition so the government had to adopt the Washington concensus in 1986 which was introduced by the International monetary fund (IMF) and World Bank in the form of Structural Adjustment Program. The objective of the program was to create an enabling environment for investors and private enterprises through financial liberalisation for an efficient allocation of funds in the economy. Although the program showed some sucess in achieving its goals, it was short lived due to a change in economic policy and lack of consistency in governance and was further difused by external shocks. In total the program was interrupted by economic instability leading to high interest rate, as high as 48% and high inflation rate which stood 48.8% in 1992 (CBN data).

From 1993 to 1999, the military government had no clear blue print on how to improve the economic situation in the country. In 1999, an elected government was installed which then came up with an economic agenda in 2004 called the National Economic Empowerment and Development Strategy (NEED) which aimed to improve the economic wellbeing of the country.

However, despite the economic and political instability over the period, Nigeria was able to undertake infrastructural investments for the development of its financial sector, which was imbeded within the Structural Adjustment Program.

3.3 The Financial Development in Nigeria

The Nigerian financial sector is a developing one that has grown in size and activity over the past five decades though like the economic growth has had its fair share of challenges. The two major period in history when there was a major reform or restructuring in the financial system were in 1986 and 2004. In 1980s, there was a sharp fall in oil price which had adverse effects on the Nigerian economy and affected the balance of payment which was further compounded by external debt, rise in unemployment, increase in cost of production due to high cost of raw materials and reduction in the living stardard of the people. In 1986, Nigeria had to adopt the Washington concensus with the help of IMF to reform the financial system through financial liberalisation which was tagged Structural Adjustment Program. Oresotu (1992) highlighted the objectives of the program as reforming the financial structure; improving the manpower skill of the monetary sytem and opening up the domestic market to free flow of capital. The second major reform was in 2004, when all commercial banks were asked to recapitalise to the turn of 25 billion Naira to further strengthen the banking sector and increase the confident of depositors in the system. Following Demirguc-Kunt and Levine (1973), we will measure the financial development in Nigeria by two indicators, namely the bank loan to the private sector relative to GDP and the value of stock traded relative to GDP. We will also use a more general indicator the ratio of M2 to GDP (M2/GDP) to measure the financial sector.



Source: CBN Statistical Bulletin

Figure 2. Real M2/GDP ratio in Nigeria from 1961 to 2010

3.3.1 The Banking Sector Development in Nigeria

The first conventional banking started in 1952, and the Central Bank of Nigeria (CBN) was established in 1958 to regulate the affairs of the banking sector. All the banks that operated in Nigeria during that period were all foreign banks. In 1973, after the oil boom, the government under the Nigerian Enterprise Promotion Decree embarked on a nationalization of the foreign firms in Nigeria. Under the law, the government was supposed to acquire 40% of shares of foreign companies including the institutions active in the banking sector. In 1976, law requirements have been reviewed and nation was expected to own 60% of all enterprises. To this respect, the government further acquired 20% share of the banks, meaning that it owned 60% of the banks. In 1980, when Nigeria

was experiencing economic crisis due to the sharp fall in oil price, banks were distressed and led to bank fold up making depositors lose their funds in the process. The reformation process within the SAP program adopted by the government used a capitalist system. Therefore, the government had to sell its bank shares to the members of public as part of the privatization process. It also established the Nigerian Deposit Insurance Cooperation (NDIC) to protect depositors' funds in the event of bank distress. This increased the confidence in the system and amount of savings increased which also encouraged corperation to get banking licenses to render banking services.

In 1988, there were about 42 commercial banks operating in Nigeria with a net asset of 52.2 million Naira and over 1500 branches as compared to 1000 commercial bank branches and about 24 merchant banks in 1984. However, the banking system still faced challenges such as low capital base, which was sometimes as below as 10 million USD and high overhead costs. In 2004, a major reform was undertaken by the Central Bank of Nigeria (CBN) to increase the minimum capital base of banks from 2 billion Naira to 25 billion Naira which reduced the number of banks from 89 to 25 either by public offer, acquisition or merger. Yet, there was of a rapid growth in the sector during the following years. The number of commercial bank branches increased from 3,233 in 2006 to 5,809 braches as of the last quarter of 2010, and the growth of ATM machines in Nigeria has been enormous, it grew from 500 ATMs in 2006 to over 8000 ATMs in 2009 while the bank loans to the private sector in real terms increased from 486.16 million Naira in 1960 to 1,610.42 in 1975 and from 4,826.26 million in 1983 to 101,577.86 million in 2010. For this study, bank loan to private sector/GDP (BLPS/GDP) will be used as a measure of the banking activity in the private sector.

