CAPITAL MARKET AND ECONOMIC DEVELOPMENT OF EMERGING ECONOMIES: NIGERIA, SOUTH AFRICA AND KENYA

BY

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CERTIFICATION

This is to certify that this work "Capital Market and Economic Development of Emerging Economies: Nigeria, South Africa and Kenya" was carried out by Mpamugo, Chikwendu Samuel (20074583778) in partial fulfillment of the requirements for the award of the Degree Doctor of Philosophy (Ph.D) in Financial Management Technology in the Department of Financial Management Technology of the Federal University of Technology, Owerri.

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DEDICATION

This work is dedicated to my entire family and friends.

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ABSTRACT

The effect of capital market on the development of emerging economies of Nigeria, South Africa and Kenya was examined in this study. The study was necessitated by the apparent sluggish economic development in the selected countries as evidenced from apparent low GDP growth rate, low level of industrialization, high rate of unemployment, poor educational and health facilities as well as low level of infrastructural development in spite of the level of capitalization of their capital markets over the years and the apparent huge amounts of money that have been spent to enhance the functioning of the markets. The aim of the study therefore, is to ascertain the extent to which the capital market affects economic development in these countries. The study relied mainly on secondary data for the analysis and covered the period 1990 to 2018. To avoid spurious regression, the Stationarity test by Dickey-Fuller was used. The test for co-integration by Johansen and the error correction model were also used in the analysis while the direction of causation was determined using the granger test for causality. Panel data (pooled) regression analysis was also carried out. Findings revealed among others, that the relationship between market capitalization and human development index was positive and insignificant for both Nigeria and South Africa but, negative and insignificant in Kenya. For the securities traded value and economic development, the relationship was positive and significant in Nigeria, positive and significant in South Africa, positive and significant in Kenya. However, the result of panel data (pooled) regression analysis revealed that HDI is a positive and significant function of capital market variables in all the countries except value of securities traded that has negative but insignificant effect on HDI. Based on the findings, the conclusion was that capital market had weak impact on the economy of the affected countries given the low values of the estimated coefficients and high transaction and information costs, interference with stock prices and loss of investors' confidence could be a challenge. Hence, the study recommends that policies be formulated by government and regulatory agencies to ensure the creation of strong and more transparent institutional and legal framework as well as promote investment in human resources to ensure that available financial resources are more efficiently allocated by the stock exchanges. Policies should also be made to encourage companies operating in the domestic economies, including educational and health institutions, to be listed on the domestic stock exchanges.

KEYWORDS: ***Co-integration, capital market, causality, economic development, correction model, human development index.***

CHAPTER ONE

INTRODUCTION

1.1 Background Information

One of the major macroeconomic objectives of most developing countries, including Nigeria, is to achieve low unemployment and desirable level of growth and development. A countries ability to increase output with the available capital stock together with other production factors (i.e land, labour, capital and entrepreneurship) is a good indication of economic growth. It follows, therefore, that to achieve high growth in output, there should be high level of capital accumulation appropriately combined with other factors of production. Oke and Adeusi (2012) posit that capital formation is a key factor in achieving growth. According to CBN (2004), investments and accumulation of capital are essential factors needed to achieve growth in any economy. While investment is the acquisition of the means of production (capital goods) with money in the hope of realizing some benefits in future, capital goods refer to man-made aids such as factory buildings, machineries, tools, equipment, fittings and fixtures, business vehicles, inventories, etc., which are not required for immediate consumption or for their own sake but are used in the process of making other goods and services. However, a country requires more than just increase in economic output to achieve improvement in the socio economic wellbeing of its population. Todaro and Smith (2003), observed that nations directed their efforts narrowly towards increased production as a result of not having a broad goal of development. This resulted in increase in poverty, inequality and unemployment. According to the development report of the World Bank (1991), a broader view of development includes: “To improve the quality of life, especially in the world’s poor countries. A better quality of life generally calls for higher incomes but it involves much more. It encompasses as

ends in themselves better education, higher standards of health and nutrition, less poverty, a cleaner environment, more equality of opportunity, greater individual freedom, and a richer cultural life". By mobilizing savings and channeling funds to investors, the capital market facilitates the growth and development of the economy (Nwanna, 2016).

The capital market embraces the stock market. In an active stock market, changes in the level of economic activity could be measured through the use of an index of stock market. In the strict sense, the market is meant for trading on corporate and government securities with maturities of more than one (1) year; while the secondary market is for trading on existing securities. The primary market concerns itself with the placement of new issues on the market. Increase of loanable funds and the allocation of such funds to productive economic units is facilitated by replacement of new issues which is carried out either by private placement or through the organized exchange.

The capital market assumes a central position in the economic growth process of any nation. It provides avenue for firms and governments to sell stocks and bonds to raise long-term funds for investment which will subsequently lead to increase in total output of the economy (Dayaratne and Wijethunga, 2015). As Iyoha (2004) puts it, sustainable economic growth is enhanced by the sourcing of long term funds through the capital market.

Empirical investigations on the link between economic development and capital market are limited, especially in developing economies. However, there are substantial economic literature by such experts as Schumpeter (1911) and Bernanke and Gertler (1990) who argued that capital market positively affects the growth of the economy. On the other hand authors like Robinson (1952) and Lucas (1988) had claimed lack of relationship between the market and development of any economy. Based on the above debate, investing the relationship between the two variables has become necessary.

1.2 Problem Statement

Through its intermediation role, a capital market that is active is expected to facilitate development by efficiently allocating available resources for productive investments. However, there has been apparent sluggish economic development in most of the developing countries as evidenced from apparent low GDP growth rate, low level of industrialization, high rate of unemployment, poor educational and health facilities as well as low level of infrastructural development in spite of the level of capitalization of their capital markets over the years and the apparent huge amounts of money that have been spent to enhance the functioning of the markets. This trend, if allowed to continue, could lead to serious economic depression in the affected economies.

Consequently, this study investigates the effect of capital market on economic development of emerging economies covering the period, 1990-2018.

1.3 Aim and Objectives of Study

This study aims at determining the effect of the Capital Market on the development of emerging economies of the selected countries. Specifically, the objectives include the following, to:

i. Determine how far market capitalization has affected development in the emerging economies
ii. Ascertain the extent to which value of securities traded to GDP ratio has affected development in the selected countries.
iii. Find out how far turnover ratio in the stock market has affected development in the selected countries.
iv. To determine the extent to which all share index has affected development in the emerging economies.
v. Investigate the effect of an integrated (regional) capital market on the selected countries' economy.

1.4 Research Questions

In the light of the above, the following questions have become pertinent:

i. How has market capitalization affected economic growth in the selected countries?

ii. What effect does the total value of securities traded have on the development of the affected economies?

iii. In what way has stock market turnover ratio impacted on the economy of the selected countries?

iv. How far is the impact between all share index and the development of the affected economies?

v.To what extent will an integrated (regional) market affect the economies of the selected countries?

1.5 Research Hypotheses

The following hypotheses have been formulated for the purpose of the study:

H_{O1}: The effect of market capitalization on economic development in the selected countries is not significant.

H_{O2}: Securities traded value does not significantly affect economic development in the emerging economies

H_{O3}: The effect of Stock Market Turnover Ratio on the selected countries' economic development is not significant.

H_{O4}: All share index is not significantly related to economic development in the selected countries.

H_{O5}: An integrated (regional) market will not have any significant impact on the economy of the selected countries.

1.6 Justification of Study

This study aims at determining if there is a significant relationship between the Nigeria, South Africa and Kenya capital markets and their economic development activities. The outcome of the study will be beneficial to policy makers, investors in the market, as well as future researchers in this field of study. Furthermore, it is hoped that the study will provide more reliable information that would assist in bridging the gap in knowledge as it affects capital market activities and probably stimulates further research. Finally, the study will assist the researcher to fulfill part of the graduation requirement.

1.7 Scope of the Study

The researcher aims at reviewing the structure and relevant aspects of capital market operations and development in Nigerian. The study will also assessed the effect of investment finance contributed by the capital market relative to its size and liquidity in the process of capital formation and economic development in general. However, effort was be made to use available data collected in respect of the other selected African countries namely: South Africa and Kenya to determine the effect of capital market on their economies. This is aimed at giving the researcher a broad basis for any conclusion that will be made. The choice of the three countries was based on the size of their capital markets. Again, the fact that Nigeria was declared the poverty capital of the world in 2018, based on the projections of the World Poverty Clock and compiled by Brookings Institute makes it a best representative of the emerging economies.

There was no deliberate effort to compare the Nigerian capital market and those other countries, because theoretically and in practice, capital markets are basically the same but may differ in their levels of development and sophistication. In pursuance of this objective, the study restricted to a period of twenty nine years spanning from 1990 to 2018. It is worthy of note that human

development index was introduced by UNDP as a means of accessing and comparing development among nations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Preamble

In this chapter, three sections are covered. They include: conceptual frame work, theoretical frame work and the empirical literature review. The first section deals with an overview of the concept of economic development and its measurements. The second reviewed some theories in relation to the study. In the last section, some issues relating to causality analysis were examined.

2.2 Conceptual Framework

Long-term government and corporate securities are bought and sold in the capital market. Arrangements and procedures for financing long-term investments are also made in this market. The market offers a variety of high quality financial instruments such as common stock, preferred stock, bonds and convertible securities. Through the institutions and intermediaries that make up the capital markets, the society's surplus funds are made available to government and corporations in need of funds for long-term investments, corporate expansion, development of new product lines and desirable social amenities that have both direct and indirect bearing with economic development. Osaze (2000) posited that the capital market facilitates capital formation which is essential for the growth of any economy.

2.2.1 Exposition of Economic Development

Economic development is a broader concept than economic growth. Development reflects social and economic progress and requires growth in output. Growth is essential for development, but it is not a sufficient condition as it cannot guarantee development.

2.2.2 Measurement of Economic Development

Until recently, per capita income and GNP increase, the people's overall wellbeing and availability of basic needs were the means of measuring a country's economic development. In 1990 precisely, a new measure of development, the Human Development Index (HDI) was introduced by UNDP. This method of measuring development is explained below:

- **Human Development Index (HDI)**

The modern economists are not satisfied with GNP per capita or national income as principal measures of economic progress. According to them, the issues are not only how much growth but what kind of growth (Seers, 1969). The HDI was therefore, introduced by the United Nation Development Programme (1990) to provide a means of measuring economic development in three broad areas: per capita income, health and education. The HDI tracks changes in the level of development of countries over time.

The HDI has two main features: A scale from 0 (no development) to 1 (complete development). The index is based on three equally weighted components:

1. Longevity, calculated by expectancy of life at birth:
2. Knowledge, determined by a weighted average of adult literacy (two-thirds) and mean years of schooling (one-third),
3. Standard of living, measured by real per capita gross domestic product adjusted for the differing purchasing power parity of each country's currency to reflect cost of living and for the assumption of diminishing marginal utility of income.

What the Figures Mean

- An index of 0- 0.49 means low development
- An index of 0.5-0.69 means medium development
- An index of 0.7- 0.79 means high development
- Above 0.8 means very high development.

The HDI is a very useful means of determining how developed a country. Per capita GDP alone is clearly too narrow an indicator of economic development and fails to indicate other aspects of development, such as enrolment in school and longevity. Hence the HDI is a broader and more encompassing indicator of development than GDP, though GDP still provides one third of the index (Todaro & Smith, 2009).

2.3 The Nigerian Financial System

In the pre – banking era, traditional financial institutions now known as informal providers of domestic funds for investment served the Nigerian investing public relatively well and performed some of the functions of modern banks though in an inefficient, unrefined and limited manner (Nwankwo, 1984). The limitations of these institutions necessitated the establishment of a modern financial system. These traditional institutions are termed informal because of their mode of operations and for lack of documented information about them. They provide investment funds for individuals and small enterprises operating in the informal sector of the economy and by so doing facilitate capital formation (CBN, 2004).

The WACB and the CBN were established in 1912 and 1958 respectively and their coming on board paved the way for what is today known as Nigerian modern financial system. Nwankwo (1984) broadly classified the system into capital and money markets based on the types and maturity periods of instruments traded in the various markets.

2.3.1 The Financial Markets

These are markets for trading on financial assets. They include the Stock Exchange, the money market, the Foreign Exchange and a number of specialized markets where financial derivatives are traded.

Nzotta (2004) posited that a financial market is a network of financial institutions and structures through which financial resources are transferred to ultimate borrowers for investments in economic activities.

2.3.1.1 Functions of the Financial Markets

The channeling of funds in an economy is driven by the differences in the size of the fund, maturity and the risk attached to the transfer. The financial sector

performs its role by transforming funds in the system so as to meet needs of both users and providers of funds. This transformation of funds is usually referred to as financial intermediation (CBN: 2004). Nzota (2204) further decomposed the functions of the financial system as follows:

i. It provides institutional framework for monetary management.
ii. It provides liquidity to the various financial instruments traded on the market.
iii. It improves the mobilization and allocation of financial resources:
iv. It determines the flexibility and pace with which the financial system can adjust to both external and internal shocks.
v. It provides avenues for savers or funds suppliers to effectively manage their risk exposure.
vi. It attracts foreign investments.

2.3.1.2 Classification of Financial Market

There are four ways in which a financial market can be classified. They are:

i. **Financial Claims:**

Under this category is the market for trading on fixed naira or fixed income securities, otherwise known as debt market?

The other aspect of this market is the market for trading on residual claim or variable income securities otherwise known as equity or stock market. The preference stock, due to its hybrid nature, possesses the characteristics of both fixed and variable income securities.

ii. **Maturity of Claims:**

Another classification is based on the maturity of claims on the issues' assets. Financial claims maturing within a period of one year or less are referred to as

money market instruments while those instruments whose maturity fall above one year are referred to as capital market instruments.

iii **Type of Issue:**

Fresh issues of instruments meant for raising new funds in the form of initial Public Offers (IPO's), right issues and offers for sale fall under the primary market while the market for existing or "second hand" securities is called the secondary market.

iv **Market Organizational Structure:**

Under this classification, three forms of financial markets can be identified. First, there is the auction market or organized exchanges having a location where instrument are traded. The Stock Exchange belongs to this category. Second, is the over the – counter (OTCs) markets for securities not listed on the organized exchange market, and third, the intermediate market, being ma market for financial intermediaries. The third is the derivative market which involves the exchanges of contracts whose values derive from the underlying financial assets and their prices.

2.3.2. Development of the Nigerian Financial Markets

2.3.2.1 The Nigeria Capital Market

Before the modern financial markets became operational in Nigeria, there were informal markets for money lending activities. The Nigerian financial markets arose because of the need to stem the repatriation of funds into the London financial system. Other factors include the need to develop markets that would enhance effective and efficient monetary management and promote deposit money banks portfolio management as well as facilitate long – term mobilization of funds through the activities in the money and capital markets (CBN, 2004).

2.3.2.2 Historical Development of the Nigeria Capital Market

Capital operations started in Nigeria in 1946 when the first Nigerian government registered stock was issued by the colonial government and managed by the Accountant –general. This was over-subscribed but this success notwithstanding, no serious effort was made by the colonial administration to set up formal stock exchange in the country. However, this situation was reversed due to the pressure from the nationalists for the need to finance the growing budget deficit of the 1950s, the deteriorating balance of payment deficit as from the late 50s and also the need to mobilize funds to embark on development programs. This led to the setting up of the Barback Committee in May 1959 to look into the possibility of how the share market can be started in Nigeria. Provision of facilities to enhance the management of issue of shares and to encourage the mobilization of savings in the country was recommended by the committee. For this reason the Lagos Stock Exchange, which later became the Nigerian Stock Exchange in 1977, was established in 1960. It however, started operation in 1961 (SEC, Committee Report, 2009). The CBN was set up in 1958 and it took over the management of the Federal Government Development Stock in 1959.

The Nigerian Enterprises Promotion Decree which was promulgated in 1972 created the need for additional development of the economy. This led to the establishment of Nigeria Bank for Commercial Industry (NBCI) in 1972, the Nigerian Agricultural and Cooperative Bank (NACB) in 1973, the Federal Mortgage Bank of Nigeria in 1977 and Urban Development Bank in 1992.

The establishment of these institutions marked the beginning of a formal capital market in Nigeria.

2.3.3 Capital Market Structure in Nigeria

Two markets make up the capital market in Nigeria namely, the market for stocks and the commodities market. Financial assets are traded in the stock market while commodities market is for trading on commodities. Primary and secondary markets make up the stock market (Ekrian, 1999).

A. **Primary Market**

Investors source funds directly from the primary market. The main characteristics of the primary market are: the market is not identifiable with any particular site; and the proceeds of transactions go to the investor. Sourcing of funds from this segment of the capital market can either be in form of equity participation and/or listed or unlisted industrial loans and government bonds/stocks.

The dealing patterns in the primary market as summarized by Nzotta (2004), includes the following:

i. **Offer for subscription**: This dealing pattern involves direct issue of shares and debentures to the public which results in new shares or securities and the sums realized go directly to the issuer to finance expansion or modernization. Offer for subscription is usually done with a prospectus
ii. **Offer for sale**: Under this dealing pattern, existing shareholders offer their shares to members of the public for sale. The proceeds of the offer go to the selling shareholders and not the company as in the case of offer for subscription. The Federal government in its privatization Programme employs this method of divestment. The proceeds of the divestment go to the government via the bureau for Public Enterprises (formally, the Technical Committee on Privatization and Commercialization)

iii. **Private Placing:** This is a system of raising funds from the market which seldom gets the approval of the council of Stock Exchange whereby the stock of a company are placed with a stockbroker who then seeks out prospective purchasers. New issues usually arise from this type of dealing and the proceeds go to the issuing company.

iv. **Stock Exchange Introduction:** Stock Exchange introduction occurs in a situation where a company seeking quotation is seen to have fulfilled the minimum listing requirement. No new funds are raised under this arrangement, but the major advantage is that it qualifies the company's securities to be traded on the floors of the Exchange. Guaranty Trust Bank PLC for instance was listed in 1996 by introduction because it already had enough shareholders to satisfy part of the listing requirements of the exchange.

v. **Right Issue:** Right Issues are shares offered to a company's existing shareholders in proportion to the number of shares held and usually at prices below the market prices, to make the offer attractive. Through this method of issue, existing shareholders are given the first option of subscribing to the issue. When the shareholders fail to take up the issue, the company could then go to the public.

B. The Secondary Market

This is the segment of the stock market where existing securities are traded. The purchases of sale go to the holders of the instruments rather than the company. The market provides liquidity by enabling holders of securities to convert them to cash if they desire to sell part or all their holdings before maturity.

C. **The Derivatives Market**

This is a third segment of the capital market which is still at its rudimentary stages in Nigeria.

Derivatives were essentially used over a long period as risk management strategies by investors. These instruments are developed as mechanisms for hedging against risks associated with exposures to interest and exchange rates changes, as well as commodity and stock price movements.

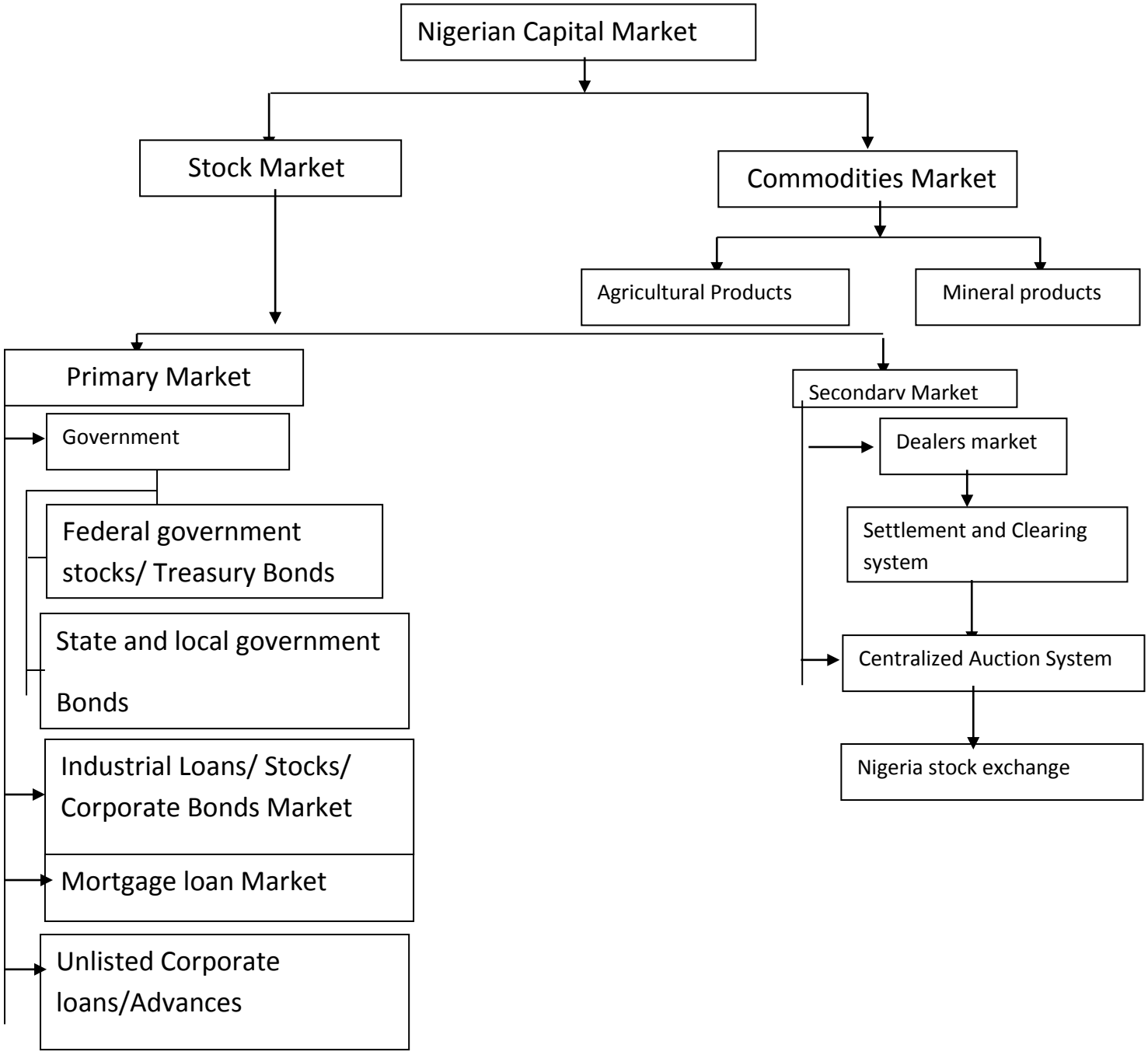

Fig. 2.1: The structure of the Nigerian capital Market Source: CBN (2004).

2.3.4 Legal Framework

In Nigeria, the operations of the stock market is governed and guided by the following statues.

i. The Lagos Stock Exchange Act, 1961,
ii. Trustee Investment Act, 1990,
iii. Companies and Allied Matters Act, 1999,
vi. Bank and other financial institutions Decree, 1991,
vii. Nigerian investment Promotion Act, 1995,

viii. Foreign Exchange (Miscellaneous provisions) Act, 1995,

ix. Securities and Exchange Commission Decree, 1999,

x. Investment and securities Act, 1999,

xi. Pensions Act, 2004.

2.3.5 Regulatory Framework

The capital market is regulated by the Securities and Exchange Commission (SEC), the CBN and the Stock Exchange of Nigeria.

2.3.5.1 Central Bank of Nigeria (CBN)

The Central Bank of Nigeria leads in the regulation of the Nigerian financial system which embodies the financial markets. It supervises the capital market through SEC and through the Federal Ministry of Finance, lays down the terms and conditions for the sale of government stocks.

2.3.5.2 Securities and Exchange Commission (SEC)

This institution was established in 1979 to replace the Capital Issues Commission set up in 1973. It has the responsibility of regulating capital market activities and performs the following functions:

i. Registers and approves all eligible securities offered in the capital market.

ii. Ensures fairness in security dealings.

iii. Registers stocks as well as Security Exchanges.

iv. Performs on /off site inspection with a view to assuring fair play/ and equitable dealings on the Exchange

v. Promotes investors' education and all categories of intermediaries in the securities market.

2.3.5.3 The Stock Exchange

This organization complements the regulatory efforts of SEC. It functions through a number of committees:

I. The Quotations Committee

This committee is responsible for analyzing and scrutinizing the applications from companies seeking quotations on the Exchange. It also ensures that financial statements submitted by companies are prepared to meet the disclosure requirements and international standards of accounting.

II. The Surveillance Committee:

This committee performs over sight functions as it monitors the operations of the market to ensure that operating guidelines are adhered to. As an SRO regulates their members dealers/stockbrokers) as well as the transactions in the secondary market.

2.3.6 Capital Market Participants

Four groups of market participants are recognized as follows:

i. The Regulators (This is made up of the CBN, SEC and NSE).

ii. Providers of funds (This is made up of individuals and institutional investors, unit trusts, Nigeria Social Insurance Trusts Funds and other corporate investors).

iii. Users of funds (This is made up of governments and companies).

iv. Intermediaries (This is made up of stock broking firms, issuing houses, underwriters, registrars).

2.3.7 Instruments Traded In the Capital Market

Equities and debts are the two basic instruments traded in the market.

Debts instruments obligate the issuer to pay fixed rate of interest at stated period and to repay the principal amount at maturity. Equities on the hand are instruments that confer ownership rights on the investors. Holders of Equity are also entitled to dividend which usually depends on the operational result of the issuer. For this reason, they are regarded as the risk bearers of the company.

A diagrammatic representation of the instrument traded in the capital market is shown in fig 2.2.

