CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The rising consciousness of investors about equity markets around the globe serves as a drive for researchers to probe into the performances of African capital markets without any exception. In Africa, new stock markets have as well been established. The history about the expansion of African stocks goes beyond just a numerical addition; it marks a development in stock markets across the African region. Stock market development has been central to the domestic financial liberalization programs of most African countries (Yartey & Adjasi, 2007).

Over the years, Economists have been emphasizing the need for effective mobilization of resources as a catalyst for national development in any economy. This can only be achieved through the effectiveness in the mobilization and allocation of funds to different sectors of the economy, so as to allow them manage their human and material resources which will result in optimal output for a sustainable growth and development in any economy (Oke, 2012).

The capital market has played significant roles in national economic growth and development. One intermediary in the market that operates as a rallying point for the overall activities is the stock exchange. It is a common postulation that without a functional stock market, the capital market may be very illiquid and unable to attract investment (Akingunola, Adekunle& Ojodu, 2012). Essentially, the stock market provides liquidity (Ezeoha, Ebele & Ndi-Okereke, 2009), contributes to capital formation, and investment risk reduction by offering opportunities for portfolio diversification (Levine, 1991; Ibenta, 2000).

The liquidity role stands out clearly as the most significant among the numerous functions provided by the stock market. According to Levine (1997), a liquid stock market promotes long-term investments. The stock market mainly provides liquidity by enabling firms to raise funds through the sales of securities with relative ease and speed (Akingunola et al., 2012). Through this catalyst role, the stock market is able to influence investment and economic growth in general.

In capital market, the stock in trade is money which could be raised through various instruments under well-governed rules and regulations, which are carefully administered and adhered to by different market operators. Thus, the rate of economic growth of any nation is inextricably linked to the sophistication of its financial market and specifically its stock market efficiency. The fund required by the corporate bodies and governments are often huge, sometimes running into billions of naira. It is, usually difficult for these bodies to meet such funding requirements solely from internal source. Hence, they often look up to the stock market because it is the ideal source as it enables corporate entities and government to pool monies from a large number of people and institutions (Oke, 2012).

Mining is the primary reason for the growth and development of South Africa's financial sector (Bell, farel & Cassim, 1999). This is in contrast to Nigeria where initial economic development was based on agriculture and trade. Mining required raising capital for large scale projects especially for deep level gold (Bell, Farrel & Cassim, 1999; (Moin, 2007; ASEA, 2012). In the period before 1989, Africa could only boast of five stock markets in sub-Saharan region and three stock markets in the Northern region. As at 2008, there were 29 stock exchanges as a representation of 38 countries' capital market (African Union, 2008).It is often documented that the apparent substantial increase in stock markets in Africa can be attributed to the extensive financial sector reforms undertaken by a number of African countries (Kenny & Moss, 1998).

Comparatively, Nigeria has a larger population than South Africa but South Africa is richer in per capita. Nigeria with a population of 166 million has a much larger population than South Africa whose population is only 63 million. Nigerian economy needs to be substantially larger than South Africa before an average Nigerian will be as prosperous as an average South African (Fraren, 2014). It is observed that Nigeria economy is growing faster than South African, but this is expected because Nigerian economy is still under developed and as such any minor improvement leads to substantial economic gains. South Africa is a middle income country with a lot of economic infrastructure already in place. Nigeria population is increasing at a higher rate than South Africa (Fraren, 2014). As at September 2013, the total market capitalization of South Africa is $522 billion while that of Nigeria stood at $114

billion. A comparative economic indicator between South Africa and Nigeria are shown in table 1.

Table 1: Nigeria and South African Economic Indicators

Variables	**Nigeria**	**South Africa**
Population	166million	63 million
Gross Domestic Product	350 billion	970billion
Market Capitalization	144 billion	522 billion
Turnover Ratio	8.79	54.93
Total New Listings	190	388
GDP per capita	$2,294	$10,960

Source: ACM Insight, 2014.

A close look at Table 1showed that although Nigeria population is almost three times that of South Africa, South African economy is more robust with higher GDP, Market capitalization, turnover ratio, per capita income and total new listings.

In Nigeria, efforts have been made by market operators, regulators, and governments, to strengthen the capital market since 1960 (Adenuga, 2010). As the Nigerian economy continues its rapid integration with the global market place, it is inevitable that in parallel with the ongoing public sector reforms that have been behind its increasing competitiveness, the nation will need to source significant amounts of funding and develop deep, efficient, and highly liquid capital markets in order to move the economy to the next growth phase (Onasanya, 2012).

The capital market was a major beneficiary of structural reforms to the economy, which began in 1999, as a result of which the trend growth rate of the economy rose from 3% to 4% per annum before the turn of the last century, to around 7% per annum since 2003. Additional reforms to the financial services sector, including the 2004/2005 increase in banks' minimum capital base saw further inflows of investment into the capital market.

The Nigeria Stock Exchange is the physical market of the Nigerian capital market, established in 1960 to provide listing and trading services, as well as electronic Clearing, Settlement and Delivery (CSD) services through Central Securities Clearing System (CSCS) Plc Act. The instruments listed in the exchange are Federal Government Development Loan Stocks, State Government bonds, Commercial and

Industrial loan stock, equity stocks, preference shares and so on. The value of equity stock of the market constitutes over 80 per cent of the securities in the market. The equity market is made up of Main Board and Alternative Security Exchange Markets. The former is further segmented into primary and the secondary markets. The primary market deals with new issues of securities, while the secondary market is a market for trading in existing securities. The latter is introduced to encourage small and medium scale indigenous companies to seek quotation on the stock market (Josiah, Sampson & Akpeti, 2001).

By October 2007, well over 20 companies listed on the Nigerian Stock Exchange (NSE) had market capitalisation in excess of US$1 billion. And according to the then governor of the central bank, the NSE's capitalisation was expected to hit US$100 billion by 2008, just behind the Johannesburg Stock Exchange. A lot of this growth was fueled by rising pension assets which needed an outlet, and which by October 2007 stood at over N600 billion (Nigerian Stock Exchange, 2011).

The market witnessed a steep decline in trading volumes and overall market capitalisation, with the value index dropping from 33,358.3 points in 2006 to 20,730.6 points in 2014, and the value of approved new issues dropping precipitously to N2.03 billion in 2014 from N1,410 trillion in 2006. According to NSE (2014), the listed equities of Nigeria capital market is 190 with 48 listed bonds (including one exchange traded fund), and an average daily turnover this year of US$17 million, the market capitalisation of equities on the NSE currently stands at N6.54trn, while that of bonds is slightly lower at N3.74 trillion, (Nigerian Stock Exchange, 2014).

The 2015 market capitalisation and All-Shares Index figures in the Nigerian Stock Exchange (NSE) market closed very poorly (Nigerian Stock exchange Market report, 2015). The NSE closed for the year as one of the worst markets in Africa in spite of the successful conduct of the 2015 general elections. During the year, the Nigerian bourse slumped below its three-year low due to what market analysts attributed to dwindling crude oil price, foreign exchange problems and exodus of foreign portfolio investors. The market was also negatively affected by the instability of the naira exchange rate which discouraged foreign investors from the bourse. The market was unstable with the naira hovering around N197 and N200 to the dollar at the official

market for the better part of the year in spite of the various measures adopted by the Central Bank of Nigeria. Available statistics showed that a total of 92.90 billion shares worth N952.49 billion were exchanged by investors in 941,602 deals between January and December 2015. This was against 108.47 billion shares valued at N1.34 trillion traded in 1,335,572 deals in the same period in 2014. Data from the NSE as at Dec. 31, 2015 showed that the equity market dipped by 17.36 per cent year-to-date compared with a decline of 16.14 per cent posted in 2014. The All-Shares Index lost 6014.90 points or 17.36 per cent to close for the year at 28,642.25 on Dec. 31, 2015 from the 34,657.15 it opened for the year. The market capitalisation, which opened for the year at N11.478 trillion, lost N1.628 trillion to close at N9.850 trillion on Dec 31, 2015 due to huge price losses by some blue chips (NSE, 2015).

Following the opening of mining and financial companies in the late 19th century, there was a dire need for a stock exchange in South Africa and the Johannesburg Securities Exchange was eventually established in 1887. There was no formal documented regulatory procedure of the operation of the exchange until enactment of the Stock Exchanges Control Act (Uyaebo, Atoi & Usman, 2015).

Johannesburg Securities Exchange was renamed JSESecurities Exchange, which provided a market for securities trading with a regulated procedure. The JSE's market capitalization stood at USD614 billion as at end May 2009 and the market turnover was USD300 billion in 2008 calendar year SARB (2009) cited in Uyaebo et al (2015). Between 1995 and first quarter 2013, JSE averaged 15,656 Index points reaching an all-time high of 40,984 Index points in March of 2013 and a record low of 4,308 Index points in September of 1998. The FTSE/JSE All Share Index has a base value of 10815.083 as of June 21, 2002 (Uyaebo et al., 2015).

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 in doing so, they create new jobs, products, services, wealth and economic opportunities (Mkhize & Mswell-Mbanga 2006). 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 Development Indicators, 2011). According to a press 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. Moreover, South Africa's Johannesburg Stock Exchange (JSE) led African exchanges in Initial Public Offerings (IPO) transactions and capital raised in the past five years, amounting to $2.7 billion. In the period under review, there were 105 IPOs, raising $6.1 billion by African companies on exchanges worldwide and non-African companies on African exchanges, with the top 10 African IPOs by value in 2015 taking place in South Africa and North Africa, namely Egypt and Morocco. In 2015, capital raised from IPOs by companies on the JSE in dollar terms decreased by 11 percent as compared with 2014, largely due to the weakening of the South African rand during the year, while capital raised from IPOs by companies on other African exchanges in dollar terms increased slightly by 3 percent as compared with 2014 (Oputa, 2016).

In terms of volume, the JSE saw a 33% increase in the number of IPOs in 2015 as compared to 2014, and listings on the JSE more than doubled. About 72 percent of 2015 IPO value and 54 percent of IPO volume was carried out during the first half of 2015, reflective of the relatively higher levels of consumer confidence as compared to the second half of the year. As compared to 2014, the year 2015 showed a steady overall increase in IPOs of 12 percent in terms of transaction volume and 17 percent in terms of dollar denominated value. As at 31 December, 2015, African exchanges had a market capitalisation of about $1 trillion, with 23 percent of this value residing on exchanges outside of South Africa, suggesting that untapped value remains in Africa's capital markets, (Oputa, 2016).

Between 2011 and 2015, capital raised from FOs by companies on the JSE represented 85 percent of the total African FO capital raised and 67 percent of the total transaction value while the Egyptian Exchange and the Nigerian Stock Exchange, both in terms of FO volume and value, followed (Oputa, 2016)

1.2 Statement of the Problem

In recent period's before the recent recession set in Nigeria and Indeed South Africa capital markets witnessed a sporadic growth in their economies. Output growth in the

Nigeria averaged 6 to 7 percent yearly, which within the context of global output growth was very impressive performance (Nigeria Bureau of Statistics, 2015). According to the report before this period, the oil sector has remained the major driver of growth recording a 7.50 per cent increase in contrast to the non-oil sector. This scenario is different with the South African economy which although has equally witnessed an impressive performance in economic growth, the capital market performance indicators have not transformed their economies to the desired level (Oputa, 2016).

Although a number of studies have been conducted on the causal relationship between capital market development and economic growth in many developing countries, the majority of these studies have relied mainly on bank development as a proxy for financial development. However, specific studies addressing the dynamic causal relationship between stock market development and economic growth in Africa on regional and comparative nature are very limited.

Capital market liquidity has been a catalyst for long-run growth in developing countries. A liquid stock market promotes long-term investments and allows investors to sell their shares easily, thereby permitting firms to raise equity capital on favourable terms. However, most empirical evidence strongly supports the belief that stock market liquidity boosts or at least precedes economic growth (Akingunola, Adekunle & Ojodu, (2012); Adenuga, 2010). Alternative theories, however, suggest that stock market liquidity increase is relatively unimportant for aggregate economic activity (Khetsi & Mongale, 2015). It is thus imperative to investigate the effect of capital market liquidity on economic growth of developing economies with focus on Nigeria and South African as our sample.

Moreover, empirical evidence linking capital market development indicators to economic growth has been a controversial issue of discuss among scholars. Previous research studies on the effect of capital market on economic growth (Nyasha & Odhiambo,2015; Odhiambo, 2009; Ghirmay, 2004; and Calderon & Liu,2003)differ in their methodologies, time period covered and geographical location as well as their findings and conclusions. It is against this backdrop that the current study attempts to investigate the effect of stock market development on economic growth in Nigeria

and South Africa using Granger causality as against ordinary least square (OLS) The study uses three proxies of stock market development, namely the stock market capitalisation, stock market traded value and stock market turnover, all of which are expressed as a ratio of GDP. The economic growth is, however, proxied by real GDP growth rate.

1.3 Objectives of the Study

The broad objective of the study is to comparatively evaluate the effect of capital market on the economic growth of Nigeria and South Africa between 1981 and 2015. The specific objectives are:

1. To ascertain the effect of stock market capitalization ratio to gross domestic product on economic growth in Nigeria and South Africa economies.
2. To evaluate the effect of stock value traded ratio to gross domestic product on economic growth in the Nigeria and South Africa economies.
3. To examine the effect of turnover ratio of the two countries stock markets on their economic growths.

1.4 Research Questions

Based on the objectives of the study, the following research questions are stated:

1. How does the stock market capitalization ratio to gross domestic productinfluence economic growth in Nigeria and South Africa?
2. To what extent has the stock values traded ratio to gross domestic product affected economic growth in Nigeria and South Africa?
3. To what extent do turnover ratios in Nigeria and South Africa stock markets affect their economic growth?

1.5 Research Hypotheses

The following hypotheses have been formulated to guide the study;

H_{o1}: Stock market capitalization ratio to gross domestic product in Nigeria and South Africa has no significant effect on their economic growth.

H_{o2}: Stock value traded ratio to gross domestic product in Nigeria and South Africa has no significant effect on their economic growth.

H_{o3}: The turnover ratio of Nigeria and South Africa stock exchange markets do not has significant effect on their economic growth.

1.6 Significance of the Study

This study will be beneficial to the following groups as follows:

1. **Researchers**

Research students in economics, finance and related fields will find the study very useful as it will go a long way in enhancing their knowledge of the capital market of the two nations. It will also serve as reference material to students.

2. **Policy Makers**

The information that will be generated from this study will serve as a working guide to government economic planners in Federal, State and Local government. It will help them in formulating policies in respect of the capital markets. It is also expected that this study would complement the efforts of government and policy makers in reviving the Nigeria capital market and restoring the confidence of shareholders and other participants in the market. Again, the study will enable government regulatory agencies concerning stock exchanges to proffer means to correct, adjust and forge way forward for efficiency in the capital markets.

3. Investors

The study will reveal the strength and depth, the growth of the markets and the rate of transaction in each capital market to both local and foreign investors who have intentions of investing in Nigeria and South Africa stock markets.

4. The General public

A well-functioning stock market will be a boost to economic growth and development through its capital accumulation process, gross domestic product growth, increase in investment and consumption, employment generation, poverty reduction and general improvement in the quality of life. The recommendations in this work if implemented shall make way for a well-functioning stock market.

1.7 Scope of the Study

The study is on the effect of capital market on economic growth of Nigeria and South Africa. The choice of studying Nigeria and South Africa capital markets primarily rests on the fact that both markets have the highest market capitalization in Africa. The study made use of the following selected variables; gross domestic product (GDP), market capitalization ratio to GDP, stock value traded ratio to GDP and turnover ratio. The reason for studying the selected variables is because they reveal the size and the liquidity position of the capital markets. The time frame for the study covered the period: 1981-2015.

1.8 Limitations of the Study

The study encountered some limitations. These limitations are as follows:

- This work was intended to cover a longer frame from 1981-2016 but the non-availability of data, limits the study to 1981- 2015. Only very few regional comparative studies of this nature were accessed online, majority of them could not be accessed due to lack of restriction rights. The researcher relied mainly on secondary data accessible to the public. The researcher could not travel to South Africa to obtain first-hand information and as such sourced all information on South Africa from the internet.
- Nigeria and South Africa are in different category of development. They vary in size and economic nature. As a result of this, they have a great difference in their economic indicators. The use of autoregressive distributed lag helped us to bridge this gap and achieve a better comparative study of the two countries.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Conceptual Review

2.1.1 Concept of Capital Market

Capital market is defined as the market where medium to long terms finance can be raised. The capital market is the market for dealing (that is lending and borrowing) in long term loanable funds, (Mishra, Mishra, Mishra & Mishra, 2010; Akingbohungbe, 1996; Ekezie, 2002). Mbat (2001) described it as a forum through which long-term funds are made available by the surplus to the deficit economic units. Capital market is a collection of financial institutions set up for the granting of medium and long term loans. It is a market for government securities, for corporate bonds, for the mobilization and utilization of long-term funds for development – the long term end of the financial system (Adenuga, 2010).

Soyode and Oyedeji (2006) states that the capital market is primarily created to provide avenues for effective mobilization of idle funds from the surplus economic unit and channel them to the deficit economic unit for long-term investment purpose. It serves as a linkage between the deficit sector and the surplus sector in any economy. The suppliers of funds are basically individuals and corporate bodies as government rarely supply funds to the market. The users of funds, by contrasts, consist mainly of corporate bodies and government.

Mohtadi and Agarwal (2004), observe that large stock markets lower the cost of mobilizing savings, facilitating investments in the most productive technologies. It is a known fact that the investment that promotes economic growth and development requires long term funding, far longer than the duration for which most savers are willing to commit their funds (Ologunde, Elumilade & Asaolu, 2006).

The vital roles played by the capital market in the achievement of economic growth thereby enables government, industries, corporate bodies to raise long-term capital for the purpose of financing new projects, expanding and modernizing industrial concerns. A unique benefit of the capital market to corporate entities is the provision of long-term, non-debt financial capital. Therefore, the determination of the overall

growth of an economy depends on how efficiently the stock market performs its allocative functions of capital (Ewah, Esang & Bassey, 2009).

In principle, the capital (stock) market is expected to accelerate economic growth, by providing a boost to domestic savings and increasing the quantity and the quality of investment (Ifionu & Omojefe, 2013). The market is expected to encourage savings by providing individuals with an additional financial instrument that may better meet their risk preferences and liquidity needs. Better savings mobilization may increase the saving rate (Saidu, 2014). The capital market also provides an avenue for growing companies to raise capital at lower cost. In addition, companies in countries with developed stock market are less dependent on bank financing, which can reduce the risk of a credit crunch. The capital market therefore is able to positively influence economic growth through encouraging savings among individuals and providing avenues for firm financing (Atoyebi, Ishola, Kadiri, Adekunjo & Ogundeji, 2013).
Companies can finance their operation by raising funds through issuing equity (ownership) or debenture/bond borrowed as securities. Equity have perpetual life while debenture /bond issues are structured to mature in periods of years varying from the medium to long-term of usually between five and twenty five years (Okpoto, 2015).Capital markets also provide the opportunities for the purchase and sale of existing securities among investors thereby encouraging the populace to invest in securities that foster economic growth.

In the capital market, lenders (investors) provide long term funds in exchange for long term financial assets offered by borrowers. Aderibigbe (1977) said capital market could be defined narrowly as the market for dealings (lending and borrowing) in longer-term loan able funds and equity shares. The market according to him is made up of the primary and secondary markets. The primary (new issue) market is concerned with raising new capital. The secondary market is the market for the sale and purchase of existing securities, which are already in people's hand, enabling savers who purchased bonds and shares when they had surplus funds to recover their money when they need cash (Ologunwa & Sodibo, 2016).

A leading operator in the capital market is the stock exchange market. A stock market or equity market is a public market (a loose network of economic transactions, not a

physical facility or discrete entity) for the trading of company stock and derivatives at an agreed price; these are securities listed on a stock exchange as well as those only traded privately, (Akingunola et al., 2012). The stocks are listed and traded on stock exchanges which are entities of a corporation or mutual organization specialized in the business of bringing buyers and sellers of the organizations to a listing of stocks and securities together.

Capital market offers a variety of financial instruments that enable economic agents to pool, price and exchange risk. Through assets with attractive yields, liquidity and risk characteristics, it encourages saving in financial form. This is very essential for government and other institutions in need of long term funds. Al-Faki (2006) defined the capital market as a network of specialized financial institutions, with series of mechanism, processes and infrastructure that, in various ways facilitate the bringing together of suppliers and users of medium to long term capital for investment in economic growth project.

The initial motive behind establishment of capital markets in African countries has been to liberalize the financial sector which in turn stirs a positive and more appreciated operation of the sector (Yartey & Adjasi, 2007).

2.1.2 Capital Market and Economic Growth

Economic growth means an increase in the capacity of an economy to produce goods and services, compared from one period of time to another. Economic growth is a process by which a nation wealth increases over time. The most widely used measure of economic growth is the rate of growth in a country's total output of goods and services gauged by the gross domestic product (GDP). Economic growth constitutes the increase of per capita gross domestic product (GDP) or other measures of aggregate income, typically reported as the annual rate of change in the real GDP (Dornbush & Fisher, 1981). Efficient and effective operation of the stock market is expected to boost economic growth by way of providing opportunity to raise domestic savings and increasing investments in quality and quantity terms (Singh, 1997). Stock market provides mechanism that enables the encouragement of domestic savings through the provision of individuals and corporate entities with some supplementary financial instruments that are capable of meeting their risk preference and liquidity needs (Levine & Zervos, 1998). According to Aggarwal, Inclan and Leal (1991),

capital market impacts on economic growth by encouraging the flow of foreign capital, reducing the over reliance of the corporate sector on short term financing, aid government privatization programme and provides means for expansion of operations which leads to increased output.

There is an increasing realization by researchers of the correlation between stock market and economic growth in African countries. As records have it, there are currently quite a number of literatures outlining the significant correlation between stock market development and economic growth of countries (Akingunola, Adekunle& Ojodu, 2012; Adenuga, 2010). The linkage obtains its significance from the observation gathered from the activities of stock market on a developed economy. As Senbet and Otchere (2008) explained, 'this linkage is explained by the role of a well-functioning stock market system in lowering the costs of mobilizing financial resources and in ensuring that these resources are allocated efficiently in the sense of being channeled to their highly valued use'.

Schumpeter (1911) as cited in Demetriades and Hussein (1996) explains that a well-developed financial system can facilitate technological innovation and economic growth through the provision of financial services and resources to investors who are ready to invest in new products. The above argument of Schumpeter (1911) was later advanced as the McKinnon and Shaw (1973) hypothesis, which is a policy analysis tool for developing countries with strong recommendation for high capital accumulation and decentralized financial intermediation (Demetriades & Hussein, 1996).

Robinson (1952) as cited in Chang & Caudil (2005) however argued that finance does not influence economic growth; rather it is financial development that follows economic growth since expansion of the real economy means more demand for financial services and institutions. Lucas (1988) totally dismissed the positive role of financial development on economic growth; he argues that the role of the financial system in the growth process has been "badly overstressed".

Chandavarka (1992) on the other hand states that those development economists are always sceptical on the role of financial system and therefore often ignore it: *"…none of the pioneers of development economics… even list finance as a factor of development"*. The interaction between financial development and economic growth

often occurs through a number of channels. According to Masih, Al-Elg and Madani (2009), there is no broad consensus on the specific number of channels but the common channels often found in the literature are investment and productivity. The investment channel is usually captured through capital stock and productivity through real interest rate.

McKinnon and Shaw (1973) further explains that misallocation of resources, interest ceilings; poor investment and inefficiency are usually associated with the policy of financial repression that was prevalent in the 1960s and 1970s in the Less Developed Countries (LDCs). Therefore, the viable alternative is financial liberalisation which stimulates saving and investment, ultimately leading to high economic growth. Greenwood and Jovanovic (1990), Bencivenga and Smith (1991), and Berthelemy and Varoudakis (1996) argue that through research collection, risk pooling and analysis of information on competing technologies of production, financial intermediations can improve the flow of resources and enhance economic growth.

2.1.3 The Stock Market Size

2.1.3.1 The Concept of Stock Market Capitalization

A common index often used, as a measure of stock market size is the market capitalization. Market capitalization equals the total value of all listed shares. In terms of economic significance, the assumption is that market size and the ability to mobilize capital and diversify risk are positively correlated. Market capitalization is the total value of the tradable shares at the capital market. It depicts the depth of the market or the Market Size. Where the market size is big, it enhances the GDP which bring about economic growth but when the Market Size is small, it hampers economic growth and has negative impact on the GDP (Okonkwo, Ananwude & Echekoba, 2015). The concept of market capitalization is very common in stock market analysis. It denotes the measurement of the total value of a market with consideration of the total value of shares (Alajekwe & Achugbu, 2012). It is an estimate of a market's value based on perceived futures as well as its economic and monetary situations (Ogege & Ezike, 2012). The Table 2 displays the total market capitalization (MCAP) for Nigeria and South Africa markets as captured by ASEA (2013). Market capitalization to GDP is used as a proxy for stock market size. Levine and Zervos (1996) observe that an increase in the stock market capitalization as measured either

by the ratio of the stock market value to GDP or by the number of listed companies, may improve an economy's ability to mobilize capital and diversify risks.

Table 2: Total Market Capitalization in Nigeria and South Africa

Year	Nigeria USBN$	South Africa USBN$
2006	32.82	715.03
2007	86.35	833.55
2008	49.80	491.28
2009	33.33	793.07
2010	53.40	981.44
2011	43.06	845.58
2012	57.77	998.34

Source: African Securities Exchanges Association (ASEA), 2013

The sharp increase in MCAP in Nigeria in 2007 can be mainly attributed to the bank consolidation programme of the Central Bank of Nigeria (CBN) where banks were directed in 2004 to increase their capital base to about US$200milliom by December 2005 (World Bank, 2007). The market however plummeted in 2008 owing to the global financial crisis. During that period according to the CBN (2009), Nigeria stock market lost almost 70% of market capitalisation. After a sharp decline in the world equity market capitalization in 2008 due to the global financial crisis, there was an attempt of recovery in 2010 at a value of 53.40 and 981.44 billion USD in Nigeria and South Africa respectively which subsequently grew to 57.77 and 998.34 billion USD for Nigeria and South Africa by the end of 2012. A closer look at the market capitalization reveals that South African stock market is over 15times higher than that of Nigeria.

2.1.3.2 Market Capitalization Ratio to Gross Domestic Products

As an investment ratio, the market capitalization ratio to GDP is used to determine the extent to which a particular market is undervalued or overvalued. It is calculated as the country's market capitalization divided by the market GDP and then multiplied by 100 (Investopedia, 2013). The outcome of this calculation is the share of the country's GDP that is accounted for by the stock market trading. Usually, a market with value greater than 100% is explained as an overvalued market, whereas a market with value of around 50% is translated as market undervaluation (Investopedia, 2013).Abu (2009) econometric results indicated that stock market development (market capitalization GDP ratio) increases economic growth. The essence of the market capitalization ratio is that the size of the market should be positively correlated with

the ability to mobilize capital and diversify risk in an economy (Demirguc-Kunt and Levine, 1995; Alajekwe & Achugbu, 2012).

Table 3: Nigeria and South African Market Capitalization Ratio to GDP

Year	Nigeria	South Africa
2006	28.1%	280.4%
2007	28.0%	280.4%
2008	18.0%	179.9%
2009	31.0%	248.2%
2010	24.6%	174.9%
2011	17.4%	130.2%
2012	21.8%	159.3%
MEAN	24.1%	207.6%

Source: Data from African Securities Exchanges Association

From the Table 3, it is deduced that South Africa exchange have mean (2006-2012) above 100% which signifies over valuation of their markets. This is due to hyperinflation suffered by their economy in the recent past. It is interesting to note that Nigeria's value is not high with the mean value of 24.1% although the country's stock market could boast of a good capitalization value. Nigerian stock market is undervalued which should make investors cast their prying eyes on Nigerian stock exchange.

2.1.4 The Concept of Liquidity

Liquidity is used to refer to the ability of investors to buy and sell securities easily. It is an important indicator of stock market development because it signifies how the market helped in improving the allocation of capital and thus enhancing the prospects of long-term economic growth. This is possible through the ability of the investors to quickly and cheaply alter their portfolio thereby reducing the riskness of their investment and facilitating investments in projects that are more profitable though with a long gestation period (Okonkwo, 2009; Ologunwa & Sadipo, 2016). The liquidity as argued by Osinubi (2002), facilitate profitable interactions between the equity and the money market, since, with a liquid capital market, shares are accepted as collateral by banks for lending purposes and consequently increasing access to credit for growth. Similarly, Oke and Mukuola (2004) highlighted liquidity as an important characteristic of a stock market and point to its ability to efficiently allocate capital as well as allowing investors to divest their assets easily. Two main indices are

often used in the performance and rating of the stock market: total value traded ratio; and turnover ratio.

2.1.4.1 Total Stock Value Traded

Total stock value traded infers the trading in capital market. It reports total financial assets bought and sold at the market. It indicates whether a market is liquid or not. This indicator shows the value of shares traded in a year. It is arrived at by finding the product of the total number of shares traded within a specific time by the market value of the shares (Ibenta, 2005; Alajekwe & Achugbu, 2012). Value traded is a strong indicator of the liquidity of a stock market. It is used to measure the stock market transactions relative to the stock market size. If the value of stock traded in the stock market is high, it indicates a highly liquid market. Total value traded ratio measures the organized trading of equities as a share of the national output. Table 4 depicts the value of stock traded in Nigerian and South African stock markets (2006-2012).

Table 4: **Value of Shares Traded in Nigeria and South Africa(2006-2012)**

Year	Nigeria (USD)	South Africa (USD)
2006	3,700,000,000	311,041,000,000
2007	16,774,190,000	432,747,170,000
2008	18,285,710,000	395,235,210,000
2009	4,654,800,000	374,007,048,670
2010	5,290,740,369	438,087,637,674
2011	4,181,924,837	402,299,570,059
2012	4,231,648,477	408,628,960,228

Source: African Securities Exchanges Association, 2013.

Clearly from the data displayed in Table 4, South African stock market is many times over the Nigerian stock market in total value traded for the specified years. It is also obvious that South African stock market accounts for the larger percentage to the total accumulated stock trading value. There has been however a consistent growth in South African stock market from 2009 to 2012. The table 3 indicates that South African stock market is more liquid than the Nigerian stock market.The extent of liquidity or illiquidity of a market is very pertinent to investors in analyzing the operational function of the market. Nigeria saw a huge decline possibly due to lack of investor confidence in the market during the 2008 financial crisis.

2.1.4.2 Turnover Ratio

This is used as an index of comparison for market liquidity rating and level of transaction costs. This ratio equals the total value of shares traded on the stock market divided by market capitalization. It is also a measure of the value of securities transactions relative to the size of the securities market. A stock market's turnover ratio is simply a measure of how frequent stock exchanges hands (Edeme & Okoro, 2013). It is used to tell how well stocks are quickly turned into revenues. A low turnover ratio is an indication to potential investors that the stock price is unaffected by any sudden and high purchases of the stock due to the abundance of the stock. A high turnover ratio suggests to the investor that an increase in purchases would have a considerable effect on the stock due to the few numbers available (Adeoye, 2015). Although a higher ratio implies higher demand for stocks, it also suggests higher brokerage fees or transaction costs which, if uncontrolled, could minimize returns (Investopedia, 2013). Therefore, potential investors tend to consider stocks with low turnover ratios. The turnover ratio of a stock market is the result of the value traded divided by the market capitalization. Table 5 reveals the turnover ratio of Nigeria and South Africa stock markets.