3.3.2 The Stock Market Development in Nigeria

The Nigerian stock market was established in 1960 and started trading in 1961 with six branches in Nigeria. The Nigerian stock market started trading with 19 listed companies and as of March 2007 had 283 listed companies with a market capitalization base of about 15 trillion Naira (125 billion USD). The Securities and Exchange Commission (SEC) is the government agency that regulates the market while the Central Securities Clearing System (CSCS) is the clearing house for the stock market. The stock market has increased in size, activity and efficiency in the last 5 decades with over 3 million individuals and over 100 cooperation trading with about 47% of the foreign shares traded. Presently, it is the third largest market in Africa and an affiliate member of the World Federation of Exchanges (FIBV) and a foundation member of the African stock exchange Association (ASEA). Although it has well over 200 listed companies, the share of market capitalization is dominated by 10 companies with the largest stocks that make up about 40% of the total stock market capitalization. Compared to other African countries, the Nigerian stock market performance is well above average but compared to the world market its performance is below average. According to the world stock performance review in 1999, on the turnover ratio, NSE was ranked as the 78th out of 105 countries, while on the average company size, 87th out of 100 countries and on the rate at which the price indices change (in USD), it was 73 out of 97 countries. The Emerging stock market factbook produced by Standard and Poor in 2000 show that the Nigerian stock exchange market did not make the top 40 in the world. The measures were based on the total value of stocks traded, the number of listed companies and market capitalization.

The market activity in the economy is an important indicator which is measured as the total value of stock traded over GDP. It measures the value of stock transactions relative to the size of the economy. This indicator is also used to measure market activity and liquidity as it measures trading relative to economic activity as reported by Levine and Zervos (1996).

Chapter 4

DATA AND METHODOLOGY

4.1 The Data:

In order to study the relationship between economic growth and financial development of Nigeria, we will use four variables. Economic performance of the country will be measured by real GDP per capita. The financial development will be measured by two indicators, namely the total value of stock transactions relative to the size of the economy, and the bank loans to the private sector relative to size of the economy. A more general indicator, namely the M2 measure of money supply relative to the size of the economy will also be used as general measure of the financial development in the economy. The value of stock transactions over GDP and Bank loans to the private sector over GDP both measure the level of activity in the stock market and the banking sector respectively.

For the purpose of this study, the analysis will be based on the annual time series data between 1961 to 2010. The data is obtained from the Central Bank of Nigeria statistical bulletin and World Bank World Development Index.

4.2 The Methodology

We explore any possible relationship between financial development and economic growth within a Vector Autoregressive (VAR) framework and also investigate the

direction of causation among them. Following Demirguc-Kunt and Levine (1979) the financial indicators were grouped as bank-based and stock market-based financial development indicators with an attempt to account for different channels of financial development. For the bank-based group, the ratio of bank loans to private sector to gross domestic product, BLPS/GDP, was used. For the market-based category, the value of stock transactions relative to output, VST/GDP, was constructed. The economic growth was measured by GDP per capita. This study will cover a period of 50 years between 1961 and 2010. Based on the order of cointegration of variables, any possibility of long-run and short-run relationship will be investigated. If no cointegration relationship is found, a VAR model will be estimated. If long-run relationship is determined, Vector error correction model (VECM) will be estimated to study the short-run and long-run relationship between the variables. The Granger-causality tests will also be conducted to investigate whether economic growth is the cause of financial development to test the McKinnon and Shaw (1973) hypothesis or the financial development is simply the outcome of economic growth as proposed by Robinson (1952) and Kuznets (1955)

4.2.1 The Unit root test

The first step in setting up the model is to test whether the series are stationary or not. To achieve this, the augmented Dickey Fuller (ADF) test (Fuller 1976, Dickey and Fuller 1979) will be conducted to ensure that the stochastic properties do not depend explicitly on time. The general form of the test is represented as

$$\Delta y_t = \alpha + \beta t + \gamma y_{t-1} + \delta_1 \Delta y_{t-1} + \cdots + \delta_{p-1} \Delta y_{t-p+1} + \varepsilon_t, \qquad \text{eq.(1)}$$

for testing $H_0 : \gamma = 0$, (there is a unit root or the series is nonstationary) against $H_1 : \gamma < 0$ (there is no unit root or the series is statatioary) for which the critical values are non standard and have been constructed by Dickey and Fuller.