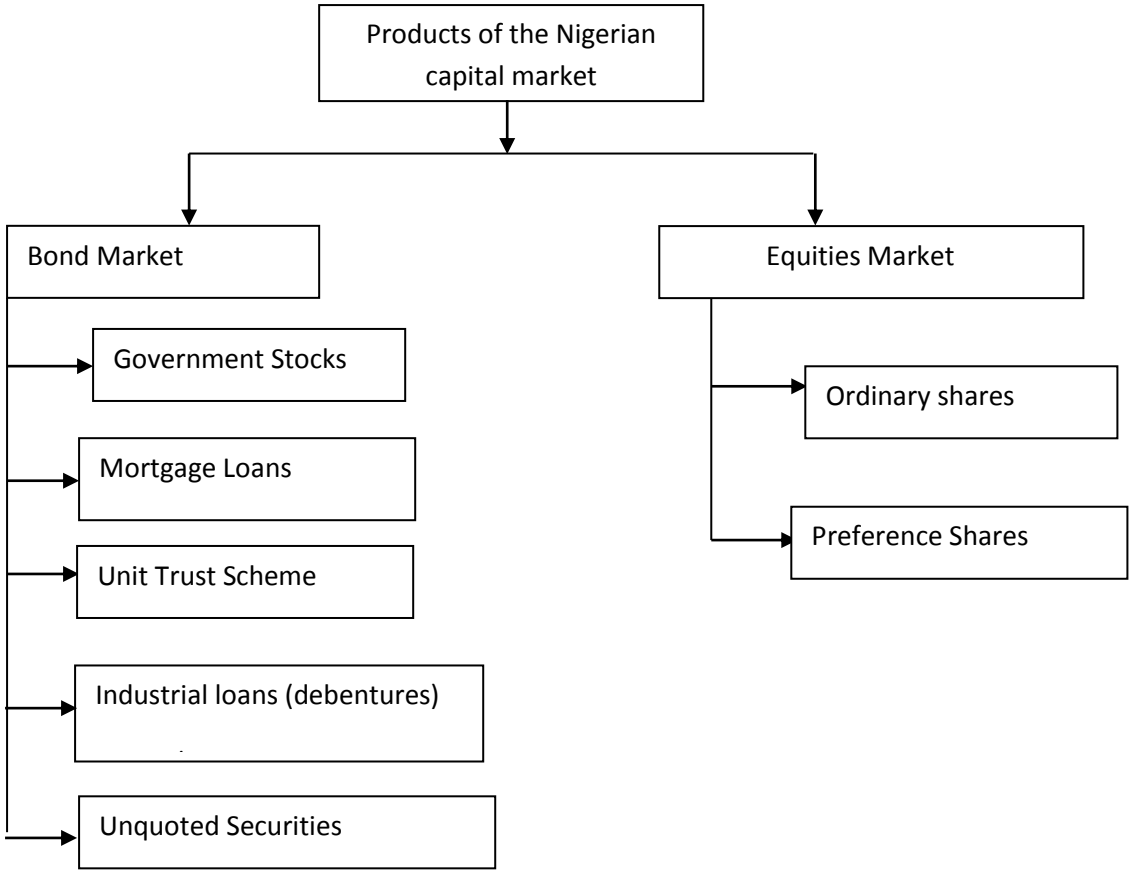

Fig 2.2: Instrument of the Nigerian Capital Market

Source: CBN (2004) Financial Markets in Nigeria.

2.3.8 The Nigerian Stock Exchange

This is only financial institution empowered to operate the facilities for trading in long-term securities. It has the unique role of acting as a link between market functionaries. The Stock Exchange is very essential to the existence of the

capital market. As is the case in other economics the operations of the capital market revolve around the Nigerian Stock Exchange, which is regarded as the hub of all the capital market activities. Outside its role as self-supervisory organization (SRO), it also participates actively in the issuance of stocks and is solely responsible for easy conversion of these stocks into cash.

If the Stock Exchange fails to perform satisfactorily, investors will lose confidence in it and this could lead to the collapse of the whole economic system (Adoghor, 1997).

2.3.8.1 The Structure of the Exchange

The Exchange first started as the Lagos Stock Exchange incorporated under section 21 of the company's ordinance of 1960.

Establishment of capital market in Nigeria was motivated by the following reasons:

i. To create the enabling environment for sourcing of long-term funds
i. To ensure the availability of long-tern funds
ii. To create facilities that will enable foreign businesses to offer their stocks to the Nigerian public and offer an opportunity for them to invest and participate in the shares and ownership of foreign businesses;
iii. To make available facilities that will enhance funds mobilization and stocks marketability.
iv. To introduce a code of conduct, check abuses and regulate the activities of the operators in the market; and the Exchange started formal operation in 1961 and was later renamed, the Nigerian Stock Exchange in 1977.

2.3.8.1.1 Membership and Governance

The owners (shareholders) of the Stock Exchange are known as members. Application for membership of the Exchange is open to firms or financial institutions as well as individuals who by virtue of their position or experience have made or likely to make valuable contributions to the Exchange. Two types of membership exist: -Ordinary and Dealing Membership.

i. **Ordinary Members**

An ordinary member (institutions or individuals) of the Nigerian Stock Exchange is a member who has taken up shares of the issued Share capital of the Exchange and has been admitted into the register of members. Apart from the powers bestowed on him by section 393 of the companies Act 1968, no other benefit accrues to such a member.

ii. Dealing Members

A dealing member of the Exchange is a person or an institution that in addition to being an ordinary member is licensed by the council to trade in stocks, shares and bonds in the stock market and accepts to be bound by the rules and regulations of the Exchange. Such member is entitled to brokerage commission and no dividend. A dealing member is generally referred to as a stock broker. Section 4(4) of the Exchange's Articles of Association stipulates the conditions for becoming a member of the Exchange.

The Exchange is governed by Board members that take responsibility for making policies with respect to the Exchange. It is also from the Board members that branch council members are drawn. The Branch Council

assists in the supervision of the Branch Exchanges, thus ensuring that the conditions which make for efficiency and fair trading exist.

2.3.8.2 Growth and Developments in the Capital Market

The Exchange started business with 19 securities in 1961 and this number grew steadily to 264 in 2010 while the value of securities traded rose from ₦512 million in 1980 to ₦2.4 trillion in 2008.Trading at the Nigerian Stock Exchange commenced with 0.3Million shares worth ₦1.5 million in 334 deals and grew steadily to a value of ₦16.6 million in 634 deals in 1970. The implementation of the Nigerian Enterprises Promotion Decree of 1972 and 1977 enhanced public participation in the capital market. Similarly, the state governments began patronizing the capital market to raise funds for long-term development projects with the defunct Bendel Sate Government floating its bond in 1978.

Subsequently, new issues valued ₦817 million in 1985 increased to ₦ 1.5 trillion in 2008, while market capitalization followed a similar pattern as it rose from ₦ 6.7 billion in 1980 to ₦ 9.6 trillion in 2008

The astronomical increase is attributable to a number of factors including the reduction in settlement time, trading regime, computerization of trading activities, internationalization of the Exchange, cross border listing with other Stock Exchanges in the African region as well as opening of new branches.

The introduction of a centralized clearance system (or Central Securities Clearing System (CSCS)) in 1997 was meant to reduce the time spent in transacting on securities and improve on the general of effectiveness of the Exchange. The CSCS, in conjunction with the registrars of quoted companies acts as a sub-registry for all quoted companies. All these have reduced the risk in the delivery of share

certificates; enhanced transparency in operations, reduced costs associated with production of stock certificates and increased investor confidence in the market.

Through the introduction of the Automated Trading System (ATS) in April 27, 1999 coupled with the graduation to T + 3 cycle transaction days, the efficiency of the market has been enhanced, bringing it at par with what is obtainable in other emerging markets and developed markets in Asia, Europe and America.

The CSCS coupled with the e-business platform and internet portal have also impacted positively by enhancing corporate visibility, affording real time access to information on transactions in company securities and on-line access to general information on market activities

The Securities and Exchange Commission has also introduced electronic bonus which mandates companies to issue electronically, bonus shares instead of the long wait for certificates which in some cases, and the investor does not receive. The Trade Alert which has come into force is another effort introduced into the market at maintaining and sustaining the credibility and transparency in the market. Trade Alert is a device, which when subscribed to, alerts the investor on the trading position of his stocks.

2.3.8.3 Listing and its Benefits

Listing is the admission of a company into the official list of the Exchange. Before a company can participate in the Exchange, it must be listed.

To be listed is synonymous with the term "to be quoted" and this implies that the instruments can be transacted through the Exchange. The terms and conditions to be fulfilled by each security before listing is usually contained in the “Green Book”.

2.3.8.3.1 Benefits of Public Quotation

Ndi Okereke-Onyiuke (2002) enumerated the following benefits that are accruable to a company whose securities are quoted on the Exchange:

i. ***Marketability of Shares:***

Quotation increases the marketability of the quoted company's shares can also be used as collateral for bank credits. This increases the potentials for the business and personal benefits to its owners;

ii. ***Continuity:***

The continuity and survival of a company quoted on the Exchange is assured even after the death of its founders;

iii. ***Expansion and Modernization:***

Proceeds from the issue of a public quoted company can be used for expansion and modernization of the company;

iv. ***Acquisition Opportunities:***

Companies listed on the Exchange are able to create a market for their shares thereby ensuring growth by acquisition with its marketable shares as consideration.

v. ***Quality Personnel***

Quality personnel are attracted to a listed company because of confidence on its future growth and stability.

vi. ***Free Perpetual Advertisement:***

Companies quoted on the Exchange are continuously advertised Free of charge on the NSE Daily Official list, Newspapers, T.V,

Business news, and the Reuter's Network which is hooked on to the Exchange.

2.3.9. The Process of Raising Funds on the Exchange

2.3.9.1 Primary Market:

If a company after due internal authorization decides to raise either initial or additional equity capital through a public offer, it follows the following procedures:

i. The company appoints an Issuing House (Agent) that will package the offer;
ii. The Issuing house then submits its application to the SEC for the registration of the proposed security;
iii. The Company also sends another listing application to the stock broker for presentation to the Exchange;
iv. After the issuing house has met all the requirements, the Securities and Exchange Commission sends a letter of registration to the issuing house;
v. The offer is now open to the public for subscription and the prospectuses are distributed to the public by the collecting agents (banks, etc.);
vi. Members of the public return their completed application forms with their cheques to the collecting agents who now make returns to the registrar;
vii. On receipt of all the applications, the registrar collates and sends payments to the receiving banker;
viii. If the issue is oversubscribed, the company, the issuing house and the registrar meet to formulate and agree on a formula for allotment of the shares; based on the guidelines of the Securities and Exchange Commission.

ix. The allotment is then submitted to the Securities and Exchange Commission for clearance, after which the documents are returned to the issuing house.
x. Immediately the allotment schedule is cleared, the receiving bank will be instructed to release the proceeds of the issue to the issuer.
xi. A copy of the allotment schedule is published and any surplus fund in the issuer's account is returned to the registrar for return to the subscribers.
xii. After the dispatch of the monies to the subscribers, a register of shareholders of the company is compiled. If the offer is an additional issue, the registrar merely continues with the existing register.
xiii. Certificates are then dispatched to the new investors by the registrar after being sealed by the company.

2.3.9.2 Secondary Market

The clearing process before the introduction of CSCS includes the following;

i. The investor submits his certificate to an intermediary (stock broker) to sell at a price;
ii. The certificate was then sent to the registrar for verification and authentication;
iii. After authentication, the broker takes it to the trading floor of the Exchange for trading;
iv. At the same time another interested investor shopping for the security on offer, employs the services of another broker.
v. At the end of the bidding process between the brokers a price is struck and the brokers exchange relevant documents which the Stock Exchange certifies.
vi. Thereafter, the buying stockbroker lodges the documents and certificates with the registrar who examines the completeness and genuineness of the documents, cancels the old certificate and prepares a new one in the name

of the new buyer. The documents/certificates will then be forwarded to the company whose securities are being exchanged for sealing and signature;

vii. The new certificate is then returned to the registrar for onward delivery to the broker who in turn forwards it to his client.

2.3.10 The Central Securities Clearing System (CSCS)

Before the introduction of the CSCS, the system witnessed a lot of inefficiencies such as undue delay, cancellation and frequent issuance of certificates, failed trades and manual clearing and settlement system. Others include failure to exploit capital gains and these difficulties rendered the market relatively illiquid.

i. Up to the trading stage, the transactions processes in the secondary market of the pre- and post CSCS establishment remained the same, except for the Depository Functions of the clearing company.

ii. After trading, the Exchange sends a transaction diskette to the CSCS where comparison and confirmation of transactions and netting of obligations are done;

iii. It should be noted that shares must have their certificates deposited in the depository in the name of the shareholder at least 24 hours before transaction on the floor of the Exchange;

iv. After transactions, the net financial obligations are sent to the settlement bank(s), eight of them in 2010 which then posts them to the accounts of the Stock brokers;

v. Thereafter, the banks send an updated balance of the stock broker's accounts to the clearing company, which upon receipt effects delivery;

vi. Sometimes, stock brokers may be requested to tidy up their accounts with the settlement bank(s) before they can trade on any day;

vii. Within the additional three (3) days after the transaction (T) day,

clearing and settlement are affected and the selling broker can then deliver the proceeds of the sales to the selling investor after receiving his brokerage and other statutory fees.

viii. The buying investor does not deliver any certificate as the CSCS does not issue certificates; instead, it issues statements showing the number of stocks and other securities, the buying investor has in the system. Thereafter, the clearing company sends the certificate to the registrar for recording keeping.

ix. In the event of over-trading, there is a trade guarantee fund from which trades would be settled under the Trade Guarantee Fund Scheme.

2.3.11 Problems of the Capital Market

The market has encountered many problems over the years and these have impeded its growth, development and effective performance. Some of these problems are highlighted below:

i. Infrastructural Inadequacy:

All the branches of the Exchange are yet to be fully automated even with the introduction of Automated Trading System (NSE, 2004).

Poor state of public infrastructure such as power, telecommunications and inadequate information technology, which had to be provided by the operators, leads to higher operating cost. In developed Stock Exchanges computer technology has greatly improved the capability of these markets to capture relevant information timely which is translated in stock prices.

iii. Market Illiquidity:

Nigerian investors are averse to dilution of ownership. Consequently, they adopt the "buy and hold" attitude with regards to securities which

ultimately impairs the activities in the market. This attitude ultimately limits the level of speculation and by extension, the vibrancy in the market. In this regard, the potential market capitalization is larger than the actual capitalization.

v. Ignorance:

Nigerian businessmen and the investing are still ignorant about the workings of the Exchange and the merits of its patronage in spite of the various enlightenment campaigns. The level of public awareness of the benefits derivable from the operations of the capital market is still very low and there is need for reappraisal. (Adoghor, 1997).

v. Paucity of Instruments Traded in the Market

Paucity of securities is one of the serious problems confronting the stock market. Most companies especially the indigenous ones are still reluctant to raise funds through the Stock Exchange probably for fear of the burden of disclosing corporate information whereas the Nigerian investing public has demonstrated a strong desire for participation in the capital market as shown in the recent experience of substantial subscription for most public issues offered by the banking sector in the on-going consolidation reforms by the Central Bank of Nigeria.

vi. Limited Scope of Professionalism:

Inspite of the various attempts by the market operators and stock market regulators to elevate the level of professionalism, available evidence show that most of the operators manifest very limited and low level of professionalism, sophistication, imagination, dynamism and lack of competitiveness in various aspects of stock trading, including investment advice (Nzotta, 2004).

viii. Unfavorable Investment Climate

The investment climate is generally very poor and unfavorable. This is evident in the high level of political uncertainty, social unrest in the oil rich Niger-Delta region, the stop-go nature of policy formulation and implementation, inaccurate and unreliable statistics. These factors, apart from other macroeconomic constraints, increase the risk of holding financial assets in the domestic capital market. This also affects direct foreign portfolio investments in the Nigerian capital market.

2.3.12 Capital Market Development in South Africa

2.3.12.1 The Bond Market

Unlike many African and emerging-market countries, South Africa relies more on its domestic bond market than on international borrowing. This is partly due to historical reasons, but also due to the preferences of the current government (Mboweni, 2006)

In the 1970s and 1980s, sanctions were progressively imposed on South Africa, and the country was effectively denied access to international financial markets. At the same time, the government of the day ran large deficits, at times as high as six per cent of GDP. The government had no option but to fund its growing budget deficit in the domestic bond market. Against the backdrop of exchange control regulations and prescribed asset requirements, the large non-bank financial institutions provided a ready demand for these bonds.

Needless to say, government and semi-government debt dominated issuances in the domestic bond market.

2.3.12.2 The Equity Market

The JSE was founded as far back as 1887 and is currently ranked 17th in the World Federation of Stock Exchanges, based on its market capitalization in US dollar terms.

In the late 1990s, a number of developments were introduced to improve trading on the JSE, among which was the introduction of an automated and centralized trading system.

Another important milestone for the JSE was the strategic alliance that was formed with the London Stock Exchange (LSE) in 2002. In this year, all shares were dematerialized and the T+5 settlements for all JSE main board trades was introduced.

As part of the JSE's alliance with the LSE, its trading system was replaced with the SETS system hosted by the LSE. This change improved international visibility and acceptability of the JSE. In addition, the JSE modernized its operations with the launch of a new indexing system in conjunction by launching a new system of indexing which international investors are familiar with,

The alliance with the LSE required a review of the JSE's Main Board listing requirements to bring it in line with international best practice. The result was that listed companies declined in number. In order to continue providing an opportunity for small to medium-sized companies of good quality and with high growth potential to raise capital, the JSE launched an alternative exchange (AltX).

In 2005, the JSE expanded its product base to include not only equities and derivatives, but also interest-rate products with the launch of Yield-X, which is a "one-stop yield shop" for a wide range of interest-rate products derivative and spot traded on the exchange.

2.3.13 Capital Market Development in Kenya

The capital market in Kenya is made up of stock market, bonds, development financial institutions, and pension funds. While the stock market has been in existence since 1920s, it failed to pick the growth

momentum and currently, the market has just about 50 listed firms which are less than what the country inherited at independence. The bonds market is in its infancy stage almost getting to its youthful stage. DFIs have faced various problems from managerial to financial making it difficult for them to perform their initially desired role.

A study by IFC and Central Bank of Kenya in 1984 study recommended the need to develop capital markets in order to facilitate mobilization of long term capital In Sessional Paper No. I 1986 the government indicated its commitment in facilitating growth of the capital market and this saw the kick-off of the capital market reform in late 1980s which saw institutional and policy reforms.

2.3.13.1 Stock Market

The Stock market saw in early 1990s the set-up of the capital market authority that was given the double responsibility for development and regulation of the market operations. However, the market is an indication that the CMA is not delivering its services adequately. The development role calls for diversification of the financial assets and attracting IPOs. With the regulatory responsibility CMA is expected to keep surveillance of the market. The recent experience with stock brokers failing is an indication that the market is missing out in terms of surveillance. With institutional development, the market has witnessed, centralization of trading and automation aimed to reduce the transaction period to T+4. The market has also seen entry of investment banks that are expected to play various roles including, market making and underwriting. However, they have not managed to perform these roles adequately.

The performance of the stock market indicates that the market has not managed to make significant contribution to financing economic growth. The market has financed less than 1% of the GDP so far. Further, the

listings are intermittent and in the recent period, the participation of the private sector has been minimal.

2.3.13.2 Bonds Market

Corporate bonds were introduced into the market on November 22, 1996 when the East Africa development plan (EADB) bond was issued at a price of 99% raising Kshs 600 Million. The bond was traded in denominations of Kshs 1Million with an interest of 1.2% points above the prevailing 91-day Treasury bill rate. Further the EABD launched Kshs 2 Million medium term note which was listed on the NCE Fixed income securities market segment on 2nd May 2001, which was viewed as a break from the Long term debt instruments. Proceeds from the issue were intended for mobilizing lending in local currencies and for the development of a sustainable tool for alleviating the exchange risk associated with long and medium term borrowing in foreign currencies. The shelter Afrique made a medium term note of Kshs 350 M to be issued in three tranches, the first issued on the 8th December 2000, through a private placement to institutional investors. Proceeds from the sale were used for housing development in Kenya. The first locally controlled firm to offer bond was Safaricom whose proceeds were to be used to expand Safaricom and network coverage and capacity aiming to improve both the availability and reliability of their networks.

2.3.13.3 Investment Funds

The period 1996/97 saw the launching of investment funds and venture capital funds, including the Regent Undervalued Assets Africa Fund that applied for listing in Kenya, Bostwana and Ireland. This was an offshore investment fund and it was listed in the NSE in 1997. The fund offered 10 Million shares out of which Kenya was allocated 10.2% to subscribe for

with minimum subscription per investor fixed at US$100,000. Simba fund was set up by Barring Asset Management as a regional investment fund for Africa with a resource pool of US$120million. The fund was invested in seven sub-Saharan African countries with favorable GDP growth rate. The Acacia Fund Limited was the first Kenya's venture capital fund. The fund is promoted by the Commonwealth Development Corporation with a capitalization of KShs 1 billion. The fund was launched as a ten year close-ended fund that would make equity investments in medium sized companies, which have the potential of being listed at the NSE. There were also efforts to help mortgage finance companies to issue asset-backed securities in an effort to facilitate increased savings in financial assets and at the same time develop alternative financial market instruments to raise capital. The main aim was to facilitate the raising of additional long-term capital, which would contribute towards the development of the housing sector. Regent Undervalued Assets Africa Fund was delisted in 2001 after failing to comply with the listing requirements.

2.3.14 The Global Financial Crisis

Sher and Iyanatul (2010) attribute the US financial crisis to several factors. First, the housing boom and sub-prime lending, with insufficient collateral or proof of financial condition required by lending institutions. The housing boom created strong incentives for investment in homes, leading to overbuilding. Home ownership increased to about 70% of the population, from about 60% historically. The large amount of home ownership was financed mostly by borrowed money. Banks and other financial institutions bet big on home prices, with about 56% of outstanding mortgage loans in August 2008 being sub-prime. Second, excessive risk taking by banks and other financial institutions, Banks and other financial institutions were highly leveraged, creating incentives for excessive risk taking by equity holders. Added to this ‘moral hazard’ was

explicit deposit insurance available to these institutions, as well as implicit guarantees of bailout for institutions deemed too large or too important to fall in the context of weak corporate governance and ill-advised executive compensation contracts, leading to distorted incentives.

Third, easy money and hubris (overconfidence) affected participants in the financial sector. Alan Greenspan followed and 'easy money' policy so there was too much investment money chasing too few investment opportunities, causing asset market inflation. In January 2001, for example, the US Federal benchmark interest rate fell from 6.5% to 1% over a two-year period. Hubris from the housing boom led individuals and lenders to extrapolate continuing rises in house prices, overestimating ability to pay based on continuing inflated prices, Lax lending and underwriting standards led to leveraged loans with minimal down payment.

Fourth, inflated ratings and grades, perhaps because rating agencies wanted to earn commission or did not know how to rate mortgage-based securities. The rating of money funds and securities did not have much content, e.g. an 'AAA' rating did not have a normal relationship with the probability of default of mortgage securities. These inflated ratings led debt investors to buy mortgage securities at inflated prices.

Fifth and last, complex and opaque securitization: Banks put individual mortgages into pools, which were then sold to special purpose vehicles (SPVs), which held them passively. SPVs in turn financed themselves through complex securities involving multiple tranches. With few disclosure requirements; many types of tranche instruments and a large number of SPVs with varied investors, SPVs served as black holes where banks could keep dumping their mortgages.

The burst of the housing bubble as a result of the above factors led to a shutdown of the credit markets and failure of venerated financial institutions such as Lehman Brothers, Merrill Lynch, AIG and so on. This creased a crisis

of confidence: global panic and 'flight to quality' from even traditionally sage assets, such as money market funds and commercial paper. Private capital dried up as it was not known what the value was of the assets held by institutions or which institutions might fail.

This US-originating financing crisis has spread throughout the world. Since countries in sub-Saharan Africa are barely integrated into the global financial system, an interesting discussion arose on whether they would be spared the effects of the global financial crisis. However, the crisis is already anticipated to derail the high growth that sub-Saharan Africa has been experiencing in the past decade (of about 6.5%). Available estimates, for example by the International Monetary Fund (IMF), are already pointing to economic slowdown in Africa, to about 3.5% (Mwega, 2009).

2.3.14.1 Effect of the Financial Crisis

The prices of securities (especially equities) in the market, before the global financial crisis in 2008, did not reflect their true values because most speculators and other investors used bank credit to buy up most of the securities, thereby creating artificial scarcity which resulted in high prices of the securities. Thus, when the financial crisis started, the banks that were also indebted to foreign creditors demanded immediate repayments from their customers. The customers themselves were forced to divest their investments which then resulted in some glut in the securities market, leading to near collapses of the market as the prices of most securities fell by more than 400 percent. Banks also stopped granting further credit to their customers and the consequence was a fall in aggregate investment. The consequence was under-capacity utilization of most industries, leading to loss of jobs by most employees.

2.4 Theoretical Review

This section reviewed some of the classical and contemporary theories of economic development as well as some capital market theories. The controversy surrounding the causality between the development of finance and growth of the economy was equally reviewed.

2.4.1 Classical Theories of Economic Development

2.4.1.1 (a) Linear Stages of Growth Models

The early models of economic development focused on the need for substantial injection of funds to ensure high growth rates in GDP. According to Todaro and Smith (2009), the two popular models are Stages of Growth model by Rostow and the model by Harrod-Domar.

Before the mid-1960's, development theorists believed that developmental processes must follow historical stages. Ingham (1995) posits that this view was made popular by Rostow, because of the pattern followed by countries that were developed then**.** Rostow (1960) argued that the transition from underdevelopment to development would pass through five stages: the traditional society, the pre-condition for take-off into self-sustaining growth, the take-off, the drive to maturity, and the age of high mass consumption. The take-off stage is critical. From this stage, underdeveloped countries are expected to transit into

Self-sustaining economic growth stage and this process requires increase in the saving and investment rate as this will facilitate the growth of the economy.

The Harrod-Domar Growth Model Popularized the mechanism by which more investment leads to more growth (Harrod 1948; Domar, 1947).

The model is often referred to as the **AK** model**.** Where **K** represents output and **A** a constant. This model has frequently been applied in one form or another, to

policy issues facing developing countries (Todaro & Smith, 2009). In all, it follows that every country needs capital to increase investment and induce economic growth and development.

2.4.1.1(b) The Structural Change Models

Economists described the development process during most of the 1960s and 1970s as structural change by which the reallocation of labour from the agricultural sector to the industrial sector is considered the major source of economic growth.

2.4.1.2 Traditional Neoclassical Growth Theory

The neoclassical growth theory due to Solow (1956) expanded on the Harrod-Domar formulation by adding a second factor, labour, and introducing a third independent variable, technology, to the growth equation. Again, unlike the fixed-coefficient, constant-returns to scale assumption of the Harrod-Domar model, Solow's neoclassical growth model exhibited diminishing returns to labour and capital separately and constant returns to both factors jointly. Technological progress became the residual factor explaining long-term growth, and its level was assumed by Solow and other neoclassical growth theorists to be determined exogenously, that is, independent of all other factors (Todaro & Smith, 2009).The production function is specified as follows:

$$Y = K^{\alpha} (AL)^{1-\alpha} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 2.1$$

Where Y is gross domestic product, K is the stock of capital (human capital as well as physical capital), L is labour and A represents technological progress (or the productivity of labour which grows at an exogenous rate).Because the rate of technological progress is given exogenously (at 2% per year, say), the Solow neo-classical model is sometimes called an **"exogenous"** growth model. α represents the elasticity in relation to output.