TABLE 5: Turnover Ratio in Nigeria and South Africa Stock Markets (2006 - 2012)

Year	Nigeria	South Africa
2006	13.6	48.80
2007	28.2	54.99
2008	25	71.84
2009	10	46.25
2010	9.91	43.26
2011	9.71	46.25
2012	7.32	40.93
AVERAGE	12.39	49.71

Source: Data from African Securities Exchanges Association, 2013.

Nigeria and South Africa stock markets registered an overall mean turnover ratio of 12.39% and 49.71% for the period 2008-2012 which is a strong indication of potentially investable market. The high turnover ratio posted by South Africa stock markets could be explained by the tendency of families and strategic investors to control a large portion of the stocks in their market. On the other hand, the low turnover ratio experienced by Nigeria stock markets could be attributed to 'strong trading interests from institutional investors' (Capital Market Authority,

2010).Turnover ratios of each stock market are assessed in order to measure the operational efficiency of the markets geared towards the ease of trading.

2.1.5 The Concept of Gross Domestic Product (GDP)

The GDP represents the total value of goods and services produced in a country for a period of one year (Dornbush & Fisher, 1981). It is also the market value of all officially recognized final goods and services provided by a country within one year (Okoye & Nwisienyi, 2013). It is the market value of all final goods and services made within the boarder of a country in a year (Sullivan & Sheffrin, 1996). In another sense, gross domestic product is the monetary value of all the finished goods and services produced within a country's border in a specific time period. Although GDP is usually calculated on an annual basis, it includes all of private and public consumption, government outlays, investment and exporters import that occur within a defined territory (Anyanwu, 1996). It is mathematically represented as follows:

GDP = C + G + I + NX

Where: C = is equal to all private consumption

G = the sum of government spending

I = all the country's business spending on capital.

NX = the nation's total net exports, calculated as total export minus total imports (NX = Exports – Imports).

GDP was used in this study as a proxy for economic growth in Nigeria and South Africa. Its expansion or increase signifies growth in the economy while its decrease is a sign of economic stagnation.

Table 6: Nigeria and South African GDP (2006 - 2012)

Year	Nigeria(USD)	South Africa(USD)
2006	145,429,802,542	261,007,039,379
2007	116,451,202,370	286,171,830,700
2008	208,064,724,514	273,141,750,193
2009	169,481,270,115	283,985,548,070
2010	229,507,890,739	363,240,728,680
2011	245,682,418,219	401,802,218,556
2012	262,597,405,488	384,312,674,446
Average	196,744,959,141	321,951,684,289

Source: African Securities Exchanges Association, 2013.

From table 6 it is crystal clear that the South African GDP is far higher than Nigerian GDP. The average with the period was 196,744,959,141 and 321,951,684,289 for Nigeria and South Africa respectively.

2.2 Theoretical Framework

The theoretical framework for this study is based on the theory of efficient market. Very much of the relevant recent work carried out on economic growth and capital market development focuses on efficient market hypothesis (Shahbaz, Ahmed & Ali, 2008; Patrick, 2005; Sule, & Momoh, 2009; Ntim, 2012; Khetsi & Mongale, 2015).

2.2.1 The Efficient Market Hypothesis (EMH)

The theoretical background linking capital market and economic growth is based on the Efficient Market Hypothesis (EMH) developed by Fama in 1965. According to the Efficient Market Hypothesis, financial markets are efficient or prices on traded assets have already reflected all known information and therefore are unbiased because they represent the collective beliefs of all investors about future prospects. Previous test of the Efficient Market Hypothesis (EMH) have relied on long-range dependence of equity returns. It shows that past information has been found to be useful in improving predictive accuracy. This assertion tends to invalidate the Efficient Market Hypothesis (EMH) in most developing countries. Equity prices would tend to exhibit long memory or long range dependence, because of the narrowness of their market arising from immature regulatory and institutional arrangement. They noted that, where the market is highly and unreasonably speculative, investors will be discouraged from parting with their funds for fear of incurring financial losses. The implication is that companies cannot raise additional capital for expansion. Thus, it suffices to say that efficiency of the capital market is a necessary condition for growth in Nigeria (Nyong, 2003).

The subject of efficiency is critical to every financial (and capital) market development. An efficient financial market exists when security prices reflects all available public information about the economy, about financial market and about the specific company involved; this implies that market prices of individual securities adjust very rapidly to new information (Van Horne, 2001).

Efficiency in allocation of scarce resources into their most productive uses by investors is critical for economic growth (Owolabi & Ajaiyi, 2013). Stock markets are established to help in this process of optimalizing of real resources into competing uses. Operational efficiency concerns the use of resources in the various operations of capital market institutions at the lowest costs possible. When the operations of the stock market are efficient, exchange can only engender the accrual of normal profits. In a price-efficient market, the investors can only expect to earn a risk-adjusted return from an investment as prices move instantaneously in respect to any new information. As a result, security prices are said to fluctuate randomly about their intrinsic or true values. Self-interest to investors when they seek under-valued or over-valued securities either to buy or sell is the driving force behind market efficiency (Ibenta, 2005).

Fama (1970) as cited in Okonkwo (2009) described three level of efficiency.

1. Weak-form of efficiency: current prices fully reflect the historical sequences of prices; that is, knowledge of the past price patterns will not help you improve forecast of the future.

2 Semi-strong-form efficiency: current prices fully reflect all publicly available information; including such information as annual reports news items.

3.Strong-form efficiency: current prices fully reflect all information, both public and private. (Private information is that which is known only to insiders).

The implications of market efficiency are identified by Ibenta (2000). If markets are weak-form, past prices cannot predict price movements in the future; i.e. the market rules trends, cycles or any other predictable pattern of price movement. The real financial position of a company will in the long-run be reflected in the company's share price. Since strong-form efficient market hypothesis does not seem to hold, management with unfavourable information about companies might release such information to the public.

Investors can rarely beat the market since all new information will have been built into security prices. An efficient market tries to imply that the value of security analysis is zero. In a situation where the market is efficient, investors choose passive portfolio management which may enable them detect and exploit perceived departures from efficiency. In efficient markets, there are no gains from trade spotting and

"timing the market" for rights issues or for speculating in share price movement. Similarly, accounting charges are just as valueless as acquisition to supposedly 'undervalued' companies. Corporations can only add value through the efficiency of their operations. Financial transactions are usually zero-NPV activities; i.e. they do not add value (Ibenta, 2000).

A critical question about market efficiency asked by Van Horne (2001) is "does market efficiency always hold?" He asked the question with reference to the stock market crash in the U.S. on October 19, 1987, when the market value fell by 20% in a few hours. Failing to find any compelling explanation, the authors observed:

"*We are left with the uneasy feeling that although market efficiency is a good explanation of market behaviour most of the time and securities seem to be efficiently priced relative to each other, there are exceptions. These explanations call into question market 'embodying all available information and, therefore whether they can be completely trusted ___ although the concept of financial market efficiently underlies a good deal of our thinking, we must be mindful of the evidence that suggests exceptions.*

There is no perfect capital market anywhere, although some capital markets are more efficient than others. The conditions for a perfect capital market are similar to those of perfect competition. They include;

-No entry barrier: Any supplier or user of funds can freely enter or leave the market

-Large number of buyers: no single market participant is big or powerful enough to influence prices of securities.

-Divisible financial assets: financial assets should be sold in small units so that investments in them could be made by all participants.

-Absence of transaction costs: individuals who transact in the market can access and trade in securities at little or no cost.

-No tax discrimination: no set of investors or traders should be favoured at the expense of the others in tax levies (Ibenta, 2000; Vanhorne, 2001).

Inspite of the obvious surprise that tend to question the reliability of the Efficient Market hypothesis, this work believes that the stock market is efficient, and that changes in the market significantly reflect changes in economic growth of any nation with reasonably organized national stock markets like Nigeria and South Africa.

2.3 Empirical Literature Review

The stock market serves as a veritable tool in the mobilization and allocation of savings among competing ends which are critical and necessary for the growth and efficiency of the economy. Therefore, the determination of the overall growth of an economy depends on how efficiently the stock market performs its allocative functions (Ewah, Esang & Bassey, 2009).

2.3.1 Empirical Literature Review on Nigerian Capital Market

Adam and Sanni (2005) examined the role of stock market in Nigeria's economic growth using Granger Causality test and regression analysis. The study discovered a one-way causality between GDP growth and market capitalization and a two-way causality between GDP growth and market turnover. They also observed a positive and significant relationship between GDP growth and turnover ratios. The study advised that government should encourage the development of the capital market since it has a positive relationship with economic growth.

Afees and Kazeem (2010) critically and empirically examined the causal linkage between stock market and economic growth in Nigeria between 1970 and 2004. The indicator of the stock market development used are market capitalization ratio, total value traded ratio and turnover ratio while the growth rate of gross domestic product is used as proxy for economic growth, using the granger causality (GC) test, the empirical evidence obtained from the estimation process suggests a bidirectional causality between turnover ratio and economic growth, a uni-directional relationship from market capitalization to economic growth and no causal linkage between total value traded. The result of the causality test is sensitive to the choice of variable used as proxy for stock (capital) market. Overall the result of the granger causality test suggested that capital market drive economic growth.

Nyong (1996) developed an aggregate index of capital market development and used it to determine its relationship with long run economic growth in Nigeria. The study employed a time series data from 1970 to 1994. Four measures of capital market development ratio of market capitalization of GDP measured in percentage, ratio of total value of transaction on the main stock exchange to GDP in percentage, the value

of equities transactions relative to GDP and listing were used. The four measures were combined into one overall composite index of capital market development using principal component analysis. The financial market depth was included as control. It was found that the capital market development is negatively and significantly correlated with the long-run growth in Nigeria.

Josiah, Samson and Akpeti (2012) looked at the impact of the capital market in the development of the Nigerian economy with the main objective of identifying the importance of the capital market. Using the Ordinary Least Square and cochrane – Orcutt interative methods, they discovered that the capital market has not contributed positively to the development of the Nigerian economy. However, there is a positive correlation between the rate of transactions in the capital market and the development of Nigerian economy.

Idowu, Abiola and Babatude (2012) investigated the effect of financial reform on capital market development in Nigeria over the period 1986 to 2010. They used Ordinary Least Square (OLS) technique to estimate the empirical models of the study. The impact of the capital market reform introduced in 1995 on capital market development was assessed using the Chow-Breaking-point Test. Their result revealed that the financial reform of 1995 impacted significantly on the capital market development in Nigeria.

Kolapo and Adaramola (2012) examined the impact of the Nigerian capital market on economic growth from the period of 1990-2010. The economic growth was proxied by Gross Domestic Product (GDP) while the capital market variables considered include; Market Capitalization (MCAP), Total New Issues (TNI), Value of Transactions (VLT), and Total Listed Equities and Government Stocks (LEGS). Applying Johansen co-integration and Granger causality tests, their results show that the Nigerian capital market and economic growth are co-integrated, implying that a long run relationship exists between capital market and economic growth in Nigeria. Their causality test results suggest bidirectional causation between the GDP and the value of transactions (VLT) and a unidirectional causality from Market capitalisation to the GDP and not vice versa. On the other hand, there is no "reverse causation" from GDP to market capitalization. Furthermore, there is independence "no causation"

between the GDP and total new issues (TNI) as well as GDP and LEGS. This is a clear indication of the relative positive impact the capital market plays on the economic growth of the country. The evidence from this study reveals that the activities in the capital market tend to impact positively on the economy.

Oke (2012) examined the effect of the Nigerian capital market operation on the development of the Nigeria oil and gas sector. To achieve this, two models were formulated and data for the period 1999-2009 were collated while the co-integration and Error Correction model were employed for analysis. Their findings indicate that there exists a long run equilibrium relationship among the variables in both models.

Akingunola, Adekunle and Ojodu (2012) investigated the impact of interest rate on capital markets growth and to shed some light on how other macroeconomic variables such as inflation rate, exchange rate also influence capital markets growth. Multiple regression analysis of the ordinary least square was employed in their study to determine the impact of interest rate as well as other macroeconomic variables such as inflation rate, exchange rate on capital market growth. Findings of their study revealed that interest rates have an adverse effect on capital market growth. The Regression analysis results reveal that a 1% increase in interest rate will lead to a 44% decrease in all share price index, this implies that as the rate of interest increases, the performance of the capital market reduces. Inflation rate and exchange rate are however not significant, especially at the 5 percent level of significance. The study revealed further that although interest rate is not negatively linked to the all share index, on its own but when examined alongside other control variables such as inflation rate and exchange rate, it behaves true to type.

Oke and Adeusi (2012) examined the impact of capital market reforms on the Nigerian economic growth between 1981 and 2010. The ordinary least square method of regression and the Johansen co-integration analysis were employed to analyse the secondary data sourced from the Central Bank of Nigeria statistical bulletin, the Nigeria Stock Exchange Fact book and the Nigeria Security and Exchange Commission Reports. Their results show that capital reforms positively impact the economic growth.

Aliyu (2009) assessed the impact of oil price shock and real exchange rate volatility on real economic growth in Nigeria on the basis of quarterly data from 1986Q1 to 2007Q4. The empirical analysis started by analyzing the time series properties of the data which is followed by examining the nature of causality among the variables. Furthermore, the Johansen VAR-based cointegration technique was applied to examine the sensitivity of real economic growth to changes in oil prices and real exchange rate volatility in the long-run while the short run dynamics was checked using a vector error correction model. Results from ADF and PP tests show evidence of unit root in the data and Granger pairwise causality test revealed unidirectional causality from oil prices to real GDP and bidirectional causality from real exchange rate to real GDP and vice versa. His findings showed that oil price shock and appreciation in the level of exchange rate made positive impact on real economic growth in Nigeria. He recommended greater diversification of the economy through investment in key productive sectors of the economy to guard against the vicissitude of oil price shock and exchange rate volatility.

Adaramola (2012) in his study examined the long-run and short-run effects of exchange rate on stock market development in Nigeria over 1985–2009, using the Johansen cointegration tests. He specified a bi-variate model and his empirical results show a significant positive stock market performance to exchange rate in the short-run and a significant negative stock market performance to exchange rate in the long-run. The Granger causality test shows strong evidence that the causation runs from exchange rate to stock market performance; implying that variations in the Nigerian stock market is explained by exchange rate volatility.

Osuala and Jones (2015) examined empirically the long held theory that crude oil price change negatively impacts on stock market return. Using monthly data covering the period 1985 to 2011- resulting in 324 data points, the study examines this theory in the context of Nigeria. The study finds a significantly positive relationship between oil price and stock market return both on the short-run and the long-run, and that the direction of relationship is from oil price to market return, and finds no reverse causation. The study therefore recommends a strong effort towards diversification of the Nigerian economy in order to avoid the detrimental effect of fall in oil price in the international market.

Nwosu (2009) in her work the impact of fuel price on inflation used the variance Autoregressive analysis model to assess the relative contribution of fuel price on inflation. The study used available quarterly data series spanning 1995 to 2008. The finding of the study revealed that the policy of subsidizing the price of fuel should be continued so as to help cushion the economy from the adverse effects of oil-price shock.

Akpan (2009) stated that there has been a steep upward trend in the price of crude oil in recent years, reaching a record nominal high in mid-2008. This have led to increasing concern about its macroeconomic implications, both abroad and in Nigeria given that the Nigerian economy is highly vulnerable to oil price fluctuations. He analysed the dynamic relationship between oil price shocks and major macroeconomic variables in Nigeria by applying a VAR approach. The study pointed out the asymmetric effects of oil price shocks; for instance, positive as well as negative oil price shocks significantly increase inflation and also directly increases real national income through higher export earnings, though part of this gain is seen to be offset by losses from lower demand for exports generally due to the economic recession suffered by trading partners. His findings showed a strong positive relationship between positive oil price changes and real government expenditures. Unexpectedly, the result identified a marginal impact of oil price fluctuations on industrial output growth. Furthermore, the "Dutch Disease" syndrome is observed through significant real effective exchange rate appreciation.

Alajekwe and Achugbu (2012) investigates the role of stock market development on economic growth of Nigeria from 1994-2008 using Ordinary Least square econometric technique to measure the relationship between capital market development indices and economic growth. They adopted market capitalization ratio as a proxy for market size and value traded ratio and turnover ratio as proxy for liquidity. The study find that market capitalization ratio and value traded ratio have a very weak negative correlation with economic growth while turnover ratio has a very strong positive correlation with economic growth and that market capitalization has a strong positive correlation with turnover ratio which according to them implies that liquidity has a propensity to spur economic growth in Nigeria

Ogege and Ezike (2012) empirically examined the effect of capital market on economic growth of Nigeria using time series data from 1971-2010. They adopted the Engle-Granger and Johanson method of co-integration in VECM setting estimation technique. They find that in the long run, the Nigeria capital market positively and significantly influenced economic development. They therefore encouraged government to put more effort in developing an active new issues market by encouraging more flotation of new issues and create a stable environment for business.

Echekoba, Ezu and Egbunike (2013) examined the effect of capital market on economic growth of Nigeria economy under a democratic rule. Using time series data from 1999-2011 and Multivariate regression method to analyze data. They find that only the total market capitalization and all share indexes exert insignificant positive influence on the GDP while the total value of stock has a negative insignificant effect on GDP.

Edeme and Okoro (2013) whilst investigating the effect of capital market on economic growth of Nigeria from 1970-2010, used GDP as proxy for economic growth while market capitalization, number of deals and value of transaction were the independent variables. The finding reveals that the capital market variables all have positive and significant effect on economic. They therefore encourage government to implement policies that will make the market more efficient and reposition it for growth within the economy.

Ifionu and Omojefe (2013) examined the performance of the capital market and its impact on economic growth of Nigeria. Using time series data covering 1985-2010, they employed co-integration econometric tool in data analysis. The study empirically established between dynamic capital market and economic development. they recommend that policies that will improve the development of the length and breadth of Nigeria capital be pursued.

Adeoye (2015) empirically examines the impact of capital market on economic growth in Nigeria from 1992-2011. Market capitalization was used as a proxy for Nigeria capital market against some variables of the economy- GDP, FDI, Inflation, TNI, value of transaction and TNL. Using multiple regression analysis, the study

finds that the capital market has an insignificant impact on the economy for the period under study. He advised that policies and measures that would boost investor's confidence be enshrined in the running of the Nigeria capital market so as to enable it contribute significantly to the economic growth of Nigeria.

Okoye and Nwisienyi (2013) studies the effect of capital market on the Nigeria economy using time series data from 2000-2010. Adopting multiple regression and Ordinary Least Square estimation technique with GDP as dependent variable and all share index, market value and market capitalization as independent variables. The find that there are significant relationships between capital market indicators and GDP and concludes that the capital market has significantly affected the economy for the period under review.

Atoyebi, Shola and Kadiri (2013) studied the impact of capital market on economic growth in Nigeria using annual data from 1981- 2010. They adopted GDP as the dependent variable while market index and market capitalization as independent variables. Johanson co-integration technique and vector auto regression were used for data analysis. The study finds that increase in market index and market capitalization lead to increase in GDP. They conclude that all tiers of government should fund their developmental programme through the capital market so as to boost transaction in the market.

Ologunwa and Sodipo (2016) applied structural dynamic model to analyze data. They find that capital market ratio and turnover ratio are significant and positive drivers of economic growth.Odo, Anoke, Onyeisi and Chukwu (2017) examined the impact of capital market indicators on economic growth in Nigeria from 1986-2016. The study adopted ARDL-Bond testing and VAR Granger causality econometric tool to test the variables. Their finding reveals causality from MCAPGDP to GGDP. They suggest an increase in money supply so as to stimulate growth in capital market.

Owolabi and Ajaiyi (2013) examines whether or not stock market promotes economic growth in Nigeria. They employed ordinary least square on time series data from 1971-2010. Their study reveals a positive relationship between economic growth and capital market. They suggest that policies geared towards rapid development of stock market should be pursued.

2.3.2 Empirical Literature Review on South African Capital Market

Khetsi and Mongale (2015) studied capital markets as institutions that actively play a role in the development of an economy. This study investigates the impact of capital markets on economic growth in South Africa from 1971-2013. The results indicated that there is a positive relationship between economic growth and capital markets in South Africa. Furthermore, the country should focus on factors that contribute to the development of capital markets, such as the development of financial institutions. The study contributes to the existing body of empirical literature with regards to economic growth and capital markets, especially with reference to stock markets as South Africa has one of the largest stock markets (JSE) in the world.

Nyasha and Odhiambo (2015) investigate the dynamic causal relationship between bank-based financial development, stock market development and economic growth in South Africa – during the period 1980–2012. The study includes savings and investment as intermittent variables – thereby creating a multivariate Granger-causality model. Using the newly developed autoregressive distributed lag (ARDL)-bounds testing approach, the empirical results of this study reveal that there is a distinct short- and long-run unidirectional causal flow from stock market development to economic growth in South Africa. The results also indicate that there is a unidirectional causal flow from bank-based financial development to stock market development in the short run. The study, however, fails to find any causality between bank-based financial development and economic growth. The study, therefore, concludes that the development of the real sector in South Africa is largely driven by stock market development.

Odhiambo (2009) in his study, the dynamic causal relationship between stock market development and economic growth in South Africa is examined – using the newly developed ARDL Bounds testing procedure. The study uses three proxies of stock market development, namely stock market capitalisation, stock market traded value and stock market turnover, against real GDP per capita, a proxy for economic growth. Using the 1971-2007 data sets, the empirical results of this study show that the causal relationship between stock market development and economic growth is sensitive to the proxy used for measuring the stock market development. When the stock market capitalisation is used as a proxy for stock market development, the economic growth

is found to Granger cause stock market development. However, when the stock market traded value and the stock market turnover are used, the stock market development seems to Granger cause economic growth. Overall, the study finds the causal flow from stock market development to economic growth to predominate. The results apply irrespective of whether the causality is estimated in the short run or in the long run.

Nomfundo (2010) examined the long run relationship between stock market development and economic growth in the case of South Africa. The study used quarterly data covering the period from 1990Q1 to 2010Q4. To empirically test the link between the two variables, the study used the Johanson's cointegration approach and Granger causality so as to test the direction of the relationship. The Vector Error Correction Model was also employed to capture both short run and long run dynamics. Generally, the results reveal that a long run relationship exists between the two variables and the causality flows from economic growth to stock market development. Also, the extent to which of stock market development impacts on growth is statistically weak.

Gondo (2009) studied the impact of financial development has on economic performance of the South African economy from 1970 to 1999. The evidence is based on a time series empirical growth model, using instrumental variables with robust standard errors. The paper introduces an index of political and economic polarisation as well as the inflation tax, as the identifying instruments, to compensate for simultaneity bias in the financial development regressors. The
results show that credit extension to the private sector and stock market liquidity have a complementary and statistically progressive impact on economic performance over the period, whilst, in the short-run at least, liquid liabilities exerts a negative impact on economic growth. He also finds that institutions and the regulatory environment matter for both economic growths
and financial development. Increasing access to credit and indexed securities is a beneficial policy proposition to reduce inequality and protect the earnings of the poor in particular, whilst increasing productivity. He concluded that a more active stock market and banking sector drives economic growth in South Africa.

Umar (2012) examine the casual relationship between stock markets, banks and economic growth in South Africa using quarterly time series data from 1983:q1-2007:q4. Using Vector Error Correction model (VECM) based causality tests to establish a link between financial development (represented by both banking and stock market systems) and economic growth. Impulse response functions (IRFs) and Variance Decomposition (VDCs) are computed to further examine the short-run dynamics among the variables in the system. Also, Structural Vector Autoregression (SVAR) is applied to examine the link between financial development and economic growth. The empirical investigation suggests that in the long-run, there is evidence of bidirectional causality between financial development and economic growth using the banking system proxy by Bank Credit to Private sector (BCP). While, when stock markets variables are used that is Turnover Ratio (TR) and Value of shares Traded (VT), the results indicate unidirectional causality from economic growth to stock market system. The Impulse response functions (IRFs) and variance decompositions (VDCs) indicate that financial development (BCP,TR, and VT) have short-run impact on economic growth at the immediate year of initial shocks and VDCs shows that all the indicators for financial development contain some useful information in predicting the future path of economic growth. Meanwhile,

SVAR results indicate little evidence that finance promote economic growth in the long-run.

Nduka, Anigbogu and Nyiputam (2016) whilst investigating the long causal relationship between stock market and aggregate economic performance of South Africa, used quarterly data from 1995-2013. They utilized Augmented Dickey Fuller and Philip Perron unit root, Johanson 1995 maximum likelihood co-integration technique and VEC model. They further employed Granger 1969 pair-wise causality test approach. The study find that long run relationship exist between stock market and economic growth of South Africa but the causality test result suggest that non cause each other.

Chipaumire and Ngirande (2014) examined the impact of stock market on economic growth in South Africa. They employed Ordinary Least Square regression on time series data from 1995-2010. They also used Augmented Dickey Fuller to test the

stationarity. They find that stock market liquidity impacts economic growth in South Africa.

Mohamed (2015) in attempting to find an answer as to whether stock market play significant positive role in influencing the rate at which economies grow, used data from 1990-2012. He also employed dynamic panel examination approach in assessing the relative effect of stock market capitalization on economic growth in Africa. He finds that a positive significant relationship exist between stock market capitalization and economic growth. He therefore urged African nations to explore stock market as a potential avenue for promoting economic growth.

2.3.3 Empirical Literature Review on some Capital Markets around the World

Umar (2010) studied the financial development, economic growth and stock market volatility: Evidence from Nigeria and South Africa. The study evaluates development and economic growth in Nigeria and South Africa using bank and stock market variables; bank credit to private sector, market capitalization, turnover ratio, and value of shares traded. The study applies Multivariate vector autoregressive (VAR) and Vector Error Correction Model (VECM). It further uses Generalised Impulse Response Function (GIRF) and Variance Decomposition (VDC) for analyzing the data. The results for Nigeria suggest the existence of unidirectional causality from economic growth to financial development using bank credit to private sector. While using liquid liabilities, it indicates bidirectional causality between financial development and economic growth. In the case of South Africa, the findings suggest the existence of bidirectional causality between financial development and economic growth using the banking system. However, the use of stock market variables in the analysis revealed a unidirectional causality from economic growth to stock market system.

Arthur and Jose (2012) studied comparative analysis of emerging capital markets using survey data on the evolution of the Brazilian capital market between 1960 and 2012, and also data on the evolution of capital markets of other emerging countries selected. The study concludes that the Brazilian and the emerging countries selected capital markets have undergone a process of liberalization and openness of their economies that have similarities, despite the historical background of their formation.

Capital market authority (2010) in a study of comparative analysis of the performance of African stock markets for the period 2008-2009, studied the performance of 15 security markets in Africa including the 6 largest markets during the period 2008 – 2009. The study concludes that African stock markets are a good bet for investment in 2010.

Ntim (2012) in his study of why African Stock Markets Should Formally harmonize and integrate their Operations, employing parametric and non-parametric variance-ratios tests on 8 countries daily share price indices from 1995 to 2011, they found that irrespective of the test employed, the returns of all the eight African continent-wide indices investigated appear to have better normal distribution properties compared with the 8 individual national share price indices examined. They also report evidence of statistically significant weak form informational efficiency of the African continent-wide share price indices over the individual national share price indices irrespective of the test statistic used. Their results imply that formal harmonization and integration of African stock markets may improve their informational efficiency.
King and Levine (1993) carry out a cross-country study with an endogenous growth model on eighty countries with data covering the period 1960-1989. The results show that financial development has a positive impact on economic growth. Meanwhile, the issue of causality could not be resolved due to the cross-country technique employed in their analysis. Khan and Senhadji (2003) use both panel and cross- sectional methodologies on 159 countries for the period 1960-1999. They conclude that financial development does have positive impact on economic growth. Beck, Levine and Loayza (2000) however use the Generalised-Method-of-Moments (GMM) technique and the overall results of their findings reveal that financial development is positively related to both per capita GDP growth and total factor productivity growth.
The same results are obtained also by Levine, Loayza & Beck (2000) and Beck & Levine (2004). Favara (2003) however finds a result that contrasts with the findings of Levine, Loayza and Beck (2000) using both the instrumental-variables regression and the GMM panel estimation. His results indicate that financial development does not have significant effect on economic growth.

Christopoulos and Tsionas (2004) used panel unit root and panel cointegration techniques to examine the relationship between financial development and economic

growth and results suggest that long-run causality runs from financial development to economic growth and there is no evidence of bi-directional causality.

Shahbaz, Ali and Ahmed (2008) showed the relationship between the stock price and the economic growth in their study of Kenya Stock Exchange -100 index. The data used range from year 1971 to 2006. In conclusion, they established a direct and relevant correlation between the stock price and economic growth. With emphasis on the economic growth of Africa, it can be argued that the emergence of stock markets in the region has an impact on the economic growth of African countries.

Demetriades and Hussein (1996) highlight the importance of time-series over the cross-section data. They argue that cross-section regressions do not always reflect individual countries' circumstances especially in the cases of financial institutions, policy regimes and effectiveness of governance. Through time-series data and VAR methodology Demetriades and Hussein (1996) obtain results that contrast with most of the cross-sectional studies. Most of their findings on the 16 countries studied indicate bidirectional causality between financial development and economic growth.

Issahaku, Ustarz and Domanban (2013), examined the existence of causality between macroeconomic variables and stock returns in Ghana. They employed monthly time series data spanning the period January 1995 to December 2010, with the use of vector error correction (VECM) model to establish long-run and short-run relationship between stock performance and macroeconomic variables. In order to determine the existence or otherwise of causality, they performed the Granger Causality tests. Also, the impulse response functions and forecast error variance decomposition were used to assess the stability of the relationship between stock returns and macroeconomic variables over time. Their result reveals that a significant long run relationship exists between stock returns and inflation, money supply and Foreign Direct Investment (FDI). In the short-run, a significant relationship exists between stock returns and macroeconomic variables such as interest rate, inflation and money supply. In the short-run the relationship between stock returns and FDI is only imaginary. The result from the VECM coefficient shows that it takes approximately 20 months for the stock market to fully adjust to equilibrium position in case a macroeconomic shock occurs. Lastly, a causal relationship running from inflation and exchange rate to stock returns

was established. Then also, a causal relationship running from stock returns to money supply, interest rate and FDI was also revealed. Their findings imply that arbitrage profit opportunities exist in the Ghana stock market contrary to the dictates of the Efficient Market Hypothesis (EMH).

Calderon and Liu (2003) establish bidirectional causality between financial development and economic growth. However, in the case of developing countries, financial development contributes more to the causal relationship, while in the case of developed countries; economic growth contributes more than financial development to the causal relationship. Shan (2005) uses a VAR framework through variance decomposition and impulse response function analysis. The results show very little or weak evidence that financial development leads to economic growth. Singh (2008) utilizes time-series data for India and through bivariate reduced VAR model, the results obtained suggest the existence of bidirectional causality between financial development and economic growth.

Luintel and Khan (1999) apply time series and dynamic heterogeneous panel methods to examine the relationship between financial structure and economic growth. The results indicate that for most countries in the sample, financial structure and financial development tend to have a strong impact on economic growth. Luintel and Khan (1999) argue that bivariate VAR tests *"suffer from omitted variable problems and lead to erroneous causal inferences"* and after using the multivariate VAR tests and theoretical over-identifying restrictions on 10 countries, the results reveal bidirectional causality between financial development and economic growth in all the sample countries studied. Moreover, Liang and Teng (2006) use similar methods for China for the period 1952-2001 but the results reveal a unidirectional causal relationship from economic growth to financial development.