In equation (1) α is the constant (Drift), β is the coefficient of time trend and ρ represents the order of autoregressive process. There are three forms in which ADF test can be executed; by including the constant and trend variable or including only the constant or excluding both trend and constant.

One can also perform unit root test for series with structural breaks which is extended by Perron (1989, 1990). He considered unit root test by including a dummy variable dtT_B that captures the shift in the series by allowing $d_tT_B = 0$ for $t \leq T_B$ and $d_tT_B = 1$ for $t > T_B$. If the coefficient of the dummy variable is statistically significant at a given significance level, it means there is a shift after the break date, T_B

4.2.2 The VAR Methodology

The VAR model allows all variables in the system of equations to appear on the left-hand side of the equations without any distinction as endogenous or exogenous. In the case of I(1) variables, the VAR model is represented in general as

$$\Delta Y_t = \Gamma_1 \Delta Y_{t-1} + ... + \Gamma_{p-1} \Delta_{t-p+1} + u_t \qquad \text{eq.(2)}$$

where u_t is the error term and Γ_i are the parameters to be estimated and Y_t is a set of K time series variables and Δ is the difference operator. The error term is white noise process with zero mean.

In the case of any cointegrating relationship among there variables, this long-run relationship is included into (eq. (2)) as

$$\Delta Y_t = \Pi Y_{t-1} + \Gamma_1 \Delta Y_{t-1} + ... + \Gamma_{p-1} \Delta_{t-p+1} + u_t \qquad \text{eq. (3)}$$

where $\Pi = \alpha\beta$ is the long-run parameter and thus Γ_i represent short-run parameters. The β's then is the cointegrating vector and α is the matrix for speed of adjustment parameters or called the loading matrix that indicate short-run response to long-run disequilibrium.

4.2.3 The Cointegration Rank Test.

Cointegration test will be performed to test if the time series variables share the same stochastic drift. The objective is to know if the non stationary series are cointegrated or not. For this purpose the Johansen (1995) approach will be used which is based on the likelihood ratio (LR) test calculated as LR = $-T\sum\log(1-\lambda_j)$ where λ_j = estimated values of the characteristic root of the estimated long-run parameter π in the VECM and T is the number of observations. The Johansen's rank test is conducted sequentially under the $H_0(0)$: $rk(\Pi) = 0$ against $H_1(0)$: $rk(\Pi) \rangle 0$ and $H_0(0)$: $rk(\Pi) = 1$ against $H_1(1)$: $rk(\Pi) \rangle 1$ and so on. The cointegration rank, the number of independent cointegrating vector, will be selected for the VECM when the null hypothesis cannot be rejected. The LR statistics depends on the number of nonstationary components and the deterministic terms such as constant, trend and shift dummy variables for which Johansen (1995a) also derived LR-type test which follow asymptotic χ^2 distribution with degree of freedom equal to number of restriction. However, in cases of shifts for unknown break dates, Saikkonen and Lutkepohl (2000c) proposed a variant of the LR test for cointegration which does

not depend on the shift dummy variable. If the variables are not cointegrated, a vector autoregressive (VAR) model will be estimated as proposed by Sims (1980). If there is disequilibrium in the long-run relationship among the variables, a vector error correction mechanism will be applied following Granger (1981) and Engle and Granger (1987).

4.2.3 The Granger-causality Test

Granger-causality concept is introduced by Granger (1969). Accordingly, if a variable, say, y_{2t} improve the forecast of another variable, say, y_{1t}, then y_{2t} is said to be Granger-causal for y_{1t}. In order to conduct the test, the simple model can be considered as

$$y_{1t} = \sum \gamma_{1i} y_{1,t-i} + \sum \delta_{1i} y_{2,t-i} + cD_t + u_{1t} \qquad i = 1,\ldots,p \qquad \text{eq.(4)}$$

$$y_{2t} = \sum \gamma_{2i} y_{1,t-i} + \sum \delta_{2i} y_{2,t-i} + cD_t + u_{1t} \qquad i = 1,\ldots,p \qquad \text{eq.(5)}$$

where y_{1t} is not Granger-causal for y_{2t} if $\gamma_{2i} = 0$ and similarly, y_{2t} is not Granger-causal for y_{1t} if $\delta_{1i} = 0$ that are specified under the null hypothesis against the alternative that at least one of the coefficients is different from zero. In the case of cointegrated variables, the Granger-causality test can also be performed in the VECM framework such that the null should also include the appropriate elements of $\alpha\beta'$ to be checked whether they equal to zero in addition to other parameters. As noted earlier α is the loading matrix and β is the cointegrating vector. The test statistics is based on Wald or likelihood ratio (LR) statistics which has χ^2 distribution with degrees of freedom equal to number of restrictions tested. The F version of the test can also be used since it offers a better approximation as suggested by Helmut Lüthepohl in "Applied Time