2.4.2 Contemporary Theories of Growth

i. The Endogenous Growth Theory

This theory, also known as the New Growth Theory, which emerged in the mid-1980s, rejected Solow's assumption that technological progress is exogenous. The theorists (Romer 1986; Lucas 1988; Aghion & Howitt 1992, etc.) Posited that a key determinant of economic growth is technological progress which is endogenous. They also argued that investment in human and physical capital, knowledge and innovation contribute significantly to the growth of the economy. The theorists further argued that economic development will be facilitated by the effect of spillover and positive externalities that arise from a knowledge based economy. According to the theory, there will be increase in incentive for innovation which will invariably lead to high rate of economic growth, if policies that support research subsidies or education are formulated.

According to the theorists, when firms accumulate more capital, some of the increased capital will be intellectual capital that creates technological progress which will offset the tendency for the marginal product of capital to diminish.

This research is, therefore, rooted in the endogenous theory of growth because of the emphasis the theorists laid on saving, capital formation, knowledge and technological progress as strong contributors to economic development.

Ii Underdevelopment as a Coordination Failure

The thought that among complementary activities, the market may fail to achieve co-ordination led to the propounding of the co-ordinations failure theory.

To achieve an optimal level of coordination, the policy of "**Big Push**" – which requires that government embarks on large scale investment programme capable of causing complementarities and leading to an increase in industrialization was recommended.

The fall of the economies that are centrally planned as well as poor performance of the industrialization that was led by government, resulted in the "big push" becoming less popular in the developing economies (Meier, 2002).

As a way of breaking out of poverty by developing countries, the United Nations Development Programme (2005) recommended that the "big push" strategy be adopted in the areas of human capital development and the development of key infrastructure.

2.4.3 Capital Market Theories

Theories of capital market try to predict trends and developments in the market based on one form of mathematical model or another. Development of pricing models of financial assets are made possible by the foundation provided by these theories.

As new information arrive the market, they are easily and correctly reflected in asset prices. For this reason, the capital market is said to be efficient with regards to information.

Some of the theories briefly considered here are: Efficient Market hypothesis (EMH), Modern Portfolio Theory (MPT), Capital Market Theory (CMT) and Capital Asset Pricing Model (CAPM)

a. **The Efficient Market Hypothesis (EMH)** states that information available in the market is quickly reflected in asset prices. This implies that it is impossible to earn a return that is in excess of the market average because only new information determines changes in market prices.
b. **Modern Portfolio Theory (MPT),** developed by Markowitz (1952) explains how investors that are risk averse can, at a given risk level, construct portfolios that can enable them maximize expected returns, emphasizing that risk is an inherent part of higher reward.

Portfolios that are constructed in line with MPT are called efficient portfolios.

c. Capital Market Theory (CMT)

The concept of risk-free asset is a key element in developing Capital Market Theory. Adding risk-free asset such as government treasury bills, integrates investment and financial decisions and creates a set of expected risk-return possibilities that did not exist previously.

Risk free assets have the following characteristics:

i. Expected return is certain
ii. Standard deviation of return is zero
iii. Correlation and covariance with any risky asset or portfolio is zero.

d. **The capital Asset Pricing Model (CAPM)** This model explains that expected return is linked to the risk of investing in a security. The model shows that to obtain expected return on a security, a risk premium that depends on the beta of the security is added to the risk-free return. Investors normally require a higher risk premium if the investment involves more risk. CAPM is rooted in the systematic risk concept

The CAPM formula is as stated below:

$$R_i = R_f + \beta(R_m + R_f) \quad \text{.....(2.1)}$$

Where:

R_i = Expected return on a security

R_f = Risk-free rate

β = Beta of the security

R_m = Expected return of the market.

Assumptions of the model include the following:

i. All investors are rational and risk-averse.

ii. Markets are highly efficient and all investors have equal access to all available information.

iii. Borrowing and lending by investors is at a rate that is risk-free

iv. Investors are free from transaction costs and taxes.

v.All assets are absolutely liquid and infinitely divisible.

vi. Beta coefficient is the only measure of risk.

vii. All investors have similar expectations with regards to mean, variance and covariance of asset returns.

viii. All investors have identical time horizon.

2.4.4 Causality between Capital Market and Growth of the Economy

In this section existing views relating to direction of causality flow between capital market and growth of the economy are examined.

2.4.4.1 Early Views

There are two contrasting early views that are considered. Theorists such as Shaw (1973), and Mckinnon (1973) posited that finance is a necessary requirement for any economy to grow. This implies that a positive link between the two exists and causation flows from finance to growth of the economy.

On the other hand, theorists like Lucas (1988) viewed financial development as an unimportant determinant for growth and further argued that the role played by financial development towards growth has been overstressed by economists.

The group views stock market development as a limiting factor towards economic development because it allows dissatisfied investors to quickly sell their shares, which according to them, encourages investor myopia and weaken their commitment towards effective management of the firms.

2.4.4.2 Challenging Views

Patrick (1966) put forward three possible hypotheses to explain the direction of the relationship between the variables. These are supply leading, demand following and feedback hypotheses.

i. **Supply Leading Hypothesis**

This hypothesis states that finance facilitates growth of the economy because improved supply of financial services, which is essential for economic growth, is enhanced by the creation of financial institutions and the markets. The supply leading hypothesis is predicated on the lower cost of acquiring information, because financial intermediaries have the ability to achieve reduction in information cost by obtaining information relating to different investment opportunities and comparing same in the interest of all their savers. They also ensure that resources are efficiently allocated to the best project. The works of Mckinnon (1973), Shaw (1973), Levine (1997), support this hypothesis.

ii. **Demand Following Hypothesis**

This hypothesis, on the other hand, states that market development is facilitated by economic growth. This is because increase in financial assets demand, which is stimulated by rise in economic growth leads to financial system development. Robinson (1952) also notes that "where enterprise leads, finance follows"

iii. **Feedback Hypothesis**

The feedback hypothesis suggests a two-way causal relationship between financial development and economic performance. The hypothesis postulates that a country with a well-developed financial system could promote high economic expansion through technological changes, service and products innovation. This in turn will create high demand in the financial arrangements and services. Effective responds of the banking institutions to these demands will stimulate a high economic performance. Hence, both financial development and economic growth are positively interdependent and this relationship could

lead to feedback causality. The works of Luintel and Kham (1999) support this view.

2.4.4.3 The Consensus View

In support of the earlier finance-growth nexus view, Nieuwerburgh, Buelens and Cuyvers (2005) posited that a well-developed stock market should mobilize and allocate financial resources efficiently for productive use. They argued that for efficient mobilization of savings, financial intermediaries are necessary as it is costly for individuals to mobilize savings on their own . In support of the augment, Levine (1997) recognized technological innovation, savings rate and investment decisions as the medium through which financial development promotes growth and development in any economy.

2.5 Empirical Review

Over the decades, there have been studies that examined the relationship between economic development and capital market. Most of these studies substantiate that there is a relationship between the two. In some cases however, no correlation was found between the two variables.

Levine (1991) posited that developed stock market reduces both liquidity shock and productivity shock of business men to investment funds as well as enhances the production capacity of the economy. Bencivenga, Smith and Starr (1996) in their study, concluded that developed stock market induces long run economic growth.

Levine and Zervos (1996) investigated the relationship between stock market development and long-run economic growth. The study used pooled cross-country time series regression of forty – one countries from 1976 to 1993 to examine this relationship. The result showed a strong correlation between overall stock market development and long- run economic growth.

Mohammad, Nadeem and Liaquat (2008) examined the relationship between stock market development and economic growth in a developing economy, a study of Pakistan, using annual time-series data from 1971 to 2006. The study was conducted using co-integration and autoregressive distributed lag (ARDL) bounds testing technique and the result of the study revealed a strong relationship between stock market development and economic growth.

The result of this study was corroborated by the work of Nazir, Nawaz and Gilani (2010) that investigated the relationship between stock market development and economic growth in Pakistan for the period 1986 to 2008.

The study used ratio of market capitalization to GDP and ratio of total value of shares traded to GDP as measures of stock market development while the GDP was used as a proxy for economic growth.

The result revealed that economic growth can be attained by increasing the size of the stock markets of a country as well as the market capitalization in an emerging market like Pakistan.

Some authors in Nigeria have also attempted to examine the link between capital market development and economic growth.

Ezeoha, Ogamba, and Ndi-Okereke, (2009) examined the nature of the relationship that exists between stock market development and the level of investment (domestic private investment and foreign private investment) flows in Nigeria. The study showed that stock market development promotes domestic private investment flows which invariably enhances the economy's production capacity as well as promotion of national output growth. The result however, revealed that stock market development in Nigeria has not been able to encourage the flow of foreign private investment into the country.

Edame and Okoro (2013) studied the impact of capital market on economic growth in Nigeria.

The study was based on time series data collected on annual basis from 1970 to 2010 and the ordinary least squares (OLS) regression technique was used in analyzing the data. From the result obtained, all the capital market variables captured in the model such as market capitalization, number of deals and value of transactions were all positive and significant in promoting economic growth in Nigeria.

Donwa and Odia (2010) analysed time series data covering the period 1981 to 2008 and found out that capital market indicators (market capitalization, total listed equities, total new issues, volume of transaction and government stock) had no significant impact on Nigeria's economic growth. Ewah, Esang and Bassey (2009) examined the impact of capital market efficiency on economic growth in Nigeria by applying time series analysis on market capitalization, money supply, interest rate, total transaction and government development stock. Their findings revealed that although the capital market in Nigeria has the potential to induce growth, it has not contributed meaningfully to Nigeria's economic growth due to market rigidity, low market capitalization, low absorptive capacity, illiquidity and misappropriation of funds among others.

Kolapo and Adaramola (2012) investigated the impact of the Nigerian capital market on its economic growth and development using time series data from 1990 to 2010.

The technique of analysis adopted was the Johansen co-integration and Granger causality tests. The result showed that the Nigerian capital market and economic growth are co-integrated. This implies that a long-run relationship exists between capital market and economic growth in Nigeria. The causality test result suggested a bi-directional causation between the

GDP and value of transactions (VLT) and a uni-directional causality from market capitalization to GDP and not vice versa.

Odetayo and Sajuyigbe (2012) Studied the link between growth of the economy and capital market of Nigeria between 1990 and 2011, using ordinary least squares method. The found out that capital market indices have significant impact on the GDP.

Yadirichukwu and Chigbu (2014) examined the impact of capital market on economic growth in Nigeria for the period 1985 to 2012. The study applied regression analysis, incorporating multivariate co-integration and error correction to examine characteristics of the time series data,

Results revealed that two of the capital markets indicators, new issues and value of transaction, had positive and significant relationship with economic growth. On the other hand, an inverse relationship was observed between the other two capital market indicators (market capitalization and total listing) and economic growth. However, the relationship between total listing and economic growth was found to be insignificant.

The study recommended, among other things, that policy institution should be active in making systematic checks and appropriate policy innovations to ensure capital market led economic growth.

Nyong (1997) developed an aggregate index of capital market development and used it to determine its relationship with long-run economic growth in Nigeria. The study was conducted using time series data from 1970 to 1994.

Four measures of capital market development, the ratio of market capitalization to GDP, the ratio of total value of transactions on the main stock exchange to GDP, the value of equities transaction relative to GDP, and total listings were used. The four measures were combined into one overall composite index of capital market development using principle component

analysis. A control variable represented by a measure of financial market debt (which is the ratio of broad money to stock of money to GDP), was also included in the study. The result of the study showed that capital market development is negatively and significantly correlated with long-run growth in Nigeria.

Christian, Nwezeaku and Akujuobi (2015) evaluated the impact of capital market on economic growth and development in Nigeria using regression analysis on annual data from1981 to 2012 and concluded that the capital market has significant positive impact on economic growth in Nigeria. The study however, revealed that growth in market capitalization does not have significant impact on the economy in Nigeria. They therefore, recommended that capital market regulatory authorities should put in place policies that will enhance and sustain the market's contribution to economic development.

In South Africa, Odihiambo (2009) examined the causal link between economic growth and development of the stock market. The study applied ARDL technique on annual time series data. The study found evidence of causal impact of stock market development on economic growth. Ndako (2009) also investigated the causal link between stock market developments in South Africa. The study applied the analytical technique of vector error correction models (VECM) on quarterly data for the same period as in the case of Odihiambo. The result of the study showed evidence of causal impact of economic growth on stock market development, which was a direct opposite of Odihiambo's finding in terms of causal flow.

The nature of the data as well as the techniques of analysis employed may have influenced the results.

Irving (2005) tried to find out if there is a relationship between economic development in Eastern and Southern Africa and the capital market and found it to be non-existent or even harmful. He therefore, advised that Africa

should pay more attention to weightier problems such as poverty, undeveloped infrastructure and inadequate social services rather than devote further scare resources and efforts to promoting stock exchanges.

In Kenya, Olweny and Kimani (2011) investigated the causality between economic growth and performance of the stock market. The study covered the period 2001 to 2010 and quarterly data were used. The causality test by Granger was used in the analysis. Findings of the study showed a unilateral causality that flows from Nairobi Stock Exchange to the stock market reflecting the micro-economic state of the country.

Aduda, Chogii and Muraya (2014) examined the effect of capital market deepening on the economic growth in Kenya from 1992 to 2011. The study which used correlation analysis on the time series data, found out that GDP is positively affected by capital market in Kenya and so lends support to the finance growth nexus. They therefore recommended that government should take policy initiatives to foster growth of the capital market.

There are other researchers that contributed to the argument on the finance growth nexus.

Adaoye (2015) examined the impact of the Nigeria capital market on the Nigerian economy looking at a 20 years period from 1992 to 2011. The result of the multiple regression analytical approach revealed that the capital market had an insignificant impact on the economy within the period under review. The study therefore, advised that policies and measures that would boost investors' confidence should be enshrined in the running of Nigerian capital market so that it could contribute significantly to the growth of the Nigerian economy.

Nieuwerburgh, Buelens and Cuyvers (2005) investigated the long-run relationship between economic growth and financial market development in Belgium.

The researchers used a new set of stock market development indicators to posit that financial market development substantially affects economic growth. According to them, there was strong evidence that stock market development positively impacted economic growth within the period under study.

Ifueru and Abudu (2013) investigated the causal relationship and the direction of causality between stock market development and economic growth in Ghana, Kenya and Nigeria using Granger causality test procedure. The study regressed five indicators of stock market; stock market capitalization, stock turnover ratio, stock traded value, number of listed securities and stock market index against the real gross domestic product (GDP), which was used as proxy for economic growth. The period covered by the study was 1989 to 2009.

Result of the study did not show any causal relationship between stock market development and economic growth in Ghana and Nigeria, but revealed a bidirectional causal relationship between stock market development and economic growth in Kenya. They recommended, among other things, that the government and self- regulatory organizations should create and ensure strong, more transparent institutional and legal framework and should also encourage investment in human resources to bring about efficiency of stock exchanges and their auxiliary (support) services in efficiently allocating the available financial resources for investment purpose and also creating the platform that will engender best corporate practice which will result in growing investment, increased confidence in the financial system and further growth of the economy.

Mecagni and Sourial (1999) also applied the GARCH estimating methodology on Egyptian data and found out that four of the popular stock market indices did not conform to the efficient market hypothesis.

Based on the above argument, it has become very necessary to examine the role which capital markets play in developing economies.

Musibau, waliu, Hammed and Sa'ad (2016) examined the impact of Nigerian capital market on economic growth and development in Nigeria using annual series from 1970 to 2013. Capital market variables used for the study were Market Capitalization (MCAP), Total New Issues (TNI), Value of Shares Traded (VST) and Total Listed Equity (TLS) whereas the Gross Domestic Product (GDP) was used as a proxy for economic growth. A co-integration approach including the Error Correction Model and Granger Causality Test were among the analytical techniques used for the study. Results of the study revealed that past values of real GDP, values of shares traded, market capitalization and total new issues positively and significantly impacted on the current value of the real GDP. The granger causality results at lag2 showed that market capitalization and value of shares traded granger cause real GDP with no reverse or feedback effect. The study recommends more focus on the enhancement of the capital market (through enlightenment campaign) so as to engender greater growth of the economy.

Dayaratne and Wijethinga (2015) investigated the link between economic growth in Sri Lanka and development of the stock market between 2004 and 2014. The period includes the extensive civil war period and the post war period prevailed in the country. The capital market indicators used were Market Capitalization Ratio, Total Value Traded Ratio, Turnover Ratio, and Change in Number of Listed Companies, while the GDP was used as a proxy for growth in the economic. The ADF unit root test, Co-integration test by Johansen and the Causality Test by Granger were the basic statistical techniques used in analyzing the data. The results revealed a long-run relationship between economic growth and development of the stock market. Also, the results confirmed causality between stock market development and economic growth both during the war period and post war period.

In the republic of Croatia, Mihovil, Drago and Ivan (2016) investigated the effect of capital market development on economic growth using annual series from 2000 to 2015. Capital market indicators used for the study were Turner over Ratio, Market Capitalization Ratio, Number of Shares and Total value Traded. GDP was used as a proxy for economic growth. The non-linear multiple regression analysis was adopted in analyzing the data. Results revealed that Market Capitalization Ratio, Number of Shares and Turnover Ratio had positive impact on the GDP, while the relationship between the GDP and Total Value Traded was found to be negative. The researchers concluded that an increase in the capital market indicators that positively affect the GDP can contribute to the development of the Croatian capital market and invariably impact positively on the economy of the country.

Abbas, Pei and Rui (2016) examined the relationship between the stock market measures and economic growth in Tanzania using annual time series data from 2000 to 2011. Stock market development indicators used in the study were Turnover Ratio. Value of Shares Traded to GDP Ratio and Market Capitalization to GDP Ratio, The proxy used for economic growth was the GDP. The Unit Root Test and Multiple Regression Analysis were among the instruments used in analyzing the data. Findings of the study revealed that there was no relationship between economic growth in Tanzania and the stock market.

The study recommends that the government should make financial policies that will motivate companies to see the stock market as a good source of long-term funds instead of taking bank loans. A reduction in tax liabilities of companies as well as tax paid by individuals, in order to enhance savings, was also recommended.

Abdul -Khaliq (2013) investigated the impact of stock market liquidity on the economic growth of Jordan during the period from 1991-2011. For measurement of liquidity the study used Market Capitalization to GDP Ratio

and the Market Turnover Ratio while the Growth Rate of GDP was used to represent economic growth. The model used in testing the relationship was the simple linear regression model. Results of the study showed that market capitalization to GDP ratio did not exert significant effect upon economic growth but the turnover ratio had significant effect upon the economic growth.

Erasmus (2016) examined the relationship between sustainable economic growth in the economy of Nigeria and stock market evolution for the period 1987-2014. Market indicators used for the study included turnover ratio, stock market capitalization ratio and stock market traded value, together with a combined index of stock market development. The proxy used for economic growth was the GDP. The study employed the Error Correction Model and the ARDL in analyzing the data. The result showed that at 10% significance level, economic growth was positively and significantly affected by market capitalization and turnover ratio. The effect of value traded ratio on growth was positive and insignificant while combined stock index had negative and insignificant effect on economic growth.

The study recommends financial deepening and public enlightenment on the benefits of the stock market as a way of enhancing the effect of capital market on the economy.

Samwell and Lwaga (2016) examined the impact of stock exchange market on the economic growth in Tanzania using simple regression model on 1998 to 2012 annual data. The study used volume of shares traded and market capitalization as measures of capital market development while the proxy used for economic growth was RGDP. Findings show that the market capitalization has a negative impact on economic growth, which suggests that the stock market in Tanzania is still under developed and its impact on the growth of the economic is insignificant. Findings also show that the impact of market

liquidity on economic growth is positive, which suggests that the stock market is still active despite its size.

Araoye, Ajayi and Aruwaji (2018), examined the impact of the Nigerian Stock market development on the nation's economic growth from 1985 to 2014. The GDP was used as proxy for economic growth while market capitalization and market turnover ratio were used as proxies for stock market development in terms of size and liquidity respectively. The study used the Johansen's co-integration test in establishing if a long–run relationship does exist between stock market development and economic growth in Nigeria. The study also used the error correction model to find out if the stock market is significant in determining economic growth in Nigeria .Results of the study revealed that the stock market has impacted insignificantly on the economic growth. This is because both market capitalization and turnover ratio presented positive and insignificant relationship with gross domestic product. The study recommends that policy makers should ensure improvement in market capitalization by encouraging foreign direct investment participation in the market. It further recommended that small and medium entrepreneurs should be encouraged to access the market for investible funds given their close affinity with the grass root fund mobilization ability.

Echekoba and Ananwude (2016) examined the causality between economic growth in Nigeria and stock market development from 1981 to 2015. In the study, value of stock traded and Market capitalization were the indicators of capital market used while GDP was used as proxy for economic development. Results of co-integration test, which was carried out using the Johansen's test revealed a long-run relationship between the GDP and stock market development. No causality was found between stock market development and economic growth as revealed by the results of Granger causality test

Saleh, Hougbing, Ahmed and Yapatake (2016), examined the impact of stock exchange on economic growth of Mauritius using time series secondary data

covering the period of 1993-2015. In this study, GDP was used as proxy for economic growth while market capitalization ratio, value traded ratio and turnover ratio were used as proxies for stock exchange. The study used cointegration and the vector error correction mechanism (VECM) to estimate the short as well as the long–run parameters after ascertainment of co-integration test. Results revealed that with the exception of short- run causality which was found to run from turnover ratio to economic growth, no causality was found to exist between all other capital market indicators used. The study recommends that stock market regulators should address issues that are capable of boosting the investors' confidence through improving policy formulation and creating awareness.

2.6 Gap in Knowledge

The works reviewed so far revealed that the proxy used for economic development by earlier researchers was the GDP. Here, HDI which measures development better than the GDP was used.

Furthermore, in addition to country by country analysis which the earlier researchers adopted, This study tried to close the gap in knowledge by going further to carry out, among other analysis, panel data (pooled) regression analysis, which earlier researchers in this area failed to do, to find out the effect an integrated (regional) market will have on the economic development of the emerging economies. This enabled the researcher to proffer solution on how to reverse this dangerous downward trend in the economic development of the emerging economies.

CHAPTER THREE

METHODOLOGY

This chapter is concerned with how the study was designed; the procedure adopted in gathering data, the sources of data collection as well as the data period. It also specifies the empirical model utilized and the econometric techniques employed in estimating the model (data analysis).

3.1 Research Design and Sources of Data

This study explored the ex-post research design. Research design is the framework for the collection of data for this research. This is an econometric study of the capital markets of Nigeria, South Africa and Kenya involving the analysis of time series (secondary) data covering the period 1990 to 2018. The selection of the study period in this case was based on the year (1990) in which the United Nations Development Programme (UNDP), in its Annual Development Reports, initiated the construction and refinement of the Human Development Index (HDI) (Todaro & Smith 2009).The Nigerian Stock Exchange (NSE), National Bureau of Statistics, Nigeria (NBSN), Central Bank of Nigeria (CBN),World Federation of Exchanges (WFE), African Federation of Exchanges(AFE), Johannesburg Stock Exchange (JSE) Website, Nairobi Stock Exchange (NSE) Website, United Nations Development Programme (UNDP) Reports (various series), the relevant literatures (books, journals, previous research papers and electronic sites) and the World Bank were the main sources of data for this study.

3.2 Source of Data

Data obtained were from the secondary sources as outlined in section 3.1 above. The researcher did not make substantial use of primary data save for few oral interviews conducted with some key market participants on matters relating to the study.

3.3 Specification of the Model

The model adopted for this study was based on the improvement suggested by Demirgue-kunt and Levine (1996), Levine and Zervos (1996) and Ewah, Esang and Bassey (2009) which have investigated linkage between stock market and economic growth and development. Their studies infer that the economic growth (proxied by Gross Domestic Product) is significantly influenced by the capital market indices such as market capitalization, value of securities traded, turnover ratio, all share index and total listing. In the light of this, the general econometric model for the study is stated as follows:

HDI =f (MCAPGDP, VSTGDP, SMT, ALSI)…….… (3.1)

Where:

HDI = Human Development Index (proxy for economic development)

MCAPGDP = Ratio of market capitalization to GDP.

VSTGDP = Value of Securities Traded to GDP

SMT = Stock Market Turnover Ratio

ALSI = All Share Index

The explicit forms of equation (3.1) are represented in the different econometric models as stated below:

MODEL 1:

This model specifies the equation for Nigeria

$HDI_tN=\beta_0+ \beta_1HDI_{t-1} + \beta_2MCAPGDP_t + \beta_3VSTGDP_t +\beta_4SMT_t + \beta_5ALSI+\mu_t$…….……. (3.2)

MODEL2:

This model specifies the equation for South Africa

$HDI_tSA = \beta_0 + \beta_1 HDI_{t-1} + \beta_2 MCAPGDP_t + \beta_3 VSTGDP_t + \beta_4 SMT_t + \beta_5 ALSI + \mu_t$……..(3.3)

MODEL 3:

This model specifies the equation for kenya

$HDI_tK = \beta_0 + \beta_1 HDI_{t-1} + \beta_2 MCAPGDP_t + \beta_3 VSTGDP_t + \beta_4 SMT_t + \beta_5 ALSI + \mu_t$……. (3.4)

Where;

β_0 = Intercept.

Constants $\beta_1 - \beta_5$ = independent variables 'coefficients.

μ_t = error term

For the purpose of analysis, variables for Nigeria, South Africa and Kenya shall be differentiated by attaching N, SA and K respectively.

Human Development Index: is an index that combines measurements of life expectancy, literacy, educational attainment and gross domestic product (GDP) per capita for countries worldwide.

Market Capitalization Ratio: is a measure for the stock market size. It is calculated as the ratio of the market capitalization to GDP. The reason behind this measure is that the overall market size is positively correlated with the ability of the market to mobilize capital and diversify risk on economy wide basis (Levine & Zervos, 1996).

Value of Security Traded Ratio: Compliments market capitalization. It is an indicator of market liquidity and it is computed as the total value of bonds and shares traded divided by the gross domestic product of the economy.