Farzanegan and Markwardt (2009) stated that due to the high dependence on oil revenues, oil price fluctuations had a special impact on the Iranian economy. By applying a VAR approach, they analyzed the dynamic relationship between asymmetric oil price shocks and major macroeconomic variables in Iran. Contrary to previous empirical findings for oil net importing developed countries, oil price increases (decreases) have a significant positive (negative) impact on industrial output. Unexpectedly, the authors noted that they cannot identify a significant impact

of oil price fluctuation on real government expenditures. The response of real imports and the real effective exchange rate to asymmetric oil price shocks are significant. Furthermore, the response of inflation to any kind of oil price shocks is significant and positive.

Eryiğit (2009) analyzed the impacts of oil price changes on the sectoral indices of the Turkish stock exchange using daily data. Adopting the ordinary least square technique, he estimated an extended market model which included market return, oil prices (in Turkish Lira), oil price in dollars and exchange rate (USD/TL) to determine the effects of the oil price (USD) changes on market indexes in Istanbul Stock Exchange (ISE) for the period of 2000 - 2008. He found that changes in oil price (TL) had statistically significant effects on electricity, wholesale and retail trade, insurance, holding, investment, wood, paper, printing, basic metal, metal and non-metal products, machinery and mineral products indices at the 5 percent significance level. In addition, changes in oil price (USD) had a significant positive effect on wood, paper printing, insurance and electricity sub-sector indices.

Ang and Mckibbin (2007) also obtain similar results for Malaysia using multivariate VAR framework. Their findings reveal that in the long-run, it is economic growth that causes financial development while in the short-run there is no causality between financial development and economic growth in all the models analyzed.
Chang and Caudill (2005) analyses the relationship between financial development and economic growth in Taiwan based on a multivariate VAR model. The results of their findings suggest a unidirectional causality running from financial development to economic growth.

Ang (2008) through Autoregressive Distributed Lag (ARDL), examines mechanisms that provide the linkage between financial development and economic growth for Malaysia. These are: financial development, private saving, foreign direct investment, saving-investment correlation, private investment and aggregate output. The results indicate that financial development has a strong link with economic growth through qualitative and quantitative channels.

Through the use of vector error correction model and variance decomposition technique, Masih, Al-Elg and Madani (2009) obtain results that contrast that of Ang (2007) for Saudi Arabia. After examining the direction of causality between financial development and economic growth in a multivariate VAR framework, their findings show a unidirectional causality from financial development to economic growth.

Handa and Khan (2008) also use time series data on 13 countries. After applying VEC model the results show the existence of unidirectional causality from economic growth to financial development for Bangladesh, Sri Lanka, Brazil, Malaysia, Thailand and Turkey. Meanwhile, for Germany, Japan, India, Argentina, the UK and the USA they establish bidirectional; and no causality exists for Pakistan.

Kilian (2008) used a newly developed measure of global real economic activity; he proposes structural decomposition of the real price of crude oil in four components: oil supply shocks driven by political events in OPEC countries; other oil supply shocks; aggregate shocks to the demand for industrial commodities; and demand shocks that are specific to the crude oil market. The latter shock is designed to capture shifts in the price of oil driven by higher precautionary demand associated with concerns about the availability of future oil supplies. He quantifies the magnitude and timing of these shocks, their dynamic effects on the real price of oil and their relative importance in determining the real price of oil during 1975-2005. The analysis also sheds light on the origins of the major oil price shocks since 1979. Distinguishing between the sources of higher oil prices is shown to be crucial for assessing the effect of higher oil prices on U.S. real GDP and CPI inflation. It is shown that policies aimed at dealing with higher oil prices must take careful account of the origins of higher oil prices. He also quantifies the extent to which the macroeconomic performance of the U.S. since the mid-1970s has been determined by the external economic shocks driving the real price of oil as opposed to domestic economic factors and policies.

Ghirmay (2004) examines the causal relationship between financial development and economic growth in 13 sub-Saharan African countries. He uses bivariate VAR model and the result reveals that financial development leads to economic growth in eight countries while six countries depict a bidirectional causal relationship.

Atindehou (2005) find weak causal relationship between financial development and economic growth for all the 12 sample countries in West Africa with the exception of

Mauritania which exhibits unidirectional causality from finance to growth. The paper uses time-series data for the period 1960-1997 and the estimation is based on VAR methods.

Odhiambo (2007) examines the causal relationship between financial development and economic growth in three Sub-Saharan African countries. The findings reveal that in both Kenya and South Africa, the direction of causality is from economic growth to financial development while Tanzania also exhibits unidirectional causality; but this is from finance to economic growth.

Abu-Badr and Abu-Qarn (2008) also obtain similar results for Egypt using annual data from1960 to 2001 and applies a multivariate VAR method. Their results reveal bidirectional causality for all the four measures of financial development employed.

Wolde-Rafael (2009) applies multivariate VAR and Modified Wald test (MWALD) for Kenya. He establishes bidirectional causality between financial development and economic growth in three out of four measures of financial development used. His study uses annual data and covers the period 1966 to 2005.

Gries, Kraft and Meierrieks (2009) also carry out a similar multivariate VAR studies but on a wider scope covering 16 sub-Saharan African countries. Using finance, trade openness and economic growth, they establish weak causal relationship between finance and growth in most countries in the sample. However stronger evidence is established between finance and trade openness and also between trade openness and economic growth.

Mohtadi and Agarwal (2004) examined the capital market and economic growth in developing countries using a panel data approach that covers 21 emerging markets over 21 years (1977 - 1997), they found that turnover ratio is an important and statistically insignificant determinant of investment by firms and that these investment in turn are significant determinant of aggregate growth. Foreign direct investment is also found to have a strong positive influence on aggregate growth. The result of their study indicates that both turnover ratio and market capitalization are important variables as determinants of economic growth.

Kuwornu and Owusu-Nantwi (2012) studied the effect of macroeconomic variables on the Ghanaian stock market returns, using the Vector Error Correction approach. He did find that in the long-run stock returns are positively affected by inflation,

exchange rate and treasury bill rate and negatively by crude oil prices. But in the short-run, they attribute variations in stock returns to inflation (negative effect), and treasury bill rate (positive effect).

In summary, empirical evidence linking capital market development indicators to economic growth has been a controversial issue of discuss among scholars, although the majority of the evidence is in favour of a positive relationship between capital market development indicators and economic growth (Adenuga, 2010).In the course of carrying out this research work a lot of literature was reviewed based on the capital market and economic growth. Also in this regard, various definitions of the variables have been considered as well. Finally, the theoretical framework of the study was discussed.

2.4 Gap in the Literature

Numerous studies on the effect of capital market on economic growth have shown conflicting results. While some studies reveal positive and significant effect, some also find negative significant effect; others still find insignificant positive or negative effect, while some others find no effect at all. However, the conflicting results could be traced to a varying number of factors including the cross-country nature of most of the previous study. A major criticism on the cross-section studies hinges on the fact that countries with varying variables are pooled for a study. Some economists argue that for a cross-section analysis to be valid, the countries selected for study should be made as homogenous as possible by grouping the countries by geography, size or economic nature.

Again, the conflicting result could be caused by the instrument or model employed in data analysis. Majority of the previous studies have mainly used either the residual-based cointegration test associated with Engle and Granger (1987) or the maximum likelihood test based on Johansen (1988) and Johansen and Juselius (1990). Yet it is now well known that these cointegration techniques may not be appropriate when the sample size is too small (Odhiambo, 2009).

The empirical evidence revealed that capital market studies and their effect on economic growth have been a popular line of research interest. However, only a few

have tried to present a comparative study. This study therefore is a comparative evaluation of the performance of Nigeria and South Africa capital markets with a view of establishing how their performance have related to economic growth. The indicators of capital market performance are endogenous variables. Changes in the indicators (market capitalization, stock value traded and turnover ratio) are not only themselves affected by economic outcomes, but they are also affected by unobserved variables that may also have direct effects on the economy.

Because of these issues of omitted variables and reverse causation, the ability to draw inferences from the conditional correlations in growth regressions is likely to be weak. This study reasoned that changes in economic outcomes can be regressed on lagged changes in stock market performance variables which addresses many of endogeneity problems which other related studies might have neglected. The work used Autoregressive Distributed Lag (ARDL) model to establish how the stock market performances have related to the economic growth of Nigeria and South Africa between 1981 and 2015.

CHAPTER THREE
METHODOLOGY

3.1 Research Design

The study used ex-post facto research design. This is based on the premise that past information (data) on Nigerian and South African stock exchanges and gross domestic product will be applied in the analysis. According to Robinson (1952), "ex-post facto research design is any systematic empirical enquiry into which the independent variables have been directly manipulated because they had already occurred or they are inherently not manipulatable. Therefore, the data were collected from the source that the researcher has no power to manipulate. Thus the data were collected and used as collected. The study aims to include the macro-economic variables of the capital market and factors that can affect them in the two countries. The study covers all that pertains to capital market in Nigeria and South African. The variables selected are those that reflect the major activities of the capital markets which include: Gross domestic product growth rate (GDPGR) used as the dependent variable and proxy for economic growth; and the independent variables including market capitalization ratio to GDP (MKTCR); stock value traded ratio to GDP (SVTR) and turnover ratio (TUNR). The study covers a period of 34 years (1981 – 2015).

3.2 Sources of Data

The study used secondary data. Secondary data refers to existing data. The data for the study weresourced from the 2015 World development Indicators online version of 2015 available in *www.worldbank.org*. The time series data covered the performance measurement indicators used in the study which includes; market capitalization ratio to GDP, stock value traded ratio to GDP and turnover ratio as well as GDP growth rateof Nigeria and South Africa from 1981 to 2015.

3.3 Model SpecificationandDescription of the Variables

The theoretical foundation for this study is based on Calderon-Rossell behavioural structural theoretical model of capital market development and optimal capital structure theoretical model by (Sule & Momoh, 2009; Oke, 2012). In both theories economic growth and stock market liquidity are considered as the main determinants

of capital market development. Calderon-Rossell behavioural structural theoretical model defined market capitalisation as follows:

Y = PV …….(1)

Where: Y= is market capitalisation in local currency;

P= is the number of listed companies in the stock market; and

V= is the local currency average price of listed companies.

Modification of the Calderon-Rossell behavioural structural model involves the inclusion of institutional and macroeconomic factors which are important in stock market development, (Abiola & Babatunde, 2012). Garcia and Liu (1999) showed that macroeconomic factors such as real income, savings rate, financial intermediary development, and stock market liquidity are important determinants of stock market development. Pagano (1993) shows that regulatory and institutional factors may influence the efficient functioning of stock markets. For example, mandatory disclosure of reliable information about firms may enhance investor participation, and regulations that instil investor's confidence in brokers should encourage investment and trading in the stock market.

Calderon-Rossell model was modified to incorporate other financial and economic variables that might affect stock market development. In particular, he examined the role of income, foreign private investment, credit to the private sector, value traded, turnover ratio, savings rate, and broad money supply (M_2).

Following Oke (2012) the functional specification for this study is as follows:

GDPGR =f(MKTCR).....1

GDPGR =f(SVTR).....2

GDPGR =f(TUNR).....3

Econometrically transforming the models results to thus:

Model 1

$GDPGR_t = \beta_0 + \beta_1 MKTCR_t + \mu_t$.....4

Model 2

$GDPGR_t = \beta_0 + \beta_1 SVTR_t + \mu_t$.....5

Model 3

$GDPGR_t = \beta_0 + \beta_1 TUNR_t + \mu_t$.....6

Where: GDPGR isthe gross domestic product growth rate. The GDP *represents* the total value of goods and services produced in a country for a period of one year. It is also the market value of all officially recognized final goods and services provided by a country within one year. This is used in this study as a proxy for economic growth. Different types of GDP have been used in literature but this study used growth rate GDP (GDPGR).

MKTCR is the market capitalization ratio**.** As an investment ratio, the market capitalization as a percentage of GDP (MKCR) in the study is used to determine the extent to which a particular market is undervalued or overvalued. It is calculated as the country's market capitalization divided by the market GDP and then multiplied by 100 (Investopedia, 2013). The outcome of this calculation is the share of the country's GDP that is accounted for by the stock market trading. Usually, a market with value greater than 100% is explained as an overvalued market, whereas a market with value of around 50% is translated as market undervaluation (Investopedia, 2013). It is used in the study as the proxy for stock market size.

SVTR is the stock value traded ratio. This ratio measures the liquidity of the capital market. This is given as ratio of total value of stock traded to GDP.It shows whether a market is liquid or not. It also tells an investor how quick he can convert his Financial Assets into cash. When an investor is sure of converting his Financial Assets into cash at any time, he is encouraged to invest more.It proxied the capital market liquidity.

TUNR is the turnover ratio. It is simply a measure of how frequent stock exchanges hands. It tells how fast stocks are quickly turned into revenues. A low turnover ratio is an indication to potential investors that the stock price is unaffected by any sudden and high purchases of the stock due to the abundance of the stock. A high turnover ratio suggests to the investor that an increase in purchases would have a considerable effect on the stock due to the few numbers available. Although a higher ratio implies higher demand for stocks, it also suggests higher brokerage fees or transaction costs which, if uncontrolled, could minimize returns (Investopedia, 2013).

$\beta_0 = \beta_0$ is the constant term,μ_t = is the error term and t = is the time trend.

β_i = coefficient of the independent variable

3.4 Method of Data Analysis

The data for this research were presented and analysed based on the research questions and hypotheses earlier established for the study.This research work employed Ordinary Least Square (OLS) estimation because of its reliable traits as the best unbiased estimator and because the equations are in recursive form. Since the focus of the study is to analyse the effect of stock market indicators on economic growth, the study also adopt the autoregressive distributed Lag-error correction modeling (ARDL-ECM) and co-integration approach popularized by Pesaran, Shin and Smith (2001). The ARDL modeling approach is superior because it does not require pre-testing of the series to determine the order of integration when the variables are of the mixed order of integration 1(0) and 1(1) (Pesaran, Shin & Smith,2001).

Unit Root Test

The variables of this study shall be subjected to non-stationary test using the Augmented Dickey fuller (ADF) and Phillips-perron testing procedures. The unit root test regression equations with constants are;

$$\Delta(Y)_t = \alpha_o + \alpha_1 (Y)_{t-1} + \sum_{T=1}^{m} pi\, \Delta (Y)_{t-1} + \mu_t \quad \text{.....7}$$

Where Δ is the difference operator, U_t = random terms and t = linear trend

The F test has a non-standard distribution which depends on (1) whether the variables included in the model are 1(0) or 1(1), (ii) the number of regressors and (iii) whether the model contains an intercept and / or a trend. Two sets of critical values are generated, with one set refers to as the 1(1) series and the other the 1(0) series (Pesaran, Shin &Smith, 2001).

Co-integration Test/Bound Test

After establishing the existence of unit root and their order of integration identified then it will be necessary to check if the variables have the same order of integration. If the variables are integrated in the same order then the presence of co-integration is established. Their linear combination is established (Enders, 1995). Equation below represents co-integration tests.

$$\Delta Y_t = \alpha_1 Y_{t-1} + X_t \delta + \beta_1 \Delta Y_{t-1} + \beta_2 \Delta Y_{t-1} + \ldots + \beta_p \Delta Y_{t-p} + \in_t \quad \text{.....8}$$

where X= optimal exogenous regressors which may consist of constant or a constant and trend, α, δ and β are parameters to be estimated.

If the order of integration is ascertained, then investigation of the presence of a co-integration amongst the variables will be tested. The F test is used for testing the existence of long-run relationship. When long-run relationship exit, F test indicates which variable should be normalized. The null hypothesis of no co-integration among the variables in equations is Ho: $\alpha_1 = \alpha_2 = \alpha_3 = 0$ against the alternative hypothesis, $H_i: \alpha_1 \neq \alpha_2 \neq \alpha_3 \neq 0$

The ARDL- Error Correction Model

The researcher went further to assess the short run adjustment to equilibrium using the ARDL-Error Correction Model (ECM). This is to indicate whether or not all the variations within the dependent variable in the model are as a result of the co-integrating vectors attempting to return to equilibrium and the error correction term that captures this variation.

$$\Delta(GDPNG)_t = \alpha_o + \alpha_1(GDPNG)_{t-1} + \alpha_i \sum_{i=1}^{p} \Delta Z_{t-k} + \alpha_3 ECM_{t-I} + \mu_t \quad \ldots\ldots\ldots 9$$

$$\Delta(GDPSA)_t = \alpha_o + \alpha_1(GDPSA)_{t-1} + \alpha_i \sum_{i=1}^{p} \Delta Z_{t-k} + \alpha_3 ECM_{t-I} + \mu_t \quad \ldots\ldots\ldots\ldots 10$$

Where: ECM_{t-I} = The residual or error correction mechanism of the previous year.
α= The speed of adjustment parameters.
Z_t = all other explanatory variables defined above in the two equations.

Granger Causality Test

The co-integration test deals with the relationship between the variable. To determine the causality or the direction of relationship in statistical term, we carried out the Granger Causality test to examine the effect of stock market development on various macroeconomic variables. When macroeconomic variables help in the prediction of stock market development, then stock market development is said to be Granger caused by macroeconomic variables. Alternatively, stock market development is said

to be Granger caused by macroeconomic variables when the coefficients on the lagged of macroeconomic variables are statistically significant.

3.5 Estimation Procedure

The modelling procedures adopted include determining the order of integration of the variables employed using Augmented Dickey Fuller (ADF) and Philip Perron unit root tests. Obtaining the co-integration regression from the normalized coefficient of the model generated from the co-integration vector. And should co-integration exist the ECM model is estimated by applying the ECM version of ARDL where the speed of adjustment to equilibrium will be determined and diagnostic tests conducted.

3.6 A priori Expectation

This refers to the supposed relationship between the dependent and independent variables of the model as determined by the postulations of McKinnon's (1973) complementary hypothesis. The result or parameter estimate of the models was interpreted on the basis of the supposed signs of the parameters as established by McKinnon's (1973) complementary hypothesis. The coefficients of market capitalization ratio, stock value traded ratio and turnover ratio are expected to have a positive signs which indicates their positive relationship to the growth rate gross domestic product (GDPGR).Table 7 shows the expected signs of the independent variables in the models.

Table 7: Expected Signs of the Independent Variables in the Models

Symbol	Variable	What they represent	Expected Signs
MKTCR	Market capitalization ratio to GDP	The size of the stock market	+
SVTR	Stock value traded ratio to GDP	The liquidity of stock market	+
TUNR	Turnover ratio	Stock market liquidity	+

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 Data Presentation

The Nigeria and South Africa data as sourced from World Bank development indicators available at http://data.worldbank.org are presented in this subdivision. The data span from 1981 to 2015. Table 8 presents Nigeria's gross domestic product growth rate, market capitalization ratio to GDP, stock value traded ratio to GDP and market turnover ratio while Table 9 dealt with the corresponding data for South Africa.

Table 8: Nigeria's Gross Domestic Product Growth Rate, Market Capitalization, Stock Value Traded and Turnover Ratio from 1981-2015

Year	Gross Domestic Product growth Rate (%)	Market Capitalization as a % of GDP	Stock Value Tradedas a % of GDP	Turnover Ratio (%)
1981	-13.13	5.30	0.32	6.10
1982	-1.05	4.95	0.22	4.30
1983	-5.05	5.18	0.36	6.98
1984	-2.02	4.73	0.22	4.66
1985	8.32	4.90	0.24	4.80
1986	-8.75	5.05	0.37	7.32
1987	-10.75	4.25	0.20	4.66
1988	7.54	3.80	0.32	8.50
1989	6.47	3.35	0.16	4.77
1990	12.77	4.96	0.07	1.38
1991	-0.62	4.23	0.04	1.05
1992	0.43	3.56	0.06	1.58
1993	2.09	13.57	0.19	1.14
1994	0.91	16.46	0.25	1.51
1995	-0.31	27.24	0.29	1.08
1996	4.99	36.34	0.90	2.47
1997	2.80	35.06	1.39	3.97
1998	2.72	32.25	1.90	5.91
1999	0.47	8.20	0.31	3.83
2000	5.32	7.03	0.42	5.96
2001	4.41	9.61	0.38	8.71
2002	3.79	4.02	1.21	7.77
2003	10.35	13.71	1.98	8.86
2004	33.74	18.06	1.91	10.59
2005	3.45	19.82	1.74	8.78
2006	8.21	22.58	2.47	10.96
2007	6.83	51.00	10.43	20.45
2008	6.27	23.10	8.04	34.79
2009	6.93	19.01	2.65	13.94
2010	7.84	13.70	1.38	10.10
2011	4.89	9.48	0.94	9.92
2012	4.28	12.19	0.89	5.50
2013	5.39	15.65	1.21	12.30
2014	6.31	11.16	0.90	8.18
2015	2.70	10.39	0.85	8.17

Source: World Bank Development Indicators. Available: http://data.worldbank.org

Table 9: South Africa's Gross Domestic Product Growth Rate, Market Capitalization, Stock Value Traded and Turnover Ratio from 1981-2015

Year	Gross Domestic Product growth Rate (%)	Market Capitalizationas a % of GDP	Stock Value Tradedas a % of GDP	Turnover Ratio (%)
1981	5.36	86.21	2.30	3.48
1982	-0.38	97.21	3.24	3.33
1983	-1.85	96.21	3.97	4.13
1984	5.10	62.64	2.15	3.43
1985	-1.21	82.66	3.62	4.38
1986	0.02	129.12	6.52	5.05
1987	2.10	133.42	9.52	7.13
1988	4.20	110.08	3.84	3.49
1989	2.40	116.44	5.92	5.09
1990	-0.32	122.19	7.63	6.03
1991	-1.02	153.63	6.72	4.37
1992	-2.14	125.69	5.55	4.42
1993	1.23	161.64	5.89	3.65
1994	3.20	185.70	9.56	5.15
1995	3.10	178.43	10.26	5.75
1996	4.30	163.66	18.05	11.03
1997	2.60	150.76	27.57	18.29
1998	0.50	122.33	39.40	32.21
1999	2.40	190.10	53.30	28.04
2000	4.20	149.82	51.70	34.51
2001	2.70	121.36	29.10	23.98
2002	3.70	157.60	41.29	26.20
2003	2.95	148.78	27.99	18.82
2004	4.56	193.58	36.65	18.93
2005	5.28	213.10	43.18	20.26
2006	5.59	261.83	63.96	24.43
2007	5.36	276.60	86.08	31.12
2008	3.19	168.32	70.66	41.98
2009	-1.54	270.00	73.50	27.22
2010	3.14	246.44	73.86	29.97
2011	3.28	189.48	54.23	28.62
2012	2.21	229.03	57.24	24.99
2013	2.33	256.48	63.18	24.63
2014	1.63	265.85	69.94	26.31
2015	1.30	233.95	74.38	31.79

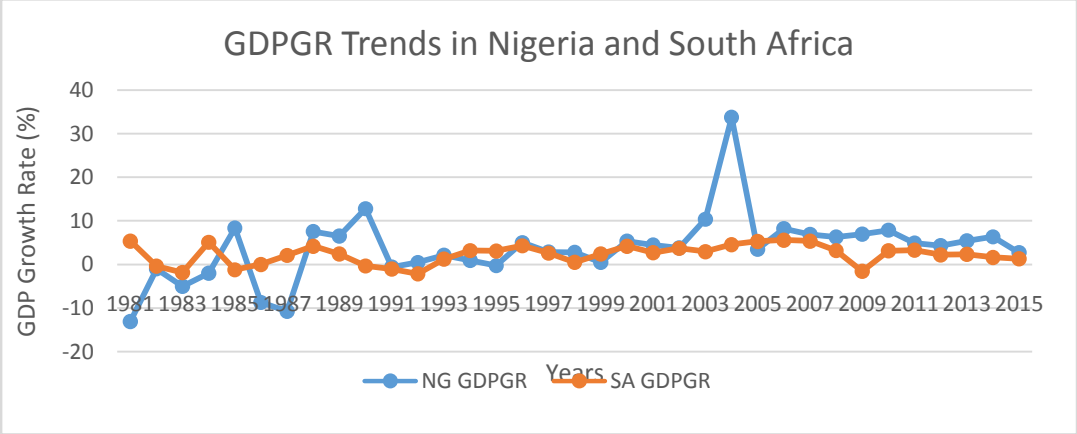
Source: World Bank Development Indicators. Available: http://data.worldbank.org

Gross Domestic Product Growth Rate

Tables 8, 9, Fig.1 and 2 show the growth rate of gross domestic product from 1981 to 2015. It can be seen that the Nigeria's growth rate of gross domestic product was 4.28% in 2012 compared to 2.21% of South Africa. During the period 1981-1990, the Nigeria's growth rate of gross domestic product averaged -0.57% but that of South Africa averaged 1.54%. Also from the period 1981 to 1987, the Nigeria GDP growth rate was negative this is in response to the effect of structural adjustment and economic liberalization policies of the government. Likewise, South Africa in eighty and early nineties, South Africa economy was recovering from the period stag

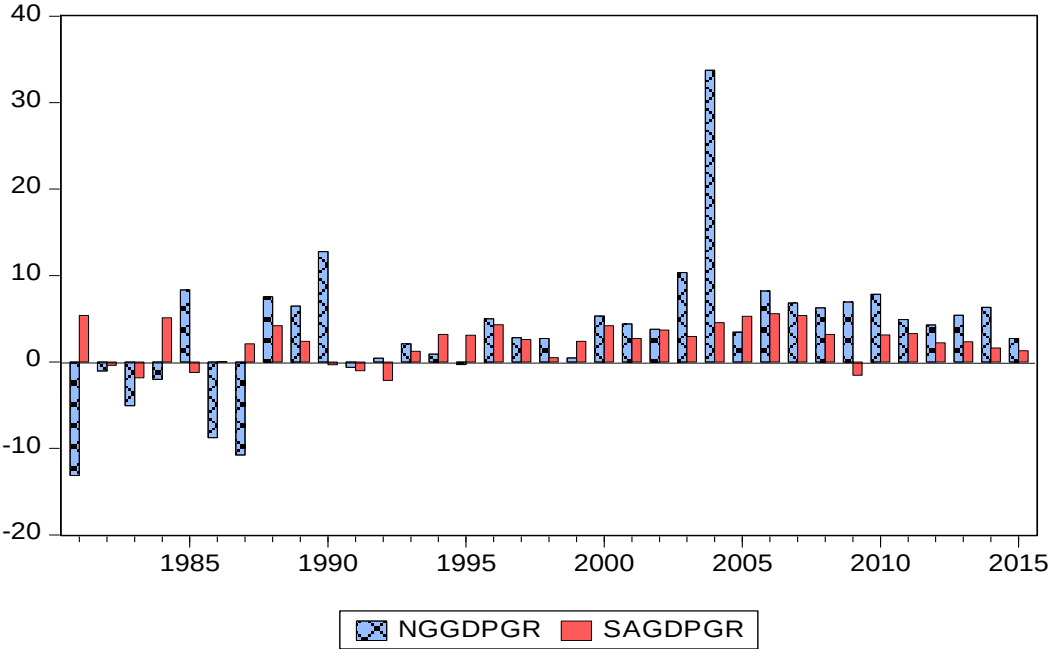
inflationary malaise. It was also the period South Africa was economically sanctioned by the world due to apartheid. In 2004, the growth rate of Nigeria's GDP significantly increased to 33.74% as against 10.35% in 2003 but for South Africa it appreciated marginally to 4.56% from 2.95 of the previous year. From 2010 to 2015 saw depreciation in the growth rate of gross domestic product for both countries except for 2013 when there was a marginal rise by the tune of 5.39% for Nigeria and 2.33% South Africa.

Figure 1: GraphicTrend in GDP Growth Rate of Nigeria and South Africa



Source: worldbank.org

Figure 2: Bar Trend in GDP Growth Rate of Nigeria and South Africa

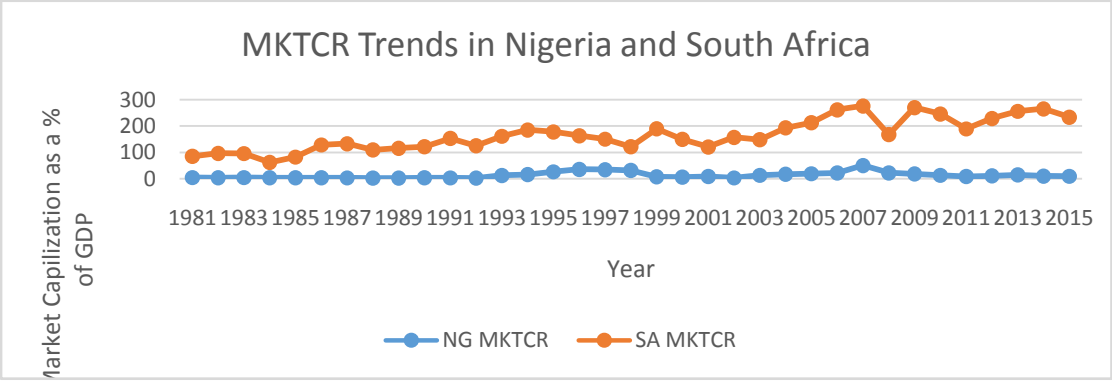


Source: worldbank.org

Market Capitalization as a percentage of GDP

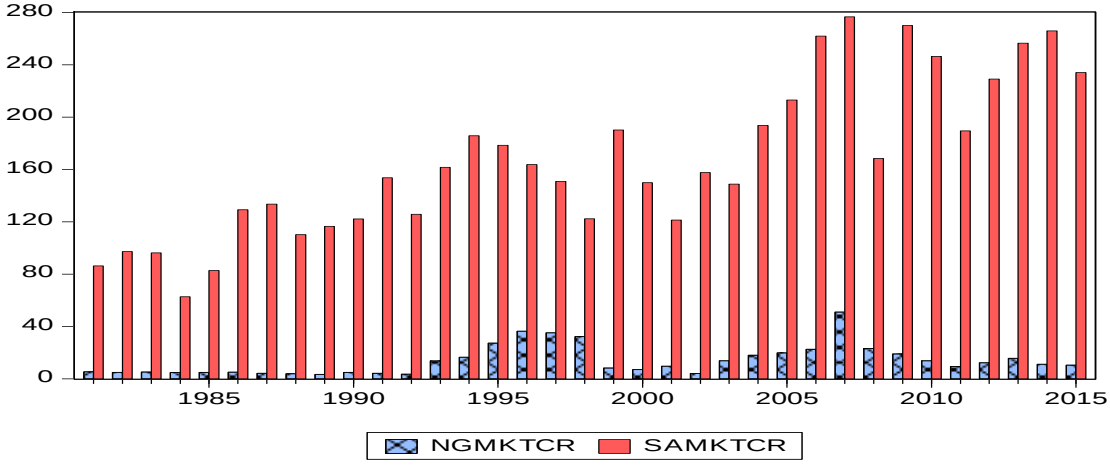
As can been seen in Table 8, 9, Fig. 3 and 4, the market capitalization ratio to GDP of South Africa within the period studied has been tremendously higher than that of Nigeria, signifying a greater capital market activities in South Africa than in Nigeria. The market capitalization as a ratio to GDP for Nigeria was 19.01in 2009, a fall of 21.51% from 23.10 in 2008, but for South Africa it was 270.00, a rise of 37.66% from 168.32 in 2008. The market capitalization for Nigeria increased rapidly in 2002 and 2007 from 4.02 to 51.00 before it fellsharply in 2008 to 23.10, a decrease of 120.78%. The same appreciation was also witnessed for South Africa with the exception of 2003 when it surged to 148.78 before falling by 64.33% to 168.32 in 2008.