Series Econometrics" p.149. The denominator degrees of freedom is the total number of observations minus the total number of estimated parameters.

Chapter 5

Empirical Results

5.1 Unit root test results

In time series analysis, we must first of all test the variables for stationarity. This (as explained in the previous chapter) is to ensure that the series do not produce a spurious regression. The stationarity will be investigated using the unit root tests allowing for structural breaks proposed by Saikonnen and Lutkepohl (2002) and Lanne, Lutkepohl and Saikonnen (2002) which will be applied to the variables in levels and then in first differences to see if they have become stationary. The number of lags used is suggested by Schwarz Information Criterion (SIC) and Hannan-Quinn Criterion (HQ). Since Akaike information criterion (AIC) and Final Prediction Error suggest the longest lags and since there is limitation in the number of observation used in the analysis, the decisions on the choice of lag length is based on HQ and SIC criteria which suggest shorter lags. In this study, the vector of Y_t = {LGDPpc, LM2R, LBLR and VSTR}

Table 5.1 The Unit Root Tests with Structural Break

Variable	Number of lags	Deterministic term	Test statistic	Critical Value at 5%	Suggested Break date
LGDPpc	3	c, sd	-0.65	-2.88	1981
LBLR	0	c, sd	-0.55	-2.88	1997
LM2R	1	c, sd	-1.73	-2.88	1989
ΔLGDPpc	3	c, id	-4.57	-2.88	1981
ΔLBLR	0	Id	-6.10	-2.88	1997
ΔVSTR	0	Id	-8.44	-2.88	2007
ΔLM2R	0	Id	-4.48	-2.88	1989

Note: t stands for trend, c for constant, sd for shift dummy and id for impulse dummy variable.

We will reject the null hypothesis H_0 : the variable has a unit root against the alternative H_1 : the variable has no unit root if the test statistic is greater than the critical values. For the sake of this research, we will choose our critical value at 5% level of significance.

From table 5.1, test statistic for LGDPpc, LBLR and LM2R are less than the critical values and so we accept the null hypothesis which states the variable has a unit root and conclude that they are non-stationary. The test statistic for ΔLGDPpc, ΔLBLR, ΔVSTR and ΔLM2R are greater in absolute value than the critical value so we reject the null hypothesis and conclude that the variables are stationary. Therefore, we conclude that all series are I(1).

5.2 Cointegration

The unit root test results show that the variables that are non-stationary include LGDPpc, LBLR, LM2R, and VSTGDP. The cointegration test seeks to discover whether there is a long-run equilibrium relationship between the nonstationary variables. The Johansen trace test as well as the version proposed by Saikonnen and Lutkepohl (S&L) test will be used. We will test if there is a long term relationship between the LGDPpc and each of the financial development indicators, LM2R, VSTR and LBLR. For the test, the number of lags is as suggested by Schwarz information criterion (SIC) and the critical values are as suggested by Osterwald and Lenum. To ensure the plausibility and consistency of the results, a bivariate test of LGDPpc will be conducted with each of the financial development variable before a four-dimensional test is conducted since cointegration rank test are normally low power when used with multiple dimensional system, Saikonnen and Lutkepohl (1999).

The Johansen trace test for cointegration involves computing the test statistic λ_{trace} to test the null hypothesis $H_0 : rk(\pi) = r_0$ against $H_1 : rk(\pi) \rangle r_0$ sequentially. Table 5.2 below presents the test results

Table 5.2 Saikonnen & Lutkepohl Tests for Cointegration

Variable	**Number of Lags**	**Deterministic term**	**H_0 : $rk(\pi)=r_0$**	**Test statistic**	**Critical Value at 5%**
LGDPpc, LM2R	3	t, c, D'86, D'07	r = 0	15.45	15.76
			r = 1	2.32	6.79
LGDPpc, LM2R	1	t, c, D'86, D'07	r = 0	27.85	15.76
			r = 1	2.00	6.79
LGDPpc, LBLR	1	t, c, D'86, D'07	r = 0	16.54	15.76
			r = 1	2.51	6.79
LGDPpc, LBLR	3	t, c, D'86, D'07	r = 0	13.35	15.76
			r = 1	1.63	6.79
LGDPpc, VSTR	2	t, c, D'86, D'07	r = 0	18.09	15.76
			r = 1	2.50	6.79

Note: r represents the number of cointegrating vector, t stands for the trend while c stands for the constant.