Turnover Ratio: Measures liquidity of the market and high turnover ratio is an indication of low transaction cost in the capital market. The ratio also compliments the total value traded ratio and is computed as the value of total share traded divided by market capitalization.

All Share Index: Shows the changing average value of the share prices of all companies on a stock exchange, and it is used as a measure of how well a market is performing.

3.3.1 A priori Expectation

Based on the literature, the expectation is that all capital market development measures especially those being used for this study, should have positive effect on economic development through liquidity injection and efficient allocation of resources. That is, β_1, $\beta 2$, $\beta 3$, $\beta 4 > 0$

3.4 Techniques of Model Evaluation

3.4.1Descriptive Statistics

For robustness, descriptive statistics of the data sets is carried out. This involves calculation of averages, measures of dispersion, skewness and Kurtosis. Graphs of the data on Human Development index and the Capital Market variables are also drawn in other to determine the pattern of movements of the various variables

3.4.2 Stationarity Test

Often, the slope coefficients of an auto-regressive model are estimated using ordinary least squares. This requires that the time series data must be stationary with the same order of integration. If this condition is violated, the resultant

estimates will be invalid and could be referred to as "spurious regression" (Granger & Newbold, 1974).

Furthermore, the stationarity status of a time series can have an impact on its behavior and properties. Brook (2008) defined a stationary series as one in which the mean, variance and auto-covariance will each be a constant at each given lag. In the event that the data is non-stationary at level [1(0)], the data needs to be differenced until stationarity is reached. This study, for robustness, carried out a descriptive statistics of the data before conducting a formal test to check if all the variables have stationary time series. The formal test is conducted through Augmented-Ducky-Fuller test and re-tested using Phillips-Perron test.

3.4.2.1 Unit Root Test

The ADF test differs from the other unit root test methods in the sense that the dependent variable's lagged terms are added in order to take care of the possible serial correlation in the error terms which are assumed to have a constant variance (Chakraborty, 2007).

The ADF method involves estimating the following equation:

$$\Delta Y_t = \alpha_0 + \beta_1 Y_{t-1} + \varphi_2 t + \sum_{i=1}^{p} \theta_i \Delta Y_{t-1} + \mu_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (3.5)$$

where: Δ , $Y_{t,}$ and μ_t are difference operator, variable tested and white noise residual respectively and t is a time trend. Furthermore, α_o is the intercept while ΔY_t equals $(y_{t-1}-y_{t-2})$ and $\beta_{1,}$ φ_2 and θ_i are coefficients being tested.

The number of augmenting lags (P) is determined by minimizing the Schwartz Bayesian information criterion or minimizing the Akaike information criterion or lags are dropped until the last lag is statistically significant, E views allows all of these options for the research to choose from.

The null and the alternative hypotheses being tested for variable Y_t are as follows:

$H_{0:}\ \beta_1 = 0$

$H_i: \beta_1 < 0$

H_0 implies non-stationarity of the series, and the null is rejected when β_1 is less than zero ($H_1: \beta_1 < 0$). If the null hypotheses is not rejected, further differencing is carried out until stationary is reached. The hypotheses are tested as:

$H_0: \beta_1 = 0$

$H_1: \beta_1 < 0$

and the test statistic

$$DF_t = \frac{\beta_1}{SE(\widehat{\beta_1})} \quad \text{.....(3.6)}$$

is computed and compared to the critical value (Dickey & Fuller, 1979). The H_0 is rejected if the test statistic is less than the critical value.

3.4.2.2 Philips-Perron (PP) Test

Another test for unit root similar to ADF test was developed by Philips-Perron (1998). However, the test produces unsatisfactory results if the samples are finite (Davidson & Mackinnon, 2004).

Dimitrios and Stephen (2007) specifies three cases on which a decision on whether to move to the next step or to stop after getting the results for the stationarity test can be based. The first is that, if all the variables are stationary at level 1(0), the variables are said to be co-integrated. The second case is that if the variables are integrated at different orders, then there is no co-integration finally, if the variables are integrated of some order, a co-integration test is conducted.

3.4.3 Test for Co-integration

Engle Granger co-integration approach and the Johanson's co-integration method are the co-integration techniques that are commonly used.

3.4.3.1 Engle Granger's Approach

The Engle Granger Co-integration approach was developed by Granger (1981), and further developed by Engle and Granger (1987). It is generally referred to as the Engle Granger – 2 stage method; it highlights four steps that are considered in order test for co-integration. The first step is to determine the order of which the variables are integrated. This is followed by the estimation of the long-run relationship if the results from step one permits. The third is to test for co-integration of the residuals and finally the model of error correction is estimated in order to determine how early deviations are corrected in the long-run. The Engle granger co-integration approach is viewed as a method that is easy to understand and implement however, Dimitrios and Stephen (2007) points out that the method is characterized by a number of drawbacks.

The approach does not clearly explain which variables can be used as regressor and this makes it inappropriate when more than two variables are employed. Secondly, it cannot show the number of co-integrating vectors when more than two variables are involved. Thirdly, transfer of error from step 1 to step2 is possible because of the two-step nature of the estimator

3.4.3.2 Johansen's Co-integration Approach

The drawbacks of the Engle Granger approach led to the development of the Johansen's (1988), Johansen and Juselius (1990) co-integration procedure as a solution. This procedure applies maximum likelihood to the vector auto-regression (VAR) model. In conducting it a number of steps are usually taken into consideration. The first step is to examine the order of integration of the variables, the second is to set the lag length for the model, the third step is to choose the appropriate model with regards to the deterministic components in the multivariate system, the fourth one is to determine the number of co-integrating vectors, and the last step is to test for linear restrictions in the co-integrating vectors. The Johansen's approach is more appropriate for large samples and it treats all variables as endogenous which enables it to capture more than one co-integrating vectors. In view of these advantages, the study adopts it over other co-integration approaches, in order to examine the long-run relationship among the variables.

If the VAR is of order P, the starting equation can be stated as:

$$Y_{t+} = A_1 Y_{t-1} + A_2 Y_{t-2} + \ldots\ldots\ldots + A_p Y_{t-p} + BX_t + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.7)$$

Where Y_t is the non-stationary 1(1) K-vector, X_t is a D-vector of deterministic variables, ε_t is a vector of innovations. The VAR can be re-written as:

$$\Delta Y_t = \prod Y_{t-1} + \sum_{i-1}^{p-1} \Gamma_i \Delta Y_{t-i} + BX_t + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.8)$$

$$Where \prod = \sum_{i-1}^{p} A_i - 1 \; and \; \Gamma_i = -\sum_{j=i+1}^{p} A_j$$

Π And Γ are coefficients matrices. Coefficient matrix Π is known as the impact matrix and contains the information regarding the long-run relationship. This can be decomposed to $\Pi = \alpha\hat{\beta}$ where α is the speed adjustment to the equilibrium while $\hat{\beta}$ is the long-run matrix of coefficients.

The procedures suggested by Johansen's (1988) that can be used to test for co-integration between variables are trace test and maximum eighteen value test. The two procedures are formulated as follows:

Trace Test

The likelihood ratio (LR) test statistic for the hypothesis of at most r co-integrating vectors is

$$\lambda_{trace} = -T\sum_{1=r+1}^{n} \ln(1-\lambda_i)$$

Where r is the number of co-integrating vectors which can be 0, 1, 2, n-1, n is the number of variables, T stands for the number of observations employed for estimation, λ_i is the i^{th} largest estimated value obtained from the estimated matrix. The trace procedure is based on the likelihood ratio test about the matrix and it considers whether the trace is increased by adding more eigenvalues beyond the largest eighteen value of the statistic is bigger than the critical value, the null hypothesis of the most r co-integrating vectors is rejected.

Maximum Eigen Value Test

To test the null hypothesis of r co-integrating vectors versus the alternative of (r+1) co-integrating vectors, the LR test statistic is

$$\lambda max\ (r, r+1) = -T\ln(1-\lambda_{r+1})$$

If the null hypothesis is rejected, it means there is one or more co-integrating vectors.

A major problem with Johansen's co-integration is setting the optimal number of lags required.

Consequently, this may lead to standard normal error terms that are suffering from non-normality, autocorrelation and heteroskedasticity. Hence, the Schwarz criterion (SC) and the Akaike information criterion (AIC) tests are applied in order to set an optimal lag structure.

3.4.4 Error Correction Model

If the variables in the VAR model are co-integrated, a vector error correction model (VECM) is constructed so as to examine the relationship among all endogenous variables. Specifically, the error correction model is designed to capture the short-run deviations that might have occurred in estimating the long-run co-integrating equations (Engel and Granger, 1987). This include the error correction term (ECM), the capital market model specified as follows:

$$\Delta HDI_t = \beta_o + \sum_{i=1}^{n} \beta_{1i} \Delta HDI_{t-i} + \sum_{i=1}^{n} \beta_{2i} \Delta MCAPGDP_{t-i} + \sum_{i=1}^{n} \beta_{3i} \Delta VSTGDP_{t-i}$$
$$+ \sum_{i=1}^{n} \beta_{4i} \Delta SMT_{t-i} + \sum_{i=1}^{n} \beta_{5i} \Delta ALSI_{t-i} + \beta_6 ECT_{t-1} + \mu_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3.9$$

Where: Δ is a first difference operator, ECT_{t-1} is the error correction term lagged at one period and μ_t is a white noise.

3.4.5 The Granger Causality Test

The granger causality test seeks to test direction of effect between pairs of variables. The study recognizes that the direction of the relationship between the two variables can go either way as suggested by the supply leading, demand following and feedback hypothesis. Consequently, depending on the stationarity, causality test is carried out to find out if it is supply leading hypothesis, demand following hypothesis or feedback hypothesis that is applicable for the countries under study.

The Grangers causality test is established as follows:

$$Y_t = \alpha_o + \sum_{i=1}^{m} \alpha_{1i} X_{t-i} + \sum_{j=1}^{n} \alpha_{2j} Y_{t-j} + \mu_t \quad \ldots\ldots 3.10$$

$$X_t = \beta_o + \sum_{i=1}^{m} \beta_{1i} X_{t-i} + \sum_{j=1}^{n} \beta_{2j} Y_{t-j} + V_t \quad \ldots\ldots 3.11$$

Where: Y_t is the dependent variable which is the measure of economic development in this case and X_t represents all the selected capital market variables while μ_t and V_t are error terms which are assumed to be uncorrelated. Y is said to granger cause X if ($\sum\alpha_{1i} = 0$) in equation 3.7 and ($\sum\beta_{2j} \neq 0$) in equation 3.8. In this case, the hypotheses is demand following. On the other hand, if the estimated coefficients of lagged X in equations (3.7) is statistically different from zero, which is ($\sum\alpha_{1i} \neq 0$) and the set of lagged human development index coefficients in equation (3.8) is zero, which is ($\sum\beta_{2j} = 0$) then a unilateral causality that flows from the market to development of the economy is established. The hypotheses here is supplied leading. The feedback of X and Y exist if ($\sum\alpha_{1i} \neq 0$) in equation (3.7) and ($\sum\beta_{2j} \neq 0$) in equation (3.8). In contrast, the variables are said to be independent and a causality relationship does not exist if the set of coefficients is equal to zero.

3.4.6 Diagnostic Tests

This is a stage where a goodness of fit for the model is tested by carrying out second order econometric tests namely serial correlation test, heteroskedasticity test multicollinearity test and model adequacy test

3.4.6.1 Test for Serial Correlation

One of the assumptions of the vector error-correction model is that the variances and correlation between different disturbances are all equal to zero, which

means that the error terms are independently distributed. When this assumption is violated, it means the error terms are no longer independently distributed, this indicates the presences of serial correlation (or auto correction). This can be caused by omission of a relevant variable, wrong functional forms and systematic errors in measurement. Statistical tests such as Durbin-Watson (DW) test and Breusch-Godfrey LM test are usually performed to detect the presence of serial correlation. Dimitrios and Stephen (2007) observed that the durbin-Watson test has some disadvantages that make it unsuitable as it may lead to inconclusive results. This is because it is not applicable when a lagged dependent variable is employed and it cannot take into account higher orders of serial correlation. To deal with these disadvantages of the Durbin-Watson test, Breusch and Godfrey (1978) developed a second order econometric test for serial correlation and is applicable where lagged values of the dependent variables are used as independent variables in the model's representation for later observations. Because the test is based on the idea of Lagrange multiplier testing, it is sometimes referred to as LM test for serial correlation (Asterion, dimitrios, hall, & Stephen, 2011). Based on the foregoing reason, the study employs the Breusch-Godfrey serial correlation test. The Breusch–Godfrey method tests the hypothesis that there is no serial correlation against the alternative hypothesis for serial correlation.

3.4.6.2 Heteroskedasticity

A model is heteroskedasrtic if the variances of the error terms are unequal. This characteristic violates the assumption that the variances of error terms are constant. The presence of Heteroskedasticity in a model can be detected by conducting tests such as Harvey Godfrey test, the park LM test, whites test and the Breusch-Pegan-Godfry test among others. Breusch-Pegan (1979) developed the Breusch-Pegan test and it was independently suggested with some extension by Cook and Weisberg (1983). It tests whether the values of the regressors

determine the variances of errors from a regression. In that case, Heteroskedasticity is present.

To carry out this test, a model in which ordinary residual squares are taken as dependent variable and some (or all) of the regressors are taken as independent variables is required to be estimated. It is a chi-square test; the test statistic is distributed as nX^2 with K degrees of freedom, where k is the number of independent variables. If the test statistic has a p-value below an appropriate threshold (e.g. $P < 0.05$) then the H_o, which is that the model is Homoskedastic will not be accepted and Heteroskedasticity assumed and in that case, the model will be re-estimated to cater for this problem. The study prefers the Breusch-Pegan-Godfrey test.

3.4.6.3 Multicollinearity

Multicollinearity is a term used to describe a multiple regression model when there is high correlation between two or more predictors.

The variance inflation factor (VIF) measures how much the variance of the estimated regression coefficient increases (is inflated) when multicollinearity exists (Kunter, Nachtsheim, & Neter, 2004) if the variance of the coefficients increases, the model becomes less reliable. The VIFs are calculated by regressing each predictor against all of the other predictors in the Model in order to obtain the R-SQ value. The VIF for each predictor is obtained by the following formula:

$\text{VIF} = \frac{1}{1-R^2}$ the standard error of the factor is then obtained by taking square root of the VIF.

There are some guidelines that are used to determine whether the VIFs are in an acceptable range and they include the following:

i. The analysis exhibits the signs of multicollinearity such as estimates of the coefficients very from model to model.

ii. t-test for each of the individual slopes are non-significant (P>0.05), but the overall F-test for testing all of the slopes are simultaneously o which is significant (p<0.05)
iii. The correlations among pairs of predictor variables are large.

A rule of the thumb commonly used in practice is if a VIF is > 10, the multicollinearity is high. A VIF of less than 10 is acceptable (Kunter, Nachsherim & Neter, 2004).

3.4.6.4 Model Adequacy Test

Ramsey (1969) developed a test that is used to determine whether a linear regression model has been well specified or not. It is known as the Regression Equation Specification Error Test (RESET). There is misspecification of a linear model if a non-linear function can better approximate the data generating process.

3.4.7 Panel Data Regression

Panel data comprise observations of multidimensional data obtained from the same individuals, firms, industry or countries over multiple time periods. A panel can be said to be short or long depending on the relative size, space or time. A panel can be short if the number of time period (T) is less than the number of cross section unit (N), (T< N) and it is said to be long if the number of time periods is greater than the number of cross sectional units that is, T > N. Two models to be considered are fixed and random effects models.

The fixed effects model hold that the regression lines are the same across countries but the intercepts differ or is said to be time variant across individuals that comprise three countries. In our case though the intercept differs across the countries, each countries' intercept does not vary over time.

The fixed effects model is given as:

$FXR_{it} = \alpha_1 + \alpha_2 \sum_{i=2}^{N} D_{it} + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + u_{it}$ ...(3.12)

The subscript *i* on the intercept suggests that owing to peculiarities of each of these countries, the intercept of the three countries may differ. The intercept α_1 is the intercept value of the first entity – Nigeria which is a reference (or base) point. While other α coefficients indicate by how much the intercept values of other countries differ from the first intercept value for the reference country, Nigeria.

According to the random effects model, the differences between individuals are random, drawn from a given distribution with constant parameter. Thus, the random effects model the individual effects as part of disturbance term drawing from a probability distribution rather than wiping them out. The random effects model can therefore be stated as an error component model as:

$Y_{it} = \beta_1 X_{1it} + \beta_2 X_{2it} + .. \ldots + \beta_K X_{Kit} + u_{it}$ ..... (3.13)

$u_{it} = \alpha_i + e_{it}$ = the composite term consisting of two components α_i and e_{it}.

CHAPTER FOUR

RESULTS AND DISCUSSION

The model estimated and analytical framework specified in chapter three have been applied to arrive at the results/ discussion presented in this chapter.

4.1 Results

4.1.1 Results for Nigeria

4.1.1.1 Presentation of Data

Data in respect of all the variables used in this study are shown in Table 4.1

Table 4.1 Data on HDI and Capital Market Indicators - Nigeria

Year	HDIN	MCAPGDPN	VSTGDPN	SMTN	ALSIN
1990	0.411	3.45	0.05	1.41	513.79
1991	0.405	4.23	0.04	1.04	783
1992	0.406	3.56	0.06	1.57	1107.61
1993	0.418	4.36	0.07	1.68	1543.84
1994	0.429	4.74	0.07	1.49	2205.02
1995	0.432	6.2	0.06	1.02	5092.21
1996	0.42	7.09	0.17	2.44	6992.1
1997	0.436	6.73	0.25	3.66	6440.53
1998	0.439	6.58	0.34	5.17	5672.72
1999	0.427	6.41	0.3	4.69	5266.41
2000	0.434	7.04	0.42	5.96	8111.04
2001	0.521	9.61	0.84	8.71	10963
2002	0.440	9.81	0.76	7.77	12137.72
2003	0.453	13.71	1.21	8.86	20128.94
2004	0.462	18.51	1.98	10.69	23844.46
2005	0.468	19.85	1.8	9.07	24085.8
2006	0.466	27.58	2.53	9.18	33189.31
2007	0.478	63.81	5.21	8.16	57990.23
2008	0.486	39.36	6.91	17.56	31450.82
2009	0.449	28.36	2.77	9.75	20827.21
2010	0.493	18.16	1.46	8.07	24770.5
2011	0.499	16.32	1.01	6.22	20730.63
2012	0.505	20.64	1.13	5.47	28078.84
2013	0.521	23.82	2.94	12.32	41329.21
2014	0.525	18.95	1.5	7.91	34657.2
2015	0.527	17.86	1	8.2	28642.25
2016	0.530	9.10	0.40	7.52	32438.54
2017	0.532	12.00	0.60	5.90	38439.38
2018	0.538	12.36	0.57	6.20	38540.24

Sources: World Bank, UNDP, World Federation of Exchanges (WFE), African Federation of Exchanges (AFE), CBN, NSE, National Bureau of Statistics of Nigeria.

4.1.1.2 Data Analysis

4.1.1.2a Descriptive Statistics for Nigeria

Results of descriptive statistics of the human development index and capital market indicators in table 4.1 are shown in table 4.2 and figure 4.1.

Table 4.2: Descriptive statistics for HDI and Capital market indicators in Nigeria.

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic
HDIN	29	.405	.538	.46724	.043648	.251	-1.373
MCAPGDPN	29	3.450	63.810	15.17931	12.839976	2.232	6.596
VSTGDPN	29	.040	6.910	1.25690	1.589266	2.264	5.667
SMTN	29	1.020	17.560	6.47207	3.831950	.583	1.038
ALSIN	29	513.790	57990.230	19516.29483	15225.585516	.507	-.394
Valid N (listwise)	29						

Sources: EVIEWS 10.0

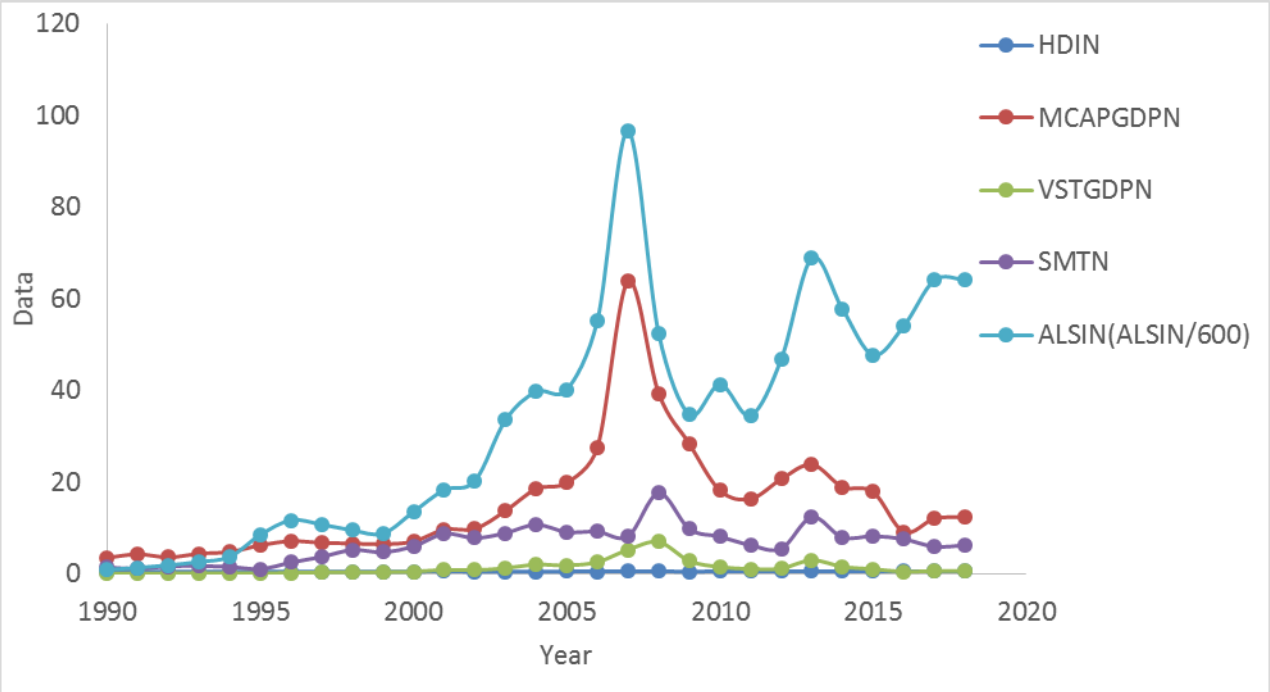

Fig. 4.1: Time Series plot of HDIN, MCAPGDPN, VSTGDPN, SMTN, ALSIN

Source: Eviews10.0

Figure 4.1.1.2b: Trend Analysis for Nigeria

Descriptive statistics of the Human Development Index (HDIN) and Capital market variables: Market Capitalization Ratio (MCAPGDPN), Value of Securities Traded Ratio (VSTGDPN), Stock Market Turnover Ratio (SMTN) and All Share Index (ALSIN) in Nigeria are presented in Table 4.2. From the Table, notice that the average values of HDI, MCAPGDPN, VSTGDPN, SMTN and ALSIN are 0.46724, 15.17931, 1.25690, 6.47207 and 19516.29483 respectively for the sample period. The standard deviations are 0.043648, 12.839976, 1.589266, 3.831950 and 15225.585516 for HDI, MCAPGDPN, VSTGDPN, SMTN and ALASIN respectively. Table 4.2 also shows that the skewness coefficients for HDI, MCAPGDPN, VSTGDPN, SMTN and ALSIN are 0.251, 2.232, 2.264, 0.583 and 0.507 respectively; while the kurtosis coefficients for HDI, MCAPGDPN, VSTGDPN, SMTN and ALSIN are -1.373, 6.596, 5.667, 1.038 and -0.394 respectively.

The HDI mean value of 0.46724 implies that Nigeria falls within the low development countries. The skewness coefficients show that HDI data are fairly symmetrical. They also show that MCAPGDPN and VSTGDPN are respectively highly skewed while the SMTN and ALSIN are moderately skewed. The data of HDIN, SMTN and ALSIN can be said to be fairly normally distributed since they respectively have Kurtosis coefficients that lie between -3 and +3. On the other hand, the data of MCAPGDPN and VSTGDPN are not normally distributed because their Kurtosis coefficients are respectively greater than 3.

Figure 4.1 shows that while the graph of HDIN remained almost horizontal to the x-axis, showing little or no increase, the individual graphs of the capital market variables reveal fairly general increase with noticeable degrees of volatility. This implies that increase in capital market activities, within the period under study, had little or no effect on economic development (HDIN) in Nigeria.

4.1.1.2c Analytical Results for Nigeria

The ADF test shown here (and PP Test Statistic which is only shown in the appendix) were carried out to know if the variables are stationary to avoid spurious results which could have arisen if non stationary data were used for regression. The variables became stationary at first difference (i.e. I(1)) as in table 4.3.

Table 4.3 Unit Root Test Results -Nigeria

	Lag	ADF Test Statistic	Critical Values		
Variables	SCI	1st difference	1%	5%	Remarks
HDIN	5	-7.764835	-3.737853	-2.991878	Stationary
MCAPGDPN	5	-5.080782	-3.737853	-2.991878	Stationary
SMTN	5	-7.369156	-3.737853	-2.991878	Stationary
VSTGDPN	5	-4.204753	-3.737853	-2.991878	Stationary
ALSIN	5	-6.852780	-3.737853	-2.991878	Stationary

Source: Eviews 10.0

From the above Table 4.3, the absolute values of ADF statistic of all the series are more than their 1 percent critical values and far more than that of 5 percent at first difference. This implies that the series are differenced once for them to be stationary. The researcher resorted to testing for co-integration between the variables since they are integrated of order 1. Table 4.4 shows the co-integration test result.

4.1.1.2d Co integration and ECM Tests

Table 4.4 Co-integration Test for HDI-Capital market Development Data.