Figure 3: GraphicTrend in Market Capitalization Ratio to GDP of Nigeria & South Africa



Source: worldbank.org

Figure 4: BarTrend in Market Capitalization Ratio to GDP of Nigeria & South Africa

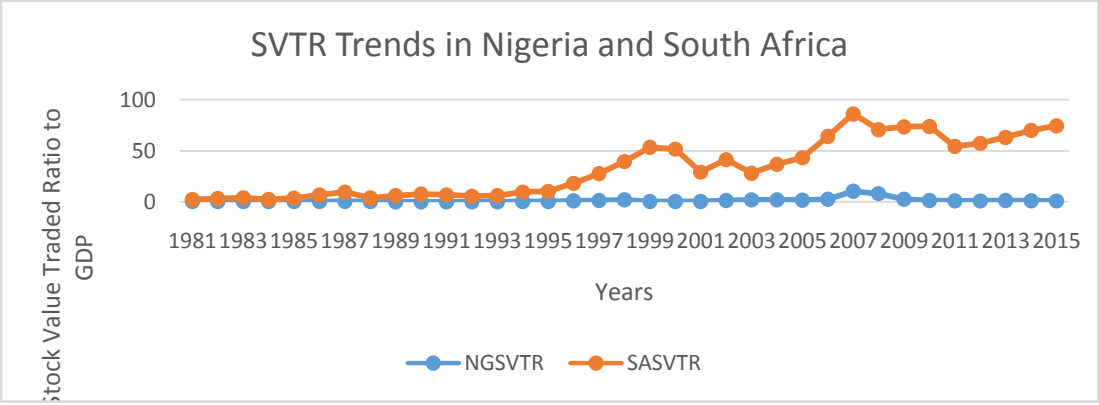


Source: worldbank.org

Stock Value Traded Ratio to GDP

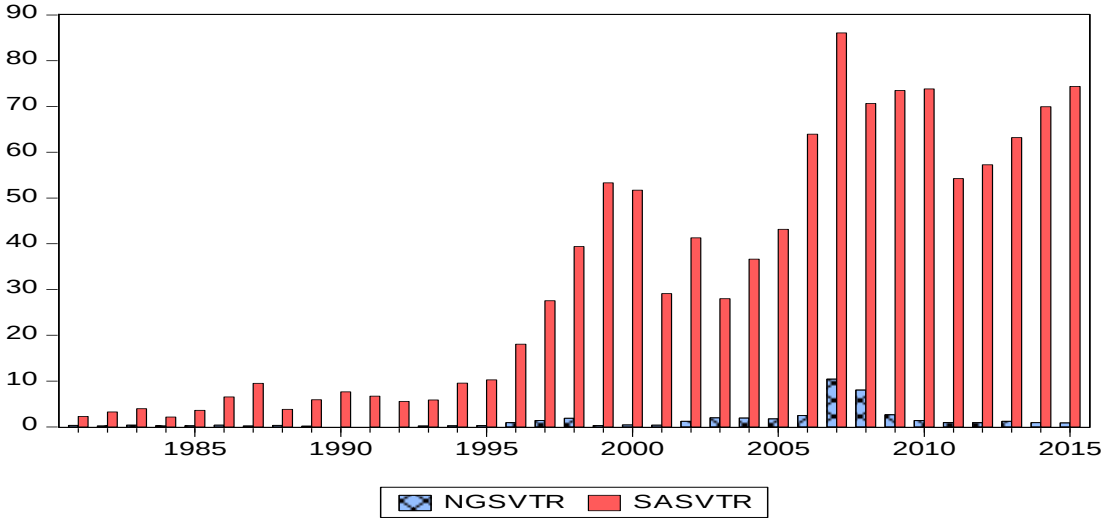
The Nigeria's stock value traded ratio to GDP in 2009 was 2.65, a fall of 203.40% from the previous year value of 8.04. This was not the case for South Africa as it appreciated by 3.86% to settle at 73.50 in 2009 as against 70.66 in 2008. A careful look at Tables 8, 9, Figure 5 and 6, showed that there is more liquidity in the South Africa capital compared to Nigerian capital market. In 2015, the Nigeria's stock value traded ratio to GDP decline by5.88% to close at 0.85 while that of South Africa appreciated by 5.97% to close at 74.38. It would be deduced from the stock value traded ratio that South African's capital market performed better than Nigeria's capital within the period studied.

Figure 5: GraphicTrend in Stock Value Traded Ratio to GDP of Nigeria & South Africa



Source: worldbank.org

Figure 6: BarTrend in Stock Value Traded Ratio to GDP of Nigeria & South Africa

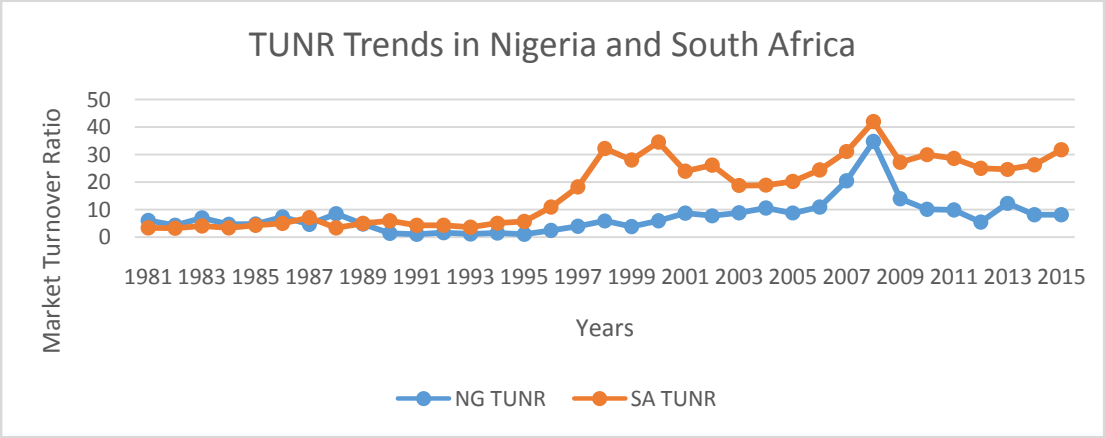


Source: worldbank.org

Turnover Ratio

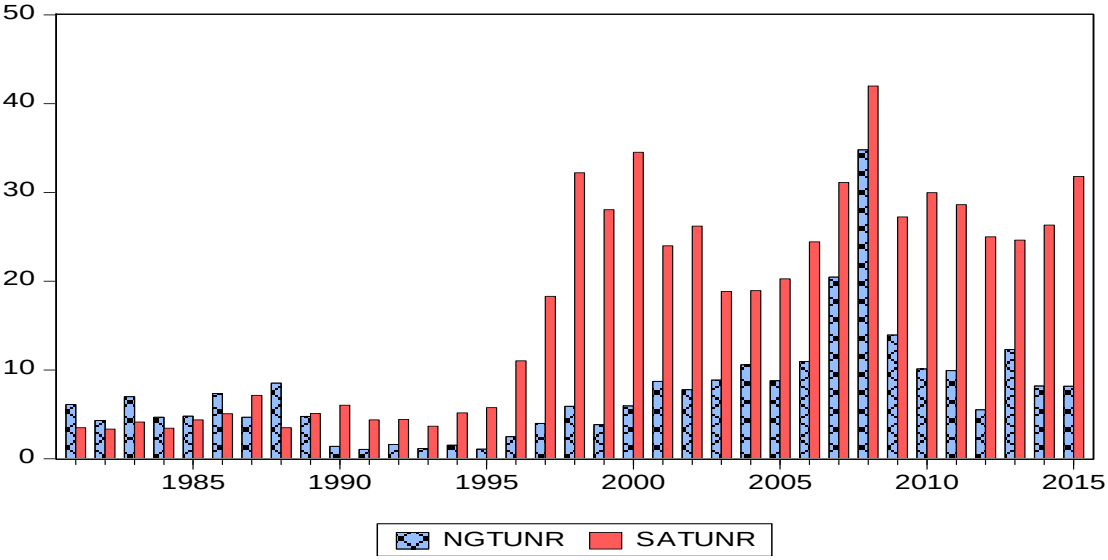
The turnover ratio of Nigeria's capital market was 6.10 in 1981 while that of South Africa was peaked at 3.48, which had risen to 39.60% for Nigeria by the end of 2010 to settle at 10.10 as that of South Africa rose by 88.39% (higher than that of Nigeria capital market) to settle at 29.97 in 2010. In 2012,turnover ratio of Nigeria's capital market fell by 80.36% to close at 5.50 while South Africa was down by only 14.53% by closing at 24.99. In 2015, turnover ratio in South Africa rose by 17.24% to settle at 31.79 while that of Nigeria depreciated by 0.12% to close at 8.17. These fluctuations are illustrated and exhibited in Tables 8, 9, Figure 7 and 8.

Figure 7: GraphicTrend in Turnover Ratio of Nigeria and South Africa



Source: worldbank.org

Figure 8: BarTrend in Turnover Ratio of Nigeria and South Africa



Source: worldbank.org

4.2 Descriptive Properties of the Variables

Tables 10 and 11 present the descriptive characteristic of the variables in the models developed in this research work. Descriptive properties of the variables visa viz: mean, median, minimum and maximum value, standard deviation, Skewness, Kurtosis, Jarque-Bera, Sum Sq. Dev. and number of observations were elucidated. Table 9 and 10 show the mean to be 3.67 for GDPGR, 13.82 for MKTCR, 1.29 for SVTR and 7.46 for TUNR but for South Africa, 2.27 for GDPGR, 167.2 for MKTCR, 32.62 for SVTR and 16.92 for TUNR. The median for South Africa are 2.60, 157.6, 27.99 and 18.82 for GDPGR, MKTCR, SVTR and TUNR respectively while that of Nigeria are 4.28, 10.39, 0.42 and 6.10. The minimum and maximum values respectively for Nigeria's capital market are 33.74 and -13.13 for GDPGR, 51.00 and 3.35 for MKTCR, 0.04 and 2.13 for SVTR and 1.05 and 6.31 for TUNR but for South Africa it was recorded as 5.59 and -2.14 for GDPGR, 62.6 and 59.4 for MKTCR, 2.15 and 27.66 for SVTR and 3.33 and 11.99 for TUNR. The standard deviation shows that South Africa capital performed better in market capitalization ratio GDP, stock value traded ratio to GDP and turnover ratio when compared to Nigeria's capital market.

Table 10: Descriptive Properties for Nigeria Data

	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	P-value	Obs.
GDPGR	3.67	4.28	33.74	-13.13	7.67	1.18	8.59	53.70	0.00	35
MKTCR	13.82	10.39	51.00	3.35	11.36	1.45	4.80	17.05	0.00	35
SVTR	1.29	0.42	10.43	0.04	2.13	3.25	13.32	216.83	0.00	35
TUNR	7.46	6.10	34.79	1.05	6.31	2.54	11.46	141.90	0.00	35

Source: Data outputvia E-views9.0

Table 11: Descriptive Properties for South Africa Data

	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	P-value	Obs.
GDPGR	2.27	2.60	5.59	-2.14	2.231	-0.42	2.20	1.96	0.38	35
MKTCR	167.2	157.6	276.6	62.6	59.4	0.33	2.12	1.79	0.41	35
SVTR	32.62	27.99	86.08	2.15	27.66	0.38	1.65	3.51	0.17	35
TUNR	16.92	18.82	41.98	3.33	11.99	0.20	1.61	3.05	0.22	35

Source: Data outputvia E-views9.0

In terms of the peakedness of the variables measured by Kurtosis statistic, Tables 10 and 11 reveal that Nigeria data are leptokurtic in nature given that the Kurtosis value are greater than 3 while South Africa data were observed not to be leptokurtic in nature as evidenced by the less than 3 values of the Kurtosis statistic. The skewness statistic reveal that all Nigeria capital market data are positively skewed towards normality but for South Africa only GDPGR was not positively skewed towards normality. The p-value of the Jarque-Bera in Tables 10 and 11 suggest that all the Nigeria capital market data were normally distributed and devoid of any outlier

capable of affecting results as shown by the significant p-values but for South Africa, all the variables based on World Bank development indicators, were not normally distributed. Consequently, the Shapiro-wilk normality test was conducted for all the South Africa data. At this time it was observed that the South Africa data were all normally distributed as depicted by the significant p-values of the Shapiro-wilk statistic in Table 12.

Table 12: Shapiro-Wilk Statistic Normality test for South Africa Data

	Shapiro-Wilk Statistic	P-value
GDPGR	0.945469	0.082241
MKTCR	0.954461	0.050293
SVTR	0.871016	0.000718
TUNR	0.866457	0.000557

Source: Data outputviaGretl

4.3 Diagnostic Test

Serial Correlation LM Test

To ensure that variables in the models are free from autocorrelation that may result for whatever deficiency of the Durbin Watson test of autocorrelation, the serial correlation LM test was conducted. The weakness of Durbin Watson is corrected via serial correlation LM test. From the result in Tables 13 and 14, the variables in the models (lagged by one year) are free from autocorrelation as shown by the statistically insignificant p-values for Nigeria and South Africa.

Table 13: Breusch-Godfrey Serial Correlation LM Test for Nigeria

Models	F-statistic	Prob. F(2,29)
Model 1	0.047978	0.9532
Model 2	0.214017	0.8086
Model 3	0.279272	0.7583

Source: Data output via E-views9.0

Table 14: Breusch-Godfrey Serial Correlation LM Test for South Africa

Models	F-statistic	Prob. F(2,29)
Model 1	0.521516	0.5991
Model 2	1.910807	0.1661
Model 3	1.880877	0.1706

Source: Data output via E-views9.0

Heteroskedasticity Test

To get rid of problem of heteroskedasticity, the Breusch-Pagan-Godfrey Heteroskedasticity test was performed for all the models as presented in Tables 15 and 16 for Nigeria and South Africa. The probability of the Chq. statistic isinsignificant at 5% level of significancefor the models, suggesting that there is no heteroskedasticity in the models.

Table 15:Breusch-Pagan-Godfrey Heteroskedasticity test for Nigeria

Models	F-statistic	Prob. F(2,31)
Model 1	0.406978	0.6692
Model 2	0.344817	0.7110
Model 3	0.352569	0.7057

Source: Data output via E-views9.0

Table 16: Breusch-Pagan-Godfrey Heteroskedasticity test for South Africa

Models	F-statistic	Prob. F(2,31)
Model 1	0.917823	0.4100
Model 2	0.494493	0.6146
Model 3	1.231675	0.3057

Source: Data output via E-views9.0

Ramsey RESET Test

The specification of the model to ascertain if non-linear combinations of the independent variables have any power in explaining the dependent variable or not were performed via the Ramsey Reset Specification test. The p-values for all the models are insignificant at 5% level of significance, which shows that the models were well specified in their functional form for both Nigeria and South Africa.See Tables 17 and 18 respectively.

Table 17:Ramsey Reset Specification test for Nigeria

Models	F-statistic	df	p-value
Model 1	1.221090	(1,30)	0.2779
Model 2	2.598071	(1,30)	0.1175
Model 3	2.741219	(1,30)	0.1082

Source: Data output via E-views9.0

Table 18: Ramsey Reset Specification test for South Africa

Models	F-statistic	df	p-value
Model 1	1.010661	(1,30)	0.3228
Model 2	0.055484	(1,30)	0.8154
Model 3	0.014926	(1,30)	0.9036

Source: Data output via E-views9.0

4.4 Stationarity Test Result

The unit root test was performed at intercept only and intercept and trend at level form and first difference via Augmented Dickey-Fuller (ADF) and Phillips Perron (PP). This is ensure that the data are free from stationarity defect that affects virtually all time series data owing to nature of data generation. The ADF for Nigeria at level intercept only, and intercept and trend are presented in Tables 19 and 20 while at first difference intercept only, and intercept and trend depicted in Tables 21 and 22 while that of South Africa are presented in Tables 23, 24, 25 and 26.

Table 19: ADF Nigeria Test Result at Level: Intercept Only

Variables	ADF Test Statistic	Test Critical Value at 1%	Test Critical Value at 5%	Connotation
GDPGR	-4.810838 (0.00)*	-3.639407	-2.951125	Stationary
MKTCR	-2.509275 (0.12)	-3.639407	-2.951125	Not Stationary
SVTR	4.214462 (1.00)	-3.711457	-2.981038	Not Stationary
TUNR	-2.591197 (0.10)	-3.639407	-2.951125	Not Stationary

Source: Data output via E-views9.0.

Table 20: ADF Nigeria Test Result at Level: Trendand Intercept

Variables	ADF Test Statistic	Test Critical Value at 1%	Test Critical Value at 5%	Remark
GDPGR	-5.271871 (0.00)*	-4.252879	-3.548490	Stationary
MKTCR	-2.547604 (0.31	-4.252879	-3.548490	Not Stationary
SVTR	1.303134 (0.99)	-4.356068	-3.595026	Not Stationary
TUNR	-3.033660 (0.14)	-4.356068	-3.595026	Not Stationary

Source: Data output via E-views9.0

For Nigeria data it was observed that all the variables were not stationary at level except GDPGR but became stationary at first differencing. However, for South Africa GDPGR, MKTCR and SVTR was found to be stationary at level for intercept and trend. All the data for South Africa also became stationary at first difference, which gives freedom for testing the number of co-integrating equations in the models. World Bank development indicators data for South Africa are more stationary at level compared to that of Nigeria.

Table 21: ADF Nigeria Test Result at First Difference: Intercept Only

Variables	ADF Test Statistic	Test Critical Value at 1%	Test Critical Value at 5%	Connotation
GDPGR	-8.688280 (0.00)*	-3.646342	-2.954021	Stationary
MKTCR	-6.327757 (0.00)*	-3.646342	-2.954021	Stationary
SVTR	-5.593785 (0.00)*	-3.653730	-2.957110	Stationary
TUNR	-6.595290 (0.00)*	-3.646342	-2.954021	Stationary

Source: Data output via E-views9.0

Table 22: ADF Nigeria Test Result at First Difference: Trendand Intercept

Variables	ADF Test Statistic	Test Critical Value at 1%	Test Critical Value at 5%	Remark
GDPGR	-8.583421 (0.00)*	-4.262735	-3.552973	Stationary
MKTCR	-6.265128 (0.00)*	-4.262735	-3.552973	Stationary
SVTR	-7.562387 (0.00)*	-4.356068	-3.595026	Stationary
TUNR	-6.491194 (0.00)*	-4.262735	-3.552973	Stationary

Source: Data output via E-views9.0

Table 23: ADF South Africa Test Result at Level: Intercept Only

Variables	ADF Test Statistic	Test Critical Value at 1%	Test Critical Value at 5%	Connotation
GDPGR	-4.376566 (0.00)*	-3.639407	-2.951125	Stationary
MKTCR	-2.095326 (0.25)	-3.639407	-2.951125	Not Stationary
SVTR	-0.726439 (0.83)	-3.639407	-2.951125	Not Stationary
TUNR	-1.261758 (0.64)	-3.639407	-2.951125	Not Stationary

Source: Data output via E-views9.0

Table 24: ADF South Africa Test Result at Level: Trendand Intercept

Variables	ADF Test Statistic	Test Critical Value at 1%	Test Critical Value at 5%	Remark
GDPGR	-4.798369 (0.00)*	-4.252879	-3.548490	Stationary
MKTCR	-4.714965 (0.00)*	-4.252879	-3.548490	Stationary
SVTR	-3.847648 (0.02)*	-4.284580	-3.562882	Stationary
TUNR	-2.573558 (0.29)	-4.252879	-3.548490	Not Stationary

Source: Data output via E-views9.0

Table 25: ADF South Africa Test Result at First Difference: Intercept Only

Variables	ADF Test Statistic	Test Critical Value at 1%	Test Critical Value at 5%	Connotation
GDPGR	-7.647935 (0.00)*	-3.646342	-2.954021	Stationary
MKTCR	-7.021976 (0.00)*	-3.653730	-2.957110	Stationary
SVTR	-5.658255 (0.00)*	-3.646342	-2.954021	Stationary
TUNR	-6.587018 (0.00)*	-3.646342	-2.954021	Stationary

Source: Data output via E-views9.0

Table 26: ADF South Africa Test Result at First Difference: Trendand Intercept

Variables	ADF Test Statistic	Test Critical Value at 1%	Test Critical Value at 5%	Remark
GDPGR	-7.513326 (0.00)*	-4.262735	-3.552973	Stationary
MKTCR	-6.893956 (0.00)*	-4.273277	-3.557759	Stationary
SVTR	-5.586386 (0.00)*	-4.262735	-3.552973	Stationary
TUNR	-6.476693 (0.00)*	-4.262735	-3.552973	Stationary

Source: Data output via E-views9.0

Phillips Perron (PP) Test

Just the same way the ADF test was performed, the Phillips Perron (PP) test was also performed at level form, first difference, at intercept and trend and intercept. The results are condensed in Tables 27 and 28 for level form at intercept only and trend and intercept at Tables 29 and 30 for first difference at intercept and trend and

intercept for Nigeria's data while Tables31,32, 33 and 34 for South Africa using the same yard stick of stationary test performance of Nigeria. The result of the ADF and PP test show that Nigeria and South Africa data are all stationary at first difference which gave the authority for the examination of the long run relationship between the dependent and explanatory variables in the models.

Table 27: PPNigeria Test Result at Level: Intercept Only

Variables	PP Test Statistic	Test Critical Value at 1%	Test Critical Value at 5%	Connotation
GDPGR	-4.804998 (0.00)*	-3.639407	-2.951125	Stationary
MKTCR	-2.584949 (0.11)	-3.639407	-2.951125	Not Stationary
SVTR	-2.521196 (0.12)	-3.639407	-2.951125	Not Stationary
TUNR	-2.591197 (0.10)	-3.639407	-2.951125	Not Stationary

Source: Data output via E-views9.0

Table 28:PPNigeria Test Result at Level: Trendand Intercept

Variables	PP Test Statistic	Test Critical Value at 1%	Test Critical Value at 5%	Remark
GDPGR	-5.262312 (0.00)*	-4.252879	-3.548490	Stationary
MKTCR	-2.671898 (0.25)	-4.252879	-3.548490	Not Stationary
SVTR	-2.654855 (0.26)	-4.252879	-3.548490	Not Stationary
TUNR	-3.033660 (0.14)	-4.252879	-3.548490	Not Stationary

Source: Data output via E-views9.0

Table 29:PP Nigeria Test Result at First Difference: Intercept Only

Variables	PPTest Statistic	Test Critical Value at 1%	Test Critical Value at 5%	Connotation
GDPGR	-21.63413 (0.00)*	-3.646342	-2.954021	Stationary
MKTCR	-6.327757 (0.00)*	-3.646342	-2.954021	Stationary
SVTR	-8.808384 (0.00)*	-3.646342	-2.954021	Stationary
TUNR	-8.032276 (0.00)*	-3.646342	-2.954021	Stationary

Source: Data output via E-views9.0

Table 30:PPNigeria Test Result at First Difference: Trendand Intercept

Variables	PP Test Statistic	Test Critical Value at 1%	Test Critical Value at 5%	Remark
GDPGR	-25.64304 (0.00)*	-4.262735	-3.552973	Stationary
MKTCR	-6.265210 (0.00)*	-4.262735	-3.552973	Stationary
SVTR	-9.035332 (0.00)*	-4.262735	-3.552973	Stationary
TUNR	-7.924630 (0.00)*	-4.262735	-3.552973	Stationary

Source: Data output via E-views9.0

Table 31:PPSouth Africa Test Result at Level: Intercept Only

Variables	PP Test Statistic	Test Critical Value at 1%	Test Critical Value at 5%	Connotation
GDPGR	-4.434361 (0.00)*	-3.639407	-2.951125	Stationary
MKTCR	-1.792165 (0.38)	-3.639407	-2.951125	Not Stationary
SVTR	-0.726439 (0.83)	-3.639407	-2.951125	Not Stationary
TUNR	-1.268549 (0.63)	-3.639407	-2.951125	Not Stationary

Source: Data output via E-views9.0

Table 32:PPSouth Africa Test Result at Level: Trendand Intercept

Variables	PP Test Statistic	Test Critical Value at 1%	Test Critical Value at 5%	Remark
GDPGR	-4.825020 (0.00)*	-4.252879	-3.548490	Stationary
MKTCR	-4.684738 (0.00)*	-4.252879	-3.548490	Stationary
SVTR	-2.697606 (0.24)	-4.252879	-3.548490	Not Stationary
TUNR	-2.573558 (0.29)	-4.252879	-3.548490	Not Stationary

Source: Data output via E-views9.0

Table 33:PP South Africa Test Result at First Difference: Intercept Only

Variables	PP Test Statistic	Test Critical Value at 1%	Test Critical Value at 5%	Connotation
GDPGR	-18.68091 (0.00)*	-3.646342	-2.954021	Stationary
MKTCR	-11.28029 (0.00)*	-3.646342	-2.954021	Stationary
SVTR	-5.658229 (0.00)*	-3.646342	-2.954021	Stationary
TUNR	-6.537877 (0.00)*	-3.646342	-2.954021	Stationary

Source: Data output via E-views9.0

Table 34:PPSouth Africa Test Result at First Difference: Trendand Intercept

Variables	PP Test Statistic	Test Critical Value at 1%	Test Critical Value at 5%	Remark
GDPGR	-22.41162 (0.00)*	-4.262735	-3.552973	Stationary
MKTCR	-11.03221 (0.00)*	-4.262735	-3.552973	Stationary
SVTR	-5.586380 (0.00)*	-4.262735	-3.552973	Stationary
TUNR	-6.436488 (0.00)*	-4.262735	-3.552973	Stationary

Source: Data output via E-views9.0

4.5 Long Run Relationship

The unit root as depicted in section 4.4 envisages the stationarity of all the variables. As a result, the long run relationship between the variables was established using the Johansen co-integration methodology and the result for Nigeria and South Africa presented in Tables 35 to 36. The result of the Johansen co-integration reveals that all the capital market indicators via market capitalization ratio to GDP, stock value traded ratio to GDP and turnover ratio of Nigeria are related with gross domestic product growth rate at 5% level of significance but for South Africa it was only stock value traded ratio to GDP and turnover ratio that have a long run relationship with gross domestic product growth rate. This is an indication that the size of the Nigeria capital market and economic growth are related in the long run while the size of South Africa capital market and economic growth are not related in the long run. Thus, the economic growth of South Africa is not dependent on the size of the capital market while Nigeria relies on capital market size for growth. The trace test for Nigeria shows two (2) co-integrating equations as one (1) was for South Africa.

Table 35: Nigeria's Johansen Co-integration for GDPGR and MKTCR

Unrestricted Co-integration Rank Test (Trace) GDPGR and MKTCR				
Hypothesized Number of CE(s)	**Eigen Value**	**Trace Statistic**	**0.05 Critical Value**	**Prob.****
None *	0.283793	16.73107	15.49471	0.0324
At most 1 *	0.159044	5.716127	3.841466	0.0168
Unrestricted Co-integration Rank Test (Maximum Eigenvalue) GDPGR and MKTCR				
Hypothesized Number of CE(s)	**Eigen Value**	**Maximum Eigen Statistic**	**0.05 Critical Value**	**Prob.****
None	0.283793	11.01495	14.26460	0.1535
At most 1 *	0.159044	5.716127	3.841466	0.0168

Trace test and Max-eigenvalue test indicate 2and no co-integrating eqn(s) at the 0.05 level;
* denotes rejection of the hypothesis at the 0.05 level; **MacKinnon-Haug-Michelis (1999) p-values.

Table 36: Nigeria's Johansen Co-integration for GDPGR and SVTR

Unrestricted Co-integration Rank Test (Trace) GDPGR and SVTR				
Hypothesized Number of CE(s)	**Eigen Value**	**Trace Statistic**	**0.05 Critical Value**	**Prob.****
None *	0.347453	21.92032	15.49471	0.0047
At most 1 *	0.211308	7.833527	3.841466	0.0051
Unrestricted Co-integration Rank Test (Maximum Eigenvalue) GDPGR and SVTR				
Hypothesized Number of CE(s)	**Eigen Value**	**Maximum Eigen Statistic**	**0.05 Critical Value**	**Prob.****
None	0.347453	14.08679	14.26460	0.0533
At most 1 *	0.211308	7.833527	3.841466	0.0051

Trace test and Max-eigenvalue test indicate 2and no co-integrating eqn(s) at the 0.05 level;
* denotes rejection of the hypothesis at the 0.05 level; **MacKinnon-Haug-Michelis (1999) p-values.

Table 37: Nigeria's Johansen Co-integration for GDPGR and TUNR

Unrestricted Co-integration Rank Test (Trace) GDPGR and TUNR				
Hypothesized Number of CE(s)	**Eigen Value**	**Trace Statistic**	**0.05 Critical Value**	**Prob.****
None *	0.327287	18.23430	15.49471	0.0189
At most 1 *	0.144541	5.151876	3.841466	0.0232
Unrestricted Co-integration Rank Test (Maximum Eigenvalue) GDPGR and TUNR				
Hypothesized Number of CE(s)	**Eigen Value**	**Maximum Eigen Statistic**	**0.05 Critical Value**	**Prob.****
None	0.327287	13.08242	14.26460	0.0762
At most 1 *	0.144541	5.151876	3.841466	0.0232

Trace test and Max-eigenvalue test indicate 2and no co-integrating eqn(s) at the 0.05 level;
* denotes rejection of the hypothesis at the 0.05 level; **MacKinnon-Haug-Michelis (1999) p-values.

Table 38: South Africa's Johansen Co-integration for GDPGR and MKTCR

Unrestricted Co-integration Rank Test (Trace) GDPGR and MKTCR				
Hypothesized Number of CE(s)	**Eigen Value**	**Trace Statistic**	**0.05 Critical Value**	**Prob.****
None	0.314620	14.40288	15.49471	0.0725
At most 1	0.056982	1.936104	3.841466	0.1641

Unrestricted Co-integration Rank Test (Maximum Eigenvalue) GDPGR and MKTCR				
Hypothesized Number of CE(s)	**Eigen Value**	**Maximum Eigen Statistic**	**0.05 Critical Value**	**Prob.****
None	0.314620	12.46678	14.26460	0.0943
At most 1	0.056982	1.936104	3.841466	0.1641

Trace test and Max-eigenvalue test indicate no co-integrating eqn(s) at the 0.05 level;
* denotes rejection of the hypothesis at the 0.05 level; **MacKinnon-Haug-Michelis (1999) p-values.

Table 39: South Africa's Johansen Co-integration for GDPGR and SVTR

Unrestricted Co-integration Rank Test (Trace) GDPGR and SVTR				
Hypothesized Number of CE(s)	**Eigen Value**	**Trace Statistic**	**0.05 Critical Value**	**Prob.****
None *	0.445628	20.54227	15.49471	0.0079
At most 1	0.032048	1.074908	3.841466	0.2998
Unrestricted Co-integration Rank Test (Maximum Eigenvalue) GDPGR and SVTR				
Hypothesized Number of CE(s)	**Eigen Value**	**Maximum Eigen Statistic**	**0.05 Critical Value**	**Prob.****
None*	0.445628	19.46737	14.26460	0.0069
At most 1	0.032048	1.074908	3.841466	0.2998

Trace test and Max-eigenvalue test each indicates 1 co-integrating eqn(s) at the 0.05 level;
* denotes rejection of the hypothesis at the 0.05 level; **MacKinnon-Haug-Michelis (1999) p-values.