Based on the Johansen trace test results (included in the Appendix A) for cointegration, no cointegration is rejected (r=0) for economic growth and money supply variables at lag length 8 and for economic growth and value of stock traded ratio at lag lenght 4 for which there is some evidence for r=1 when both 1967 and 1986 structural break dummy variables are used. In that respect, we also conduct Saikkonen and Lutkepohl (S&L tests) test which allows the shifts in the level of the data to be incorporated into the test in alternative functional forms, (Saikkonen and Lutkepohl (1999)). The test results suggests that there is cointegration between LGDPpc and LM2R with one lag difference, there is cointegration between LGDPpc and LBLR with one lag difference and cointegration exist between LGDPpc and VSTR with two lag differences.

Table 5.3 Summary of the Cointegration Test Results, $y_t = (gdppc, m2r, blr, vstr)$

Test	Number of lag	Null Hypothesis	Test Value	Critical value
Johansen with two breaks	1	r = 0	87.29	81.52
		r = 1	46.51	56.49
		r = 2	19.16	35.35
		r = 3	5.64	18.01
Johansen with one break	1	r = 0	75.16	66.76
		r = 1	39.01	45.11
		r = 2	11.09	27.32
		r = 3	5.20	13.35
S & L	5	r = 0	36.09	35.76
		r = 1	12.74	20.96
		r = 2	3.75	9.84
S & L	6	r = 0	46.68	40.07
		r = 1	18.77	24.16
		r = 2	8.41	12.26
		r = 3	0.06	4.13
S & L	1	r = 0	61.31	40.07
		r = 1	20.31	24.16
		r = 2	3.80	12.26
		r = 3	0.16	4.13

5.3 The Estimated Vector Error Correction model (VECM)

The estimated VECM with one cointegrating vector normalized to the economic growth variable indicates that the general financial sector indicator M2/GDP ratio, banking sector variable and the 1986 dummy variable as well as the trend variable are highly significant. Table 5.4 presents the estimated long-run cointegration relationship as below

Table 5.4 Estimates of long-run Cointegration Regression

LGDPpc	**LM2R**	**LBLR**	**VSTR**	**D'86**	**Trend**
1.00	1.438	-1.232	-0.069	-0.375	0.018
	(0.000)	(0.000)	(0.722)	(0.001)	(0.000)

Note: value in the parenthesis are *p*-value

All the coefficients except VSTR, estimated in the long-run cointegration regression are highly significant. The main determinants of long-run economic growth are evidenced to be money supply and the banking sector that have coefficients greater one. This long-run relationship means that there is a negative relationship between LGDPpc and LM2R (which was not expected) and when there is a 1% increase in M2R, GDPpc decreases by 1.44%. This could have resulted from high expected inflation rate exerting a negative impact on economic growth. Like expected, there is a positive relationship between GDPpc and bank loan to the private sector. When there is a 1% increase in BLR, GDPpc increases by 1.23%. However, the value of stock trading, VSTR, is not significant in the long-run regression. The dummy variable, D'86 that represent the structural shift in 1986 with the introduction of the structural adjustment program exerts a positive impact on economic growth confirming the contribution of the financial liberalization program. The per capita GDP increases by 0.37% with the implementation of the SAP program. The trend has a negative relationship with LGDPpc, indicating that in the long-run the variables converge to each other.

So, the banking sector plays an important role in the long-run contributing positively to economic growth while the stock market exerts no impact to long-run economic growth.

The speed of adjustment coefficients on the other hand which shows short-run adjustment to disequilibrium from long-run path of the economy are reported in table 5.5 below;

Table 5.5 The Estimated Speed of Adjustment Parameters

Equation	$\mathbf{e_{t-1}}$
∆LGDPpc	-0.169
	(0.000)
∆LM2R	0.186
	(0.061)
∆LBLR	0.806
	(0.000)
∆VSTR	0.428
	(0.378)

Note: p-value are in parenthesis, e_{t-1} is the error correction term at time t-1

The cointegration vector is not significant only in the stock market equation. On the other hand, the highest response to deviation from long-run equilibrium comes from the banking sector variable with 80% change annually.