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.958435	158.0379	69.81889	0.0000
At most 1 *	0.922928	84.88769	47.85613	0.0000
At most 2	0.477742	25.93846	29.79707	0.1305
At most 3	0.290399	10.99788	15.49471	0.2116
At most 4	0.126386	3.107673	3.841466	0.0779
Trace test indicates 2 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				

Source: Eviews 10.0

The result of Table 4.4 shows that there are two co-integrating equations in the series suggesting that the variables have long-run relationship in Nigeria. Because of the existence of co-integrating equations, the researcher used the error correction model to know how the short-run deviations that occurred in the process of estimating the long-run co-integrating equations are corrected. The result is presented in Table 4.5

4.1.1.2e: Other Diagnostic Tests

Table 4.5: Error Correction Model - Nigeria.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(HDIN(-1))	0.545862	0.206729	2.640465	0.0385
D(MCAPGDPN(-2))	0.019907	0.008322	2.001841	0.0639
D(MCAPGDPN(-3))	0.009118	0.003260	2.796262	0.0813
D(SMTN(-1))	0.040497	0.006441	3.181162	0.0190
D(SMTN(-3))	0.008313	0.005893	2.410736	0.0080
D(SMTN(-4))	-0.032725	0.008314	-3.935740	0.0077
D(VSTGDPN(-1))	0.196660	0.066437	2.960071	0.0253
D(VSTGDPN(-3))	0.215372	0.063252	3.404985	0.0144
D(VSTGDPN(-4))	0.013268	0.016254	0.816290	0.4455
D(ALSIN(-1))	-1.28E-05	4.91E-06	-2.614412	0.0399
D(ALSIN(-2))	4.20E-06	3.08E-06	1.364782	0.2213
D(ALSIN(-3))	-2.24E-05	4.46E-06	-5.015000	0.0024
D(ALSIN(-4))	-2.87E-05	6.38E-06	-4.496714	0.0041
ECT(-1)	-2.650111	0.434559	-6.098394	0.0009

Source: Eviews 10.0

The result of the analysis in Table 4.5 shows that past human development index (HDI) at lag 1 reinforces itself. In other words, increase in the past HDI in Nigeria leads to increase in the present value of HDI. The effect of value of traded securities and market turnover ratio on HDI was positive and significant while all share index at lags 1, 3 and 4 exert negative and significant impact on HDI. Market capitalization ratio at lags 2 and 3 related positively and insignificantly to HDI.

From these findings, one may deduce that the capital market activities generally impact Human development index in Nigeria.

To accept this model, the researcher embarked on second order econometric tests namely serial correlation test, heteroscedasticity test and Model adequacy test.

Table 4.6: Breusch-Godfrey Serial Correlation LM Test – Nigeria				
F-statistic	0.050458	Prob. F(2,4)		0.9512
Obs*R-squared	0.516573	Prob. Chi-Square(2)		0.7721
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(HDIN(-1))	0.027655	0.285197	0.096968	0.9274
D(MCAPGDPN(-2))	0.000228	0.011053	0.020600	0.9846
D(MCAPGDPN(-3))	5.48E-05	0.004051	0.013522	0.9899
D(SMTN(-1))	0.000393	0.008425	0.046657	0.9650
D(SMTN(-3))	0.000278	0.007665	0.036224	0.9728
D(SMTN(-4))	-0.000777	0.010554	-0.073596	0.9449
D(VSTGDPN(-1))	-0.002418	0.089315	-0.027070	0.9797
D(VSTGDPN(-3))	-0.002630	0.080113	-0.032829	0.9754
D(VSTGDPN(-4))	0.002443	0.021128	0.115612	0.9135
D(ALSIN(-1))	3.06E-07	6.53E-06	0.046858	0.9649
D(ALSIN(-2))	-9.93E-08	4.13E-06	-0.024071	0.9819
D(ALSIN(-3))	1.96E-07	5.62E-06	0.034780	0.9739
D(ALSIN(-4))	-1.54E-08	8.11E-06	-0.001902	0.9986
ECT(-1)	0.001490	0.548689	0.002715	0.9980
C	-0.000728	0.019612	-0.037122	0.9722
RESID(-1)	-0.129193	0.718952	-0.179696	0.8661
RESID(-2)	0.141982	0.742661	0.191180	0.8577

Source: Eviews 10.0

Since the probabilities of F- statistic and the observed R- squared which are 0.9512 and 0.7721 respectively are greater than 5 percent critical level, it confirms absence of serial correlation. The equation is therefore good enough for hypothesis testing. The researcher also tested for Hetroscedasticity. Table 4.7 shows the result.

Table 4.7: Heteroskedasticity Test: Breusch-Pagan-Godfrey – Nigeria			
F-statistic	0.781815	Prob. F(14,6)	0.6724
Obs*R-squared	13.56433	Prob. Chi-Square(14)	0.4827

Table 4.7(B): Multicollinearity Test Result	

Scaled explained SS	2.017382	Prob. Chi-Square(14)		0.9999
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	0.000241	0.000142	1.692018	0.1416
D(HDIN(-1))	0.002501	0.001922	1.300776	0.2411
D(MCAPGDPN(-2))	-9.01E-05	7.74E-05	-1.163885	0.2887
D(MCAPGDPN(-3))	3.86E-05	3.03E-05	1.273822	0.2498
D(SMTN(-1))	-5.63E-05	5.99E-05	-0.939814	0.3836
D(SMTN(-3))	7.02E-05	5.48E-05	1.280443	0.2477
D(SMTN(-4))	-8.23E-05	7.73E-05	-1.065140	0.3278
D(VSTGDPN(-1))	0.000763	0.000618	1.235818	0.2627
D(VSTGDPN(-3))	0.000629	0.000588	1.068737	0.3263
D(VSTGDPN(-4))	2.32E-07	0.000151	0.001535	0.9988
D(ALSIN(-1))	-4.76E-08	4.56E-08	-1.043420	0.3370
D(ALSIN(-2))	2.84E-08	2.86E-08	0.991022	0.3599
D(ALSIN(-3))	-5.98E-08	4.15E-08	-1.442399	0.1993
D(ALSIN(-4))	-9.74E-08	5.93E-08	-1.642448	0.1516
ECT(-1)	-0.005776	0.004041	-1.429481	0.2028

Source: Eviews10.0

The F-statistic and the observed R^2 test show that the series are not heteroskedastic but homoscedastic. This is not unexpected since the series has already been shown to be stationary. The multicollinearity test result is shown in Table 4.7(B).

ariance Inflation Factors			
	Coefficient	Uncentered	Centered
Variable	Variance	VIF	VIF
D(HDIN(-1))	0.005781	3.234162	3.427614
D(MCAPGDPN(-2))	1.41E-07	4.631781	3.972143
D(MCAPGDPN(-5))	5.51E-083	7.124873	7.213126
D(SMTN(-2))	3.45E-07	3.412614	3.611248
D(SMTN(-3))	2.03E-07	5.613812	5.781762
D(VSTGDPN(-2))	1.28E-06	2.413342	3.478251
D(VSTGDPN(-3))	8.22E-07	4.175124	4.213418
D(VSTGDPN(-4))	6.26E-07	6.242618	5.821613
D(ALSIN(-1))	3.19E-12	3.225172	3.314728
D(ALSIN(-2))	2.89E-12	5.042633	5.214661
D(ALSIN(-3))	3.88E-12	2.189317	2.421813
ECT(-1)	0.002176	3.815622	3.631543
C	4.19E-05	2.893427	2.943426

Source: Eviews 10.0

Table 4.7(B) shows that the centered variance inflation factors are less than 10. Therefore, the VIF indicates absence of multicollinearity among the differenced variables. The RESET result for model stability is as in Table 4.8.

Table 4.8: Ramsey RESET Test – Nigeria			
	Value	Df	Probability
t-statistic	2.009423	5	0.1007
F-statistic	4.037782	(1, 5)	0.1007
Likelihood ratio	12.43155	1	0.0004
F-test summary:	Sum of Sq.	Df	Mean Squares
Test SSR	0.000629	1	0.000629
Restricted SSR	0.001407	6	0.000235
Unrestricted SSR	0.000779	5	0.000156
LR test summary:	Value	Df	
Restricted LogL	71.11248	6	
Unrestricted LogL	77.32824	5	

Source: Eviews10.0

The F-Statistic probability of 0.1007 is greater than 5 percent. That is 0.1007 > 0.05 implying that the model is adequately specified and that no variable is omitted.

The researcher once more tested for Granger causality to explore whether there is a unidirectional or bidirectional causality between the stock market indicators and Human development index. The result of the analysis is shown in Table 4.9 as follows:

Table 4.9: Pairwise Granger Causality Tests			
Null Hypothesis:	Obs	F-Statistic	Prob.
MCAPGDPN does not Granger Cause HDIN	27	0.21251	0.8106
HDIN does not Granger Cause MCAPGDPN		0.53253	0.5956
VSTGDPN does not Granger Cause HDIN	27	0.02074	0.9795
HDIN does not Granger Cause VSTGDPN		0.11913	0.8881
SMTN does not Granger Cause HDIN	27	8.33253	0.0214
HDIN does not Granger Cause SMTN		0.75213	0.4849
ALSIN does not Granger Cause HDIN	27	1.07437	0.3614
HDIN does not Granger Cause ALSIN		0.55108	0.5852

Source:Eviews10.0

The result in Table 4.9 shows that in Nigeria, only the stock market turnover ratio Granger cause HDI, but HDI does not granger cause stock market turnover ratio. The rest of the capital market indicators do not granger cause the Human Development Index.

4.1.2 Results for South Africa

Table 4.10 contains data on Human development index and capital market indicators in South Africa.

Table 4.10: Data on HDI and Capital Market Indicators - South Africa

Year	HDISA	MCAPGDPSA	VSTGDPSA	SMTSA	ALSISA
1990	0.621	123.19	4.57	6.86	2720.01
1991	0.618	139.74	5.21	5.26	3440.01
1992	0.705	76.69	5.95	5.72	3259
1993	0.722	131.93	10.01	9.45	4893
1994	0.734	166.44	11.49	7.84	5867
1995	0.654	185.64	11.28	6.74	6228
1996	0.652	168.07	18.93	18.42	6657.5
1997	0.655	155.93	30.05	18.89	6202.3
1998	0.697	126.77	43.45	28.98	5430.5
1999	0.674	197.07	54.75	33.7	8543
2000	0.632	154.24	58.32	33.18	8326
2001	0.63	117.95	58.81	40.43	10441.7
2002	0.645	166.17	69.12	48.6	9358.9
2003	0.658	159.16	72.29	45.46	10387.22
2004	0.635	207.93	76.5	45.02	12656.87
2005	0.603	228.86	90.05	39.32	18096.55
2006	0.621	273.95	117.45	48.8	24915.2
2007	0.61	291.28	160.05	55	28957.97
2008	0.623	179.37	108.51	60.62	21509.2
2009	0.631	249.04	142.61	57.27	27666.44
2010	0.643	278.53	110.52	39.61	32118.89
2011	0.651	130.40	102.87	37.82	29247.21
2012	0.659	159.42	115.73	40.26	34712.45
2013	0.663	257.43	134.51	35.43	39286.12
2014	0.665	266.73	146.00	32.56	46318.5
2015	0.666	234.00	145.80	31.80	51269.54
2016	0.667	312.21	136.21	30.50	48352.26
2017	0.666	332.28	138.45	25.70	59772.80
2018	0.669	340.10	140.25	25.92	59820.16

Sources: World Bank, UNDP, World Federation of Exchanges (WFE), African Federation of Exchanges (AFE), Johannesburg Stock Exchange (JSE) Website.

4.1.2.1 Descriptive Statistics for South Africa

Results of descriptive statistics of the human development index and capital market indicators in table 4.10 are shown in table 4.11 and figure 4.2.

Table 4.11: Descriptive statistics for HDI and Capital market indicators – South Africa.

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic
HDISA	29	.603	.734	.65410	.031587	.776	.609
MCAPGDPSA	29	76.690	340.100	200.36276	70.578995	.443	-.790
VSTGDPSA	29	4.570	160.050	79.99103	52.653482	-.112	-1.461
SMTSA	29	5.260	60.620	31.55724	16.259965	-.199	-.814
ALSISA	29	2720.010	59820.160	21601.87241	18153.249083	.831	-.537
Valid N (listwise)	29						

Source:Eviews10.0

Descriptive statistics of the Human Development Index (HDISA) and Capital market variables: Market Capitalization Ratio (MCAPGDPSA), Value of Securities Traded Ratio (VSTGDPSA), Stock Market Turnover Ratio (SMTSA) and All Share Index (ALSISA) in South Africa are presented in Table 4.11. From the Table, notice that the average values of HDISA, MCAPGDPSA, VSTGDPSA, SMTSA and ALSISA are 0.65410, 200.36276, 79.99103, 31.55724 and 21601.87241 respectively for the sample period. The standard deviations are 0.031587, 70.578995, 52.653482, 16.259965 and 18153.249083 for HDISA, MCAPGDPSA, VSTGDPSA, SMTSA and ALASISA respectively. Table 4.11 also shows that the skewness coefficients for HDISA, MCAPGDPSA, VSTGDPSA, SMTSA and ALSISA are 0.776, 0.443, -0.112, -0.199 and 0.831 respectively; while the kurtosis coefficients for HDISA,

MCAPGDPSA, VSTGDPSA, SMTSA and ALSISA 0.609, -0.790, -1.461, -0.814 and -0.537 respectively.

The HDI mean value of 0.65410 implies that South Africa falls within the medium development countries. The skewness coefficients show that HDI and ALSISA data are moderately skewed. They also show that MCAPGDPSA, VSTGDPSA, and SMTSA are respectively fairly symmetrical. All the data can said to be fairly normally distributed since they respectively have Kurtosis coefficients that lie between -3 and +3.

Figure 4.2 shows that while the graph of HDISA remained almost horizontal to the x-axis, showing little or no increase, the individual graphs of the capital market variables reveal fairly general increase with noticeable degrees of volatility. This implies that increase in capital market activities, within the period under study, had little or no effect on economic development (HDISA) in South Africa.

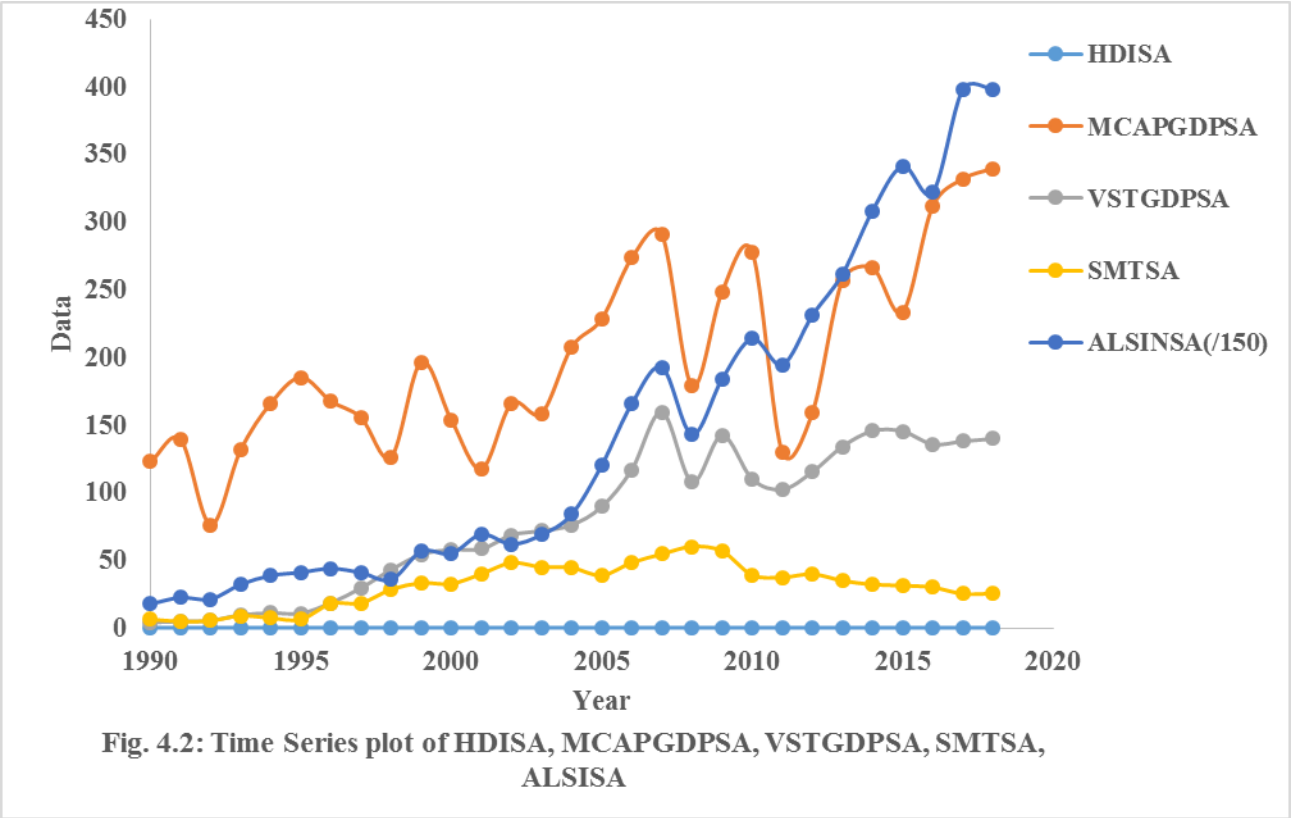

Fig. 4.2: Time Series plot of HDISA, MCAPGDPSA, VSTGDPSA, SMTSA, ALSISA

Source: Eviews10.0

Figure 4.1.1.2c: Trend Analysis for South Africa

4.1.2.2 Analytical Results for South Africa

The human development index and capital market development indicators for South Africa presented in Table 4.10 are tested for stationarity to make sure that we are not working with non-stationary data. All the variables were found to be stationary at first difference. Table 4.12 shows the result.

Table 4.12: Unit Root Test Results - South Africa

	Lag	ADF Test Statistic	Critical Values		
Variables	SCI	1st difference	1%	5%	Remarks
HDISA	5	-5.609092	-3.737853	-2.991878	Stationary
MCAPGDPSA	5	-6.693941	-3.752946	-2.998064	Stationary
SMTSA	5	-3.974996	-3.737853	-2.991878	Stationary
VSTGDPSA	5	-7.097575	-3.737853	-2.991878	Stationary
ALSISA	5	-4.581521	-3.737853	-2.991878	Stationary

Source: Eviews 10.0

From the above Table 4.12, the absolute value of ADF statistic of all the series are more than their 1 percent critical values and far more than that of 5 percent at first difference. This implies that the series are differenced once for them to be stationary. They are therefore said to be integrated of order one. The researcher then tested for co-integration between the variables. The result is presented in Table 4.13 as follows:

Table 4.13: Results of Co-integration Test – South Africa

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.772241	83.44638	69.81889	0.0028
At most 1 *	0.573303	47.94255	47.85613	0.0491
At most 2	0.443384	27.50217	29.79707	0.0899
At most 3	0.388698	13.44085	15.49471	0.0996
At most 4	0.065623	1.628897	3.841466	0.2019
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				

Source:Eviews10.0

The result of Table 4.13 shows that there are two co-integrating equations in the series suggesting a long-run relationship between the Human development index and capital market indicators in South Africa. To determine how these variables adjust in response to a random shock and also to explore the long-run impact of the market variables on human development index in South Africa, error correction model was used. Table 4.14 shows the result.

Table 4.14 Error Correction Model for HDISA in South Africa

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(HDISA(-1))	0.490354	0.169696	-2.889572	0.0202
D(MCAPGDPSA(-2))	0.000199	0.000124	1.601602	0.1479
D(SMTSA(-1))	0.003737	0.001176	3.173340	0.0131
D(SMTSA(-2))	0.000579	0.000792	0.731310	0.4855
D(VSTGDPSA(-2))	0.041284	0.000314	3.766306	0.0055
D(VSTGDPSA(-3))	0.001756	0.000431	4.057815	0.0036
D(VSTGDPSA(-4))	5.41E-05	0.000252	0.214887	0.8352
D(ALSISA(-3))	5.14E-06	1.52E-06	3.391203	0.0095
D(ALSISA(-4))	2.34E-06	1.76E-06	1.330114	0.2201
D(ALSISA(-5))	8.34E-06	2.66E-06	3.132732	0.0140
ECT(-1)	-0.704463	0.248626	-2.833426	0.0220
C	-0.012998	0.005883	-2.209005	0.0582

Source:Eviews10.0

As shown in Table 4.14 past human development index (HDI) at lag 1 reinforces itself. In other words, increase in the past HDI in South Africa leads to increase in the present value of HDI. All other capital market indicators have positive and significant effect on HDI in South Africa except market capitalization that has positive and insignificant effect on HDI. From these findings, one may deduce that the capital market activities generally impact human development index in South Africa.

To accept this model, the researcher embarked on second order econometric tests namely serial correlation test, multicollinearity test using the condition index criteria, heteroscedasticity test, normality test and Model adequacy test. The serial correlation LM test is presented in Table 4.15 as follows:

Table 4.15: Serial Correlation Test- South Africa				
F-statistic	0.242475	Prob. F(2,6)		0.7920
Obs*R-squared	1.495556	Prob. Chi-Square(2)		0.4734
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(HDISA(-1))	-0.026866	0.200846	-0.133764	0.8980
D(MCAPGDPSA(-2))	-2.58E-05	0.000143	-0.180353	0.8628
D(SMTSA(-1))	5.16E-06	0.001365	0.003777	0.9971
D(SMTSA(-2))	-8.17E-05	0.000978	-0.083564	0.9361
D(VSTGDPSA(-2))	-6.91E-05	0.000366	-0.188983	0.8563
D(VSTGDPSA(-3))	-6.47E-05	0.000518	-0.124872	0.9047
D(VSTGDPSA(-4))	1.48E-05	0.000281	0.052695	0.9597
D(ALSISA(-3))	-2.87E-07	1.95E-06	-0.146974	0.8880
D(ALSISA(-4))	-2.98E-07	2.11E-06	-0.141273	0.8923
D(ALSISA(-5))	1.89E-07	3.19E-06	0.059338	0.9546
ECT(-1)	0.141338	0.377678	0.374229	0.7211
C	0.000931	0.006885	0.135234	0.8968
RESID(-1)	-0.324828	0.564298	-0.575632	0.5858
RESID(-2)	-0.443903	0.775082	-0.572717	0.5876

Source: Eviews10.0

The LM test confirms that there is no serial correlation. This implies that the residuals are not serially correlated and the equation therefore should not be respecified before using it for hypothesis testing. The researcher also tested for multicollinearity using the condition index criteria. The test of multicollinearity is presented in Table 4.16 as follows:

Table 4.16: Multicollinearity Test

Variable	Co-efficient Variance	uncentered VIF	Centered VIF
D(HDISA(-1))	0.028797	2.495767	2.459493
D(MCAPGDPSA(-2))	1.55E-08	5.820269	5.753955
D(SMTSA(-1))	1.38E-06	7.141362	6.911141
D(SMTSA(-2))	6.27E-07	3.220831	3.105458
D(VSTGDPSA(-2))	9.88E-08	4.745992	4.328649
D(VSTGDPSA(-3))	1.86E-07	8.587834	7.977386
D(VSTGDPSA(-4))	6.34E-08	2.872166	2.707392
D(ALSISA(-3))	2.30E-12	3.384207	2.764404
D(ALSISA(-4))	3.10E-12	4.063166	3.499991
D(ALSISA(-5))	7.08E-12	8.969430	7.302487
ECT(-1)	0.061815	2.856478	2.845711
C	3.46E-05	3.770795	NA

Source:Eviews10.0

Table 4.16 shows that all the centered variance inflation factors VIF are less than 10 for one to talk of presence of multicollinearity. Thus, the VIF indicates no multicollinearity among the differenced variables. The heteroskedasticity test is presented in Table 4.17 as follows:

Table 4.17: Test of Heteroskedasticity

Heteroskedasticity Test: Breusch-Pagan-Godfrey				
F-statistic	0.211134	Prob. F(11,8)		0.9899
Obs*R-squared	4.499772	Prob. Chi-Square(11)		0.9530
Scaled explained SS	0.733321	Prob. Chi-Square(11)		1.0000
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	8.75E-05	6.33E-05	1.381593	0.2045
D(HDISA(-1))	0.000975	0.001827	0.533820	0.6080
D(MCAPGDPSA(-2))	7.72E-07	1.34E-06	0.576874	0.5799
D(SMTSA(-1))	7.12E-06	1.27E-05	0.562085	0.5895
D(SMTSA(-2))	7.74E-06	8.53E-06	0.907069	0.3909
D(VSTGDPSA(-2))	-2.24E-06	3.38E-06	-0.660657	0.5274
D(VSTGDPSA(-3))	-2.45E-06	4.64E-06	-0.528214	0.6117
D(VSTGDPSA(-4))	-8.28E-08	2.71E-06	-0.030536	0.9764
D(ALSISA(-3))	2.38E-09	1.63E-08	0.145479	0.8879
D(ALSISA(-4))	-7.89E-09	1.90E-08	-0.416053	0.6883
D(ALSISA(-5))	9.22E-10	2.86E-08	0.032186	0.9751
ECT(-1)	-0.001250	0.002677	-0.466980	0.6530

Source:Eviews10.0

The F-statistic and the observed R^2 test show that the series are not hetroskedastic but homoskedastic. This is not unexpected as the series has already been shown to be stationary. The researcher therefore tested for stability of the model. In table 4.18 that follows, the value of t statistic is 0.7394 and that of F statistic is also 0.7394. The critical value is 0.05 which is lower than the two values. This implies that the model for South Africa is stable.

Table 4.18: Ramsey RESET Test

Omitted Variables: Squares of fitted values

	Value	Df	Probability
t-statistic	0.346084	7	0.7394
F-statistic	0.119771	(1, 7)	0.7394
Likelihood ratio	0.339348	1	0.5602
F-test summary:			
	Sum of Sq.	Df	Mean Squares
Test SSR	2.47E-05	1	2.47E-05
Restricted SSR	0.001468	8	0.000184
Unrestricted SSR	0.001444	7	0.000206
LR test summary:			
	Value	Df	
Restricted LogL	66.81442	8	
Unrestricted LogL	66.98409	7	

Source:Eviews10.0

The researcher therefore tested for causality between HDI and capital market indicators. The causality test result is shown in Table 4.19 as follows:

Table 4.19: Causality Test Results - South Africa

Null Hypothesis:	Obs	F-Statistic	Prob.
MCAPGDPSA does not Granger Cause HDISA	27	1.29759	0.2963
HDISA does not Granger Cause MCAPGDPSA		0.10410	0.9016
VSTGDPSA does not Granger Cause HDISA	27	2.26548	0.1311
HDISA does not Granger Cause VSTGDPSA		0.00784	0.9922
SMTSA does not Granger Cause HDISA	27	10.7234	0.0008
HDISA does not Granger Cause SMTSA		1.56715	0.2344
ALSISA does not Granger Cause HDISA	27	0.26295	0.7715
HDISA does not Granger Cause ALSISA		0.09289	0.9117

Source:Eviews10.0

The result in Table 4.19 shows that in South Africa, it is only the stock market turnover that significantly Granger causes Human development index. The rest of the capital market variables do not Granger cause Human development index.