Table 40: South Africa's Johansen Co-integration for GDPGR and TUNR

Unrestricted Co-integration Rank Test (Trace) GDPGR and TUNR				
Hypothesized Number of CE(s)	**Eigen Value**	**Trace Statistic**	**0.05 Critical Value**	**Prob.****
None *	0.401562	18.42680	15.49471	0.0176
At most 1	0.043959	1.483510	3.841466	0.2232
Unrestricted Co-integration Rank Test (Maximum Eigenvalue) GDPGR and TUNR				
Hypothesized Number of CE(s)	**Eigen Value**	**Maximum Eigen Statistic**	**0.05 Critical Value**	**Prob.****
None*	0.401562	16.94329	14.26460	0.0184
At most 1	0.043959	1.483510	3.841466	0.2232

Trace test and Max-eigenvalue test each indicates 1 co-integrating eqn(s) at the 0.05 level;
* denotes rejection of the hypothesis at the 0.05 level; **MacKinnon-Haug-Michelis (1999) p-values.

4.6 Vector Error Correction Mechanism/Short Run Dynamics

The speed of adjustment to equilibrium for Nigeria and South Africa capital market indicators was assessed through the vector error correction model and results depicted in Tables 41 to 46. The error correction for Nigeria and South Africa in respect to economic growth and market capitalization in Tables 41 to 43 showed the expected negative sign, which depict that there is adjustment process to equilibrium after a

shock in the economic growth process. However, ECM of Nigeria is low (-0.31) and not statistically significant but that of South Africa is high (-0.67) and statistically significant at 5% level of significance. In other words for Nigeria, only 31% of error generated in previous year is corrected in current years while for South Africa, 67% from previous year is corrected in present year. For economic growth and stock value traded model in Tables 42 and 45, the error correction model also showed the expected negative sign for both Nigeria and South Africa but the ECM for South Africa is statistically significant at 5% level but that of Nigeria is insignificant. The magnitude of ECM for South Africa is higher (0.76) compared to that of Nigeria with an ECM of (-0.50). Finally, for economic growth process and capital market ratio, it was observed for South Africa in Table 46 that ECM (-0.52) aligned with the expected negative sign but that of Nigeria's ECM (0.38) was not negatively signed. Nevertheless, the ECM for Nigeria and South are statistically significant at 5% level of significance. The VECM analysis showed that South Africa capital performance in relation to economic growth outweighed that of Nigeria's capital market over the period reviewed.

Table 41: VECM Result: Nigeria GDPGR and MKTCR

Variables	Coefficient	Standard Error	T-Statistic
C	0.526908	1.44699	0.36414
D(GDPGR(-1))	-0.330825	0.23130	-1.43031
D(GDPGR(-2))	-0.225630	0.18929	-1.19197
D(MKTCR(-1))	-0.076710	0.17168	-0.44682
D(MKTCR(-2))	-0.195282	0.16390	-1.19144
ECM (-1)	-0.313138	0.22099	-1.41697

Source: Data output via E-views9.0

Table 42: VECM Result: Nigeria GDPGR and SVTR

Variables	Coefficient	Standard Error	T-Statistic
C	0.423962	1.41773	0.29904
D(GDPGR(-1))	-0.215560	0.23874	-0.90292
D(GDPGR(-2))	-0.184586	0.18658	-0.98929
D(SVTR(-1))	-0.577093	0.85100	-0.67813
D(SVTR(-2))	-0.471124	0.86134	-0.54697
ECM (-1)	-0.509163	0.25950	-1.96209

Source: Data output via E-views9.0

Table 43: VECM Result: Nigeria GDPGR and TUNR

Variables	Coefficient	Standard Error	T-Statistic
C	0.380212	1.33985	0.28377
D(GDPGR(-1))	-0.089561	0.23333	-0.38383
D(GDPGR(-2))	-0.130508	0.17808	-0.73285
D(TUNR(-1))	-0.308718	0.27152	-1.13702
D(TUNR(-2))	-0.023025	0.26575	-0.08664
ECM (-1)	0.380212	1.33985	0.28377

Source: Data output via E-views9.0

Table 44: VECM Result: South Africa GDPGR and MKTCR

Variables	Coefficient	Standard Error	T-Statistic
C	-0.076377	0.35055	-0.21788
D(GDPGR(-1))	-0.031259	0.20570	-0.15196
D(GDPGR(-2))	-0.015728	0.16250	-0.09679
D(MKTCR(-1))	0.023004	0.00969	2.37496
D(MKTCR(-2))	0.010159	0.01034	0.98249
ECM (-1)	-0.669350	0.23663	-2.82869

Source: Data output via E-views9.0

Table 45: VECM Result: South Africa GDPGR and SVTR

Variables	Coefficient	Standard Error	T-Statistic
C	0.112726	0.39235	0.28731
D(GDPGR(-1))	0.064936	0.24960	0.26016
D(GDPGR(-2))	-0.025228	0.20075	-0.12567
D(SVTR(-1))	0.023541	0.04079	0.57716
D(SVTR(-2))	-0.036702	0.03941	-0.93118
ECM (-1)	-0.761242	0.32157	-2.36724

Source: Data output via E-views9.0

Table 46: VECM Result: South Africa GDPGR and TUNR

Variables	Coefficient	Standard Error	T-Statistic
C	0.211751	0.38062	0.55633
D(GDPGR(-1))	-0.080100	0.25350	-0.31597
D(GDPGR(-2))	-0.150406	0.18742	-0.80251
D(TUNR(-1))	-0.141989	0.07024	-2.02158
D(TUNR(-2))	-0.031104	0.07441	-0.41801
ECM (-1)	-0.522188	0.30785	-1.69624

Source: Data output via E-views9.0

Due to the low value the ECM T-Statistic for Nigeria, the study went further to apply ARDL-ECM for the study.

4.7 Ordinary Least Square Regression Result

The result of the models via the OLS estimation technique was presented in Tables 47 to 52. The yardstick for interpretation was based on coefficient of individual variables, adjusted R-square, F-statistic and its p-value and Durbin Watson. The dependent variable was lagged by a year to bid to correct any probable autocorrelation in addition to serial correlation LM test and Durbin Watson traditional test of autocorrelation. From Table 47 and 50, market capitalization ratio to GDP has positive but significant relationship with economic growth of Nigeria and insignificant for that of South Africa. If market capitalization ratio to GDP is held constant, economic growth rate of Nigeria would be 2.09% while that of South Africa would be 0.07%. A unit increase in market capitalization has the capability of causing a 35.72% upsurge in economic growth rate of Nigeria but for South Africa, 0.9% would be witnessed in economic growth rate. As can be seen in Table 48 and 51, stock value traded ratio has positive but significant relationship with economic growth

rate of Nigeria and insignificant for that South Africa. Looking at the constant coefficient, economic growth rate in Nigeria would swell by 2.64% while that of South Africa would be 0.02% assuming stock value traded was held constant over the period studies. A percentage rise in stock value traded ratio would result to 0.59% increase in economic growth rate of Nigeria but for South Africa, only 0.02% would be attributed to a unit rise in stock value traded.

Table 47: OLS Regression Result: Nigeria's GDP and MKTCR

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.093722	1.959913	1.068273	0.2936
$MKTCR_{-6}$	0.357232	0.153738	2.323633	0.0303
$GDPGR_{-1}$	0.207553	0.163508	1.269376	0.2138
R-squared	0.250305	Mean dependent var		5.180000
Adjusted R-squared	0.000407	S.D. dependent var		6.933875
S.E. of regression	6.932465	Akaike info criterion		6.939259
Sum squared resid	1009.240	Schwarz criterion		7.316444
Log likelihood	-92.61925	Hannan-Quinn criter.		7.057388
F-statistic	1.001628	Durbin-Watson stat		1.860526
Prob(F-statistic)	0.457549			

Note: $GDPGR_{-1}$ is the lagged Dependent Variable
Source: Data output via E-views9.0

Table 48: OLS Regression Result: Nigeria's GDP and SVTR

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.642117	1.482306	1.782437	0.0845
SVTR(-6)	3.441028	1.269500	2.710539	0.0203
$GDPGR_{-1}$	0.199338	0.162961	1.223224	0.2305
R-squared	0.581403	Mean dependent var		5.617083
Adjusted R-squared	0.124752	S.D. dependent var		6.558665
S.E. of regression	6.135938	Akaike info criterion		6.769378
Sum squared resid	414.1471	Schwarz criterion		7.407490
Log likelihood	-68.23253	Hannan-Quinn criter.		6.938669
F-statistic	1.273189	Durbin-Watson stat		2.749256
Prob(F-statistic)	0.348073			

Note: $GDPGR_{-1}$ is the lagged Dependent Variable
Source: Data output via E-views9.0

Table 49: OLS Regression Result: Nigeria's GDP and TUNR

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.700772	1.887991	0.900837	0.3746
TUNR	0.231436	0.195975	1.180945	0.2466
$GDPGR_{-1}$	0.197498	0.161077	1.226111	0.2294
R-squared	0.107847	Mean dependent var		4.166765
Adjusted R-squared	0.050289	S.D. dependent var		7.199550
S.E. of regression	7.016187	Akaike info criterion		6.818414
Sum squared resid	1526.033	Schwarz criterion		6.953093
Log likelihood	-112.9130	Hannan-Quinn criter.		6.864343
F-statistic	1.873699	Durbin-Watson stat		2.059796
Prob (F-statistic)	0.170534			

Note: $GDPGR_{-1}$ is the lagged Dependent Variable
Source: Data output via E-views9.0

Table 50: OLS Regression Result: South Africa's GDP and MKTCR

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.075350	1.130740	0.066638	0.9473
MKTCR	0.009277	0.006367	1.457150	0.1551
$GDPGR_{-1}$	0.231181	0.165265	1.398850	0.1718
R-squared	0.140679	Mean dependent var		2.179706
Adjusted R-squared	0.085239	S.D. dependent var		2.198184
S.E. of regression	2.102412	Akaike info criterion		4.408145
Sum squared resid	137.0243	Schwarz criterion		4.542824
Log likelihood	-71.93847	Hannan-Quinn criter.		4.454074
F-statistic	2.537505	Durbin-Watson stat		1.794128
Prob (F-statistic)	0.095369			

Note: $GDPGR_{-1}$ is the lagged Dependent Variable
Source: Data output via E-views9.0

Table 51: OLS Regression Result: South Africa's GDP and SVTR

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.014224	0.620908	1.633452	0.1125
SVTR	0.021298	0.013949	1.526909	0.1369
$GDPGR_{-1}$	0.196415	0.170240	1.153751	0.2574
R-squared	0.146046	Mean dependent var		2.179706
Adjusted R-squared	0.090952	S.D. dependent var		2.198184
S.E. of regression	2.095837	Akaike info criterion		4.401880
Sum squared resid	136.1685	Schwarz criterion		4.536559
Log likelihood	-71.83196	Hannan-Quinn criter.		4.447810
F-statistic	2.650863	Durbin-Watson stat		1.686661
Prob (F-statistic)	0.086543			

Note: $GDPGR_{-1}$ is the lagged Dependent Variable
Source: Data output via E-views9.0

Table 52: OLS Regression Result: South Africa's GDP and TUNR

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.873939	0.667519	1.309235	0.2001
TUNR	0.051300	0.032654	1.571008	0.1263
$GDPGR_{-1}$	0.181581	0.172599	1.052036	0.3009
R-squared	0.149532	Mean dependent var		2.179706
Adjusted R-squared	0.094663	S.D. dependent var		2.198184
S.E. of regression	2.091555	Akaike info criterion		4.397790
Sum squared resid	135.6127	Schwarz criterion		4.532469
Log likelihood	-71.76243	Hannan-Quinn criter.		4.443719
F-statistic	2.725257	Durbin-Watson stat		1.683222
Prob (F-statistic)	0.081227			

Note: $GDPGR_{-1}$ is the lagged Dependent Variable
Source: Data output via E-views9.0

Finally, Tables 49 and 52 reveal that capital market turnover ratio of both South Africa and Nigeria have positive and insignificant relationship with economic growth rate. Holding turnover ratio constant would lead to 1.7% rise in Nigeria's economic growth rate while that of South Africa was observed to swell by 0.87%. A unit rise in

turnover will cause Nigeria's economic growth to rise by 0.23% but for South Africa it would be 0.05%.

4.8 Granger Causality Effect Examination

To comparatively assess the effect of capital market indicators of Nigeria and South Africa capital market, the granger causality test was employed. A lag of one was selected owing to that fact that data applied in this research work is time series based. The result of the granger effect assessment for Nigeria and South Africa are presented in Tables 53 to 58. From Table 53, there is no unidirectional or bidirectional causal relationship between market capitalization and economic growth in Nigeria at 5% level of significance whereas for South Africa as depicted in Table 56, there is a unidirectional relationship between market capitalization and economic growth of South Africa running from market capitalization to economic growth at 5% significance level. It would construed from the results in Table 53 and 56 that market capitalization has a significant effect on economic growth of South Africa but has no significant effect on the economic growth of Nigeria. In the second place is the causal effect of stock value traded ratio. It is vivid in Tables 54 and 57 that stock value traded ratio has no significant effect on economic growth of both Nigeria and South Africa as there is no evidence of a causal relationship at 5% level of significance between stock value traded ratio and economic growth of both countries.

Table 53: Granger Causality Result for Nigeria's GDP and MKTCR

Null Hypothesis:	Obs	F-Statistic	Prob.	Remarks
MKTCR does not Granger Cause GDPGR	34	0.10359	0.7479	No Causality
GDPGR does not Granger Cause MKTCR		0.43130	0.5162	No Causality

Source: Data output via E-views9.0

Table 54: Granger Causality Result for Nigeria's GDP and SVTR

Null Hypothesis:	Obs	F-Statistic	Prob.	Remarks
SVTR does not Granger Cause GDPGR	34	0.88522	0.3540	No Causality
GDPGR does not Granger Cause SVTR		0.47624	0.4953	No Causality

Source: Data output via E-views9.0

Table 55: Granger Causality Result for Nigeria's GDP and TUNR

Null Hypothesis:	Obs	F-Statistic	Prob.	Remarks
TUNR does not Granger Cause GDPGR	34	0.95871	0.3351	No Causality
GDPGR does not Granger Cause TUNR		0.23500	0.6312	No Causality

Source: Data output via E-views9.0

Table 56: Granger Causality Result for South Africa's GDP and MKTCR

Null Hypothesis:	Obs	F-Statistic	Prob.	Remarks
MKTCR does not Granger Cause GDPGR	34	5.00431	0.0326	Causality
GDPGR does not Granger Cause MKTCR		0.00794	0.9296	No Causality

Source: Data output via E-views9.0

Table 57: Granger Causality Result for South Africa's GDP and SVTR

Null Hypothesis:	Obs	F-Statistic	Prob.	Remarks
SVTR does not Granger Cause GDPGR	34	1.55649	0.2215	No Causality
GDPGR does not Granger Cause SVTR		0.32515	0.5726	No Causality

Source: Data output via E-views9.0

Table 58: Granger Causality Result for South Africa's GDP and TUNR

Null Hypothesis:	Obs	F-Statistic	Prob.	Remarks
TUNR does not Granger Cause GDPGR	34	0.99059	0.3273	No Causality
GDPGR does not Granger Cause TUNR		1.24312	0.2734	No Causality

Source: Data output via E-views9.0

In the same vein as evidenced in Table 55 and 58, turnover ratio does not granger cause economic growth in Nigeria and South Africa as the p-value of the F-statistic which shows presence of effect is statistically insignificant. The implication of these findings is that turnover ratio has no significant effect on economic growth of Nigeria and South Africa within the time frame covered by this research work.

The variables in the model were estimated functionally but the results show that some the variables were insignificant. This led to the estimating the model in its log linear econometric format and the result was the same as in the functional form. Based on the two forms of estimating the model (functional and log linear), the study concludes that the results of the estimation were valid despite the insignificant results.

4.9 Auto-Regressive Distributed Lag (ARDL) Models

The variables have been confirmed to be stationary at first difference and the number of co-integrating equation between them determined using the Johansen co-integration. In the same vain, the ARDL bond test was also carried to cater for the mixed order of integration (stationarity of some variables at level and first difference) and in further affirmation of the long run relationship as evidenced by the Johansen methodology. Tables 59 to 61 and 62 to 64 show the bound test for Nigeria and South Africa respectively. From Tables 59, 60 and 61, the F-statistic values of 11.29971, 11.97319 and 12.03651 for market capitalization ratio, stock value traded ratio and turnover ratio respectively which are greater than the upper bound value of 5.73 at 5% level of significance is clear evidence to reject the null hypothesis if no long run relationship exist. Consequently, the three capital market variables: market capitalization ratio, stock value traded ratio and turnover ratio are co-integrated with economic growth of Nigeria. For that of South Africa, F-statistic values of 6.704335, 10.52196 and 7.122191 are also greater than the upper bound value of 5.73 at 5%

level of significance. This also suggests that capital market and South Africa's economic growth are related in the long run as the same case of Nigeria.

Table 59: Bound Test for Nigeria's GDP and MKTCR

T-Test	5% Critical Value Bond		Implication
F-Statistic	Lower Bound	Upper Bound	
11.29971	4.94	5.73	Null Hypothesis Rejected

Source: Data output via E-views9.0

Table 60: Bound Test for Nigeria's GDP and SVTR

T-Test	5% Critical Value Bond		Implication
F-Statistic	Lower Bound	Upper Bound	
11.97319	4.94	5.73	Null Hypothesis Rejected

Source: Data output via E-views9.0

Table 61: Bound Test for Nigeria's GDP and TUNR

T-Test	5% Critical Value Bond		Implication
F-Statistic	Lower Bound	Upper Bound	
12.03651	4.94	5.73	Null Hypothesis Rejected

Source: Data output via E-views9.0

Table 62: Bound Test for South Africa's GDP and MKTCR

T-Test	5% Critical Value Bond		Implication
F-Statistic	Lower Bound	Upper Bound	
6.704335	4.94	5.73	Null Hypothesis Rejected

Source: Data output via E-views9.0

Table 63: Bound Test for South Africa's GDP and SVTR

T-Test	5% Critical Value Bond		Implication
F-Statistic	Lower Bound	Upper Bound	
10.52196	4.94	5.73	Null Hypothesis Rejected

Source: Data output via E-views9.0

Table 64: Bound Test for South Africa's GDP and TUNR

T-Test	5% Critical Value Bond		Implication
F-Statistic	Lower Bound	Upper Bound	
7.122191	4.94	5.73	Null Hypothesis Rejected

Source: Data output via E-views9.0

ARDL Error Correction Model

In an attempt to ascertain the speed of adjustment to equilibrium, the ARDL error correction model was estimated and the result shown in Tables 65 to 67 and 68 to 70 for Nigeria and South Africa respectively. Table 65 and 68 for Nigeria and South Africa show that the error correction coefficient is correctly signed with the negative sign for market capitalization and economic growth nexus. This is an indication that

there is the tendency for the models to move towards equilibrium for both Nigeria and South Africa. For Nigeria, 80.77% of error generated in previous period is corrected in current period while that of South Africa is 63.75%. The error generated in past period that is corrected in present period in Nigeria is greater than South Africa by a magnitude of 17.02%.

Table 65: ARDL Error Correction for Nigeria's GDP and MKTCR

Short Run Co-integration Form				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(MKTCR(-6))	-0.350748	0.166274	-2.109459	0.0500
CointEq(-1)	-0.807676	0.364159	-2.217923	0.0405
Long Run Coefficient				
MKTCR	0.116979	0.136652	0.856034	0.3985
C	2.642096	2.470920	1.069276	0.2932

Source: Data output via E-views9.0

Table 66: ARDL Error Correction for Nigeria's GDP and SVTR

Short Run Co-integration Form				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(SVTR(-6))	-5.462070	1.950059	-2.800977	0.0379
CointEq(-1)	-0.800662	0.162961	-4.913205	0.0000
Long Run Coefficient				
SVTR	-10.916581	4.759262	-2.293755	0.0703
C	3.990015	1.007741	3.959365	0.0107

Source: Data output via E-views9.0

For economic growth and stock value traded estimation, Tables 66 and 69 reveal that error correction coefficient for Nigeria and South Africa respectively have the expected negative sign thus the model moves towards equilibrium following disequilibrium in previous period. For Nigeria, 80.0% of error generated in past years is corrected in present year while that of South Africa is 80.35%. The error generated in past period in term of stock value traded ratio is greater than that of Nigeria by a height of 0.35%. In the analysis of the turnover ratio and economic growth linkage, Tables 67 and 70 for Nigeria and South Africa respectively also exhibited the a priori negative sign. For Nigeria, 80.25% of error generated in past period is corrected in current but for South Africa, 62.72% of error generated in previous year is corrected in the current year. The error corrected in the current period in Nigeria is higher than South Africa by 17.53%.

Table 67: ARDL Error Correction for Nigeria's GDP and TUNR

Short Run Co-integration Form				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(TUNR)	0.231436	0.195975	1.180945	0.2466
CointEq(-1)	-0.802502	0.161077	-4.982114	0.0000
Long Run Coefficient				
TUNR	0.288393	0.237856	1.212466	0.2345
C	2.119336	2.331736	0.908909	0.3704

Source: Data output via E-views9.0

Table 68: ARDL Error Correction for South Africa's GDP and MKTCR

Short Run Co-integration Form				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(MKTCR)	0.000937	0.009687	0.096686	0.9237
D(MKTCR(-1))	0.017827	0.010568	1.686930	0.1027
CointEq(-1)	-0.637486	0.177273	-3.596075	0.0012
Long Run Coefficient				
MKTCR	0.009254	0.010599	0.873149	0.3900
C	0.577043	1.843476	0.313019	0.7566

Source: Data output via E-views9.0

Table 69: ARDL Error Correction for South Africa's GDP and SVTR

Short Run Co-integration Form				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(SVTR)	0.021298	0.013949	1.526909	0.1369
CointEq(-1)	-0.803585	0.170240	-4.720293	0.0000
Long Run Coefficient				
SVTR	0.026504	0.016472	1.609018	0.1178
C	1.262124	0.711479	1.773944	0.0859

Source: Data output via E-views9.0

Table 70: ARDL Error Correction for South Africa's GDP and TUNR

Short Run Co-integration Form				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(TUNR)	0.068982	0.070627	0.976707	0.3371
D(TUNR(-1))	-0.103230	0.070158	-1.471389	0.1523
CointEq(-1)	-0.687246	0.183403	-3.747197	0.0008
Long Run Coefficient				
TUNR	0.051739	0.046626	1.109661	0.2766
C	1.424598	0.960810	1.482705	0.1493

Source: Data output via E-views9.0

4.10 Test of Hypotheses

Decision Rule: In an event where the F-statistic in granger causality test p-value is less than 0.05, the null hypothesis is rejected. On the other hand, where the F-statistic in granger causality test p-valueis greater than 0.05, the null hypothesis is accepted.

Hypothesis One

Restatement of Hypothesis

H_0: Market capitalization ratio to GDP has no significant effect on economic growth of Nigeria and South Africa.

The p-value of 0.7479 in Table 71for Nigeria is greater than 0.05 but for South Africa data it is less than 0.05. In this regard, the null hypothesis that market capitalization ratio to GDP has no significant effect on economic growth of Nigeria is acceptedand the alternate hypothesis rejected but for South Africa, the null hypothesis that market capitalization ratio to GDP has no significant effect on economic growth of South Africa would be rejected as the alternate hypothesis is accepted.

Table 71: Test of Hypothesis One

Effect Result of Nigeria's GDP and MKTCR			
Null Hypothesis:	**Obs**	**F-Statistic**	**Prob.**
MKTCR does not Granger Cause GDPGR	34	0.10359	0.7479
GDPGR does not Granger Cause MKTCR		0.43130	0.5162
Effect Result of South Africa's GDP and MKTCR			
Null Hypothesis:	**Obs**	**F-Statistic**	**Prob.**
MKTCR does not Granger Cause GDPGR	34	5.00431	0.0326
GDPGR does not Granger Cause MKTCR		0.00794	0.9296

Source: Data output via E-views9.0

Hypothesis Two

Restatement of Hypothesis

H_0: Stock value traded ratio to GDP has no significant effect on economic growth of Nigeria and South Africa.

Table 72: Test of Hypothesis Two

Effect Result of Nigeria's GDP and SVTR			
Null Hypothesis:	**Obs**	**F-Statistic**	**Prob.**
SVTR does not Granger Cause GDPGR	34	0.88522	0.3540
GDPGR does not Granger Cause SVTR		0.47624	0.4953
Effect Result of South Africa's GDP and SVTR			
Null Hypothesis:	**Obs**	**F-Statistic**	**Prob.**
SVTR does not Granger Cause GDPGR	34	1.55649	0.2215
GDPGR does not Granger Cause SVTR		0.32515	0.5726

Source: Data output via E-views9.0

Judging from the econometric output in Table 72, the p-values of 0.3540 and 0.2215 for Nigeria and South Africa are higher than 0.05 hypothesis decision rule. As a result, the null hypothesis that stock value traded ratio to GDP has no significant

effect on economic growth of Nigeria and South Africa is accepted while that alternate hypothesis rejected.

Hypothesis Three

Restatement of Hypothesis

H_0: Turnover ratio has no significant effect on economic growth of Nigeria and South Africa.

Table 73 unveils that 0.3351 and 0.3273 reflecting the p-values of Nigeria and South Africa data are greater than 0.05 which the hypothesis was centred on. In the light of this, alternate hypothesis is rejected while the null hypothesis that turnover ratio has no significant effect on economic growth of Nigeria and South Africa would be accepted.

Table 73: Test of Hypothesis Three

Effect Result of Nigeria's GDP and TUNR			
Null Hypothesis:	**Obs**	**F-Statistic**	**Prob.**
TUNR does not Granger Cause GDPGR	34	0.95871	0.3351
GDPGR does not Granger Cause TUNR		0.23500	0.6312
Effect Result of South Africa's GDP and TUNR			
Null Hypothesis:	**Obs**	**F-Statistic**	**Prob.**
TUNR does not Granger Cause GDPGR	34	0.99059	0.3273
GDPGR does not Granger Cause TUNR		1.24312	0.2734

Source: Data output via E-views9.0

4.11 Discussion of Findings

The result of a positive relationship between market capitalization ratio to GDP for Nigeria and South Africa as shown in Table 47 and 50 is indication that a unit increase in market capitalization ratio to GDP influences economic growth and in line with a priori expectation. It would be inferred from the result that the size of the capital market affects the liquidity of the market. This supports the results of previous studies in Nigeria via Atoyebi, Ishola, Kadiri, Adekunjo and Ogundeji (2013), Ologunwa and Sadibo (2016), Saidu (2014), Oke (2012), Ifionu and Omojefe (2013), Echekoba, Ezu and Egbunike (2013), Edame and Okoro (2013), Kolapo and Adaramola (2012), Ogege and Ezike (2012). For South Africa, it agrees with the findings of Chipaumire and Ngirande (2014), Odhiambo (2009) and Khetsi and Mongale (2015). Nevertheless, the positive relationship between market capitalization ratio to GDP refutes the empirical results of Nduka, Anigbogu and Nyiputen (2016),

Alajekwu and Achugbu (2012), Odo, Anoke, Onyesi and Chukwu (2017) and Josiah, Adedinran and Akpeti (2012).

In term of the liquidity of the capital market, Tables 48, 49, 50 and 51 envisage a positive relationship between economic growth, stock value traded ratio and turnover ratio which confirm to a priori expectation for both Nigeria and South Africa. This result brings to light that the liquidity of the stock market increases the availability of funds for productive economic activities which in turn enhance economic growth. The ease with which securities in the capital market are converted to liquid cash results in increase investment in the market. This is in tandem with the findings of Josiah, Adedinran and Akpeti (2012), Ologunwa and Sadibo (2016), Edame and Okoro (2013), Alajekwu and Achugbu (2012) and Nduka, Anigbogu and Nyiputen (2016). That notwithstanding, the result would not confirm the findings of Khetsi and Mongale (2015), Chipaumire and Ngirande (2014), Ogege and Ezike (2012), Kolapo and Adaramola (2012), Echekoba, Ezu and Egbunike (2013), Emeh and Chigbu (2014) and Oke (2012) on the negative linkage between capital market liquidity and economic growth. Despite the further growth prospects, on average, African markets are currently trading at less than 11 times trailing Price-Earnings ratio, compared to a trailing Price-Earnings ratio of 16 times in developed markets (ASEA, 2014).
There are several obstacles to the development of capital markets generally in Africa. Theseinclude 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 (Oputa, 2016).

The Johansen co-integration and ARDL results in Tables 35 to 40 and 65 to 70 for Nigeria and South Africa reveal the existence of a long run relationship between capital market development and economic growth. This result point to finance led growth hypothesis that capital market is growth inducing especially for emerging economies. Sound policy implementation on the capital market will vividly enhance economic growth of Nigeria and South Africa. The granger causality estimation in Tables 53 to 55 and 56 to 58 for Nigeria and South Africa show that market capitalization ratio, stock value traded ratio and turnover ratio does not stimulate

economic growth in Nigeria while market capitalization ratio spurs economic growth in South Africa. This is an indication that the South Africa capital market is more developed compared to that of Nigeria. In other words, the South Africa capital market contributes to economic growth of South Africa while the economic growth of Nigeria is not significantly influenced by the capital market.

CHAPTER FIVE
SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Findings

Theeffect of capital market on economic growth of Nigeria and South Africa from 1981 to 2015 was ascertained in this study. The result of the study revealed the following:

- Market capitalization ratio to GDP has no significant effect on economic growth of Nigeria but has significant effect on economic growth of South Africa. The relationship between market capitalization ratio to GDP and economic growth is positive and significant for Nigeria and South Africa.
- Stock value traded ratio to GDP has no significant effect on economic growth of Nigeria and South Africa. The economic growth rate of Nigeria and stock value traded ratio are positive and significantly related but for South Africa they are insignificantly related.
- Turnover ratio has no significant effect on economic growth of Nigeria and South Africa. Capital market turnover ratio of both South Africa and Nigeria has positive and insignificant relationship with economic growth rate.

5.2 Conclusion

This study examined the effect of capital markets on economic growth in Nigeria and South Africa countries. A set of variables that measures the capital market performance such as market capitalization ratio to GDP, stock value traded ratio to GDP and turnover ratio were analysed usinggranger causality test in a time series analysis. The result of the Johanson co-integration and Bond tests provedthat a long-run relationship exist between capital markets and economic growth in Nigeria and South Africa. This implies that capital markets affect economic growth positively. The results favour more of South Africa economy than Nigeria because the indicator of capital market in South Africa behaved significantly more than that of Nigeria.

The reason for South Africa's capital market more significant behavior is the fact that South Africa capital market size and liquidity position is bigger and better than that of Nigeria; South Africa is a middle income country with a lot of economic

infrastructure already in place; South Africa per capita income is much higher than that of Nigeria. The study therefore concludes that economic growth is positively correlated with the size and liquidity of the both countries capital markets.

Therefore, the governments of these two countries needto do more to overcome the challenges that are still being faced by the capital markets in their countries by improving institutions, infrastructures and regulatory systems in order to develop the capital markets better and reach the performance level of other developing and emerging markets.

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.

5.3 Recommendations

The study therefore made the following recommendations:

1. The results are consistent with the confirming that capital market development indeed spurs economic growth. More specifically, it has been found that economic growth is positively correlated with the size and liquidity of the both countries capital markets. Therefore, Government and Stock Market regulators in Nigeria and South Africa should put in place policies and measuresthat aim at reducing the narrowness and increase the liquidity and efficiency of the stock markets.

2. As part of policies designed to improve capital market activities in South Africa and Nigeria, there is a need to increase their size by increasing the level of savings from the local populace. Nigeria and South Africa governments should in collaboration with banks sensitize the unbanked local populace and provide for them incentives that will encourage them to bank.Therefore government policies to mobilize funds and increase savings which will in turn increase investment and

activities in the capital markets should be instituted as this will have a strong impact on the economic growth of Nigeria and South Africa.