5.4 The Granger-Causality Test Results:

The tests for Granger-causality are performed first between the economic growth variable which is GDP per capita and financial development indicators one by one, which are M2R, BLR and VSTR. This is done first to check the overall consistency of the results since cointegration rank tests in higher dimensional system has relatively low power, (see Applied Time Series Econometrics ed. by H. Lütkepohl and M. Kratzig, page 151). The Granger-causality tests are carried under the null hypothesis that H_0: LGDPpc does not Granger cause the financial development variable against the

alternative H_1: LGDPpc Granger causes the variable. The test results are presented in table 5.3 below.

Table 5.6 Granger-Causality Test Results using 4 lags

Causality Hypothesis	**Deterministic term**	**Test value**	**p-value**
LGDPpc→LM2R	t, c, D'07, DBD	1.52	0.199
LM2R→LGDPpc	t, c, D'07, DBD	2.40	0.047
LGDPpc→VSTR	D'86, D'07, DBD	0.77	0.595
VSTR→LGDPpc	D'86, D'07, DBD	2.02	0.081
LGDPpc→LBLR	t, c, D'07, DBD	0.85	0.521
LBLR→LGDPpc	t, c, D'07, DBD	2.13	0.076

Note: t stands for trend, c stands for constant, D'86 stands for 1986 dummy variable, D'07 stands for 2007 dummy variable and DBD stands for a dummy variable for alternative break dates.

From table 5.6, the test results show that LGDPpc does not Granger cause LM2R, while LM2R Granger causes LGDPpc at 5% level of significance. The LGDPpc does not Granger cause VSTR while there is a weak evidence that VSTR Granger causes LGDPpc at about 8% but not at 5%. LGDPpc does not Granger cause LBLR whereas, there is a weak evidence that LBLR Granger causes LGDPpc at about 8% but not at 5%. However, as reported by Lutkepohl in "Applied Time series Econometrics" chapter 3, it is not satisfactory to investigate causality relationship using bivariate system, if the interest is the causality between two variables when other variables also belong to the system. This is due to the possibility of indirect causal links between variables within the system. Therefore, the test results of causality in 4-dimensional system are presented in table 5.6

Table 5.6 Overall Granger-causality Test Results

Causality hypothesis	**Test value**	***p*-value**
LGDPpc→LM2R, LBLR, VSTR	3.91	0.0002
LM2R→LGDPpc, LBLR, VSTR	12.56	0.0000
LBLR→LGDPpc, LM2R, VSTR	10.65	0.0000
VSTR→LGDPpc, LM2R, LBLR	21.15	0.0000

As shown from the above table, there is bi-directional evidence of Granger-causality between the economic growth and financial development indicators when all variables are included in the model. This is not surprising considering the speed of adjustment parameters that are highly significant in all the equations except for the stock market equation. Accordingly, when the long-run interactions among variables are taken into account, the financial development variables Granger-causes and economic growth and the economic growth variables Granger-causes financial development.

Chapter 6

CONCLUSION AND RECOMMENDATION

6.1 Conclusion:

The main objective of the study has been to investigate the relationship between the economic growth and financial development and the direction of causation using data from 1961 to 2010. To this respect, the financial sectors of the economy is divided as, the bank-based sector and the stock market-based sector in order to investigate the importance of the development of these sectors. Also, a more general variable money supply was used to capture the financial activity in the economy.

Based on the test results, a VECM was estimated with one cointegration vector with 4 lags. The main determinants of economic growth in the long-run are evidenced to be money supply and the banking sector while the stock market had no contribution. The unexpected negative sign of money supply with economic growth can be attributed to inappropriate conduct of monetary policy and inflationary pressure of money supply on economic growth in the long-run. In other words, money supply has an important negative impact on economic growth which indicates the importance of the conduct of a sound monetary policy.

Considering the short-run speed of adjustment coefficient, the highest response to previous years' deviation from long-run comes from the banking sector with 80% of

change per year. The stock market is found to be unresponsive to long-run disequilibrium.