4.1.3 Results for Kenya

Table 4.20 contains data on Human development index and capital market indicators in Kenya.

Table 4.20 Data on HDI and Stock Market Indicators - Kenya.

Year	HDIK	MCAPGDPK	VSTGDPK	SMTK	ALSIK
1990	0.473	16.24	0.04	1.42	1096.21
1991	0.476	16.8	0.06	1.57	1128.05
1992	0.481	17.06	0.05	1.65	1167.29
1993	0.52	18.48	0.1	1.14	2513.74
1994	0.532	42.62	0.53	2.25	4559.4
1995	0.544	22.3	0.47	3.12	3468.88
1996	0.523	14.93	0.44	4.01	3114.11
1997	0.498	13.82	0.51	5.38	3117.5
1998	0.508	14.82	0.35	3.55	2962.1
1999	0.488	12.9	0.36	4.8	2303.2
2000	0.447	9.88	0.28	3.58	1914.4
2001	0.454	8.05	0.25	3.62	1354.59
2002	0.46	10.89	0.16	2.42	1317.45
2003	0.474	28.06	0.57	4.16	2128.32
2004	0.465	24.17	1.37	7.42	2471.28
2005	0.479	34.07	1.37	5.24	2527.32
2006	0.495	44.06	3.22	9.67	2924.13
2007	0.502	41.76	4.46	13.49	2746.24
2008	0.508	30.24	3.58	10.8	2762.16
2009	0.504	29.62	1.25	9.26	2780.72
2010	0.529	36.15	3.32	8.95	2783.14
2011	0.535	24.32	2.43	8.87	3112.52
2012	0.539	36.3	2.98	6.82	2971.41
2013	0.544	35.22	3.02	8.11	2789.64
2014	0.550	36.8	3.12	9.27	3109.42
2015	0.555	32.70	2.16	9.12	4064.16
2016	0.585	26.80	1.20	9.18	4286.24
2017	0.590	32.50	1.68	9.24	4325.62
2018	0.585	32.80	1.72	9.30	4342.50

Sources: World Bank, UNDP, World Federations of Exchanges (WFE), African Federation of Exchanges (AFE), Nairobi Stock Exchange (NSE) Website.

4.1.3.1 Descriptive Statistics for Kenya

Results of descriptive statistics of the human development index and capital market indicators in table 4.20 are shown in table 4.21 and figure 4.3.

Table 4.21: Descriptive statistics for HDI and Capital market indicators in Nigeria							
	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic
HDIK	29	.447	.590	.51183	.039769	.340	-.645
MCAPGDPK	29	8.050	44.060	25.66759	10.701959	.006	-1.233
VSTGDPK	29	.040	4.460	1.41552	1.316805	.746	-.708
SMTK	29	1.140	13.490	6.11759	3.403942	.164	-1.083
ALSIK	29	1096.210	4559.400	2763.50828	979.886420	-.004	-.395
Valid N (listwise)	29						

Source:Eviews10.0

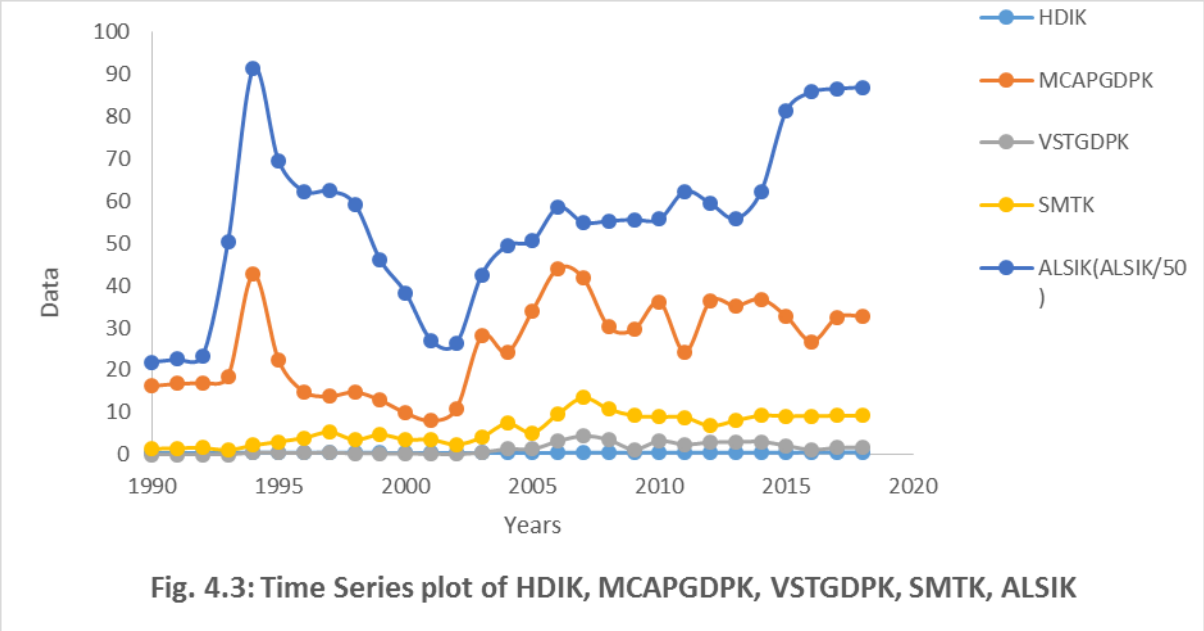

Fig. 4.3: Time Series plot of HDIK, MCAPGDPK, VSTGDPK, SMTK, ALSIK

Source:Eviews10.0

Descriptive statistics of the Human Development Index (HDIK) and Capital market variables: Market Capitalization Ratio (MCAPGDPK), Value of Securities Traded Ratio (VSTGDPK), Stock Market Turnover Ratio (SMTK) and All Share Index (ALSIK) in Kenya are presented in Table 4.21. From the Table, notice that the average values of HDIK, MCAPGDPK, VSTGDPK, SMTK and ALSIN are 0.51183, 25.66759, 1.41552, 6.11759 and 2763.50828 respectively for the sample period. The standard deviations are 0.039769, 10.701959, 1.316805, 3.403942 and 979.886420 for HDIK, MCAPGDPK, VSTGDPK, SMTK and ALASIK respectively. Table 4.21 also shows that the skewness coefficients for HDIK, MCAPGDPK, VSTGDPK, SMTK and ALSIK are (0.340, 0.006, 0.746, 0.164 and -0.004 respectively; while the kurtosis coefficients for HDIK, MCAPGDPK, VSTGDPK, SMTK and ALSIK are -0.645, -1.233, -0.708, -1.083 and -0.395 respectively.

The HDIK mean value of 0.51183 implies that Kenya falls within the medium development countries. The skewness coefficients show that HDIK, MCAPGDPK, SMTK and ALSIK series are respectively fairly symmetrical. They also show that the series of VSTGDPK is moderately skewed. All the series can said to be fairly normally distributed since they respectively have Kurtosis coefficients that lie between -3 and +3.

Figure 4.3 shows that while the graph of HDIK remained almost horizontal to the x-axis, showing little or no increase, the individual graphs of the capital market variables reveal fairly general increase with noticeable degrees of volatility. This implies that increase in capital market activities, within the period under study, had little or no effect on economic development (HDIK) in Kenya.

4.1.3.2. Analytical Results for Kenya

The human development index and capital market development indicators for Kenya in Table 4.20 were tested for stationarity to avoid spurious results which

could have arisen if non stationary data were used for regression. The results shows stationarity of all the variables at first difference. Table 4.22 summaries the result:

Table 4.22: Unit Root Test Results - Kenya

	Lag	ADF Test Statistic	Critical Values		
Variables	SCI	1st difference	1%	5%	Remarks
HDIK	8	-3.527659	-3.737853	-2.991878	Stationary
MCAPGDPK	5	-6.013647	-3.737853	-2.991878	Stationary
SMTK	5	-5.284681	-3.737853	-2.991878	Stationary
VSTGDPK	5	-5.734561	-3.737853	-2.991878	Stationary
ALSIK	5	-3.727465	-3.737853	-2.991878	Stationary

Source:Eviews10.0

From the above Table 4.22, the absolute values of ADF statistic of all the series are more than their 5 percent critical values at first difference. This implies that the series are differenced once for them to be stationary. They are all integrated of order one. The researcher therefore tested for co-integration between the variables in order to determine the stationarity of the combined series. The result of the co-iintegration test is presented in Table 4.23 as follows:

Table 4.23 Co-integration Test Results - Kenya				
Unrestricted Co-integration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.677105	77.39280	69.81889	0.0110
At most 1 *	0.648093	50.26332	47.85613	0.0292
At most 2	0.482654	25.19816	29.79707	0.1545
At most 3	0.216589	9.381107	15.49471	0.3313
At most 4	0.136521	3.522839	3.841466	0.0605
Trace test indicates 2 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				

Source:Eviews10.0

Co-integration test result (Table 4.23) shows that there are two (2) co-integrating equations. This implies a long-run relationship between the variables. The researcher therefore tested for long-run impact of the variables on HDI and determined the error correction term as shown in Table 4.24.

Table 4.24 Results of Error Correction Model -Kenya

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(HDIK(-1))	0.611015	0.076033	-8.036235	0.0151
D(MCAPGDPK(-1))	-0.001605	0.000103	-1.52799	0.0841
D(MCAPGDPK(-2))	-0.002838	0.000119	-2.00361	0.0627
D(MCAPGDPK(-5))	0.000338	7.43E-05	4.550729	0.0450
D(SMTK(-2))	-0.009109	0.000588	-15.50228	0.0041
D(SMTK(-3))	-0.009068	0.000450	-20.13368	0.0025
D(VSTGDPK(-2))	0.006455	0.001133	5.695938	0.0295
D(VSTGDPK(-3))	0.007757	0.000906	8.557030	0.0134
D(VSTGDPK(-4))	0.009015	0.000791	11.39363	0.0076
D(VSTGDPK(-5))	-0.002879	0.000667	-4.314103	0.0498
D(ALSIK(-1))	3.62E-05	1.78E-06	20.28936	0.0024
D(ALSIK(-2))	1.47E-05	1.70E-06	8.646749	0.0131
D(ALSIK(-3))	2.79E-05	1.97E-06	14.17316	0.0049
D(ALSIK(-7))	-1.90E-05	1.03E-06	-18.54627	0.0029
ECT(-1)	-0.816481	0.046745	-17.46683	0.0033
C	0.011128	0.000647	17.19572	0.0034
R-squared	0.998215			
F-statistic	74.57427			
Prob (F-statistic)	0.013308			
Durbin-Watson stat	2.128536			

Source: Eviews 10.0

Market capitalization exerts negative and insignificant effect on HDI. Stock market turnover ratio has negative effect on the economy. On the other hand, both value of securities traded and all share index exert positive and significant effect in HDI on Kenya. The error correction term is correctly signed and corrects about 81.6 percent of the short- run deviations in the long- run. The coefficient of determination is high (99.8%) while the overall regression is significant with no autocorrelation. The serial correlation test result is shown Table 4.25.

Table 4.25: Serial Correlation Test Result -Kenya				
F-statistic	0.448042	Prob. F(2,3)		0.6756
Obs*R-squared	4.139877	Prob. Chi-Square(2)		0.1262
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(HDIK(-3))	0.041711	0.296204	0.140826	0.8969
D(MCAPGDPK(-1))	-0.000100	0.001065	-0.094182	0.9309
D(MCAPGDPK(-2))	0.000219	0.000920	0.238419	0.8269
D(SMTK(-2))	-0.001331	0.003848	-0.345931	0.7522
D(SMTK(-3))	-0.001910	0.004192	-0.455693	0.6796
D(VSTGDPK(-2))	0.002425	0.007781	0.311681	0.7757
D(VSTGDPK(-3))	0.004180	0.008892	0.470108	0.6703
D(VSTGDPK(-4))	0.000706	0.005099	0.138397	0.8987
D(ALSIK(-1))	2.19E-06	1.20E-05	0.181697	0.8674
D(ALSIK(-2))	-2.47E-06	1.39E-05	-0.176987	0.8708
D(ALSIK(-7))	-3.12E-06	5.95E-06	-0.523824	0.6366
ECT(-1)	-0.052578	0.322961	-0.162801	0.8810
C	-0.000590	0.003440	-0.171626	0.8747
RESID(-1)	-0.547132	0.899232	-0.608444	0.5859
RESID(-2)	-0.794500	1.159659	-0.685116	0.5425

Source: Eviews 10.0

The result of Table 4.25 confirms that the model does not have serial correlation. The researcher therefore tested for Hetroskedasticity and presented the result of this test in Table 4.26 as follows:

Table 4.26: Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	2.403132	Prob. F(12,5)		0.1713
Obs*R-squared	15.34023	Prob. Chi-Square(12)		0.2234
Scaled explained SS	1.043707	Prob. Chi-Square(12)		1.0000
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.85E-05	8.42E-06	2.198723	0.0792
D(HDIK(-3))	-0.000756	0.000667	-1.132910	0.3086
D(MCAPGDPK(-1))	5.33E-06	1.61E-06	3.305286	0.0214
D(MCAPGDPK(-2))	-2.74E-06	2.20E-06	-1.246254	0.2679
D(SMTK(-2))	4.12E-06	9.03E-06	0.456218	0.6674
D(SMTK(-3))	-2.05E-06	8.26E-06	-0.247957	0.8140
D(VSTGDPK(-2))	3.33E-05	1.84E-05	1.816054	0.1291
D(VSTGDPK(-3))	-7.04E-06	1.62E-05	-0.434061	0.6823
D(VSTGDPK(-4))	1.87E-05	1.25E-05	1.498416	0.1943
D(ALSIK(-1))	2.28E-08	2.82E-08	0.806499	0.4566
D(ALSIK(-2))	-1.30E-09	3.28E-08	-0.039721	0.9699
D(ALSIK(-7))	-8.85E-10	1.25E-08	-0.071044	0.9461
ECT(-1)	-0.000528	0.000785	-0.672364	0.5312
R-squared	0.852234			
Durbin-Watson stat	1.911317			
F-statistic	2.403132			
Prob(F-statistic)	0.171261			

Source:Eviews10.0

The F-statistic and the observed R^2 test show that the series are not heteroskedastic but homoskedastic. The variance inflation factors test presented in Table 4.27 shows that the model is not multicollinear.

Table 4.27 Variance Inflation Factors - Kenya

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
D(HDIK(-1))	0.005781	8.059799	7.982248
D(MCAPGDPK(-1))	1.07E-08	4.109985	4.001031
D(MCAPGDPK(-2))	1.41E-08	5.694842	5.644743
D(MCAPGDPK(-5))	5.51E-09	3.742015	3.699145
D(SMTK(-2))	3.45E-07	9.43431	9.25096
D(SMTK(-3))	2.03E-07	6.059612	5.969238
D(VSTGDPK(-2))	1.28E-06	8.580640	8.402488
D(VSTGDPK(-3))	8.22E-07	5.490459	5.385243
D(VSTGDPK(-4))	6.26E-07	4.154377	4.081849
D(VSTGDPK(-5))	4.45E-07	2.820952	2.719354
D(ALSIK(-1))	3.19E-12	2.636912	2.636910
D(ALSIK(-2))	2.89E-12	2.417666	2.389233
D(ALSIK(-3))	3.88E-12	4.975460	4.766498
D(ALSIK(-7))	1.05E-12	3.716774	3.654531
ECT(-1)	0.002185	3.815622	3.631543
C	4.19E-07	2.893425	NA

Source:Eviews10.0

The model stability test was also carried out and presented in Table 4.28.

Table 4. 28: Ramsey RESET Test				
Omitted Variables: Squares of fitted values				
	Value	Df	Probability	
t-statistic	0.425345	1	0.7441	
F-statistic	0.180923	(1, 1)	0.7440	
Likelihood ratio	2.993289	1	0.0836	
F-test summary:				
	Sum of Sq.	Df	Mean Squares	
Test SSR	7.98E-07	1	7.98E-07	
Restricted SSR	5.21E-06	2	2.60E-06	
Unrestricted SSR	4.41E-06	1	4.41E-06	
LR test summary:				
	Value	Df		
Restricted LogL	109.9590	2		
Unrestricted LogL	111.4556	1		

Source:Eviews10.0

The t and F- test probability values in Table 4.28 are greater than 5% critical level and are therefore said to be stable. Thus the model for Kenya is robust and stable. The researcher also examined the Granger causality test between the capital market indicators and human development index in Kenya as in Table 4.29.

Table 4.29: Pairwise Granger Causality Tests - Kenya			
Null Hypothesis:	Obs	F-Statistic	Prob.
MCAPGDPK does not Granger Cause HDIK	27	0.97645	0.3948
HDIK does not Granger Cause MCAPGDPK		2.59991	0.1004
VSTGDPK does not Granger Cause HDIK	27	0.45517	0.6411
HDIK does not Granger Cause VSTGDPK		0.77178	0.4761
SMTK does not Granger Cause HDIK	27	0.27271	0.7642
HDIK does not Granger Cause SMTK		1.67881	0.2131
ALSIK does not Granger Cause HDIK	27	1.95834	0.1685
HDIK does not Granger Cause ALSIK		6.44561	0.0073

Source:Eviews10.0

Table 4.29 shows that in Kenya just like in Nigeria no capital market indicator granger causes Human development index. Conversely, it is only Human development index that is found to Granger cause all share index.

4.1.4 HYPOTHESIS TESTING

4.1.4.1 Nigeria

H_{01}: The effect of market capitalization on economic development is not significant.

As Table 4.4 shows, a long–run positive relationship exists between HDI and market capitalization (MCAPGDPN) ratio given its slope coefficient of 0.019907 at lag 2. The relationship is however insignificant given the probability value of 0.0639 which is greater than 0.05. This suggests that in the long-run, a 1% change in market capitalization will result in about 2% change in HDI. Consequently, the study fails to reject the hypothesis of no significant

relationship between market capitalization and economic development as measured by HDI in Nigeria.

4.1.4.1.2 H_{02}: Value of traded securities does not significantly affect development.

A long-run positive relationship is found to exist between economic development and total value of securities traded (VSTGDPN) in the capital market. This is depicted by the slope coefficients of 0.197 and 0.215 at lags 1 and 3 respectively. The relationship is observed to be statistically significant given the probability value of 0.0253 at lag 1 which is less than 0.05. This suggests that in the long-run a 1% change in value of securities traded will result in a change in HDI by 19.7%. This is consistent with the apriori expectation. Consequently, the study fails to accept the hypothesis of no significant relationship between value of securities traded and economic development in Nigeria.

4.1.4.1.3 H_{03}: The effect of stock market turnover ratio on development is not significant.

A long-run positive relationship is observed to exist between stock market turnover and economic development as measured by the HDI given the slope coefficients of 0.040497 and 0.008313 at lags 1 and 3 respectively. The relationship is also statistically significant given the probability values of 0.019 and 0.0080 at lags 1and 3 which are both less than 0.05. This suggests that in the long-run, 1% change in stock market turnover will result to a 4% change (increase) in HDI. Consequently, the study fails to accept the hypothesis of no significant relationship between stock market turnover and economic development in Nigeria.

4.1.4.1.4 H_{04}: There is no significant relationship between all share index and economic development in Nigeria.

The result of the error correction model reveals a negative (inverse) relationship between the HDI, a proxy for economic development and all share index (ALSIN) given its slope coefficients -0.0000128, -0.0000224 and -0.0000287 at lags 1,3and 4 respectively. This relationship is statistically significant given the probability value of 0.0399 at lag 1 which is less than 0.05. This suggests that in the long-run, 1% change in all share index will result in -0.0013% change in HDI. The study, therefore, fails to reject the hypothesis of no significant relationship between all share index and economic development, as measured by the HDI in Nigeria.

4.1.4.2 South Africa

H_{01}: The effect of market capitalization on economic development is not significant.

Table 4.12 reveal that a long-run positive relationship exists between HDI and market capitalization (MCAPGDPS) ratio at lag 2 given its slope coefficient of 0.000199. However, the relationship is statistically insignificant given the probability value of 0.1479 which is greater than 0.05. Consequently, the study fails to reject the hypothesis of no significant relationship between market capitalization and economic development as measured by HDI in South Africa.

4.1.4.2.2 H_{02}: Value of traded securities does not significantly affect development.

A long-run positive relationship is observed to exist between value of securities traded (VSTGDPSA) in the capital market and economic development as measured by HDI, given the slope coefficient of 0.041284 and 0.001756 at lags 2 and 3 respectively. The relationship is also observed to be statistically significant given the probability value of 0.0055 at lag 2 which is less than 0.05. This suggests that in the long run, 1% change in value of securities traded will result in 4.1% change in HDI. Hence, the study fails to accept the hypothesis of

no significant relationship between value of securities traded and economic development in South Africa.

4.1.4.2.3 H_{03}: The effect of stock market turnover ratio on development is not significant.

From the long-run error correction results, the relationship between stock market turnover (SMTSA) and economic development measured by the Human Development Index (HDI) in the long-run is observed to be positive and also statistically significant given its slope coefficient of 0.00373 at lag 1 and a probability value of 0.0131 which is less than 0.05. The finding is consistent with the a priori expectation and suggests that a 1% change in the value of stock market turnover will result in about 0.37% change in HDI in the long-run. Hence, the study fails to accept the hypothesis of no significant relationship between stock market turnover and economic development in South Africa.

4.1.4.2.4 H_{04}: All share index is not significantly related to development.

A long-run positive relationship is found to exist between economic development and All share index (ALSISA). This is evidenced by the slope coefficients of 0.00000514 and 0.00000834 at lags 3 and 5 respectively. This relationship is found to be significant given the probability value of 0.0095 at lag 3 which is less than 0.05. Consequently, the study fails to accept the hypothesis of no significant relationship between all share index in the capital market and economic development in South Africa.

4.1.4.3 Kenya

4.1.4.3.1 H_{01}: The effect of market capitalization on development is not significant.

From Table 4.21 a long-run inverse relationship exists between HDI and market capitalization (MCAPGDPK) ratio given the slope coefficients of -0.001605 and -0.002838 at lags 1 and 2 respectively. However, market capitalization

exerts a positive influence on HDI at lag 5. The relationship is also statistically insignificant given the probability value of 0.0841 at lag 1 which is greater than 0.05. This suggests that in the long-run, a 1% change in market capitalization will result in a change of about -0.16% in Kenya's human development index. Consequently, the study fails to reject the hypothesis of no significant relationship between market capitalization and economic development in Kenya.

4.1.4.3.2 H_{02}: Value of traded securities does not significantly affect development.

A long–run positive relationship was observed to exist between value of securities traded (VSTGDPK) and HDI given the slope coefficients of 0.006455, 0.007757 and 0.009015 at lags 2, 3 and 4 respectively. However, it has a negative impact on HDI at lag 5 given the slope coefficient of -0.002879. The relationship is statistically significant given the probability value of 0.0295 at lag 1 which is less than 0.05. This suggests that in the long-run, a 1 % change in value of securities traded will result in about 0.65% change in Kenya's HDI. Hence, the study fails to accept the hypothesis of no significant relationship between value of securities traded and economic development in Kenya.

4.1.4.3.3 H_{03}: The effect of stock market turnover ratio on development is not significant.

From the error correction results, a long-run negative relationship exists between stock market turnover (SMTK) and HDI given the slope coefficients of -0.009109 and -0.009068 at lags 2 and 3 respectively.

This relationship is also statistically significant given the probability value of 0.0041 at lag 2 which is less than 0.05. This suggests that in the long-run, a 1% change in stock market turnover will result in about -0.91% change in HDI. Consequently, the study fails to reject the hypothesis of no significant

relationship between stock market turnover and economic development in Kenya.

4.1.4.3.4 H_{04}: All share index is not significantly related to development.

A long-run positive relationship exists between all share index (ALSIK) and Human development index given the slope coefficients of 0.0000362, 0.0000147and 0.0000279 at lags, 1, 2 and 3 respectively.

The relationship is statistically significant given the probability value of 0.0024 at lag 1 which is less than 0.05. This suggests that a 1% change in all share index will result in about 0.0036% change in HDI. Consequently, the study fails to accept the hypothesis of no significant relationship between all share index and economic development in Kenya.

4.1.5 Results of Panel Data Regression Analysis

4.1.5.1 Fixed effects Models:

Using the data presented in Table 4.30 (see appendix LIV), the result of the fixed effects model is presented in Table 4.31 as follows:

Table 4.31: Fixed Effects Results.

Dependent Variable: HDI				
Method: Panel Least Squares				
Date: 02/20/20 Time: 07:02				
Sample: 1990-2018				
Periods included: 29				
Cross-sections included: 3				
Total panel (balanced) observations: 87				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.532508	0.012991	40.99105	0.0000
MCAPGDP	5.54E-05	0.000137	0.405222	0.6870
SMT	0.001390	0.000618	2.249312	0.0289
VSTGDP	-0.001129	0.000234	-4.830916	0.0000
ALSI	1.14E-06	3.93E-07	2.905656	0.0054
	Effects Specification			
Cross-section fixed (dummy variables)				
Period fixed (dummy variables)				
R-squared	0.960639	Mean dependent var		0.543238
Adjusted R-squared	0.934661	S.D. dependent var		0.090363
S.E. of regression	0.023098	Akaike info criterion		-4.407407
Sum squared resid	0.026676	Schwarz criterion		-3.423505
Log likelihood	219.1111	Hannan-Quinn criter.		-4.011887
F-statistic	36.97897	Durbin-Watson stat		1.311626
Prob(F-statistic)	0.000000			

Source: Eviews 10.0

The fixed effects in Table 4.31 show that the variables Stock market turnover (SMT) and all share index (ALSIN) are positively and significantly related to Human development index in all the countries. Market capitalization as ratio of GDP (MCAPGDP) exerts positive but insignificant impact on human

development index while Value of shares traded as a ratio of GDP (VSTGDP) impact negatively and significantly on human development index. The model is highly fitted (R^2 = 96 %) and the overall regression (F = 36.979) is significant. Having estimated and evaluated the fixed effects, the researcher resorted to estimating the random effects and also evaluated the results.

4.1.5.2 Random Effects Model

The results of the random effects are presented in table 4.32 as follows.