3. Another tool that will help to increase the size and liquidity of African markets is to increase the number of financial instruments available to investors. Therefore, the capital market regulators in Nigeria and South Africa should ensure that the number of securities traded in their exchanges is greatly increased in order to increase trading, liquidity and broaden the size of their markets. An increased amount of financial instrument could be achieved by creating a second tier market by the South African stock exchange regulator just like Nigeria did in 1985 by creating the Second-Tier Securities Market (SSM). Diversifying instruments and introducing derivatives trading could better the liquidity of the markets.Derivatives trading in Nigeria and South African markets may not have the expected positive impact on foreign investors due to volatility of prices, yet derivatives such as futures for agricultural goods will make both markets more attractive to firms in the agricultural sector that still represent the largest industry group in African countries.

4. 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.

5. The capital market regulators in both countries should ensure that all information needed by both local and foreign investors are readily available and accessible. The regulators should ensure that adequate Information sharing technologies are put in place. This can be achieved by adopting integrated client communication strategy.

5.4 Contributions of the Study to knowledge

1.The empirical evidence revealed that capital market studies and their effect on economic growth have been a popular line of research interest. However, only a few have tried to present a comparative study on countries in different regions of Africa.

The study evaluated the effect of capital market on economic growth of Nigeria and South Africa.

2. This study improved on existing studies by utilizing market capitalization ratio to GDP and stock value traded ratio to GDP as against the use of market capitalization and stock value traded without deflating it with GDP in the context of Nigeria. This deflation of these variables reflects the World Bank (2004) on the standard measurement of capital market development. This study also succeeded in using more sophisticated ARDL approach in addition to Johansen co-integration econometric tool in assessing the relationship between capital market and economic growth in Nigeria and South Africa.

3. This study has succeeded establishing the fact that the results of the study are consistent with the confirmation that capital market development indeed spurs economic growth. More specifically, it has been found that economic growth is positively correlated with the size and liquidity of the Nigerian and South African capital markets.

4. Finally, the study contributes to knowledge by extending period of coverage of related works to 2015.

5.5 Recommendations for Further Studies

The study recommends the following areas for further studies:

1. The scope of this study was 1981-2015, this study recommends for a study that will cover wider scope, like from 1970- 2016. This is to capture a wider and longer term relationship.
2. The study did not include some capital market variables like the number of new listings and number of listed companies in the capital markets of both countries. The study suggests the inclusion of these capital market variables in the further studies of the markets.
3. The current financial globalization has indeed increased the level of financial markets integration especially through cross border listings. Therefore, further studies should focus on markets integration and volatility in Sub Saharan Africa.

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Appendixes

Appendix I Descriptive statistics

Descriptive Statistic for Nigeria

	GDPGR	MKTCR	SVTR	TUNR
Mean	3.672571	13.82543	1.291714	7.456857
Median	4.280000	10.39000	0.420000	6.100000
Maximum	33.74000	51.00000	10.43000	34.79000
Minimum	-13.13000	3.350000	0.040000	1.050000
Std. Dev.	7.671828	11.36135	2.131290	6.308547
Skewness	1.179275	1.454823	3.248364	2.538760
Kurtosis	8.591054	4.795622	13.31858	11.45707
Jarque-Bera	53.69967	17.04835	216.8259	141.9006
Probability	0.000000	0.000199	0.000000	0.000000
Sum	128.5400	483.8900	45.21000	260.9900
Sum Sq. Dev.	2001.136	4388.729	154.4415	1353.124
Observations	35	35	35	35

Descriptive Statistic for South Africa

	GDPGR	MKTCR	SVTR	TUNR
Mean	2.270571	167.1526	32.62714	16.92029
Median	2.600000	157.6000	27.99000	18.82000
Maximum	5.590000	276.6000	86.08000	41.98000
Minimum	-2.140000	62.64000	2.150000	3.330000
Std. Dev.	2.231340	59.44526	27.66295	11.99056
Skewness	-0.421135	0.333845	0.383067	0.202581
Kurtosis	2.202766	2.116310	1.650444	1.611396
Jarque-Bera	1.961460	1.788962	3.512050	3.051384
Probability	0.375037	0.408820	0.172730	0.217471
Sum	79.47000	5850.340	1141.950	592.2100
Sum Sq. Dev.	169.2818	120147.1	26018.11	4888.299
Observations	35	35	35	35

Appendix II: Test for Normality

Test for normality of GDPGR:

```
Doornik-Hansen test = 3.3593, with p-value 0.186439
Shapiro-Wilk W = 0.945469, with p-value 0.082241
Lilliefors test = 0.126676, with p-value ~= 0.16
Jarque-Bera test = 1.96146, with p-value 0.375037
```

Test for normality of MKTCR:

```
Doornik-Hansen test = 2.72619, with p-value 0.255867
Shapiro-Wilk W = 0.954461, with p-value 0.050293
Lilliefors test = 0.094854, with p-value ~= 0.58
Jarque-Bera test = 1.78896, with p-value 0.40882
```

Test for normality of SVTR:

```
Doornik-Hansen test = 10.7429, with p-value 0.00464736
Shapiro-Wilk W = 0.871016, with p-value 0.000718141
Lilliefors test = 0.219187, with p-value ~= 0
Jarque-Bera test = 3.51205, with p-value 0.17273
```

Test for normality of TUNR:

```
Doornik-Hansen test = 7.27787, with p-value 0.0262803
Shapiro-Wilk W = 0.866457, with p-value 0.000557536
Lilliefors test = 0.221464, with p-value ~= 0
Jarque-Bera test = 3.05138, with p-value 0.217471
```

Breusch-Godfrey Serial Correlation LM Test for Nigeria

Model 1

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.047978	Prob. F(2,29)	0.9532
Obs*R-squared	0.112129	Prob. Chi-Square(2)	0.9455

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 03/19/17 Time: 10:02
Sample: 1982 2015
Included observations: 34
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.207607	2.158133	-0.096198	0.9240
MKTCR	-0.014173	0.124659	-0.113691	0.9103
GDPGR(-1)	0.111501	0.426360	0.261519	0.7955
RESID(-1)	-0.126137	0.461124	-0.273542	0.7864
RESID(-2)	-0.051488	0.208627	-0.246795	0.8068

R-squared	0.003298	Mean dependent var	-2.48E-16
Adjusted R-squared	-0.134178	S.D. dependent var	6.875087
S.E. of regression	7.321817	Akaike info criterion	6.954647
Sum squared resid	1554.661	Schwarz criterion	7.179112
Log likelihood	-113.2290	Hannan-Quinn criter.	7.031196
F-statistic	0.023989	Durbin-Watson stat	2.016180
Prob(F-statistic)	0.998813		

Model 2

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.214017	Prob. F(2,29)	0.8086
Obs*R-squared	0.494534	Prob. Chi-Square(2)	0.7809

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 03/19/17 Time: 10:04
Sample: 1982 2015
Included observations: 34
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.619154	1.846775	-0.335262	0.7398
SVTR	-0.127045	0.643181	-0.197526	0.8448
GDPGR(-1)	0.215687	0.403757	0.534200	0.5973
RESID(-1)	-0.249041	0.441271	-0.564371	0.5768
RESID(-2)	-0.106184	0.202940	-0.523227	0.6048

R-squared	0.014545	Mean dependent var	-8.88E-16
Adjusted R-squared	-0.121380	S.D. dependent var	6.839252
S.E. of regression	7.242441	Akaike info criterion	6.932847
Sum squared resid	1521.136	Schwarz criterion	7.157311
Log likelihood	-112.8584	Hannan-Quinn criter.	7.009396
F-statistic	0.107009	Durbin-Watson stat	2.037171
Prob(F-statistic)	0.979135		

Model 3

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.279272	Prob. F(2,29)	0.7583

Obs*R-squared	0.642470	Prob. Chi-Square(2)	0.7253

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 03/19/17 Time: 10:05
Sample: 1982 2015
Included observations: 34
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.447120	2.055463	-0.217528	0.8293
TUNR	-0.046047	0.215510	-0.213666	0.8323
GDPGR(-1)	0.218877	0.390959	0.559847	0.5799
RESID(-1)	-0.253445	0.432198	-0.586411	0.5621
RESID(-2)	-0.128895	0.200126	-0.644067	0.5246

R-squared	0.018896	Mean dependent var	-4.05E-16
Adjusted R-squared	-0.116428	S.D. dependent var	6.800252
S.E. of regression	7.185227	Akaike info criterion	6.916984
Sum squared resid	1497.197	Schwarz criterion	7.141449
Log likelihood	-112.5887	Hannan-Quinn criter.	6.993533
F-statistic	0.139636	Durbin-Watson stat	2.039323
Prob(F-statistic)	0.966128		

AppendixIII: Diagnostic Test

Breusch-Godfrey Serial Correlation LM Test for South Africa

Model 1

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.521516	Prob. F(2,29)	0.5991
Obs*R-squared	1.180409	Prob. Chi-Square(2)	0.5542

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 03/19/17 Time: 10:07
Sample: 1982 2015
Included observations: 34
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.280597	1.284070	0.218522	0.8286
MKTCR	0.002996	0.007135	0.419915	0.6776
GDPGR(-1)	-0.348714	0.473837	-0.735936	0.4677
RESID(-1)	0.425649	0.505109	0.842687	0.4063
RESID(-2)	-0.041472	0.212107	-0.195525	0.8463

R-squared	0.034718	Mean dependent var	1.96E-16
Adjusted R-squared	-0.098424	S.D. dependent var	2.037707
S.E. of regression	2.135634	Akaike info criterion	4.490457
Sum squared resid	132.2671	Schwarz criterion	4.714922
Log likelihood	-71.33777	Hannan-Quinn criter.	4.567006
F-statistic	0.260758	Durbin-Watson stat	2.053651
Prob(F-statistic)	0.900666		

Model 2

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.910807	Prob. F(2,29)	0.1661
Obs*R-squared	3.958821	Prob. Chi-Square(2)	0.1382

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 03/19/17 Time: 10:08
Sample: 1982 2015
Included observations: 34
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.265370	0.961393	1.316184	0.1984
SVTR	0.017725	0.016345	1.084437	0.2871
GDPGR(-1)	-0.828783	0.493298	-1.680084	0.1037
RESID(-1)	0.948318	0.513278	1.847571	0.0749
RESID(-2)	0.009365	0.200323	0.046750	0.9630

R-squared	0.116436	Mean dependent var	4.31E-16
Adjusted R-squared	-0.005435	S.D. dependent var	2.031334
S.E. of regression	2.036847	Akaike info criterion	4.395736
Sum squared resid	120.3136	Schwarz criterion	4.620201
Log likelihood	-69.72751	Hannan-Quinn criter.	4.472285
F-statistic	0.955404	Durbin-Watson stat	2.099605
Prob(F-statistic)	0.446615		

Model 3

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.880877	Prob. F(2,29)	0.1706
Obs*R-squared	3.903932	Prob. Chi-Square(2)	0.1420

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 03/19/17 Time: 10:10
Sample: 1982 2015
Included observations: 34
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.050699	0.947140	1.109339	0.2764
TUNR	0.035003	0.036833	0.950307	0.3498
GDPGR(-1)	-0.735839	0.475039	-1.549006	0.1322
RESID(-1)	0.852613	0.488210	1.746404	0.0913
RESID(-2)	-0.035815	0.199515	-0.179510	0.8588

R-squared	0.114822	Mean dependent var	1.18E-16
Adjusted R-squared	-0.007272	S.D. dependent var	2.027184
S.E. of regression	2.034542	Akaike info criterion	4.393471
Sum squared resid	120.0414	Schwarz criterion	4.617936
Log likelihood	-69.68901	Hannan-Quinn criter.	4.470020
F-statistic	0.940439	Durbin-Watson stat	2.028566
Prob(F-statistic)	0.454601		

Breusch-Godfrey Serial Heteroskedasticity Nigeria

Model 1

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.406978	Prob. F(2,31)	0.6692
Obs*R-squared	0.869885	Prob. Chi-Square(2)	0.6473
Scaled explained SS	3.004243	Prob. Chi-Square(2)	0.2227

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 03/19/17 Time: 10:24
Sample: 1982 2015
Included observations: 34

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	45.90477	37.77230	1.215303	0.2334
MKTCR	-0.741408	2.145715	-0.345529	0.7320
GDPGR(-1)	2.812090	3.151192	0.892389	0.3791

R-squared	0.025585	Mean dependent var	45.87663
Adjusted R-squared	-0.037281	S.D. dependent var	134.2279
S.E. of regression	136.7071	Akaike info criterion	12.75766
Sum squared resid	579353.4	Schwarz criterion	12.89233
Log likelihood	-213.8801	Hannan-Quinn criter.	12.80358
F-statistic	0.406978	Durbin-Watson stat	2.028869
Prob(F-statistic)	0.669164		

Model 2

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.344817	Prob. F(2,31)	0.7110
Obs*R-squared	0.739913	Prob. Chi-Square(2)	0.6908
Scaled explained SS	2.651939	Prob. Chi-Square(2)	0.2655

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 03/19/17 Time: 10:25
Sample: 1982 2015
Included observations: 34

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	38.62412	29.00748	1.331523	0.1927
SVTR	-2.291703	11.51272	-0.199058	0.8435
GDPGR(-1)	2.648138	3.189014	0.830394	0.4127

R-squared	0.021762	Mean dependent var	45.39963
Adjusted R-squared	-0.041350	S.D. dependent var	135.3189
S.E. of regression	138.0883	Akaike info criterion	12.77776
Sum squared resid	591119.9	Schwarz criterion	12.91244
Log likelihood	-214.2219	Hannan-Quinn criter.	12.82369
F-statistic	0.344817	Durbin-Watson stat	2.032151
Prob(F-statistic)	0.711032		

Model 3

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.352569	Prob. F(2,31)	0.7057
Obs*R-squared	0.756177	Prob. Chi-Square(2)	0.6852
Scaled explained SS	2.675081	Prob. Chi-Square(2)	0.2625

Test Equation:

Dependent Variable: RESID^2
Method: Least Squares
Date: 03/19/17 Time: 10:28
Sample: 1982 2015
Included observations: 34

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	31.35680	36.48778	0.859378	0.3967
TUNR	0.630293	3.787462	0.166416	0.8689
GDPGR(-1)	2.377993	3.113007	0.763889	0.4507

R-squared	0.022240	Mean dependent var	44.88333
Adjusted R-squared	-0.040841	S.D. dependent var	132.9097
S.E. of regression	135.5966	Akaike info criterion	12.74134
Sum squared resid	569979.2	Schwarz criterion	12.87602
Log likelihood	-213.6028	Hannan-Quinn criter.	12.78727
F-statistic	0.352569	Durbin-Watson stat	2.000081
Prob(F-statistic)	0.705662		

Breusch-Godfrey Serial Heteroskedasticity for South Africa

Model 1

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.917823	Prob. F(2,31)	0.4100
Obs*R-squared	1.900738	Prob. Chi-Square(2)	0.3866
Scaled explained SS	1.562290	Prob. Chi-Square(2)	0.4579

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 03/19/17 Time: 10:13
Sample: 1982 2015
Included observations: 34

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.661638	3.101574	2.470242	0.0192
MKTCR	-0.016851	0.017464	-0.964867	0.3421
GDPGR(-1)	-0.336995	0.453315	-0.743401	0.4628

R-squared	0.055904	Mean dependent var	4.030125
Adjusted R-squared	-0.005005	S.D. dependent var	5.752451
S.E. of regression	5.766829	Akaike info criterion	6.426219
Sum squared resid	1030.946	Schwarz criterion	6.560898
Log likelihood	-106.2457	Hannan-Quinn criter.	6.472149
F-statistic	0.917823	Durbin-Watson stat	1.913403
Prob(F-statistic)	0.409968		

Model 2

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.494493	Prob. F(2,31)	0.6146
Obs*R-squared	1.051159	Prob. Chi-Square(2)	0.5912
Scaled explained SS	0.721274	Prob. Chi-Square(2)	0.6972

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 03/19/17 Time: 10:19
Sample: 1982 2015

Included observations: 34

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.266610	1.571648	3.351011	0.0021
SVTR	-0.027264	0.035307	-0.772207	0.4458
GDPGR(-1)	-0.151267	0.430914	-0.351038	0.7279

R-squared	0.030916	Mean dependent var	4.004956
Adjusted R-squared	-0.031605	S.D. dependent var	5.223103
S.E. of regression	5.304999	Akaike info criterion	6.259274
Sum squared resid	872.4335	Schwarz criterion	6.393952
Log likelihood	-103.4077	Hannan-Quinn criter.	6.305203
F-statistic	0.494493	Durbin-Watson stat	1.874051
Prob(F-statistic)	0.614609		

Model 3

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.231675	Prob. F(2,31)	0.3057
Obs*R-squared	2.502855	Prob. Chi-Square(2)	0.2861
Scaled explained SS	1.533444	Prob. Chi-Square(2)	0.4645

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 03/19/17 Time: 10:21
Sample: 1982 2015
Included observations: 34

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.930381	1.557824	3.806835	0.0006
TUNR	-0.111272	0.076207	-1.460130	0.1543
GDPGR(-1)	-0.006537	0.402805	-0.016230	0.9872

R-squared	0.073613	Mean dependent var	3.988608
Adjusted R-squared	0.013846	S.D. dependent var	4.915324
S.E. of regression	4.881175	Akaike info criterion	6.092746
Sum squared resid	738.6020	Schwarz criterion	6.227425
Log likelihood	-100.5767	Hannan-Quinn criter.	6.138676
F-statistic	1.231675	Durbin-Watson stat	1.794691
Prob(F-statistic)	0.305689		

Ramsey Reset Specification for Nigeria

Model 1

Ramsey RESET Test
Equation: UNTITLED
Specification: GDPGR C MKTCR GDPGR(-1)
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	1.105030	30	0.2779
F-statistic	1.221090	(1, 30)	0.2779
Likelihood ratio	1.356479	1	0.2441

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	61.00565	1	61.00565
Restricted SSR	1559.805	31	50.31630

Unrestricted SSR	1498.800	30	49.95999
Unrestricted SSR	1498.800	30	49.95999

LR test summary:

	Value	df
Restricted LogL	-113.2852	31
Unrestricted LogL	-112.6069	30

Unrestricted Test Equation:
Dependent Variable: GDPGR
Method: Least Squares
Date: 03/19/17 Time: 10:25
Sample: 1982 2015
Included observations: 34

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.466611	1.981900	1.244569	0.2229
MKTCR	0.226360	0.164129	1.379157	0.1780
GDPGR(-1)	0.531369	0.335286	1.584821	0.1235
FITTED^2	-0.158428	0.143370	-1.105030	0.2779

R-squared	0.123768	Mean dependent var	4.166765
Adjusted R-squared	0.036145	S.D. dependent var	7.199550
S.E. of regression	7.068238	Akaike info criterion	6.859231
Sum squared resid	1498.800	Schwarz criterion	7.038802
Log likelihood	-112.6069	Hannan-Quinn criter.	6.920470
F-statistic	1.412505	Durbin-Watson stat	1.926244
Prob(F-statistic)	0.258438		

Model 2

Ramsey RESET Test
Equation: UNTITLED
Specification: GDPGR C SVTR GDPGR(-1)
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	1.611853	30	0.1175
F-statistic	2.598071	(1, 30)	0.1175
Likelihood ratio	2.823895	1	0.0929

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	123.0241	1	123.0241
Restricted SSR	1543.587	31	49.79314
Unrestricted SSR	1420.563	30	47.35211
Unrestricted SSR	1420.563	30	47.35211

LR test summary:

	Value	df
Restricted LogL	-113.1075	31
Unrestricted LogL	-111.6955	30

Unrestricted Test Equation:
Dependent Variable: GDPGR
Method: Least Squares
Date: 03/19/17 Time: 10:27
Sample: 1982 2015
Included observations: 34

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.951045	1.657999	2.383019	0.0237
SVTR	2.607004	1.373234	1.898441	0.0673
GDPGR(-1)	0.674620	0.334964	2.014008	0.0531
FITTED^2	-0.256976	0.159429	-1.611853	0.1175

R-squared	0.169507	Mean dependent var	4.166765
Adjusted R-squared	0.086458	S.D. dependent var	7.199550
S.E. of regression	6.881287	Akaike info criterion	6.805619
Sum squared resid	1420.563	Schwarz criterion	6.985191
Log likelihood	-111.6955	Hannan-Quinn criter.	6.866858
F-statistic	2.041041	Durbin-Watson stat	1.951669
Prob(F-statistic)	0.129251		

Model 3

Ramsey RESET Test
Equation: UNTITLED
Specification: GDPGR C TUNR GDPGR(-1)
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	1.655663	30	0.1082
F-statistic	2.741219	(1, 30)	0.1082
Likelihood ratio	2.972872	1	0.0847

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	127.7653	1	127.7653
Restricted SSR	1526.033	31	49.22688
Unrestricted SSR	1398.268	30	46.60893
Unrestricted SSR	1398.268	30	46.60893

LR test summary:

	Value	df
Restricted LogL	-112.9130	31
Unrestricted LogL	-111.4266	30

Unrestricted Test Equation:
Dependent Variable: GDPGR
Method: Least Squares
Date: 03/19/17 Time: 10:29
Sample: 1982 2015
Included observations: 34

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.278289	2.028079	0.137218	0.8918
TUNR	0.940581	0.468847	2.006157	0.0539
GDPGR(-1)	0.655437	0.317912	2.061696	0.0480
FITTED^2	-0.245253	0.148130	-1.655663	0.1082

R-squared	0.182541	Mean dependent var	4.166765
Adjusted R-squared	0.100795	S.D. dependent var	7.199550
S.E. of regression	6.827073	Akaike info criterion	6.789800
Sum squared resid	1398.268	Schwarz criterion	6.969372
Log likelihood	-111.4266	Hannan-Quinn criter.	6.851039
F-statistic	2.233034	Durbin-Watson stat	1.972965
Prob(F-statistic)	0.104794		

Ramsey Reset Specification for South Africa

Model 1

Ramsey RESET Test
Equation: UNTITLED
Specification: GDPGR C MKTCR GDPGR(-1)
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	1.005317	30	0.3228
F-statistic	1.010661	(1, 30)	0.3228
Likelihood ratio	1.126545	1	0.2885

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	4.465726	1	4.465726
Restricted SSR	137.0243	31	4.420137
Unrestricted SSR	132.5585	30	4.418618
Unrestricted SSR	132.5585	30	4.418618

LR test summary:

	Value	df
Restricted LogL	-71.93847	31
Unrestricted LogL	-71.37519	30

Unrestricted Test Equation:
Dependent Variable: GDPGR
Method: Least Squares
Date: 03/19/17 Time: 10:18
Sample: 1982 2015
Included observations: 34

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.692154	1.965862	0.860769	0.3962
MKTCR	-0.008387	0.018688	-0.448761	0.6568
GDPGR(-1)	-0.141412	0.405789	-0.348488	0.7299
FITTED^2	0.412959	0.410776	1.005317	0.3228

R-squared	0.168685	Mean dependent var	2.179706
Adjusted R-squared	0.085554	S.D. dependent var	2.198184
S.E. of regression	2.102051	Akaike info criterion	4.433835
Sum squared resid	132.5585	Schwarz criterion	4.613407
Log likelihood	-71.37519	Hannan-Quinn criter.	4.495074
F-statistic	2.029139	Durbin-Watson stat	1.735232
Prob(F-statistic)	0.130948		

Model 2

Ramsey RESET Test
Equation: UNTITLED
Specification: GDPGR C SVTR GDPGR(-1)
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	0.235550	30	0.8154
F-statistic	0.055484	(1, 30)	0.8154
Likelihood ratio	0.062824	1	0.8021

F-test summary:

	Sum of Sq.	df	Mean

			Squares
Test SSR	0.251374	1	0.251374
Restricted SSR	136.1685	31	4.392532
Unrestricted SSR	135.9171	30	4.530571
Unrestricted SSR	135.9171	30	4.530571

LR test summary:

	Value	df
Restricted LogL	-71.83196	31
Unrestricted LogL	-71.80055	30

Unrestricted Test Equation:
Dependent Variable: GDPGR
Method: Least Squares
Date: 03/19/17 Time: 10:19
Sample: 1982 2015
Included observations: 34

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.965060	0.664233	1.452893	0.1566
SVTR	0.010100	0.049605	0.203615	0.8400
GDPGR(-1)	0.111319	0.400506	0.277946	0.7830
FITTED^2	0.114082	0.484319	0.235550	0.8154

R-squared	0.147623	Mean dependent var	2.179706
Adjusted R-squared	0.062385	S.D. dependent var	2.198184
S.E. of regression	2.128514	Akaike info criterion	4.458856
Sum squared resid	135.9171	Schwarz criterion	4.638428
Log likelihood	-71.80055	Hannan-Quinn criter.	4.520095
F-statistic	1.731892	Durbin-Watson stat	1.670767
Prob(F-statistic)	0.181607		

Model 3

Ramsey RESET Test
Equation: UNTITLED
Specification: GDPGR C TUNR GDPGR(-1)
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	0.122174	30	0.9036
F-statistic	0.014926	(1, 30)	0.9036
Likelihood ratio	0.016912	1	0.8965

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.067440	1	0.067440
Restricted SSR	135.6127	31	4.374602
Unrestricted SSR	135.5452	30	4.518174
Unrestricted SSR	135.5452	30	4.518174

LR test summary:

	Value	df
Restricted LogL	-71.76243	31
Unrestricted LogL	-71.75397	30

Unrestricted Test Equation:
Dependent Variable: GDPGR
Method: Least Squares

Date: 03/19/17 Time: 10:21
Sample: 1982 2015
Included observations: 34

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.879490	0.679904	1.293550	0.2057
TUNR	0.037261	0.119611	0.311514	0.7576
GDPGR(-1)	0.140658	0.378109	0.372003	0.7125
FITTED^2	0.060825	0.497853	0.122174	0.9036

R-squared	0.149955	Mean dependent var	2.179706
Adjusted R-squared	0.064950	S.D. dependent var	2.198184
S.E. of regression	2.125600	Akaike info criterion	4.456116
Sum squared resid	135.5452	Schwarz criterion	4.635688
Log likelihood	-71.75397	Hannan-Quinn criter.	4.517355
F-statistic	1.764081	Durbin-Watson stat	1.673127
Prob(F-statistic)	0.175271		

Appendix IV: Unit Root Test

ADF Nigeria Test Result at Level: Intercept Only

Null Hypothesis: GDPGR has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.810838	0.0004
Test critical values:	1% level	-3.639407	
	5% level	-2.951125	
	10% level	-2.614300	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GDPGR)
Method: Least Squares
Date: 03/19/17 Time: 10:56
Sample (adjusted): 1982 2015
Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDPGR(-1)	-0.759365	0.157845	-4.810838	0.0000
C	3.276134	1.344250	2.437147	0.0205

R-squared	0.419703	Mean dependent var	0.465588
Adjusted R-squared	0.401569	S.D. dependent var	9.125475
S.E. of regression	7.059317	Akaike info criterion	6.803596
Sum squared resid	1594.687	Schwarz criterion	6.893382
Log likelihood	-113.6611	Hannan-Quinn criter.	6.834216
F-statistic	23.14417	Durbin-Watson stat	2.060909
Prob(F-statistic)	0.000034		

Null Hypothesis: MKTCR has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

	t-Statistic	Prob.*

Augmented Dickey-Fuller test statistic		-2.509275	0.1222
Test critical values:	1% level	-3.639407	
	5% level	-2.951125	
	10% level	-2.614300	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(MKTCR)
Method: Least Squares
Date: 03/19/17 Time: 10:57
Sample (adjusted): 1982 2015
Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MKTCR(-1)	-0.321504	0.128126	-2.509275	0.0174
C	4.627128	2.301535	2.010453	0.0529

R-squared	0.164414	Mean dependent var	0.149706
Adjusted R-squared	0.138302	S.D. dependent var	9.131213
S.E. of regression	8.476296	Akaike info criterion	7.169447
Sum squared resid	2299.123	Schwarz criterion	7.259233
Log likelihood	-119.8806	Hannan-Quinn criter.	7.200066
F-statistic	6.296463	Durbin-Watson stat	1.954228
Prob(F-statistic)	0.017355		

Null Hypothesis: SVTR has a unit root
Exogenous: Constant
Lag Length: 8 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		4.214462	1.0000
Test critical values:	1% level	-3.711457	
	5% level	-2.981038	
	10% level	-2.629906	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(SVTR)
Method: Least Squares
Date: 03/19/17 Time: 10:58
Sample (adjusted): 1990 2015
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SVTR(-1)	1.953534	0.463531	4.214462	0.0007
D(SVTR(-1))	-2.055293	0.464585	-4.423932	0.0004
D(SVTR(-2))	-2.527840	0.459210	-5.504757	0.0000
D(SVTR(-3))	-2.141486	0.439647	-4.870916	0.0002
D(SVTR(-4))	-2.507176	0.476324	-5.263589	0.0001
D(SVTR(-5))	-2.719566	0.527260	-5.157920	0.0001
D(SVTR(-6))	-2.954490	0.542387	-5.447198	0.0001
D(SVTR(-7))	-3.109986	0.577768	-5.382762	0.0001
D(SVTR(-8))	-3.790367	0.664520	-5.703917	0.0000
C	-0.092245	0.388600	-0.237377	0.8154

R-squared	0.770531	Mean dependent var	0.026538
Adjusted R-squared	0.641455	S.D. dependent var	2.053403
S.E. of regression	1.229550	Akaike info criterion	3.534897

Sum squared resid	24.18870	Schwarz criterion	4.018780
Log likelihood	-35.95366	Hannan-Quinn criter.	3.674238
F-statistic	5.969574	Durbin-Watson stat	2.108647
Prob(F-statistic)	0.001013		

Null Hypothesis: TUNR has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.591197	0.1046
Test critical values:	1% level	-3.639407	
	5% level	-2.951125	
	10% level	-2.614300	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(TUNR)
Method: Least Squares
Date: 03/19/17 Time: 10:59
Sample (adjusted): 1982 2015
Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TUNR(-1)	-0.346356	0.133667	-2.591197	0.0143
C	2.636347	1.303333	2.022774	0.0515

R-squared	0.173432	Mean dependent var	0.060882
Adjusted R-squared	0.147602	S.D. dependent var	5.324591
S.E. of regression	4.915951	Akaike info criterion	6.079870
Sum squared resid	773.3302	Schwarz criterion	6.169656
Log likelihood	-101.3578	Hannan-Quinn criter.	6.110489
F-statistic	6.714301	Durbin-Watson stat	1.984660
Prob(F-statistic)	0.014288		

ADF Nigeria Test Result at Level: Trendand Intercept

Null Hypothesis: GDPGR has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.271871	0.0007
Test critical values:	1% level	-4.252879	
	5% level	-3.548490	
	10% level	-3.207094	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GDPGR)
Method: Least Squares
Date: 03/19/17 Time: 11:01
Sample (adjusted): 1982 2015
Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDPGR(-1)	-0.917610	0.174058	-5.271871	0.0000
C	-0.585811	2.439730	-0.240113	0.8118

@TREND("1981")	0.254151	0.136077	1.867691	0.0713

R-squared	0.478396	Mean dependent var	0.465588
Adjusted R-squared	0.444744	S.D. dependent var	9.125475
S.E. of regression	6.799891	Akaike info criterion	6.755788
Sum squared resid	1433.394	Schwarz criterion	6.890466
Log likelihood	-111.8484	Hannan-Quinn criter.	6.801717
F-statistic	14.21604	Durbin-Watson stat	1.957996
Prob(F-statistic)	0.000042		