Regarding the Granger-noncausality test results based on bivariate-VECM models no evidence is found in support of the growth leading to financial development contrasting the hypothesis of Robinson (1952) and Kuznets (1955). However, evidence support the McKinnon and Shaw (1973) hypothesis that money supply significantly Granger-causes economic growth while there is weak evidence that the banking sector and the stock market sector Granger-causes economic growth. These results are also supportive of supply-led economic growth as proposed by Patrick (1966). In other words, Nigeria has experienced supply-leading type economic growth over the sample period of 1961-2010. Considering the possible causal links among the set of variables, Granger-causality tests conducted on the 4-dimensional system suggested bidirectional causality among the economic growth and the financial development indicators. However, we should also interpret this result with caution as the causality test may have power problem in higher order dimensional system.

6.2 Policy Recommendation:

From this study, the results tend to point at a supply-leading phenomenon, where the financial development drives the economic growth in Nigeria over the sample period. To this respect, the financial policy in the pursuit of economic growth should encourage saving in financial assets rather than unproductive tangible assets and induce investment and production especially in modern sectors such as agricultural equipment etc. To do this, the government should support financial intermediation and establish a well functioning financial market.

Money supply has a negative long-run relationship with economic growth. This can be a result of misconduct of monetary policy and inflationary pressure of money supply on the economic growth in the long-run. The Central bank should work on a more broad economic policy that will encourage economic growth of the economy.

The bank loans to the private sector show a positive relationship with economic growth as expected. The government should further strengthen the banking sector by tightening the regulatory and supervisory laws in the system to help institutionalize the industry to have more effect in the economy as there was a weak evidence of the fact that the bank loans to private sector Granger-causes economic growth.

The value of stock traded in relation to the economy was not found to be significant to the economic growth of the country. The government should strengthen the supervisory and regulatory framework in the stock market to boost people's confidence in the system.

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APPENDIX

Appendix A

Table 5.2 Johansen test for cointegration

Variable	Break dates	Deterministic Term	Number of Lagged Difference	H_0 : $rk(\pi) = r_0$	*Test statistic*	Critical value at 5%
LGDPpc and LM2R	1971	C	1	r = 0 r = 1	15.83 2.18	25.04 12.30
LGDPpc and LM2R	1971	t, c	1	r = 0 r = 1	16.32 5.06	29.33 14.48
LGDPpc and LM2R	1981	C	1	r = 0 r = 1	16.82 3.13	24.41 12.80
LGDPpc and LM2R	1971 & 1989	t, c	4	r = 0 r = 1	29.15 9.67	36.77 18.55
LGDPpc and LM2R	1971(t) & 1981(t)	t, c	8	r = 0 r = 1	172.12 55.08	44.78 43.14
LGDPpc and LM2R	1971 & 1981	C	1	r = 0 r = 1	17.22 2.89	30.91 15.67
LGDPpc and LM2R	1971 & 1981	t, c	1	r = 0 r = 1	17.22 2.89	30.91 15.67
LGDPpc & VSTR	1986	C	4	r = 0 r = 1	18.99 4.70	23.55 12.85
LGDPpc & VSTR	1986	t, c	4	r = 0 r = 1	29.50 9.70	28.65 14.17
LGDPpc & VSTR	1967 & 1986	t, c	4	r = 0 r = 1	62.40 24.27	45.08 23.26
LGDPpc & LBLR	2004	C	1	r = 0 r = 1	25.14 6.13	24.73 11.98
LGDPpc & LBLR	2004	t, c	1	r = 0 r = 1	22.38 7.39	32.70 16.41
LGDPpc & LBLR	1971	C	1	r = 0 r = 1	16.81 2.20	25.04 12.30
LGDPpc & LBLR	1971(t)	t, c	1	r = 0 r = 1	19.87 6.27	34.18 17.22
LGDPpc & LBLR	1986(t) & 2004(t)	t, c	1	r = 0 r = 1	37.16 7.75	45.69 23.62
LGDPpc & LBLR	1971 & 1985	t, c	1	r = 0 r = 1	19.49 5.50	43.20 23.20