Table 4.32: Random Effects Results

Dependent Variable: HDI				
Method: Panel EGLS (Period random effects)				
Date: 02/20/20 Time: 07:17				
Sample: 1990 2018				
Periods included: 29				
Cross-sections included: 3				
Total panel (balanced) observations: 87				
Swamy and Arora estimator of component variances				
White cross-section standard errors & covariance (d.f. corrected)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.527074	0.010331	51.01887	0.0000
MCAPGDP	2.61E-05	0.000117	0.222889	0.0242
SMT	0.000861	0.000425	2.026286	0.0462
VSTGDP	-0.001019	0.000192	-5.299229	0.0825
ALSI	2.05E-06	4.11E-07	4.979614	0.0000
	Effects Specification			
			S.D.	Rho
Cross-section fixed (dummy variables)				
Period random			0.010956	0.1837
Idiosyncratic random			0.023098	0.8163
	Weighted Statistics			
R-squared	0.909777	Mean dependent var		0.543238
Adjusted R-squared	0.902746	S.D. dependent var		0.088560
S.E. of regression	0.027618	Sum squared resid		0.058731
F-statistic	129.4062	Durbin-Watson stat		0.844515
Prob(F-statistic)	0.000000			
	Unweighted Statistics			
R-squared	0.887105	Mean dependent var		0.543238
Sum squared resid	0.076513	Durbin-Watson stat		0.744883

Source: Eviews 10.0

The results also indicate that market capitalization to GDP ratio (MCAPGDP), Stock market turnover (SMT) and all share index (ALSI) are positively and significantly related to Human development index in all the countries while value of shares traded as a ratio of GDP (VSTGDP) impact negatively but insignificantly on human development index. The model is highly fitted (R^2 = 91 %) and the overall regression (F = 129.4062) is significant.

To determine a more appropriate method to choose among the fixed effects and the random effects, we use the Hausman test. The researcher therefore states the hypothesis for choosing between the fixed and random effects model as follows:

Ho: Random effects is more appropriate

H_1: Fixed effects is more appropriate

On the basis of this hypothesis, the result of the Hausman test is presented in Table 4.30 and the decision rule follows as well.

Table 4.30: Results of Hausman test

Correlated Random Effects - Hausman Test			
Equation: Untitled			
Test period random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Period random	0.000000	4	1.0000
* Period test variance is invalid. Hausman statistic set to zero.			
** WARNING: robust standard errors may not be consistent with assumptions of Hausman test variance calculation.			

Source: Eviews 10.0

Decision Rule

Since the Chi-square is greater than 5% (1.000 > 0.05%) we accept Ho that the Random effects is more appropriate and reject H_1 that the fixed effects is more appropriate. Thus, the fixed model is rejected and the random effect is accepted

for analyzing the impact of capital market indicators on human development index. This shows that the results are time variant and the individuality of the selected countries are not recognized in explaining the effect of capital market indicators on human development index.

The researcher therefore stated the rightful model based on the random effect as follows:

HDI = 0.527074 + 0.0000261MCAPGDP + 0.00086SMT -0.001019VSTGDP +0.0000021ALSI

SD (0.010331) (0.000117) (0.000425) (0.000192) (0.00000411)

R^2 = 91%, F = 129.4062

4.2 Discussion of Findings and Policy Implications

For stationarity, the ADF and PP tests were conducted. Results of the tests revealed that all variables were not stationary at their levels and stationarity was reached after first differencing .Having reached stationarity, co-integration tests using Johansen's co-integration approach were conducted for the estimation models. The co-integration tests suggested two co-integration vectors in each case and so a co-movement in the long-run between capital market and economic development was confirmed for each country. The term for the error correction is negative and significant for the specified model in each case. The diagnostic checks results confirmed that the model for each country was well specified and stable.

- In the Case of Nigeria, a long–run positive relationship is observed to exist between market capitalization/GDP ratio and HDI at lags 2 and 3 given its slope coefficients of 0.019907 and 0.009117 respectively. The relationship

is also observed to be statistically insignificant given the probability value (at lag 2) of 0.0639 which is greater than 0.05.

- The long-run relationship between value of securities traded and human development index is observed to be positive and statistically significant given the slope coefficients of 0.197 and 0.215 at lags 1and 3 and the probability values of 0.0253 and 0.0144 which are both less than 0.05.
- A long-run positive relationship is also observed to exist between stock market turnover and HDI given its slope coefficients of 0.040497 and 0.08313 at Lags 1 and 3 respectively. The relationship is also observed to be statistically significant given the probability value of 0.019 at lag 1 which is less than 0.05 and the t-value of 3.1812 which is greater than the critical t-value of 2.06.
- A long –run inverse relationship is found to exist between all share index and HDI given its slope coefficients of -0.0000128, -0.0000224 and -0.0000287 at lags 1, 3 and 4 respectively. The relationship is statistically significant given the probability value of 0.0399 at lag 1 which is less than 0.05.
- With regards to South Africa, a long –run positive relationship is observed to exist between HDI and market capitalization/GDP ratio at lag 2, given its slope coefficient of 0.000199. The relationship is observed to be statistically insignificant given the probability value of 0.1479 which is greater than 0.05.
- The relationship between value of securities traded and HDI is observed to be positive, given its slope coefficients of 0.041284 and 0.00176 at lags 2 and 3 respectively. The relationship is observed to be statistically significant given its probability value of 0.0055 at lag 2 which is less than 0.05.
- A long –run positive relationship is observed to exist between stock market turnover and HDI given its slope coefficient of 0.00373 at lag 1. This relationship is observed to be statistically significant given the probability value of 0.0131 which is less than 0.05.

- A long–run positive relationship is found to exist between HDI and all share index given its slope coefficients of 0.00000 514and 0.00000834 at lags 3 and 5 respectively. This relationship is observed to be statistically significant given the probability value of 0.0095 at lag 3 which is less than 0.05.
- With respect to Kenya, the long-run relationship between market capitalization/GDP ratio and Human development index is observed to be negative given its slope coefficients of – 0.001605 and – 0.002838 at lags 1 and 2 respectively. The relationship is observed to be statistically insignificant given the probability value of 0.0841 at lag 1 which is greater than 0.05.
- A long-run relationship between value of securities traded to GDP ratio and HDI is observed to be positive given its slope coefficients of 0.006455, 0.00776 and 0.009015 at lags 2, 3 and 4 respectively. The relationship is also observed to be statistically significant given the probability value of 0.0295 at lag1, which is lower than 0.05.
- The long-run relationship between stock market turnover and HDI is observed to be negative given its slope coefficient of -0.00911 and -0.009068 at lags 2 and 3 respectively. The relationship is observed to the statistically significant given the probability value of 0.0041 at lag 2 which is less than 0.05.
- A long–run positive relationship is found to exist between all share index and HDI given its slope coefficients of 0.0000362, 0.0000147 and 0.0000279 at lags, 1, 2 and 3 respectively. The relationship is statistically significant given the probability value of 0.0024 at lag 1 which is less than 0.05.

❖ Finally, the result of the panel data analysis (Pooled regression analysis), using the random effect model, reveal that all other capital market indicators are positively and significantly related to Human Development Index in all

the countries while value of shares traded has negative and insignificant effect on HDI.

4.2.1 Policy Implications

The findings of this study show that Nigeria and South Africa share relatively common characteristics in terms of capital market behavior. Human development index in Nigeria and South Africa is a positive and insignificant function of market capitalization. In other words, in both countries, market capitalization has a positive and insignificant effect on human development index. In Kenya it is not so rather human development index is a negative and insignificant function of market capitalization to GDP ratio. Again, in both Nigeria and South Africa traded values of securities and turnover ratio exert positive and significant impact on human development index. In Kenya, on the other hand, a value of securities traded exerts positive and significant impact on human development index while the impact of stock market turnover ratio is found to be negative and significant. However, all share index exerts negative and significant impact on human development index in Nigeria while it exerts positive and significant impact in both South Africa and Kenya.

The error correction terms are rightly signed and the overall regressions are significant with no autocorrelation. The three models are robust and stable and can be used for policy making and forecasting.

This analysis suggests that the degree of responsiveness of human development index to a small change in all share index (stock price) in Nigeria is elastic since a unit increase in the stock price decreases significantly the Human development index. In Kenya, human development index is found to granger cause all share index while in both Nigeria and South Africa, stock market turnover ratio is found to granger cause human development index. In other words, stock market turnover ratio is a good predictor of human development

index in both Nigeria and South Africa while human development index is a good predictor of all share index in Kenya.

The capital market exerted strong effect on HDI when pooled regression analysis, using the random effect model, was carried out. In particular, market capitalization to GDP ratio, which was found to have positive but insignificant effect on human development index when the analysis was done on country by country basis had significant effect in all the selected economies, after the data were pooled. This implies that regional integration of the capital markets will lead to faster economic development of the affected countries.

Some of the findings may differ from those of earlier researchers based on the fact that the study adopted the human development index as a proxy for economic development instead of the GDP. The study also applied the concept of capital market deepening. This could promote dialogue on the reason for such outcomes and possible policy implication.

The findings of this study does not support the position of Nazir, Nawaz and Gilani (2010) as market capitalization/GDP ratio was found to have positive but insignificant relationship with HDI in both Nigeria and South Africa, as well as negative and insignificant relationship in Kenya. Nieuwer *et al* (2005) investigated the long-run relationship between economic growth and financial market development in Belgium and posited that economic growth is a function of financial market development.

In Nigeria, Kolapo and Adaramola (2012) investigated how the Nigerian economy was affected by the capital market between 1990 and 2010. The techniques of analysis adopted was the Johansen co-integration and Granger causality tests. The result showed that the Nigeria capital market and economic growth are co-integrated. The causality test result suggested a bi-directional causation between GDP and value of transactions (VLT) and a uni-directional causality from market capitalization to GDP and not vice versa. While this

study also found co-integration between capital market and economic development, no causality was found to exist between the economy and these two variables.

Nyong (1997) investigated the link between capital market development and long-term economic growth in Nigeria for the period 1970 to 1994 and found out that capital market development is negatively and significantly correlated with long-run growth in Nigeria. This study does not fully support the findings of Nyong (1997) especially in Nigeria because apart all share index which had negative relationship with HDI, the relationship between HDI and all other capital market indicators was positive.

Findings of Olweny and Kimani (2011) on the causality between the economy and the capital market in Kenya between 2001 and 2010 revealed that causality runs unilaterally from the stock exchange to GDP. In this work however, only turnover ratio was found to granger cause the HDI.

Nagraj (1996), Singh (1997), Riman, Esso and Eyo (2008) were among the researchers that found no link between growth of the economy and capital market while others like Obstfeld (1995) and Chinery and Strout (1996) established a positive relationship between stock market and economic growth and development in their studies.

In order to strengthen the link between the stock market and economic development in Nigeria and other emerging economies, the policy issues raised by the policy implication of this study, as well as others, need to be examined. They include the following:

Firstly, the study found out that the degree of responsiveness of human development index to a small change in all share index (stock price) in Nigeria is elastic, since a unit increase in stock price decreases significantly the human development index. This negative relationship might not be unconnected with the global financial crises of 2008 when stock prices rose significantly and

suddenly crashed leading to heavy losses by financial assets investors. This development requires the elimination of undue interference by both capital market regulators and corporate bodies in stock prices so as to allow market mechanism to determine the prices of stock.

Secondly, the weak relationship which was observed to exist between capital markets of Nigeria, Kenya and to some extent, South Africa and HDI suggests lack of effective participation of investors, possibly due to lack of confidence on the market. It is therefore, necessary to reverse this trend using good policies.

Thirdly, even if capital market positively affects growth, it may not guarantee development which itself is inclusive growth. Government's deliberate policy, aimed at increasing spending to boost health and education, in addition to GDP per capita, is vital in ensuring that increase in GDP, achieved through increased capital market activities, translate to economic development.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Research Findings

This study investigates the impact of the capital market on the economic development of emerging economies; Nigeria, South Africa and Kenya, using annual data from 1990 to 2018. The study reviewed some of the main theories of economic development including the neoclassical and endogenous growth theories and it considered the endogenous growth model which holds that investment in physical and human capital, innovation, knowledge and policy measures are significant contributors to economic growth as the relevant theory explaining the long- run impact of the capital market on economic development. In explaining the direction of the relationship between the two variables, the supply leading, demand following and feedback hypotheses were reviewed. Some of the empirical studies reviewed suggested a strong link between capital market and economic growth while others argued that there is no relationship between capital market and economic growth and development.

Based on both theoretical and empirical literature, the study specified empirical model that explains the link between economic development and the capital market. The model expresses economic development as a function of four capital market indicators (MCAPGDP, SMT, VSTGDP & ALSI) for each of the three countries under study.

To empirically examine the effect capital market has on economic development, the study first conducted the stationarity test for all variables under investigation in order to avoid obtaining spurious regression results. The variables were found to be integrated of order one. A co-integration test was then conducted to examine the long-run relationship between the variables. Both the trace

statistics and maximum eigenvalue test revealed the presence of two co-integrating vectors suggesting a long-run relationship between the variables in each case. The error correction model was estimated, followed by second order econometric tests to determine the goodness of fit for the model. Causation analysis was also carried out. Findings revealed that human development index is a positive and insignificant function of ratio of market capitalization to GDP in both Nigeria and South Africa; while in Kenya it is a negative and insignificant function of market capitalization to GDP ratio. Again, in both Nigeria and South Africa, value of securities traded ratio and stock market turnover ratio exert positive and significant impact on human development index. In Kenya, the effects of the value of securities and all share index on HDI are positive and negative respectively. However, while the effect of all share index on HDI is negative and significant in Nigeria, its effect on both South Africa and Kenya is positive and significant. The result of panel data (pooled) regression analysis revealed that while human development index is a positive and significant function of all other indicators of the capital market in all the countries, value of traded securities has negative but insignificant effect on HDI. The effect of the capital market on human development index was found to be generally positive and significant when pooled regression analysis was carried out.

The error correction terms are rightly signed and the overall regressions are significant with no autocorrelation. The three models are robust and stable and can be used for policy making and forecasting.

5.2 Conclusion

The analysis suggests that the degree of responsiveness of human development index to a small change in all shares index (stock price) in Nigeria is elastic since a unit increase in the stock price decreases significantly the human development index. . Human development index was found to granger cause all

share index in Kenya while turnover ratio was found to granger cause human development index –in South Africa and Nigeria.

In general, the study confirms a link between capital market and economic development. However, the extent to which capital market impact economic development, especially in Nigeria, is found to be rather weak and not consistent with the a priori expectations presented on chapter three of this study. It is surprising to find out that the capital markets of Nigeria, South Africa and Kenya, as developed as they are, contribute so little towards economic development. Loss of investors' confidence in the system, caused by corruption and lack of transparency on the side of both capital market regulatory authorities and corporate bodies, as well as lack of appropriate policies relating to capital market operations could be a challenge. Effort should be made to stop this dangerous trend and restore investor confidence in the market to enable it play its expected role of positively impacting economic development in the affected countries.

5.3 Recommendations

Based on the findings above, the study makes the following recommendation:

- Government and capital market regulatory authorities should establish strong and more transparent institutional and legal framework as well as support investment in human resources to engender efficiency in the allocation of available financial resources for investment purpose and create the platform that will lead to increased investment and promotion of best corporate practices that will restore investor confidence in the market in order to stimulate further growth and development of the economy.
- There should be a deliberate policy that is aimed at encouraging more private limited companies and informal sector operators to access the market for fresh funds in order to increase investment in the economy.

- Trading impediments such as high transaction and information costs should be reviewed to encourage more active trading in stocks.
- There should be deliberate government policy to remove listing impediments, aimed at encouraging health and educational institutions to be listed on the stock exchanges. This will have the effect of boosting investments in the health and education sectors to ensure that growth in the economy translates to improvements in the quality of health care and education that invariably lead to economic development.
- Lastly, appropriate authorities should work towards regional integration of the capital markets of emerging economies as this will lead to faster economic development of the affected countries.

5.4 Contribution to knowledge

- The HDI is a very useful means of measuring the development of countries. Per capita GDP alone is clearly too narrow an indicator of economic development and fails to indicate other aspects of development, such as enrolment in school and longevity. Hence the HDI is a broader and more encompassing indicator of development than GDP, though GDP still provides one third of the index. This study therefore, made use of HDI as a proxy for economic development instead of the GDP. The result revealed that, unlike most of the earlier researchers who concluded that market capitalization has positive and significant effect on economic development; market capitalization actually has positive but insignificant effect on economic development of the emerging economies. In general, this study revealed that the effect of capital market on economic development is weak.
- Works reviewed so far showed that no researcher has used the same set of countries as well as the same set of data to determine the link between

development of the economy and the capital market. This work, therefore, has made a unique contribution in this area of research.

- Again, this study carried out panel data (pooled) regression analysis and found out from the findings that regional integration of the capital markets of emerging economies will lead to faster economic development of the affected countries. This is because the result of the analysis revealed that human development index is a positive and significant function of Market Capitalization, Stock Market Turnover Ratio, and all Share Index in all the countries while value of securities traded has negative but insignificant effect on HDI. The study went further to establish a model for the integrated capital markets and economic development as follows:

HDI = 0.527074 + 0.0000261MCAPGDP + 0.00086SMT -0.001019VSTGDP +0.0000021ALSI

SD (0.010331) (0.000117) (0.000425) (0.000192) (0.00000411)

R^2 = 91%, F = 129.4062, Prob(F-statistic)=0.000000

REFERENCES

Abbas, A. O, Pei, Y. X & Rui, Z. (2016). Impact of Stock Market on Economic Growth Evidence: Dar-es Salaam Stock Exchang – Tanzania. *Journal of Finance and Accounting* 4(6):321-327.

Abdul-khaliq, S. (2013). The Impact of Stock Market Liquidity on Economic Growth in Jordan. *European Journal of Business and Management*, 5(30): 153-158.

Adeoye, A. A. (2015). Impact of the Nigerian Capital Market on the Economy. *European Journal of Accounting, Auditing and Finance Research*. (3)2: 88-96.

Adoghor, G. I. (1997), Operation and Problems of the Nigerian Stock Exchange. *Journal of Business and Social Science*. 2(1):35-45.

Aduda, J., Chogii, R. & Muraya, T. M. (2014). The Effect of Capital Market Deepening on Economic Growth in Kenya. *Journal of Applied Finance andBanking*, 4(1): 141-159.

Aghion, P. & Howitt, P. (1992). A Model of Growth through Creative Destruction. *Econometrica*, 60 (2): 323-351.

Araoye, F. E., Ajayi, E. O., & Aruwaji, A. M. (2018). The Impact of Stock Market Development on Economic Growth in Nigeria. *Journal of Business and African Economy*, 4(1): 1-15

Asteriou, D., & Hall, S. G. (2011). *The Breusch- Geofery L M Test for Serial Correction Applied Econometrics*, (Second Ed.). Palgrave Macmillan: 159-161 ISBN 978-0-230-27182-1.

Bencivenga, V. R., Smith, B. D. & Starr, R. M. (1996). Liquidity of Secondary Capital Markets: Allocative Efficiency and the Maturity Composition of the Capital Stock. *Journal of Economic Theory*, 7 (1):19-50.

Bernanke & Gertler (1990). Financial Fragility and Economic Performance. *Quarterly Journal of Economics*, 55: 87-144.

Breusch, T. S. (1978). Testing for Autocorrelation in Dynamic Linear Models. Australian Economic Papers 17: 334-355.

Breusch, T. S. and Pegan, A. R. (1979). A Simple Test for Heteroskedasticity and Random Coefficient Variation. *Econometrica*, 47(5): 1287-1294.

Brooks, C. (2008). *Introduction to Econometrics for Finance*. 7th Edition, Cambridge University.

Central Bank of Nigeria (2004). *Financial Markets in Nigeria*. Abuja, Edited by O. J. Nnanna, A. Englama and F. O. Odoko.

Chakraborty, I. (2007). Does Financial Development Cause Economic Growth? The Case of India. *South Asia Economic Journal*, 9(1): 109-139.

Christian, U. A., Nwezeaku, N. C. & Akujuobi, A. B. C. (2015). Impact of Capital Market Growth on Economic Growth and Development in Nigeria. *American Journal of Marketing Research*, 1(3): 93-98

Cook, R.D., Weisberg, S. (1983). Diagnostics for Heteroskedasticity in Regression". *Biometrika*, 70(1):1-10.

Davidson, R. & Mackinnon, J. G. (2004). *Econometric Theory and Methods*. New York, Oxford University Press: 623. ISBN 0-19-512372-7.

Dayaratne,D. & Wijethunga, A. (2015). Stock Market Development and Economic Growth: War and Post War Evidence from Sri Lanka. *4th Annual International Research Conference.*

Dimitrios, A. & Stephen, G.H. (2007). *Applied Econometrics: A Modern Approach*. Palgrave, Macmillan Ltd.Uk.

Demirguc-Kunt, A. and Levine, R. (1996). Stock Markets, Corporate Finance and Economic Growth: An Overview. *The World Bank Economic Review*, 10(2): 223-239.

Dickey, D. A. & Fuller W. A. (1979). Distribution of the Estimators for Autoregressive Time Series with a Unit Root. *Journal of the American Statistical Association*, 74: 427-431.

Domar, E. D. (1947). Expansion and Employment. *The American Economic Review*, 37(1):34-55.

Donwa, P. & Odia, J. (2010).An Empirical Analysis of the Impact of Nigerian Capital Market on her Socio Economic Development. *Journal of Social Sciences*, 24(2):135-142.

Echekoba , F. N & Ananwude, A. C. (2016). The Linkage between the Depth of Development in Nigeria Stock Market and Economic Growth: A Johansen Co-integration Approach (1981-2015) *Frontiers of Accounting and Finance* 1(1):16–28.

Edame, G. E. and Okoro, U. (2013). The Impact of Capital Market on Economic Growth in Nigeria. *Journal of Poverty, Investment and Development*. 3(9): 7-15.

Engle, R. F. & Granger, C. W. J. (1987). Co-integration and Error Correction: Representation, Estimation and Testing. *Econometrica*, 55: 251-276.

Erasmus, L.O. (2016). Stock Market and Sustainable Economic Growth in Nigeria.Economies, *Data Science, Nielsen*, Oxford OX39RX, UK.

Ewah, S. O. E., Esang, E. A., & Bassey, J. U. (2009). Appraisal of Capital Market Efficiency on Economic Growth in Nigeria. *International Journal of Business and Management,* 4(12): 219-228.

Ezeoha, A., Ogamba, E. and Ndi-Okereke, O. (2009). Stock Market Development and Private Investment Growth in Nigeria. *Journal of Sustainable Development in Africa*, 11(2):20-35.

Granger, C. W. J. (1981). Some Properties of Time Series Data and Their Use in Econometric Model Specification; *Journal of Econometrics* Vol.16, Issue.1, pp.121-130.

Granger, C. W. J & Newbold, P. (1974). Experience with Forecasting Univariate Time Series and the Combination of Forecasts .J.R. *Statist, Soc.A*, 137, Part 2, 131.

Harrod, R.F. (1948). *Towards a Dynamic Economics, some Recent Developments of Economic Theory and Their Application to Policy*. London, Macmillan.

Ifueru, O. O. & Abudu, K. (2013).Stock Market and Economic Growth in Ghana, Kenya and Nigeria. *International Journal of Financial Research*, 4(2): 83-98.

Ingham, B. (1995). *Economics and Development*. New York: McGraw-Hill.

Irving, J. (2005). Regional Integration of Stock Exchanges in Eastern and Southern Africa: Progress and prospects. *IMF Working Paper* WP/05/122, Washington; International Monetary Fund.

Iyoha, M.A. (2004). *Macroeconomics: Theory and Policy*. Mindex Publishing, Revised Edition.

Johansen, S. (1988). Statistical Analysis of Cointegrating Vectors. *Journal of Economic Dynamics and Control,* 12:231-254.

Johansen, S. and Juselius, K. (1990). Maximum Likelihood Estimation and Inference on Cointegration,-With Applications to the Demand for Money. Oxford Bulletin of Economics and Statistics, Vol.52, 169-210.

Kolapo, F. T. & Adaramola, A. O. (2012). The Impact of the Nigerian Capital Market on Economic Growth (1990-2010). *International Journal of Developing societies*, 1(1): 11-19.

Kunter, M. H., Nachtsheim, C.J. and Neter, J. (2004). Applied Linear Regression Models (4th Ed.), McGraw Hill Irwin.

Levine, R. (1991). Stock Markets, Growth, and Tax Policy. *The Journal of Finance*, 46(4), 14451465.

Levine, R. (1997). Financial Development and Economic Growth: Views and Agenda. *Journal of Economic Literature*, 35(2): 688-726.

Levine, R. and Zervos, S. (1996). Stock Market Development and Long-run Growth. *The World Bank Economic Review*, 10(3):323-339.

Lucas,R.E.(1988). On the Mechanics of Economic Development. Journal of Monetary Economics, 22(1), 3-42.

Luintel, K.B. & Khan, M. (1999). A Quantitative Reassessment of the Finance – Growth Nexus: Evidence from Multivariate VAR. *Journal of Development Economics*, 60: 381-405.

Markowitz H M. (1952). ‘‘Portfolio Selection’’, *Journal of Finance* 7(1), 77-91.

Mary, H. (2018). How Does The Stock Market Affect Gross Domestic Product-(GDP)? (1) *Investopedia*.

Mboweni, T. T. (2006). An Address Presented by Governor of South African Reverse Bank at the Seminar on “Deepening Financial Sectors in Africa: Experiences and Policy Options”, *Co-organized By the IMF/AFR and DIFA*, Johannesburg.

Mckinnon, R.I. (1973). Money and Capital in Economic Development. Washington, D.C., Brookings Institution Markets, *Journal of Financial Research*, 26: 275-299.

Mecagni, M. & Sourial, M. S. (1999). The Egyptian Stock Market: Efficiency Tests and Volatility Effects. *IMF Working Paper* WP/99/48, Washington, DC: U S A.

Meier, G. M. (2001). The Old Generation of Development Economists and the New. In G.M. Meierand J. E. Stiglitz (Eds.), *Frontiers of Development Economics*: The Future in Perspective: 13-50. Washington, D.C.: World Bank/ Oxford University Press.

Bencivenga, V. R., Smith, B. D. & Starr, R. M. (1996). Liquidity of Secondary Capital Markets: Allocative Efficiency and the Maturity Composition of the Capital Stock. *Journal of Economic Theory*, 7 (1):19-50

Mihovil, A. Drago, J. & Ivan, P. (2016). The Effect of Capital Market Development on Economic Growth: Case of Croatia. *WEI International Academic Conference Proceedings*, Prague, Czech Republic.