Null Hypothesis: MKTCR has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.547604	0.3050
Test critical values:	1% level	-4.252879	
	5% level	-3.548490	
	10% level	-3.207094	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(MKTCR)
Method: Least Squares
Date: 03/19/17 Time: 11:02
Sample (adjusted): 1982 2015
Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MKTCR(-1)	-0.363388	0.142639	-2.547604	0.0160
C	3.211394	3.092614	1.038407	0.3071
@TREND("1981")	0.114230	0.164955	0.692490	0.4938

R-squared	0.177143	Mean dependent var	0.149706
Adjusted R-squared	0.124055	S.D. dependent var	9.131213
S.E. of regression	8.546079	Akaike info criterion	7.212919
Sum squared resid	2264.099	Schwarz criterion	7.347598
Log likelihood	-119.6196	Hannan-Quinn criter.	7.258849
F-statistic	3.336799	Durbin-Watson stat	1.904606
Prob(F-statistic)	0.048700		

Null Hypothesis: SVTR has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 8 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		1.303134	0.9999
Test critical values:	1% level	-4.356068	
	5% level	-3.595026	
	10% level	-3.233456	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(SVTR)
Method: Least Squares
Date: 03/19/17 Time: 11:02
Sample (adjusted): 1990 2015

Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SVTR(-1)	0.949709	0.728788	1.303134	0.2122
D(SVTR(-1))	-1.192938	0.665568	-1.792361	0.0933
D(SVTR(-2))	-1.687908	0.652447	-2.587041	0.0206
D(SVTR(-3))	-1.403286	0.596567	-2.352272	0.0327
D(SVTR(-4))	-1.801030	0.608441	-2.960076	0.0097
D(SVTR(-5))	-2.067433	0.625290	-3.306359	0.0048
D(SVTR(-6))	-2.376399	0.612114	-3.882283	0.0015
D(SVTR(-7))	-2.611591	0.617293	-4.230716	0.0007
D(SVTR(-8))	-3.362183	0.674607	-4.983917	0.0002
C	-2.025322	1.180894	-1.715075	0.1069
@TREND("1981")	0.143109	0.083101	1.722106	0.1056

R-squared	0.808410	Mean dependent var	0.026538
Adjusted R-squared	0.680684	S.D. dependent var	2.053403
S.E. of regression	1.160339	Akaike info criterion	3.431409
Sum squared resid	20.19579	Schwarz criterion	3.963680
Log likelihood	-33.60831	Hannan-Quinn criter.	3.584684
F-statistic	6.329224	Durbin-Watson stat	2.340895
Prob(F-statistic)	0.000806		

Null Hypothesis: TUNR has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.033660	0.1383
Test critical values:	1% level	-4.252879	
	5% level	-3.548490	
	10% level	-3.207094	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(TUNR)
Method: Least Squares
Date: 03/19/17 Time: 11:03
Sample (adjusted): 1982 2015
Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TUNR(-1)	-0.460731	0.151873	-3.033660	0.0049
C	0.934080	1.712887	0.545325	0.5894
@TREND("1981")	0.145871	0.097640	1.493977	0.1453

R-squared	0.228947	Mean dependent var	0.060882
Adjusted R-squared	0.179202	S.D. dependent var	5.324591
S.E. of regression	4.823969	Akaike info criterion	6.069168
Sum squared resid	721.3909	Schwarz criterion	6.203847
Log likelihood	-100.1759	Hannan-Quinn criter.	6.115098
F-statistic	4.602381	Durbin-Watson stat	1.901313
Prob(F-statistic)	0.017775		

ADF Nigeria Test Result at First Difference: Intercept Only

Null Hypothesis: D(GDPGR) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-8.688280	0.0000
Test critical values:	1% level	-3.646342	
	5% level	-2.954021	
	10% level	-2.615817	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GDPGR,2)
Method: Least Squares
Date: 03/19/17 Time: 11:05
Sample (adjusted): 1983 2015
Included observations: 33 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDPGR(-1))	-1.395090	0.160571	-8.688280	0.0000
C	0.346380	1.463781	0.236634	0.8145

R-squared	0.708883	Mean dependent var	-0.475455
Adjusted R-squared	0.699492	S.D. dependent var	15.30721
S.E. of regression	8.391204	Akaike info criterion	7.150937
Sum squared resid	2182.781	Schwarz criterion	7.241634
Log likelihood	-115.9905	Hannan-Quinn criter.	7.181454
F-statistic	75.48621	Durbin-Watson stat	2.283834
Prob(F-statistic)	0.000000		

Null Hypothesis: D(MKTCR) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.327757	0.0000
Test critical values:	1% level	-3.646342	
	5% level	-2.954021	
	10% level	-2.615817	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(MKTCR,2)
Method: Least Squares
Date: 03/19/17 Time: 11:12
Sample (adjusted): 1983 2015
Included observations: 33 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MKTCR(-1))	-1.127370	0.178163	-6.327757	0.0000
C	0.187466	1.626891	0.115230	0.9090

R-squared	0.563629	Mean dependent var	-0.012727
Adjusted R-squared	0.549553	S.D. dependent var	13.92231
S.E. of regression	9.344012	Akaike info criterion	7.366040
Sum squared resid	2706.627	Schwarz criterion	7.456738
Log likelihood	-119.5397	Hannan-Quinn criter.	7.396557
F-statistic	40.04051	Durbin-Watson stat	1.996860
Prob(F-statistic)	0.000000		

Null Hypothesis: D(SVTR) has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.593785	0.0001
Test critical values:	1% level	-3.653730	
	5% level	-2.957110	
	10% level	-2.617434	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(SVTR,2)
Method: Least Squares
Date: 03/19/17 Time: 11:13
Sample (adjusted): 1984 2015
Included observations: 32 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(SVTR(-1))	-1.304200	0.233152	-5.593785	0.0000
D(SVTR(-1),2)	0.396059	0.170588	2.321723	0.0275
C	0.024376	0.309045	0.078875	0.9377

R-squared	0.550605	Mean dependent var	-0.005937
Adjusted R-squared	0.519612	S.D. dependent var	2.521881
S.E. of regression	1.747916	Akaike info criterion	4.043785
Sum squared resid	88.60106	Schwarz criterion	4.181198
Log likelihood	-61.70056	Hannan-Quinn criter.	4.089333
F-statistic	17.76561	Durbin-Watson stat	2.072048
Prob(F-statistic)	0.000009		

Null Hypothesis: D(TUNR) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.595290	0.0000
Test critical values:	1% level	-3.646342	
	5% level	-2.954021	
	10% level	-2.615817	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(TUNR,2)
Method: Least Squares
Date: 03/19/17 Time: 11:14
Sample (adjusted): 1983 2015
Included observations: 33 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(TUNR(-1))	-1.165854	0.176771	-6.595290	0.0000
C	0.127727	0.941295	0.135692	0.8929

R-squared	0.583881	Mean dependent var	0.054242
Adjusted R-squared	0.570457	S.D. dependent var	8.249910
S.E. of regression	5.406950	Akaike info criterion	6.271939
Sum squared resid	906.2883	Schwarz criterion	6.362637

Log likelihood	-101.4870	Hannan-Quinn criter.	6.302456
F-statistic	43.49785	Durbin-Watson stat	2.065974
Prob(F-statistic)	0.000000		

ADF Nigeria Test Result at First Difference: Trendand Intercept

Null Hypothesis: D(GDPGR) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-8.583421	0.0000
Test critical values:	1% level	-4.262735	
	5% level	-3.552973	
	10% level	-3.209642	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GDPGR,2)
Method: Least Squares
Date: 03/19/17 Time: 11:15
Sample (adjusted): 1983 2015
Included observations: 33 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDPGR(-1))	-1.401323	0.163259	-8.583421	0.0000
C	1.617343	3.182318	0.508228	0.6150
@TREND("1981")	-0.070405	0.155974	-0.451389	0.6550

R-squared	0.710846	Mean dependent var	-0.475455
Adjusted R-squared	0.691569	S.D. dependent var	15.30721
S.E. of regression	8.501091	Akaike info criterion	7.204774
Sum squared resid	2168.056	Schwarz criterion	7.340820
Log likelihood	-115.8788	Hannan-Quinn criter.	7.250549
F-statistic	36.87553	Durbin-Watson stat	2.291331
Prob(F-statistic)	0.000000		

Null Hypothesis: D(MKTCR) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.265128	0.0001
Test critical values:	1% level	-4.262735	
	5% level	-3.552973	
	10% level	-3.209642	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(MKTCR,2)
Method: Least Squares
Date: 03/19/17 Time: 11:16
Sample (adjusted): 1983 2015
Included observations: 33 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MKTCR(-1))	-1.133103	0.180859	-6.265128	0.0000
C	1.653928	3.531523	0.468333	0.6429

@TREND("1981")	-0.081414	0.173410	-0.469485	0.6421

R-squared	0.566812	Mean dependent var	-0.012727
Adjusted R-squared	0.537933	S.D. dependent var	13.92231
S.E. of regression	9.463767	Akaike info criterion	7.419326
Sum squared resid	2686.886	Schwarz criterion	7.555372
Log likelihood	-119.4189	Hannan-Quinn criter.	7.465101
F-statistic	19.62700	Durbin-Watson stat	1.999915
Prob(F-statistic)	0.000004		

Null Hypothesis: D(SVTR) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 7 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.562387	0.0000
Test critical values:	1% level	-4.356068	
	5% level	-3.595026	
	10% level	-3.233456	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(SVTR,2)
Method: Least Squares
Date: 03/19/17 Time: 11:17
Sample (adjusted): 1990 2015
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(SVTR(-1))	-11.44250	1.513080	-7.562387	0.0000
D(SVTR(-1),2)	10.09817	1.445548	6.985702	0.0000
D(SVTR(-2),2)	9.241182	1.376221	6.714897	0.0000
D(SVTR(-3),2)	8.587052	1.282205	6.697099	0.0000
D(SVTR(-4),2)	7.541179	1.143344	6.595721	0.0000
D(SVTR(-5),2)	6.229586	0.941270	6.618275	0.0000
D(SVTR(-6),2)	4.572978	0.699875	6.533989	0.0000
D(SVTR(-7),2)	2.654190	0.408530	6.496922	0.0000
C	-3.016694	0.922686	-3.269468	0.0048
@TREND("1981")	0.229724	0.050956	4.508260	0.0004

R-squared	0.885755	Mean dependent var	0.004231
Adjusted R-squared	0.821492	S.D. dependent var	2.805626
S.E. of regression	1.185384	Akaike info criterion	3.461734
Sum squared resid	22.48217	Schwarz criterion	3.945617
Log likelihood	-35.00254	Hannan-Quinn criter.	3.601075
F-statistic	13.78327	Durbin-Watson stat	2.199579
Prob(F-statistic)	0.000006		

Null Hypothesis: D(TUNR) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.491194	0.0000
Test critical values:	1% level	-4.262735	
	5% level	-3.552973	
	10% level	-3.209642	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(TUNR,2)
Method: Least Squares
Date: 03/19/17 Time: 11:18
Sample (adjusted): 1983 2015
Included observations: 33 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(TUNR(-1))	-1.166014	0.179630	-6.491194	0.0000
C	0.395872	2.045539	0.193530	0.8478
@TREND("1981")	-0.014896	0.100448	-0.148300	0.8831

R-squared	0.584185	Mean dependent var	0.054242
Adjusted R-squared	0.556464	S.D. dependent var	8.249910
S.E. of regression	5.494313	Akaike info criterion	6.331812
Sum squared resid	905.6244	Schwarz criterion	6.467858
Log likelihood	-101.4749	Hannan-Quinn criter.	6.377588
F-statistic	21.07377	Durbin-Watson stat	2.067154
Prob(F-statistic)	0.000002		

ADF South Africa Test Result at Level: Intercept Only

Null Hypothesis: GDPGR has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.376566	0.0015
Test critical values:	1% level	-3.639407	
	5% level	-2.951125	
	10% level	-2.614300	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GDPGR)
Method: Least Squares
Date: 03/19/17 Time: 11:25
Sample (adjusted): 1982 2015
Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDPGR(-1)	-0.721582	0.164874	-4.376566	0.0001
C	1.539589	0.527501	2.918646	0.0064

R-squared	0.374442	Mean dependent var	-0.119412
Adjusted R-squared	0.354893	S.D. dependent var	2.663139
S.E. of regression	2.138994	Akaike info criterion	4.415571
Sum squared resid	146.4095	Schwarz criterion	4.505357
Log likelihood	-73.06471	Hannan-Quinn criter.	4.446190
F-statistic	19.15433	Durbin-Watson stat	1.709581
Prob(F-statistic)	0.000120		

Null Hypothesis: MKTCR has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

	t-Statistic	Prob.*

Augmented Dickey-Fuller test statistic		-2.095326	0.2477
Test critical values:	1% level	-3.639407	
	5% level	-2.951125	
	10% level	-2.614300	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(MKTCR)
Method: Least Squares
Date: 03/19/17 Time: 11:32
Sample (adjusted): 1982 2015
Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MKTCR(-1)	-0.231596	0.110530	-2.095326	0.0441
C	42.60210	19.36185	2.200312	0.0351

R-squared	0.120647	Mean dependent var	4.345294
Adjusted R-squared	0.093167	S.D. dependent var	39.45551
S.E. of regression	37.57261	Akaike info criterion	10.14745
Sum squared resid	45174.42	Schwarz criterion	10.23724
Log likelihood	-170.5066	Hannan-Quinn criter.	10.17807
F-statistic	4.390391	Durbin-Watson stat	2.416117
Prob(F-statistic)	0.044142		

Null Hypothesis: SVTR has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-0.726439	0.8266
Test critical values:	1% level	-3.639407	
	5% level	-2.951125	
	10% level	-2.614300	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(SVTR)
Method: Least Squares
Date: 03/19/17 Time: 11:33
Sample (adjusted): 1982 2015
Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SVTR(-1)	-0.045051	0.062016	-0.726439	0.4729
C	3.534548	2.555738	1.382985	0.1762

R-squared	0.016223	Mean dependent var	2.120000
Adjusted R-squared	-0.014520	S.D. dependent var	9.582745
S.E. of regression	9.652062	Akaike info criterion	7.429243
Sum squared resid	2981.194	Schwarz criterion	7.519029
Log likelihood	-124.2971	Hannan-Quinn criter.	7.459862
F-statistic	0.527713	Durbin-Watson stat	1.974271
Prob(F-statistic)	0.472850		

Null Hypothesis: TUNR has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.261758	0.6357
Test critical values:	1% level	-3.639407	
	5% level	-2.951125	
	10% level	-2.614300	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(TUNR)
Method: Least Squares
Date: 03/19/17 Time: 11:34
Sample (adjusted): 1982 2015
Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TUNR(-1)	-0.099062	0.078511	-1.261758	0.2162
C	2.465488	1.587342	1.553217	0.1302

R-squared	0.047393	Mean dependent var	0.832647
Adjusted R-squared	0.017624	S.D. dependent var	5.407782
S.E. of regression	5.359917	Akaike info criterion	6.252796
Sum squared resid	919.3186	Schwarz criterion	6.342582
Log likelihood	-104.2975	Hannan-Quinn criter.	6.283416
F-statistic	1.592033	Durbin-Watson stat	2.211533
Prob(F-statistic)	0.216156		

ADF South Africa Test Result at Level: Trendand Intercept

Null Hypothesis: GDPGR has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.798369	0.0026
Test critical values:	1% level	-4.252879	
	5% level	-3.548490	
	10% level	-3.207094	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GDPGR)
Method: Least Squares
Date: 03/19/17 Time: 11:35
Sample (adjusted): 1982 2015
Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDPGR(-1)	-0.803680	0.167490	-4.798369	0.0000
C	0.604941	0.754227	0.802068	0.4286
@TREND("1981")	0.064194	0.037985	1.690012	0.1011

R-squared	0.427215	Mean dependent var	-0.119412
Adjusted R-squared	0.390261	S.D. dependent var	2.663139
S.E. of regression	2.079533	Akaike info criterion	4.386261
Sum squared resid	134.0582	Schwarz criterion	4.520940
Log likelihood	-71.56644	Hannan-Quinn criter.	4.432191
F-statistic	11.56075	Durbin-Watson stat	1.730456

Prob(F-statistic)	0.000177

Null Hypothesis: MKTCR has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.714965	0.0032
Test critical values:	1% level	-4.252879	
	5% level	-3.548490	
	10% level	-3.207094	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(MKTCR)
Method: Least Squares
Date: 03/19/17 Time: 11:36
Sample (adjusted): 1982 2015
Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MKTCR(-1)	-0.841105	0.178391	-4.714965	0.0000
C	69.48757	17.37417	3.999476	0.0004
@TREND("1981")	4.217039	1.060046	3.978168	0.0004

R-squared	0.417844	Mean dependent var	4.345294
Adjusted R-squared	0.380285	S.D. dependent var	39.45551
S.E. of regression	31.06016	Akaike info criterion	9.793826
Sum squared resid	29906.73	Schwarz criterion	9.928505
Log likelihood	-163.4950	Hannan-Quinn criter.	9.839755
F-statistic	11.12515	Durbin-Watson stat	1.955007
Prob(F-statistic)	0.000228		

Null Hypothesis: SVTR has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 3 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.847648	0.0271
Test critical values:	1% level	-4.284580	
	5% level	-3.562882	
	10% level	-3.215267	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(SVTR)
Method: Least Squares
Date: 03/19/17 Time: 11:37
Sample (adjusted): 1985 2015
Included observations: 31 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SVTR(-1)	-0.769460	0.199982	-3.847648	0.0007
D(SVTR(-1))	0.357469	0.186252	1.919283	0.0664
D(SVTR(-2))	0.370699	0.186137	1.991543	0.0575
D(SVTR(-3))	0.332634	0.185639	1.791829	0.0853
C	-12.63008	5.240946	-2.409887	0.0236

@TREND("1981")	2.060816	0.553842	3.720948	0.0010

R-squared	0.373725	Mean dependent var	2.330000
Adjusted R-squared	0.248469	S.D. dependent var	10.01689
S.E. of regression	8.683727	Akaike info criterion	7.332764
Sum squared resid	1885.178	Schwarz criterion	7.610310
Log likelihood	-107.6578	Hannan-Quinn criter.	7.423237
F-statistic	2.983707	Durbin-Watson stat	1.971183
Prob(F-statistic)	0.030194		

Null Hypothesis: TUNR has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.573558	0.2938
Test critical values:	1% level	-4.252879	
	5% level	-3.548490	
	10% level	-3.207094	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(TUNR)
Method: Least Squares
Date: 03/19/17 Time: 11:38
Sample (adjusted): 1982 2015
Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TUNR(-1)	-0.349001	0.135610	-2.573558	0.0151
C	0.349839	1.781193	0.196407	0.8456
@TREND("1981")	0.356307	0.161837	2.201641	0.0353

R-squared	0.176204	Mean dependent var	0.832647
Adjusted R-squared	0.123055	S.D. dependent var	5.407782
S.E. of regression	5.064135	Akaike info criterion	6.166341
Sum squared resid	795.0093	Schwarz criterion	6.301020
Log likelihood	-101.8278	Hannan-Quinn criter.	6.212270
F-statistic	3.315329	Durbin-Watson stat	1.989744
Prob(F-statistic)	0.049569		

ADF South Africa Test Result at First Difference: Intercept Only

Null Hypothesis: D(GDPGR) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.647935	0.0000
Test critical values:	1% level	-3.646342	
	5% level	-2.954021	
	10% level	-2.615817	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GDPGR,2)
Method: Least Squares
Date: 03/19/17 Time: 11:45

Sample (adjusted): 1983 2015
Included observations: 33 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDPGR(-1))	-1.233599	0.161298	-7.647935	0.0000
C	0.024505	0.429905	0.057002	0.9549

R-squared	0.653596	Mean dependent var	0.163939
Adjusted R-squared	0.642422	S.D. dependent var	4.126223
S.E. of regression	2.467393	Akaike info criterion	4.702893
Sum squared resid	188.7288	Schwarz criterion	4.793590
Log likelihood	-75.59773	Hannan-Quinn criter.	4.733410
F-statistic	58.49091	Durbin-Watson stat	2.316476
Prob(F-statistic)	0.000000		

Null Hypothesis: D(MKTCR) has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.021976	0.0000
Test critical values:	1% level	-3.653730	
	5% level	-2.957110	
	10% level	-2.617434	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(MKTCR,2)
Method: Least Squares
Date: 03/19/17 Time: 11:47
Sample (adjusted): 1984 2015
Included observations: 32 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MKTCR(-1))	-1.968318	0.280308	-7.021976	0.0000
D(MKTCR(-1),2)	0.439971	0.169622	2.593832	0.0147
C	9.429820	6.415932	1.469751	0.1524

R-squared	0.738078	Mean dependent var	-0.965625
Adjusted R-squared	0.720014	S.D. dependent var	66.72997
S.E. of regression	35.30930	Akaike info criterion	10.05523
Sum squared resid	36155.65	Schwarz criterion	10.19264
Log likelihood	-157.8837	Hannan-Quinn criter.	10.10078
F-statistic	40.85991	Durbin-Watson stat	2.006407
Prob(F-statistic)	0.000000		

Null Hypothesis: D(SVTR) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.658255	0.0000
Test critical values:	1% level	-3.646342	
	5% level	-2.954021	
	10% level	-2.615817	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(SVTR,2)
Method: Least Squares
Date: 03/19/17 Time: 11:48
Sample (adjusted): 1983 2015
Included observations: 33 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(SVTR(-1))	-1.016800	0.179702	-5.658255	0.0000
C	2.190192	1.759449	1.244817	0.2225

R-squared	0.508060	Mean dependent var	0.106061
Adjusted R-squared	0.492191	S.D. dependent var	13.86922
S.E. of regression	9.883301	Akaike info criterion	7.478262
Sum squared resid	3028.069	Schwarz criterion	7.568959
Log likelihood	-121.3913	Hannan-Quinn criter.	7.508779
F-statistic	32.01585	Durbin-Watson stat	1.998646
Prob(F-statistic)	0.000003		

Null Hypothesis: D(TUNR) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.587018	0.0000
Test critical values:	1% level	-3.646342	
	5% level	-2.954021	
	10% level	-2.615817	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(TUNR,2)
Method: Least Squares
Date: 03/19/17 Time: 11:49
Sample (adjusted): 1983 2015
Included observations: 33 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(TUNR(-1))	-1.177708	0.178792	-6.587018	0.0000
C	0.985366	0.963629	1.022557	0.3144

R-squared	0.583271	Mean dependent var	0.170606
Adjusted R-squared	0.569828	S.D. dependent var	8.370244
S.E. of regression	5.489835	Akaike info criterion	6.302365
Sum squared resid	934.2870	Schwarz criterion	6.393063
Log likelihood	-101.9890	Hannan-Quinn criter.	6.332882
F-statistic	43.38881	Durbin-Watson stat	1.896192
Prob(F-statistic)	0.000000		

ADF South Africa Test Result at First Difference: Trendand Intercept

Null Hypothesis: D(GDPGR) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.513326	0.0000
Test critical values:	1% level	-4.262735	

5% level	-3.552973	
10% level	-3.209642	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GDPGR,2)
Method: Least Squares
Date: 03/19/17 Time: 11:50
Sample (adjusted): 1983 2015
Included observations: 33 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDPGR(-1))	-1.230748	0.163809	-7.513326	0.0000
C	0.320142	0.933593	0.342914	0.7341
@TREND("1981")	-0.016406	0.045810	-0.358135	0.7227

R-squared	0.655071	Mean dependent var	0.163939
Adjusted R-squared	0.632076	S.D. dependent var	4.126223
S.E. of regression	2.502834	Akaike info criterion	4.759233
Sum squared resid	187.9254	Schwarz criterion	4.895279
Log likelihood	-75.52734	Hannan-Quinn criter.	4.805008
F-statistic	28.48719	Durbin-Watson stat	2.330782
Prob(F-statistic)	0.000000		

Null Hypothesis: D(MKTCR) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.893956	0.0000
Test critical values:	1% level	-4.273277	
	5% level	-3.557759	
	10% level	-3.212361	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(MKTCR,2)
Method: Least Squares
Date: 03/19/17 Time: 11:51
Sample (adjusted): 1984 2015
Included observations: 32 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MKTCR(-1))	-1.969714	0.285716	-6.893956	0.0000
D(MKTCR(-1),2)	0.440602	0.172766	2.550288	0.0165
C	8.364710	14.24467	0.587217	0.5618
@TREND("1981")	0.057973	0.689096	0.084129	0.9336

R-squared	0.738144	Mean dependent var	-0.965625
Adjusted R-squared	0.710088	S.D. dependent var	66.72997
S.E. of regression	35.92975	Akaike info criterion	10.11748
Sum squared resid	36146.51	Schwarz criterion	10.30069
Log likelihood	-157.8796	Hannan-Quinn criter.	10.17821
F-statistic	26.30964	Durbin-Watson stat	2.005474
Prob(F-statistic)	0.000000		

Null Hypothesis: D(SVTR) has a unit root
Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.586386	0.0003
Test critical values:	1% level	-4.262735	
	5% level	-3.552973	
	10% level	-3.209642	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(SVTR,2)
Method: Least Squares
Date: 03/19/17 Time: 11:52
Sample (adjusted): 1983 2015
Included observations: 33 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(SVTR(-1))	-1.020047	0.182595	-5.586386	0.0000
C	1.095264	3.738504	0.292969	0.7716
@TREND("1981")	0.061199	0.183594	0.333340	0.7412

R-squared	0.509876	Mean dependent var	0.106061
Adjusted R-squared	0.477201	S.D. dependent var	13.86922
S.E. of regression	10.02812	Akaike info criterion	7.535171
Sum squared resid	3016.894	Schwarz criterion	7.671217
Log likelihood	-121.3303	Hannan-Quinn criter.	7.580946
F-statistic	15.60448	Durbin-Watson stat	1.999424
Prob(F-statistic)	0.000023		

Null Hypothesis: D(TUNR) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.476693	0.0000
Test critical values:	1% level	-4.262735	
	5% level	-3.552973	
	10% level	-3.209642	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(TUNR,2)
Method: Least Squares
Date: 03/19/17 Time: 11:53
Sample (adjusted): 1983 2015
Included observations: 33 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(TUNR(-1))	-1.177733	0.181842	-6.476693	0.0000
C	0.993118	2.085743	0.476146	0.6374
@TREND("1981")	-0.000430	0.102076	-0.004210	0.9967

R-squared	0.583271	Mean dependent var	0.170606
Adjusted R-squared	0.555489	S.D. dependent var	8.370244
S.E. of regression	5.580581	Akaike info criterion	6.362971
Sum squared resid	934.2864	Schwarz criterion	6.499017
Log likelihood	-101.9890	Hannan-Quinn criter.	6.408746

F-statistic	20.99461	Durbin-Watson stat	1.896139
Prob(F-statistic)	0.000002		

Appendix V: Long Run Relationship

Long Run Relationship Nigeria
Model 1

Date: 03/19/17 Time: 13:07
Sample (adjusted): 1983 2015
Included observations: 33 after adjustments
Trend assumption: Linear deterministic trend
Series: GDPGR MKTCR
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.283793	16.73107	15.49471	0.0324
At most 1 *	0.159044	5.716127	3.841466	0.0168

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.283793	11.01495	14.26460	0.1535
At most 1 *	0.159044	5.716127	3.841466	0.0168

Max-eigenvalue test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

GDPGR	MKTCR
-0.175387	0.020779
0.011273	-0.097052

Unrestricted Adjustment Coefficients (alpha):

D(GDPGR)	4.215616	0.748472
D(MKTCR)	-0.559216	3.578923

1 Cointegrating Equation(s): Log likelihood -229.7212

Normalized cointegrating coefficients (standard error in parentheses)

GDPGR	MKTCR
1.000000	-0.118473
	(0.16066)

Adjustment coefficients (standard error in parentheses)

D(GDPGR)	-0.739364
	(0.22651)
D(MKTCR)	0.098079
	(0.29370)

Model 2

Date: 03/19/17 Time: 13:08
Sample (adjusted): 1983 2015
Included observations: 33 after adjustments
Trend assumption: Linear deterministic trend
Series: GDPGR SVTR
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.347453	21.92032	15.49471	0.0047
At most 1 *	0.211308	7.833527	3.841466	0.0051

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.347453	14.08679	14.26460	0.0533
At most 1 *	0.211308	7.833527	3.841466	0.0051

Max-eigenvalue test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

GDPGR	SVTR
-0.157925	0.393315
0.083093	0.368888

Unrestricted Adjustment Coefficients (alpha):

D(GDPGR)	3.734066	-2.344322
D(SVTR)	-0.639551	-0.650693

1 Cointegrating Equation(s): Log likelihood -174.8544

Normalized cointegrating coefficients (standard error in parentheses)

GDPGR	SVTR
1.000000	-2.490527
	(0.82118)

Adjustment coefficients (standard error in parentheses)

D(GDPGR)	-0.589701
	(0.21187)

D(SVTR)	0.101001
	(0.04882)

Model 3

Date: 03/19/17 Time: 13:09
Sample (adjusted): 1983 2015
Included observations: 33 after adjustments
Trend assumption: Linear deterministic trend
Series: GDPGR TUNR
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.327287	18.23430	15.49471	0.0189
At most 1 *	0.144541	5.151876	3.841466	0.0232

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.327287	13.08242	14.26460	0.0762
At most 1 *	0.144541	5.151876	3.841466	0.0232

Max-eigenvalue test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

GDPGR	TUNR
-0.174364	0.096524
-0.039179	-0.154455

Unrestricted Adjustment Coefficients (alpha):

D(GDPGR)	4.383583	1.025042
D(TUNR)	-0.826747	1.915122

1 Cointegrating Equation(s): Log likelihood -210.8380

Normalized cointegrating coefficients (standard error in parentheses)

GDPGR	TUNR
1.000000	-0.553574
	(0.26240)

Adjustment coefficients (standard error in parentheses)

D(GDPGR)	-0.764341
	(0.22142)
D(TUNR)	0.144155
	(0.16756)

Long Run Relationship: South Africa

Model 1

Date: 03/19/17 Time: 13:19
Sample (adjusted): 1983 2015
Included observations: 33 after adjustments
Trend assumption: Linear deterministic trend
Series: GDPGR MKTCR
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.314620	14.40288	15.49471	0.0725
At most 1	0.056982	1.936104	3.841466	0.1641

Trace test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.314620	12.46678	14.26460	0.0943
At most 1	0.056982	1.936104	3.841466	0.1641

Max-eigenvalue test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

GDPGR	MKTCR
-0.630031	0.006996
0.069481	-0.019720

Unrestricted Adjustment Coefficients (alpha):

D(GDPGR)	1.195608	0.081469
D(MKTCR)	-2.775399	8.336290

1 Cointegrating Equation(s): Log likelihood -230.3862

Normalized cointegrating coefficients (standard error in parentheses)

GDPGR	MKTCR
1.000000	-0.011104
	(0.00819)

Adjustment coefficients (standard error in parentheses)

D(GDPGR)	-0.753270
	(0.21028)
D(MKTCR)	1.748588
	(4.11372)

Model 2

Date: 03/19/17 Time: 13:20

Sample (adjusted): 1983 2015
Included observations: 33 after adjustments
Trend assumption: Linear deterministic trend
Series: GDPGR SVTR
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.445628	20.54227	15.49471	0.0079
At most 1	0.032048	1.074908	3.841466	0.2998

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.445628	19.46737	14.26460	0.0069
At most 1	0.032048	1.074908	3.841466	0.2998