Johansen Test for Cointegration

Two Breaks:

```
*** Thu, 28 Jun 2012 12:42:12 ***
Johansen Trace Test for:  lGDPpc LBLR LM2R VSTGDP
unrestricted dummies:     D[1966] D[1986]
restricted dummies:       S[1966] S[1986]
sample range:             [1963, 2010], T = 48
included lags (levels):   1
dimension of the process: 4
trend and intercept included
response surface computed:
------------------------------------------------
 r0  LR       pval     90%      95%      99%
------------------------------------------------
 0   87.29    0.0168   77.33    81.52    89.78
 1   46.51    0.2811   52.94    56.49    63.55
 2   19.16    0.7730   32.47    35.35    41.20
 3   5.64     0.8564   15.79    18.01    22.68

OPTIMAL ENDOGENOUS LAGS FROM INFORMATION CRITERIA

sample range:             [1965, 2010], T = 46

optimal number of lags (searched up to 3 lags of levels, max lag adjusted):
Akaike Info Criterion:    3
Final Prediction Error:   1
Hannan-Quinn Criterion:   1
Schwarz Criterion:        1
```

One Break:

*** Thu, 28 Jun 2012 12:44:29 ***

Johansen Trace Test for: lGDPpc LBLR LM2R VSTGDP

unrestricted dummies: D[1966]

restricted dummies: S[1966]

sample range: [1963, 2010], T = 48

included lags (levels): 1

dimension of the process: 4

trend and intercept included

response surface computed:

r0	LR	pval	90%	95%	99%
0	75.16	0.0079	63.02	66.76	74.16
1	39.01	0.1796	42.00	45.11	51.36
2	11.09	0.9130	24.83	27.32	32.40
3	5.20	0.6453	11.51	13.35	17.27

OPTIMAL ENDOGENOUS LAGS FROM INFORMATION CRITERIA

sample range: [1965, 2010], T = 46

optimal number of lags (searched up to 3 lags of levels, max lag adjusted):

Akaike Info Criterion: 3

Final Prediction Error: 1

Hannan-Quinn Criterion: 1

Schwarz Criterion: 1

Saikonnen & Lutkepohl Test

*** Thu, 28 Jun 2012 12:50:10 ***

user specified dummies [break dates]

shift(s): [1986]

S&L Test for: lGDPpc LBLR M2GDPR VSTGDP

included dummy variables: D

sample range: [1967, 2010], T = 44

included lags (levels): 5

dimension of the process: 4

trend orthogonal to cointegration relation

response surface computed:

r0	LR	pval	90%	95%	99%
0	36.09	0.0460	32.89	35.76	41.58
1	12.74	0.4291	18.67	20.96	25.71
2	3.75	0.5064	8.18	9.84	13.48

OPTIMAL ENDOGENOUS LAGS FROM INFORMATION CRITERIA

sample range: [1968, 2010], T = 43

optimal number of lags (searched up to 6 lags of levels):

Akaike Info Criterion: 6

Final Prediction Error: 1

Hannan-Quinn Criterion: 1

Schwarz Criterion: 1

*** Thu, 28 Jun 2012 12:50:49 ***

S&L Test for: lGDPpc LBLR M2GDPR VSTGDP

included dummy variables: D

sample range: [1968, 2010], T = 43

included lags (levels): 6

dimension of the process: 4

intercept included

response surface computed:

r0	LR	pval	90%	95%	99%
0	46.68	0.0087	37.04	40.07	46.20
1	18.77	0.2145	21.76	24.16	29.11
2	8.41	0.2092	10.47	12.26	16.10
3	0.06	0.8514	2.98	4.13	6.93

OPTIMAL ENDOGENOUS LAGS FROM INFORMATION CRITERIA

sample range: [1968, 2010], T = 43

optimal number of lags (searched up to 6 lags of levels):

Akaike Info Criterion: 6

Final Prediction Error: 1

Hannan-Quinn Criterion: 1

Schwarz Criterion: 1

*** Thu, 28 Jun 2012 12:53:49 ***

user specified dummies [break dates]

shift(s): [1986]

S&L Test for: lGDPpc LBLR M2GDPR VSTGDP

included dummy variables: D

sample range: [1963, 2010], T = 48

included lags (levels): 1

dimension of the process: 4

intercept included

response surface computed:

r0	LR	pval	90%	95%	99%
0	61.31	0.0001	37.04	40.07	46.20
1	20.31	0.1468	21.76	24.16	29.11
2	3.80	0.7376	10.47	12.26	16.10
3	0.16	0.7515	2.98	4.13	6.93

OPTIMAL ENDOGENOUS LAGS FROM INFORMATION CRITERIA

sample range: [1968, 2010], T = 43

optimal number of lags (searched up to 6 lags of levels):

Akaike Info Criterion: 6

Final Prediction Error: 1

Hannan-Quinn Criterion: 1

Schwarz Criterion: 1