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

GDPGR	SVTR
-0.624870	0.016028
0.033156	-0.039434

Unrestricted Adjustment Coefficients (alpha):

D(GDPGR)	1.375974	0.214263
D(SVTR)	-3.072168	1.456660

1 Cointegrating Equation(s): Log likelihood -186.3379

Normalized cointegrating coefficients (standard error in parentheses)

GDPGR	SVTR
1.000000	-0.025650
	(0.01277)

Adjustment coefficients (standard error in parentheses)

D(GDPGR)	-0.859806
	(0.22583)
D(SVTR)	1.919707
	(1.02447)

Model 3

Date: 03/19/17 Time: 13:21
Sample (adjusted): 1983 2015
Included observations: 33 after adjustments
Trend assumption: Linear deterministic trend

Series: GDPGR TUNR
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.401562	18.42680	15.49471	0.0176
At most 1	0.043959	1.483510	3.841466	0.2232

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.401562	16.94329	14.26460	0.0184
At most 1	0.043959	1.483510	3.841466	0.2232

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

GDPGR	TUNR
-0.640292	0.048407
-0.040398	-0.084911

Unrestricted Adjustment Coefficients (alpha):

D(GDPGR)	1.190684	0.256978
D(TUNR)	-1.794452	0.944352

1 Cointegrating Equation(s): Log likelihood -166.9978

Normalized cointegrating coefficients (standard error in parentheses)

GDPGR	TUNR
1.000000	-0.075602
	(0.03108)

Adjustment coefficients (standard error in parentheses)

D(GDPGR)	-0.762385
	(0.22607)
D(TUNR)	1.148972
	(0.59551)

Appendix VI: Vector Error Correction Model

VECM: South Africa
Model 1

Vector Error Correction Estimates
Date: 03/19/17 Time: 13:58

Sample (adjusted): 1984 2015
Included observations: 32 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1
GDPGR(-1)	1.000000
MKTCR(-1)	-0.002610 (0.01018) [-0.25649]
C	-1.843979

Error Correction:	D(GDPGR)	D(MKTCR)
CointEq1	-0.669350 (0.23663) [-2.82869]	-0.973826 (4.50955) [-0.21595]
D(GDPGR(-1))	-0.031259 (0.20570) [-0.15196]	-1.328450 (3.92019) [-0.33887]
D(GDPGR(-2))	-0.015728 (0.16250) [-0.09679]	1.568106 (3.09683) [0.50636]
D(MKTCR(-1))	0.023004 (0.00969) [2.37496]	-0.496134 (0.18459) [-2.68771]
D(MKTCR(-2))	0.010159 (0.01034) [0.98249]	-0.364777 (0.19706) [-1.85111]
C	-0.076377 (0.35055) [-0.21788]	9.091878 (6.68060) [1.36094]
R-squared	0.515602	0.317158
Adj. R-squared	0.422449	0.185843
Sum sq. resids	96.44963	35029.39
S.E. equation	1.926033	36.70537
F-statistic	5.534977	2.415235
Log likelihood	-63.05859	-157.3773
Akaike AIC	4.316162	10.21108
Schwarz SC	4.590988	10.48591
Mean dependent	0.098438	4.304375
S.D. dependent	2.534360	40.67948

Determinant resid covariance (dof adj.)	4974.934
Determinant resid covariance	3284.233
Log likelihood	-220.3623
Akaike information criterion	14.64764
Schwarz criterion	15.28890

Model 2

Vector Error Correction Estimates
Date: 03/19/17 Time: 13:59
Sample (adjusted): 1984 2015

Included observations: 32 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1
GDPGR(-1)	1.000000
SVTR(-1)	-0.028844
	(0.01351)
	[-2.13424]
C	-1.329892

Error Correction:	D(GDPGR)	D(SVTR)
CointEq1	-0.761242	2.743371
	(0.32157)	(1.46842)
	[-2.36724]	[1.86825]
D(GDPGR(-1))	0.064936	-2.473077
	(0.24960)	(1.13976)
	[0.26016]	[-2.16981]
D(GDPGR(-2))	-0.025228	-0.578001
	(0.20075)	(0.91672)
	[-0.12567]	[-0.63051]
D(SVTR(-1))	0.023541	-0.052895
	(0.04079)	(0.18626)
	[0.57716]	[-0.28399]
D(SVTR(-2))	-0.036702	-0.047335
	(0.03941)	(0.17998)
	[-0.93118]	[-0.26300]
C	0.112726	2.501230
	(0.39235)	(1.79161)
	[0.28731]	[1.39608]
R-squared	0.411599	0.192908
Adj. R-squared	0.298445	0.037698
Sum sq. resids	117.1580	2442.927
S.E. equation	2.122752	9.693231
F-statistic	3.637506	1.242884
Log likelihood	-66.17063	-114.7695
Akaike AIC	4.510665	7.548093
Schwarz SC	4.785490	7.822919
Mean dependent	0.098438	2.200313
S.D. dependent	2.534360	9.881272

Determinant resid covariance (dof adj.)	400.4892
Determinant resid covariance	264.3855
Log likelihood	-180.0506
Akaike information criterion	12.12816
Schwarz criterion	12.76942

Model 3

Vector Error Correction Estimates
Date: 03/19/17 Time: 14:00
Sample (adjusted): 1984 2015
Included observations: 32 after adjustments

Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1
GDPGR(-1)	1.000000
TUNR(-1)	-0.094659 (0.03025) [-3.12970]
C	-0.649558

Error Correction:	D(GDPGR)	D(TUNR)
CointEq1	-0.522188 (0.30785) [-1.69624]	2.002551 (0.75227) [2.66202]
D(GDPGR(-1))	-0.080100 (0.25350) [-0.31597]	-1.012858 (0.61947) [-1.63505]
D(GDPGR(-2))	-0.150406 (0.18742) [-0.80251]	-0.710335 (0.45798) [-1.55101]
D(TUNR(-1))	-0.141989 (0.07024) [-2.02158]	-0.189142 (0.17163) [-1.10203]
D(TUNR(-2))	-0.031104 (0.07441) [-0.41801]	0.272276 (0.18183) [1.49741]
C	0.211751 (0.38062) [0.55633]	0.816605 (0.93010) [0.87798]
R-squared	0.421193	0.286165
Adj. R-squared	0.309884	0.148888
Sum sq. resids	115.2477	688.1779
S.E. equation	2.105375	5.144743
F-statistic	3.783994	2.084592
Log likelihood	-65.90760	-94.49902
Akaike AIC	4.494225	6.281189
Schwarz SC	4.769050	6.556014
Mean dependent	0.098438	0.864375
S.D. dependent	2.534360	5.576612

Determinant resid covariance (dof adj.)	110.4759
Determinant resid covariance	72.93137
Log likelihood	-159.4444
Akaike information criterion	10.84027
Schwarz criterion	11.48153

VECM: Nigeria

Model 1

Vector Error Correction Estimates
Date: 03/19/17 Time: 14:01
Sample (adjusted): 1984 2015

Included observations: 32 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1	
GDPGR(-1)	1.000000	
MKTCR(-1)	-0.591419	
	(0.16146)	
	[-3.66302]	
C	4.186086	
Error Correction:	D(GDPGR)	D(MKTCR)
CointEq1	-0.313138	0.748467
	(0.22099)	(0.20907)
	[-1.41697]	[3.57991]
D(GDPGR(-1))	-0.330825	-0.610939
	(0.23130)	(0.21882)
	[-1.43031]	[-2.79193]
D(GDPGR(-2))	-0.225630	-0.683571
	(0.18929)	(0.17908)
	[-1.19197]	[-3.81704]
D(MKTCR(-1))	-0.076710	0.136986
	(0.17168)	(0.16242)
	[-0.44682]	[0.84341]
D(MKTCR(-2))	-0.195282	0.191380
	(0.16390)	(0.15507)
	[-1.19144]	[1.23419]
C	0.526908	0.610462
	(1.44699)	(1.36896)
	[0.36414]	[0.44593]
R-squared	0.334183	0.438634
Adj. R-squared	0.206142	0.330679
Sum sq. resids	1725.543	1544.458
S.E. equation	8.146596	7.707283
F-statistic	2.609960	4.063112
Log likelihood	-109.2070	-107.4331
Akaike AIC	7.200438	7.089569
Schwarz SC	7.475263	7.364395
Mean dependent	0.242187	0.162813
S.D. dependent	9.143337	9.420717
Determinant resid covariance (dof adj.)		3817.922
Determinant resid covariance		2520.425
Log likelihood		-216.1270
Akaike information criterion		14.38294
Schwarz criterion		15.02420

Model 2

Vector Error Correction Estimates
Date: 03/19/17 Time: 14:02
Sample (adjusted): 1984 2015
Included observations: 32 after adjustments

Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1
GDPGR(-1)	1.000000
SVTR(-1)	-2.795213
	(0.62289)
	[-4.48752]
C	-0.547930

Error Correction:	D(GDPGR)	D(SVTR)
CointEq1	-0.509163	0.173255
	(0.25950)	(0.03947)
	[-1.96209]	[4.38959]
D(GDPGR(-1))	-0.215560	-0.144986
	(0.23874)	(0.03631)
	[-0.90292]	[-3.99286]
D(GDPGR(-2))	-0.184586	-0.153068
	(0.18658)	(0.02838)
	[-0.98929]	[-5.39366]
D(SVTR(-1))	-0.577093	0.338169
	(0.85100)	(0.12944)
	[-0.67813]	[2.61264]
D(SVTR(-2))	-0.471124	-0.148256
	(0.86134)	(0.13101)
	[-0.54697]	[-1.13166]
C	0.423962	0.134184
	(1.41773)	(0.21563)
	[0.29904]	[0.62228]
R-squared	0.360910	0.636912
Adj. R-squared	0.238008	0.567087
Sum sq. resids	1656.277	38.31605
S.E. equation	7.981414	1.213958
F-statistic	2.936572	9.121588
Log likelihood	-108.5515	-48.28816
Akaike AIC	7.159469	3.393010
Schwarz SC	7.434294	3.667835
Mean dependent	0.242187	0.015313
S.D. dependent	9.143337	1.845030

Determinant resid covariance (dof adj.)	92.75854
Determinant resid covariance	61.23513
Log likelihood	-156.6476
Akaike information criterion	10.66548
Schwarz criterion	11.30673

Model 3

Vector Error Correction Estimates
Date: 03/19/17 Time: 14:02
Sample (adjusted): 1984 2015
Included observations: 32 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1	
GDPGR(-1)	1.000000	
TUNR(-1)	-0.607745	
	(0.26262)	
	[-2.31419]	
C	0.228423	
Error Correction:	D(GDPGR)	D(TUNR)
CointEq1	-0.726587	0.318605
	(0.27538)	(0.19192)
	[-2.63853]	[1.66005]
D(GDPGR(-1))	-0.089561	-0.277447
	(0.23333)	(0.16262)
	[-0.38383]	[-1.70608]
D(GDPGR(-2))	-0.130508	-0.244155
	(0.17808)	(0.12412)
	[-0.73285]	[-1.96715]
D(TUNR(-1))	-0.308718	-0.075974
	(0.27152)	(0.18923)
	[-1.13702]	[-0.40148]
D(TUNR(-2))	-0.023025	-0.152629
	(0.26575)	(0.18521)
	[-0.08664]	[-0.82406]
C	0.380212	0.281088
	(1.33985)	(0.93381)
	[0.28377]	[0.30101]
R-squared	0.429906	0.224349
Adj. R-squared	0.320272	0.075186
Sum sq. resids	1477.467	717.6718
S.E. equation	7.538280	5.253833
F-statistic	3.921296	1.504049
Log likelihood	-106.7236	-95.17046
Akaike AIC	7.045226	6.323153
Schwarz SC	7.320051	6.597979
Mean dependent	0.242187	0.037187
S.D. dependent	9.143337	5.463224
Determinant resid covariance (dof adj.)		1522.155
Determinant resid covariance		1004.860
Log likelihood		-201.4137
Akaike information criterion		13.46336
Schwarz criterion		14.10462

Appendix VII: OLS Regression Result

OLS Regression Result: Nigeria

Model 1

GDPGR and MKTCR

Dependent Variable: GDPGR
Method: Least Squares
Date: 08/10/17 Time: 09:24w

Sample (adjusted): 1987 2015
Included observations: 29 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.681324	3.209665	0.523832	0.6059
MKTCR	0.063084	0.156614	0.402801	0.6912
MKTCR(-1)	0.026593	0.181459	0.146549	0.8849
MKTCR(-2)	-0.050570	0.181994	-0.277868	0.7838
MKTCR(-3)	0.134523	0.179317	0.750195	0.4615
MKTCR(-4)	-0.133412	0.183263	-0.727981	0.4747
MKTCR(-5)	-0.155055	0.183825	-0.843492	0.4085
MKTCR(-6)	0.357232	0.153738	2.323633	0.0303

R-squared	0.250305	Mean dependent var	5.180000
Adjusted R-squared	0.000407	S.D. dependent var	6.933875
S.E. of regression	6.932465	Akaike info criterion	6.939259
Sum squared resid	1009.240	Schwarz criterion	7.316444
Log likelihood	-92.61925	Hannan-Quinn criter.	7.057388
F-statistic	1.001628	Durbin-Watson stat	1.860526
Prob(F-statistic)	0.457549		

GDPGR and SVTR

Dependent Variable: GDPGR
Method: Least Squares
Date: 08/10/17 Time: 09:28
Sample (adjusted): 1992 2015
Included observations: 24 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.162928	2.100146	2.458366	0.0318
SVTR	2.411926	1.276535	1.889433	0.0855
SVTR(-1)	0.540369	1.934744	0.279298	0.7852
SVTR(-2)	3.410687	2.417909	1.410593	0.1860
SVTR(-3)	-3.546998	2.022778	-1.753527	0.1073
SVTR(-4)	2.179187	1.739765	1.252576	0.2363
SVTR(-5)	-1.703226	1.494532	-1.139639	0.2786
SVTR(-6)	3.441028	1.269500	2.710539	0.0203
SVTR(-7)	1.904273	1.232335	1.545256	0.1506
SVTR(-8)	2.597723	1.470525	1.766527	0.1050
SVTR(-9)	-5.649047	7.484441	-0.754772	0.4662
SVTR(-10)	1.436078	10.68443	0.134409	0.8955
SVTR(-11)	-23.67096	8.734368	-2.710095	0.0203

R-squared	0.581403	Mean dependent var	5.617083
Adjusted R-squared	0.124752	S.D. dependent var	6.558665
S.E. of regression	6.135938	Akaike info criterion	6.769378
Sum squared resid	414.1471	Schwarz criterion	7.407490
Log likelihood	-68.23253	Hannan-Quinn criter.	6.938669
F-statistic	1.273189	Durbin-Watson stat	2.749256
Prob(F-statistic)	0.348073		

Model 3

Dependent Variable: GDPGR
Method: Least Squares
Date: 03/20/17 Time: 20:28
Sample (adjusted): 1982 2015
Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.

C	1.700772	1.887991	0.900837	0.3746
TUNR	0.231436	0.195975	1.180945	0.2466
GDPGR(-1)	0.197498	0.161077	1.226111	0.2294

R-squared	0.107847	Mean dependent var	4.166765
Adjusted R-squared	0.050289	S.D. dependent var	7.199550
S.E. of regression	7.016187	Akaike info criterion	6.818414
Sum squared resid	1526.033	Schwarz criterion	6.953093
Log likelihood	-112.9130	Hannan-Quinn criter.	6.864343
F-statistic	1.873699	Durbin-Watson stat	2.059796
Prob(F-statistic)	0.170534		

South Africa

Model 1

Dependent Variable: GDPGR
Method: Least Squares
Date: 03/20/17 Time: 20:33
Sample (adjusted): 1982 2015
Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.075350	1.130740	0.066638	0.9473
MKTCR	0.009277	0.006367	1.457150	0.1551
GDPGR(-1)	0.231181	0.165265	1.398850	0.1718

R-squared	0.140679	Mean dependent var	2.179706
Adjusted R-squared	0.085239	S.D. dependent var	2.198184
S.E. of regression	2.102412	Akaike info criterion	4.408145
Sum squared resid	137.0243	Schwarz criterion	4.542824
Log likelihood	-71.93847	Hannan-Quinn criter.	4.454074
F-statistic	2.537505	Durbin-Watson stat	1.794128
Prob(F-statistic)	0.095369		

Model 2

Dependent Variable: GDPGR
Method: Least Squares
Date: 03/20/17 Time: 20:34
Sample (adjusted): 1982 2015
Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.014224	0.620908	1.633452	0.1125
SVTR	0.021298	0.013949	1.526909	0.1369
GDPGR(-1)	0.196415	0.170240	1.153751	0.2574

R-squared	0.146046	Mean dependent var	2.179706
Adjusted R-squared	0.090952	S.D. dependent var	2.198184
S.E. of regression	2.095837	Akaike info criterion	4.401880
Sum squared resid	136.1685	Schwarz criterion	4.536559
Log likelihood	-71.83196	Hannan-Quinn criter.	4.447810
F-statistic	2.650863	Durbin-Watson stat	1.686661
Prob(F-statistic)	0.086543		

Model 3

Dependent Variable: GDPGR
Method: Least Squares
Date: 03/20/17 Time: 20:35
Sample (adjusted): 1982 2015

Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.873939	0.667519	1.309235	0.2001
TUNR	0.051300	0.032654	1.571008	0.1263
GDPGR(-1)	0.181581	0.172599	1.052036	0.3009

R-squared	0.149532	Mean dependent var	2.179706
Adjusted R-squared	0.094663	S.D. dependent var	2.198184
S.E. of regression	2.091555	Akaike info criterion	4.397790
Sum squared resid	135.6127	Schwarz criterion	4.532469
Log likelihood	-71.76243	Hannan-Quinn criter.	4.443719
F-statistic	2.725257	Durbin-Watson stat	1.683222
Prob(F-statistic)	0.081227		

Appendix VIII: Granger Causality Test

Nigeria

Model 1

Pairwise Granger Causality Tests
Date: 03/20/17 Time: 20:29
Sample: 1981 2015
Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
MKTCR does not Granger Cause GDPGR	34	0.10359	0.7497
GDPGR does not Granger Cause MKTCR		0.43130	0.5162

Model 2

Pairwise Granger Causality Tests
Date: 03/20/17 Time: 20:30
Sample: 1981 2015
Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
SVTR does not Granger Cause GDPGR	34	0.88522	0.3540
GDPGR does not Granger Cause SVTR		0.47624	0.4953

Model 3

Pairwise Granger Causality Tests
Date: 03/20/17 Time: 20:31
Sample: 1981 2015
Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
TUNR does not Granger Cause GDPGR	34	0.95871	0.3351
GDPGR does not Granger Cause TUNR		0.23500	0.6312

South Africa

Model 1

Pairwise Granger Causality Tests
Date: 03/20/17 Time: 20:36
Sample: 1981 2015
Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
MKTCR does not Granger Cause GDPGR	34	5.00431	0.0326
GDPGR does not Granger Cause MKTCR		0.00794	0.9296

Model 2

Pairwise Granger Causality Tests
Date: 03/20/17 Time: 20:37
Sample: 1981 2015
Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
SVTR does not Granger Cause GDPGR	34	1.55649	0.2215
GDPGR does not Granger Cause SVTR		0.32515	0.5726

Model 3

Pairwise Granger Causality Tests
Date: 03/20/17 Time: 20:38
Sample: 1981 2015
Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
TUNR does not Granger Cause GDPGR	34	0.99059	0.3273
GDPGR does not Granger Cause TUNR		1.24312	0.2734

Appendix IX: ARDL Bound Test

Nigeria

Model 1

ARDL Bounds Test
Date: 05/27/17 Time: 17:26
Sample: 1982 2015
Included observations: 34
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	11.29971	1

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	4.04	4.78
5%	4.94	5.73
2.5%	5.77	6.68
1%	6.84	7.84

Test Equation:
Dependent Variable: D(GDPGR)
Method: Least Squares
Date: 05/27/17 Time: 17:26
Sample: 1982 2015
Included observations: 34

Variable	Coefficient	Std. Error	t-Statistic	Prob.

C	2.823029	1.959820	1.440453	0.1598
MKTCR(-1)	0.035830	0.111323	0.321860	0.7497
GDPGR(-1)	-0.771763	0.164671	-4.686685	0.0001

R-squared	0.421636	Mean dependent var	0.465588
Adjusted R-squared	0.384322	S.D. dependent var	9.125475
S.E. of regression	7.160319	Akaike info criterion	6.859083
Sum squared resid	1589.375	Schwarz criterion	6.993762
Log likelihood	-113.6044	Hannan-Quinn criter.	6.905013
F-statistic	11.29971	Durbin-Watson stat	2.048506
Prob(F-statistic)	0.000206		

Model 2

ARDL Bounds Test
Date: 05/27/17 Time: 17:28
Sample: 1982 2015
Included observations: 34
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	11.97319	1

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	4.04	4.78
5%	4.94	5.73
2.5%	5.77	6.68
1%	6.84	7.84

Test Equation:
Dependent Variable: D(GDPGR)
Method: Least Squares
Date: 05/27/17 Time: 17:28
Sample: 1982 2015
Included observations: 34

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.693834	1.482076	1.817609	0.0788
SVTR(-1)	0.552439	0.587163	0.940862	0.3540
GDPGR(-1)	-0.796778	0.163052	-4.886661	0.0000

R-squared	0.435814	Mean dependent var	0.465588
Adjusted R-squared	0.399414	S.D. dependent var	9.125475
S.E. of regression	7.072011	Akaike info criterion	6.834264
Sum squared resid	1550.414	Schwarz criterion	6.968943
Log likelihood	-113.1825	Hannan-Quinn criter.	6.880194
F-statistic	11.97319	Durbin-Watson stat	2.057107
Prob(F-statistic)	0.000140		

Model 3

ARDL Bounds Test
Date: 05/27/17 Time: 17:29
Sample: 1982 2015
Included observations: 34
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	12.03651	1

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	4.04	4.78
5%	4.94	5.73
2.5%	5.77	6.68
1%	6.84	7.84

Test Equation:
Dependent Variable: D(GDPGR)
Method: Least Squares
Date: 05/27/17 Time: 17:29
Sample: 1982 2015
Included observations: 34

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.979552	1.887555	1.048738	0.3024
TUNR(-1)	0.194209	0.198347	0.979139	0.3351
GDPGR(-1)	-0.799227	0.163109	-4.899959	0.0000

R-squared	0.437111	Mean dependent var	0.465588
Adjusted R-squared	0.400795	S.D. dependent var	9.125475
S.E. of regression	7.063875	Akaike info criterion	6.831962
Sum squared resid	1546.848	Schwarz criterion	6.966641
Log likelihood	-113.1434	Hannan-Quinn criter.	6.877891
F-statistic	12.03651	Durbin-Watson stat	2.090352
Prob(F-statistic)	0.000135		

South Africa
Model 1

ARDL Bounds Test
Date: 05/27/17 Time: 17:32
Sample: 1983 2015
Included observations: 33
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	6.704335	1

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	4.04	4.78
5%	4.94	5.73
2.5%	5.77	6.68
1%	6.84	7.84

Test Equation:
Dependent Variable: D(GDPGR)
Method: Least Squares
Date: 05/27/17 Time: 17:32

Sample: 1983 2015
Included observations: 33

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MKTCR)	0.000937	0.009687	0.096686	0.9237
D(MKTCR(-1))	0.017827	0.010568	1.686930	0.1027
C	0.367857	1.164260	0.315958	0.7544
MKTCR(-1)	0.005900	0.007247	0.814025	0.4225
GDPGR(-1)	-0.637486	0.177273	-3.596075	0.0012

R-squared	0.458010	Mean dependent var	0.050909
Adjusted R-squared	0.380583	S.D. dependent var	2.509344
S.E. of regression	1.974931	Akaike info criterion	4.337671
Sum squared resid	109.2099	Schwarz criterion	4.564415
Log likelihood	-66.57158	Hannan-Quinn criter.	4.413964
F-statistic	5.915362	Durbin-Watson stat	2.045526
Prob(F-statistic)	0.001399		

Model 2

ARDL Bounds Test
Date: 05/27/17 Time: 17:33
Sample: 1982 2015
Included observations: 34
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	10.52196	1

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	4.04	4.78
5%	4.94	5.73
2.5%	5.77	6.68
1%	6.84	7.84

Test Equation:
Dependent Variable: D(GDPGR)
Method: Least Squares
Date: 05/27/17 Time: 17:33
Sample: 1982 2015
Included observations: 34

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.127653	0.618485	1.823252	0.0779
SVTR(-1)	0.017822	0.014285	1.247593	0.2215
GDPGR(-1)	-0.785804	0.171373	-4.585347	0.0001

R-squared	0.404349	Mean dependent var	-0.119412
Adjusted R-squared	0.365920	S.D. dependent var	2.663139
S.E. of regression	2.120634	Akaike info criterion	4.425405
Sum squared resid	139.4098	Schwarz criterion	4.560084
Log likelihood	-72.23188	Hannan-Quinn criter.	4.471334
F-statistic	10.52196	Durbin-Watson stat	1.688603
Prob(F-statistic)	0.000325		

Model 3

ARDL Bounds Test
Date: 05/27/17 Time: 17:33
Sample: 1983 2015
Included observations: 33
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	7.122191	1

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	4.04	4.78
5%	4.94	5.73
2.5%	5.77	6.68
1%	6.84	7.84

Test Equation:
Dependent Variable: D(GDPGR)
Method: Least Squares
Date: 05/27/17 Time: 17:33
Sample: 1983 2015
Included observations: 33

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(TUNR)	0.068982	0.070627	0.976707	0.3371
D(TUNR(-1))	-0.103230	0.070158	-1.471389	0.1523
C	0.979049	0.669456	1.462455	0.1548
TUNR(-1)	0.035557	0.034488	1.031015	0.3114
GDPGR(-1)	-0.687246	0.183403	-3.747197	0.0008

R-squared	0.420904	Mean dependent var	0.050909
Adjusted R-squared	0.338176	S.D. dependent var	2.509344
S.E. of regression	2.041416	Akaike info criterion	4.403892
Sum squared resid	116.6867	Schwarz criterion	4.630636
Log likelihood	-67.66422	Hannan-Quinn criter.	4.480184
F-statistic	5.087801	Durbin-Watson stat	1.990677
Prob(F-statistic)	0.003288		

ARDL ECM Short and Long Run Estimates
Nigeria
Model 1
GDPGR and MKTCR

ARDL Cointegrating And Long Run Form
Dependent Variable: GDPGR
Selected Model: ARDL(4, 6)
Date: 08/09/17 Time: 14:08
Sample: 1981 2015
Included observations: 29

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDPGR(-1))	-0.007240	0.327576	-0.022102	0.9826
D(GDPGR(-2))	-0.020197	0.283039	-0.071357	0.9439

D(GDPGR(-3))	-0.166048	0.239156	-0.694308	0.4969
D(MKTCR)	0.122201	0.208586	0.585853	0.5657
D(MKTCR(-1))	-0.008648	0.207394	-0.041699	0.9672
D(MKTCR(-2))	-0.170158	0.193794	-0.878037	0.3922
D(MKTCR(-3))	0.165660	0.200933	0.824454	0.4211
D(MKTCR(-4))	0.167122	0.202308	0.826075	0.4202
D(MKTCR(-5))	-0.350748	0.166274	-2.109459	0.0500
CointEq(-1)	-0.807676	0.364159	-2.217923	0.0405

Cointeq = GDPGR - (0.2435*MKTCR + 1.8600)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MKTCR	0.243477	0.266313	0.914251	0.3734
C	1.860050	4.420413	0.420786	0.6792

Model 2
GDPGR and SVTR

ARDL Cointegrating And Long Run Form
Dependent Variable: GDPGR
Selected Model: ARDL(4, 12)
Date: 08/09/17 Time: 14:13
Sample: 1981 2015
Included observations: 23

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDPGR(-1))	0.889336	0.941489	0.944606	0.3882
D(GDPGR(-2))	-0.273051	0.625032	-0.436859	0.6804
D(GDPGR(-3))	-0.547728	0.433810	-1.262600	0.2624
D(SVTR)	-0.398067	1.884166	-0.211270	0.8410
D(SVTR(-1))	-7.827650	3.918553	-1.997587	0.1023
D(SVTR(-2))	2.846454	2.657914	1.070935	0.3331
D(SVTR(-3))	0.881057	2.386386	0.369201	0.7271
D(SVTR(-4))	3.687899	2.372133	1.554676	0.1807
D(SVTR(-5))	-2.881164	2.425455	-1.187886	0.2882
D(SVTR(-6))	-5.462070	1.950059	-2.800977	0.0379
D(SVTR(-7))	-2.863594	2.149762	-1.332051	0.2403
D(SVTR(-8))	-22.973099	17.441951	-1.317117	0.2449
D(SVTR(-9))	-2.316300	17.643603	-0.131283	0.9007
D(SVTR(-10))	50.806822	17.132832	2.965466	0.0313
D(SVTR(-11))	24.595071	18.878577	1.302803	0.2494
CointEq(-1)	-2.977630	1.208548	-2.463807	0.0570

Cointeq = GDPGR - (-10.9166*SVTR + 3.9900)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SVTR	-10.916581	4.759262	-2.293755	0.0703
C	3.990015	1.007741	3.959365	0.0107

Model 3

ARDL Cointegrating And Long Run Form

Dependent Variable: GDPGR
Selected Model: ARDL(1, 0)
Date: 05/27/17 Time: 17:38
Sample: 1981 2015
Included observations: 34

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(TUNR)	0.231436	0.195975	1.180945	0.2466
CointEq(-1)	-0.802502	0.161077	-4.982114	0.0000

Cointeq = GDPGR - (0.2884*TUNR + 2.1193)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TUNR	0.288393	0.237856	1.212466	0.2345
C	2.119336	2.331736	0.908909	0.3704

South Africa

Model 1

ARDL Cointegrating And Long Run Form
Dependent Variable: GDPGR
Selected Model: ARDL(1, 2)
Date: 05/27/17 Time: 17:39
Sample: 1981 2015
Included observations: 33

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MKTCR)	0.000937	0.009687	0.096686	0.9237
D(MKTCR(-1))	0.017827	0.010568	1.686930	0.1027
CointEq(-1)	-0.637486	0.177273	-3.596075	0.0012

Cointeq = GDPGR - (0.0093*MKTCR + 0.5770)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MKTCR	0.009254	0.010599	0.873149	0.3900
C	0.577043	1.843476	0.313019	0.7566

Model 2

ARDL Cointegrating And Long Run Form
Dependent Variable: GDPGR
Selected Model: ARDL(1, 0)
Date: 05/27/17 Time: 17:40
Sample: 1981 2015
Included observations: 34

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.

D(SVTR)	0.021298	0.013949	1.526909	0.1369
CointEq(-1)	-0.803585	0.170240	-4.720293	0.0000

Cointeq = GDPGR - (0.0265*SVTR + 1.2621)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SVTR	0.026504	0.016472	1.609018	0.1178
C	1.262124	0.711479	1.773944	0.0859

Model 3

ARDL Cointegrating And Long Run Form
Dependent Variable: GDPGR
Selected Model: ARDL(1, 2)
Date: 05/27/17 Time: 17:40
Sample: 1981 2015
Included observations: 33

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(TUNR)	0.068982	0.070627	0.976707	0.3371
D(TUNR(-1))	-0.103230	0.070158	-1.471389	0.1523
CointEq(-1)	-0.687246	0.183403	-3.747197	0.0008

Cointeq = GDPGR - (0.0517*TUNR + 1.4246)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TUNR	0.051739	0.046626	1.109661	0.2766
C	1.424598	0.960810	1.482705	0.1493