Mohammed, S., Nadeem, A. & Liaquat, A. (2008). Stock Market Development and economic Growth: ARDL Causality in Pakistan. *International Research Journal of Finance and Economics*

Musibau, O. S. H., Waliu, O. S., Hammed, A. Y. and Sa’ad, B. A. (2016). Impact of Nigerian Capital Market on Economic Growth: A Co-integration Approach. *International Journal of Social Science and Economic Research*, 2(4): 12-29.

Mwega, F.M. (2009). "The Effects of the Global Financial Crisis; A Case Study of Kenya Phase 1". Paper Presented at an Overseas Development Institute (ODI) *Workshop* in London.

Nazir, M. N., Nawaz, M. M. & Gilani, U. J. (2010). Relationship between Economic Growth and Stock Market Development. *African Journal of Business Management*, 4(6): 3473-3479.

Ndako, U.B. (2009). Stock Markets, Banks and Economic Growth: A Time Series Evidence From South Africa. Retrieved *From http://www/africametrics.org/documents/conference09/papers/Ndako=pdf*

Ndi Okereke Onyiuke (2002). The Nigerian Stock Exchange; Superlative Performance; the Stock Market in 2001; a *Review*.

Nieuwerburgh, S. V., Buelens, F. & Cuyvers, L. (2005). Stock Market Development and Economic Growth in Belgium.New York University, Stem School of Business. *Nigerian Capital Markets Statistical Bulletin* (2010).

NSE (2015), Market Recap and Outlook for 2016.

Nwankwo, G. O. (1984). *The Nigerian Financial System*. Lagos, Macmillan Publishers.

Oke, M. O. and Adeusi, S. O. (2012). Impact of Capital Market Reforms on Economic Growth: The Nigerian Experience. *Australian Journal of Business and Management Research*, 2(2): 20-30.

Schumpeter, J.A. (1911). *The Theory of Economic Development*. Cambridge, M.A. Harvard University Press.

Nwanna, I. O. (2016). Impact of Capital Market Volatility on Economic Growth in Nigeria (1985 - 2016). *Journal of Economics and Finance (IOSR-JEF)*, 8(4): 01–25.

Nyong, M.O. (1997). Capital Market Development and Long-run Economic Growth: Theory, Evidence and Analysis. *First Bank Review*: December: 13-38.

Nzotta, S. M. (2004). *Money, Banking and Finance: Theory and practices*. Owerri. International Educational Books and Publishers.

Odetayo, J. A. and Sajuyigbe, A. S. (2012). Impact of the Nigerian Capital Market on Economic Growth and Development. *International Journal of Arts and Commerce*, 1(5).

Odihiambo, N. (2009). Stock Market Development and Economic Growth in South Africa: An ARDL-Bounds Testing Approach. *Retrieved From http://www.wbicongro.com /2.*

Olweny, T. and Kimani, D. (2011). Stock Market Performance and Economic Growth: Empirical Evidence in Kenya Using Causality Test Approach. *Advances in Management and Applied Economics*, 1(3): 153-196.

Osaze, B. E. (2000*). The Nigerian Capital Market in the African and Global Financial System*. Benin city, Bofic Consults Group Limited.

Patrick, H. (1966). Financial Development and Economic Growth in Underdeveloped Countries. *Economic Development and Cultural Change*: 174-189.

Philips P. (1988). Trends and Random Walks in Macroeconomic Time Series: Further Evidence from a New Approach. *Journal of Economic Dynamics and Control*, 12: 297-332.

Ramsey, J. B. (1969). Test for Specification Errors in Classical Linear Least Squares Regression Analysis. *Journal of Royal Statistical Society, Series B*.31 (2): 350-371.

Robinson, J. (1952). *The Rate of Interest and other Essays*. London, Macmillan Press.

Romer, P.M. (1986). Increasing Returns and Long-run Growth. *Journal of Political Economy*, 94(5): 1002-1037.

Rostow, W. W. (1960). *The Stages of Economic Growth: A Non- Communist Manifesto*. Cambridge, Cambridge University Press.

Saleh, J. R., Hongbing, O., Ahmed, R. A & Yapatake, K. T. P. (2016). The Impact Of Stock Exchange on Economic Growth: The Case Of Mauritius Using VECM Approach. *Journal of Economics and finance.* 7(6).

Samwell, W & Lwaga, N. (2016). Impact of stock Exchange market on the economic growth in Tanzania, International Journal of Scientific and Technical research in Engineering (IJSTRE) 1(8):42-48.

SEC Committee Report (2009). Nigeria's Capital Market; Making World-class Potential a Reality.

Seers, D. (1969). The Meaning of Development. *International Development Review,* 11(4): 3-4.

Shaw, E. S. (1973). *Financial Deepening in Economic Development*. New York, Oxford University Press.

Sher, V. and iyanatul, I. (2010). The Great Recession of 2008-2009; Causes, Consequences and Policy Responses. ILO, Discussion Paper No.4934.

Singh, A. (1997). *The Stock Market, Industrial Development and the Financing of Cooperate Growth in India*. In D. Nayyar (Ed.), Trade and Industrialization, Delhi, Oxford University Press.

Solow, R.M. (1956). A Contribution to the Theory of Economic Growth. Quarterly *Journal of Economics*, 70(1): 65-94.

Todaro, M., & Smith, S. (2003). *Economic Development* (8th Ed.).Boston: Addison Wesley.

Todaro, M., & Smith, S. (2009). *Economic Development* (10th Ed.). Boston: Addison Wesley.

UNDP (1990), Human Development Reports.

United Nations Development Programme (2005) *UN Millennium Project – Investment in Development: Practical Plan to Achieve the Millennium Development Goals*. London Earthscan.

World Bank. (1991). World Development Report 1991: The Challenge of Development. Washington, D.C.: *World Bank*.

Yadirichukwu, E. & Chigbu, E.E. (2014). The Impact of Capital Market on Economic Growth: The Nigerian Perspective. *International Journal of Development and Sustainability*, 3(4): 838-864.

APPENDIX I

DATA ON HUMAN DEVELOPMENT INDEX AND CAPITAL MARKET INDICATORS IN NIGERIA

Year	HDIN	MCAPGDPN	VSTGDPN	SMTN	ALSIN
1990	0.411	3.45	0.05	1.41	513.79
1991	0.405	4.23	0.04	1.04	783
1992	0.406	3.56	0.06	1.57	1107.61
1993	0.418	4.36	0.07	1.68	1543.84
1994	0.429	4.74	0.07	1.49	2205.02
1995	0.432	6.2	0.06	1.02	5092.21
1996	0.42	7.09	0.17	2.44	6992.1
1997	0.436	6.73	0.25	3.66	6440.53
1998	0.439	6.58	0.34	5.17	5672.72
1999	0.427	6.41	0.3	4.69	5266.41
2000	0.434	7.04	0.42	5.96	8111.04
2001	0.521	9.61	0.84	8.71	10963
2002	0.44	9.81	0.76	7.77	12137.72
2003	0.453	13.71	1.21	8.86	20128.94
2004	0.462	18.51	1.98	10.69	23844.46
2005	0.468	19.85	1.8	9.07	24085.8
2006	0.466	27.58	2.53	9.18	33189.31
2007	0.478	63.81	5.21	8.16	57990.23
2008	0.486	39.36	6.91	17.56	31450.82
2009	0.449	28.36	2.77	9.75	20827.21
2010	0.493	18.16	1.46	8.07	24770.5
2011	0.499	16.32	1.01	6.22	20730.63
2012	0.505	20.64	1.13	5.47	28078.84
2013	0.521	23.82	2.94	12.32	41329.21
2014	0.525	18.95	1.5	7.91	34657.2
2015	0.527	17.86	1	8.2	28642.25
2016	0.527	9.10	0.40	7.52	32438.54
2017	0.530	12.00	0.60	5.90	38439.38
2018	0.538	12.36	0.57	6.20	38540.24

Sources: World Bank, UNDP. World Federation of Exchanges (WFE), African Federation of Exchanges (AFE), CBN,NSE, National Bureau of Statistics of Nigeria.

APPENDIX II

DATA ON HUMAN DEVELOPMENT INDEX AND CAPITAL MARKET INDICATORS IN SOUTH AFRICA.

Year	HDISA	MCAPGDPSA	VSTGDPSA	SMTSA	ALSISA
1990	0.621	123.19	4.57	6.86	2720.01
1991	0.618	139.74	5.21	5.26	3440.01
1992	0.705	76.69	5.95	5.72	3259
1993	0.722	131.93	10.01	9.45	4893
1994	0.734	166.44	11.49	7.84	5867
1995	0.654	185.64	11.28	6.74	6228
1996	0.652	168.07	18.93	18.42	6657.5
1997	0.655	155.93	30.05	18.89	6202.3
1998	0.697	126.77	43.45	28.98	5430.5
1999	0.674	197.07	54.75	33.7	8543
2000	0.632	154.24	58.32	33.18	8326
2001	0.63	117.95	58.81	40.43	10441.7
2002	0.645	166.17	69.12	48.6	9358.9
2003	0.658	159.16	72.29	45.46	10387.22
2004	0.635	207.93	76.5	45.02	12656.87
2005	0.603	228.86	90.05	39.32	18096.55
2006	0.621	273.95	117.45	48.8	24915.2
2007	0.61	291.28	160.05	55	28957.97
2008	0.623	179.37	108.51	60.62	21509.2
2009	0.631	249.04	142.61	57.27	27666.44
2010	0.643	278.53	110.52	39.61	32118.89
2011	0.651	130.4	102.87	37.82	29247.21
2012	0.659	159.42	115.73	40.26	34712.45
2013	0.663	257.43	134.51	35.43	39286.12
2014	0.665	266.73	146.00	32.56	46318.5
2015	0.666	234.00	145.8	31.8	51269.54
2016	0.667	312.21	136.21	30.50	48352.26
2017	0.666	332.28	138.45	25.70	59772.80
2018	0.669	340.10	140.25	25.92	59820.16

Sources: World Bank, UNDP, World Federation of Exchanges (WFE), African Federation of Exchanges (AFE), Johannesburg Stock exchange(JESE)Website.

APPENDIX III

DATA ON HUMAN DEVELOPMENT INDEX AND CAPITAL MARKET INDICATORS IN KENYA.

Year	HDIK	MCAPGDPK	VSTGDPK	SMTK	ALSIK
1990	0.473	16.24	0.04	1.42	1096.21
1991	0.476	16.8	0.06	1.57	1128.05
1992	0.481	17.06	0.05	1.65	1167.29
1993	0.52	18.48	0.1	1.14	2513.74
1994	0.532	42.62	0.53	2.25	4559.4
1995	0.544	22.3	0.47	3.12	3468.88
1996	0.523	14.93	0.44	4.01	3114.11
1997	0.498	13.82	0.51	5.38	3117.5
1998	0.508	14.82	0.35	3.55	2962.1
1999	0.488	12.9	0.36	4.8	2303.2
2000	0.447	9.88	0.28	3.58	1914.4
2001	0.454	8.05	0.25	3.62	1354.59
2002	0.46	10.89	0.16	2.42	1317.45
2003	0.474	28.06	0.57	4.16	2128.32
2004	0.465	24.17	1.37	7.42	2471.28
2005	0.479	34.07	1.37	5.24	2527.32
2006	0.495	44.06	3.22	9.67	2924.13
2007	0.502	41.76	4.46	13.49	2746.24
2008	0.508	30.24	3.58	10.8	2762.16
2009	0.504	29.62	1.25	9.26	2780.72
2010	0.529	36.15	3.32	8.95	2783.14
2011	0.535	24.32	2.43	8.87	3112.52
2012	0.539	36.3	2.98	6.82	2971.41
2013	0.544	35.22	3.02	8.11	2789.64
2014	0.550	36.80	3.12	9.27	3109.42
2015	0.555	32.70	2.16	9.12	4064.16
2016	0.585	26.80	1.20	9.18	4286.24
2017	0.590	32.50	1.68	9.24	4325.62
2018	0.585	32.80	1.72	9.30	4342.50

Sources: World Bank, UNDP, World Federation of Exchanges (WFE), African Federation of Exchanges (AFE), Nairobi Stock Exchange (NSE) Website.

APPENDIX IV

AUGMENTED DICKEY- FULLER UNIT ROOT TEST RESULT FOR HUMAN DEVELOPMENT INDEX- NIGERIA

Null Hypothesis: D(HDIN) has a unit root				
Exogenous: Constant				
Lag Length: 0 (Automatic - based on SIC, maxlag=5)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-7.764835	0.0000
Test critical values:	1% level		-3.737853	
	5% level		-2.991878	
	10% level		-2.635542	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(HDIN,2)				
Method: Least Squares				
Date: 9/21/19 Time: 05:24				
Sample (adjusted): 1992 2018				
Included observations: 27 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(HDIN(-1))	-1.462938	0.188454	-7.764835	0.0000
C	0.006528	0.005556	1.175068	0.2525
R-squared	0.732561	Mean dependent var		0.000250
Adjusted R-squared	0.720404	S.D. dependent var		0.050926
S.E. of regression	0.026928	Akaike info criterion		-4.311658
Sum squared resid	0.015952	Schwarz criterion		-4.213487
Log likelihood	53.73990	Hannan-Quinn criter.		-4.285614
F-statistic	60.26161	Durbin-Watson stat		2.292638
Prob(F-statistic)	0.000000			

APPENDIX V
AUGMENTED DICKEY – FULLER UNIT ROOT TEST RESULT FOR MARKET CAPITALIZATION/ GDP RATIO – NIGERIA.

Null Hypothesis: D(MCAPGDPN) has a unit root				
Exogenous: Constant				
Lag Length: 0 (Automatic - based on SIC, maxlag=5)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-5.080782	0.0004
Test critical values:	1% level		-3.737853	
	5% level		-2.991878	
	10% level		-2.635542	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(MCAPGDPN,2)				
Method: Least Squares				
Date: 9/21/19 Time: 05:25				
Sample (adjusted): 1992 2018				
Included observations: 27 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MCAPGDPN(-1))	-1.078437	0.212677	-5.080782	0.0000
C	0.618574	2.083399	0.296906	0.7693
R-squared	0.538908	Mean dependent var		-0.077917
Adjusted R-squared	0.517949	S.D. dependent var		14.66851
S.E. of regression	10.18432	Akaike info criterion		7.559232
Sum squared resid	2281.850	Schwarz criterion		7.657403
Log likelihood	-88.71078	Hannan-Quinn criter.		7.585277
F-statistic	25.71283	Durbin-Watson stat		2.018977
Prob(F-statistic)	0.000044			

APPENDIX VI
AUGMENTED DICKEY – FULLER UNIT TEST RESULT FOR STOCK MARKET TURNOVER RATIO – NIGERIA.

Null Hypothesis: D(SMTN) has a unit root				
Exogenous: Constant				
Lag Length: 0 (Automatic - based on SIC, maxlag=5)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-7.369156	0.0000
Test critical values:	1% level		-3.737853	
	5% level		-2.991878	
	10% level		-2.635542	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(SMTN,2)				
Method: Least Squares				
Date: 9/21/19 Time: 05:26				
Sample (adjusted): 1992 2018				
Included observations: 27 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(SMTN(-1))	-1.422479	0.193034	-7.369156	0.0000
C	0.412755	0.619904	0.665837	0.5124
R-squared	0.711676	Mean dependent var		0.027500
Adjusted R-squared	0.698570	S.D. dependent var		5.511713
S.E. of regression	3.026076	Akaike info criterion		5.132066
Sum squared resid	201.4569	Schwarz criterion		5.230237
Log likelihood	-59.58479	Hannan-Quinn criter.		5.158110
F-statistic	54.30299	Durbin-Watson stat		2.166010
Prob(F-statistic)	0.000000			

APPENDIX VII
AUGMENTED DICKEY – FULLER UNIT ROOT TEST RESULT FOR VALUE OF SECURITIES TRADED / GDP RATIO – NIGERIA.

Null Hypothesis: D(VSTGDPN) has a unit root				
Exogenous: Constant				
Lag Length: 0 (Automatic - based on SIC, maxlag=5)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-4.204753	0.0034
Test critical values:	1% level		-3.737853	
	5% level		-2.991878	
	10% level		-2.635542	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(VSTGDPN,2)				
Method: Least Squares				
Date: 9/21/19 Time: 05:27				
Sample (adjusted): 1992 2018				
Included observations: 27 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(VSTGDPN(-1))	-0.895263	0.212917	-4.204753	0.0004
C	0.033672	0.261064	0.128980	0.8985
R-squared	0.445564	Mean dependent var		-0.020417
Adjusted R-squared	0.420362	S.D. dependent var		1.677823
S.E. of regression	1.277393	Akaike info criterion		3.407176
Sum squared resid	35.89815	Schwarz criterion		3.505347
Log likelihood	-38.88611	Hannan-Quinn criter.		3.433221
F-statistic	17.67993	Durbin-Watson stat		1.922569
Prob(F-statistic)	0.000366			

APPENDIX VIII

AUGMENTED DICKEY – FULLER UNIT ROOT TEST RESULT FOR ALL SHARE INDEX – NIGERIA.

Null Hypothesis: D(ALSIN) has a unit root				
Exogenous: Constant				
Lag Length: 1 (Automatic - based on SIC, maxlag=5)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-4.864359	0.0008
Test critical values:	1% level		-3.752946	
	5% level		-2.998064	
	10% level		-2.638752	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(ALSIN,2)				
Method: Least Squares				
Date: 9/21/19 Time: 05:22				
Sample (adjusted): 1993 2018				
Included observations: 26 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(ALSIN(-1))	-1.542954	0.317196	-4.864359	0.0001
D(ALSIN(-1),2)	0.403655	0.213464	1.890971	0.0732
C	2118.636	1950.649	1.086119	0.2903
R-squared	0.608161	Mean dependent var		-275.6330
Adjusted R-squared	0.568978	S.D. dependent var		13738.63
S.E. of regression	9019.730	Akaike info criterion		21.17332
Sum squared resid	1.63E+09	Schwarz criterion		21.32143
Log likelihood	-240.4932	Hannan-Quinn criter.		21.21057
F-statistic	15.52071	Durbin-Watson stat		1.953106
Prob(F-statistic)	0.000085			

APPENDIX IX

PHILLIPS – PERRON UNIT ROOT TEST RESULT FOR HUMAN DEVELOPMENT INDEX – NIGERIA.

Null Hypothesis: D(HDIN) has a unit root				
Exogenous: Constant				
Bandwidth: 17 (Newey-West automatic) using Bartlett kernel				
			Adj. t-Stat	Prob.*
Phillips-Perron test statistic			-17.63856	0.0001
Test critical values:	1% level		-3.737853	
	5% level		-2.991878	
	10% level		-2.635542	
*MacKinnon (1996) one-sided p-values.				
Residual variance (no correction)				0.000665
HAC corrected variance (Bartlett kernel)				7.28E-05
Phillips-Perron Test Equation				
Dependent Variable: D(HDIN,2)				
Method: Least Squares				
Date: 9/21/19 Time: 05:54				
Sample (adjusted): 1992 2018				
Included observations: 27 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(HDIN(-1))	-1.462938	0.188454	-7.762845	0.0000
C	0.006528	0.005556	1.175068	0.2525
R-squared	0.732561	Mean dependent var		0.000250
Adjusted R-squared	0.720404	S.D. dependent var		0.050926
S.E. of regression	0.026928	Akaike info criterion		-4.311658
Sum squared resid	0.015952	Schwarz criterion		-4.213487
Log likelihood	53.73990	Hannan-Quinn criter.		-4.285614
F-statistic	60.26161	Durbin-Watson stat		2.292638
Prob(F-statistic)	0.000000			

APPENDIX X

PHILLIPS – PERRON UNIT ROOT TEST RESULT FOR MARKET CAPITALIZATION / GDP RATIO – NIGERIA.

Null Hypothesis: D(MCAPGDPN) has a unit root				
Exogenous: Constant				
Bandwidth: 3 (Newey-West automatic) using Bartlett kernel				
			Adj. t-Stat	Prob.*
Phillips-Perron test statistic			-5.246179	0.0004
Test critical values:	1% level		-3.737853	
	5% level		-2.991878	
	10% level		-2.635542	
*MacKinnon (1996) one-sided p-values.				
Residual variance (no correction)				95.07710
HAC corrected variance (Bartlett kernel)				71.88984
Phillips-Perron Test Equation				
Dependent Variable: D(MCAPGDPN,2)				
Method: Least Squares				
Date: 9/21/19 Time: 05:55				
Sample (adjusted): 1992 2018				
Included observations: 27 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MCAPGDPN(-1))	-1.078437	0.212677	-5.070793	0.0000
C	0.618574	2.083399	0.296906	0.7693
R-squared	0.538908	Mean dependent var		-0.077917
Adjusted R-squared	0.517949	S.D. dependent var		14.66851
S.E. of regression	10.18432	Akaike info criterion		7.559232
Sum squared resid	2281.850	Schwarz criterion		7.657403
Log likelihood	-88.71078	Hannan-Quinn criter.		7.585277
F-statistic	25.71283	Durbin-Watson stat		2.018977
Prob(F-statistic)	0.000044			

APPENDIX XI
PHILLIPS – PERRON UNIT ROOT TEST RESULT FOR STOCK MARKET TURNOVER RATIO – NIGERIA.

Null Hypothesis: D(SMTN) has a unit root				
Exogenous: Constant				
Bandwidth: 8 (Newey-West automatic) using Bartlett kernel				
			Adj. t-Stat	Prob.*
Phillips-Perron test statistic			-9.110152	0.0000
Test critical values:	1% level		-3.737853	
	5% level		-2.991878	
	10% level		-2.635542	
*MacKinnon (1996) one-sided p-values.				
Residual variance (no correction)				8.394039
HAC corrected variance (Bartlett kernel)				3.847558
Phillips-Perron Test Equation				
Dependent Variable: D(SMTN,2)				
Method: Least Squares				
Date: 9/21/19 Time: 05:56				
Sample (adjusted): 1992 2018				
Included observations: 27 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(SMTN(-1))	-1.422479	0.193034	-7.369048	0.0000
C	0.412755	0.619904	0.665837	0.5124
R-squared	0.711676	Mean dependent var		0.027500
Adjusted R-squared	0.698570	S.D. dependent var		5.511713
S.E. of regression	3.026076	Akaike info criterion		5.132066
Sum squared resid	201.4569	Schwarz criterion		5.230237
Log likelihood	-59.58479	Hannan-Quinn criter.		5.158110
F-statistic	54.30299	Durbin-Watson stat		2.166010
Prob(F-statistic)	0.000000			

APPENDIX XII

PHILLIPS – PERRON UNIT ROOT TEST RESULT FOR VALUE OF SECURITIES TRADED / GDP RATIO – NIGERIA.

Null Hypothesis: D(VSTGDPN) has a unit root				
Exogenous: Constant				
Bandwidth: 7 (Newey-West automatic) using Bartlett kernel				
			Adj. t-Stat	Prob.*
Phillips-Perron test statistic			-4.284937	0.0028
Test critical values:	1% level		-3.737853	
	5% level		-2.991878	
	10% level		-2.635542	
*MacKinnon (1996) one-sided p-values.				
Residual variance (no correction)				1.495756
HAC corrected variance (Bartlett kernel)				0.644233
Phillips-Perron Test Equation				
Dependent Variable: D(VSTGDPN,2)				
Method: Least Squares				
Date: 9/21/19 Time: 05:58				
Sample (adjusted): 1992 2018				
Included observations: 27 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(VSTGDPN(-1))	-0.895263	0.212917	-4.204737	0.0004
C	0.033672	0.261064	0.128980	0.8985
R-squared	0.445564	Mean dependent var		-0.020417
Adjusted R-squared	0.420362	S.D. dependent var		1.677823
S.E. of regression	1.277393	Akaike info criterion		3.407176
Sum squared resid	35.89815	Schwarz criterion		3.505347
Log likelihood	-38.88611	Hannan-Quinn criter.		3.433221
F-statistic	17.67993	Durbin-Watson stat		1.922569
Prob(F-statistic)	0.000366			

APPENDIX XIII

PHILLIPS – PERRON UNIT ROOT TEST RESULT FOR ALL SHARE INDEX – NIGERIA.

Null Hypothesis: D(ALSIN) has a unit root
Exogenous: Constant
Bandwidth: 13 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-6.852782	0.0000
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	

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

Residual variance (no correction)	79955875
HAC corrected variance (Bartlett kernel)	16253211

Phillips-Perron Test Equation
Dependent Variable: D(ALSIN,2)
Method: Least Squares
Date: 9/21/19 Time: 05:52
Sample (adjusted): 1992 2018
Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(ALSIN(-1))	-1.089523	0.215301	-5.060451	0.0000
C	1288.161	1930.848	0.667148	0.5116

R-squared	0.537895	Mean dependent var	-261.8400
Adjusted R-squared	0.516890	S.D. dependent var	13436.82
S.E. of regression	9339.411	Akaike info criterion	21.20153
Sum squared resid	1.92E+09	Schwarz criterion	21.29970
Log likelihood	-252.4184	Hannan-Quinn criter.	21.22757
F-statistic	25.60821	Durbin-Watson stat	2.035086
Prob(F-statistic)	0.000046		

APPENDIX XIV

JOHANSEN'S COINTEGRATION TEST RESULT – NIGERIA.

Sample (adjusted): 1993 2018
Included observations: 26.- after adjustments
Trend assumption: Linear deterministic trend
Series: HDIN MCAPGDPN SMTN VSTGDPN ALSIN
Lags interval (in first differences): 1 to 2

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.958435	158.0379	69.81889	0.0000
At most 1 *	0.922928	84.88769	47.85613	0.0000
At most 2	0.477742	25.93846	29.79707	0.1305
At most 3	0.290399	10.99788	15.49471	0.2116
At most 4	0.126386	3.107673	3.841466	0.0779

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 *	0.958435	73.15024	33.87687	0.0000
At most 1 *	0.922928	58.94928	27.58434	0.0000
At most 2	0.477742	14.94054	21.13162	0.2931
At most 3	0.290399	7.890210	14.26460	0.3899
At most 4	0.126386	3.107672	3.841466	0.0779

Max-eigenvalue 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 Cointegrating Coefficients (normalized by b'*S11*b=I):

HDIN	MCAPGDPN	SMTN	VSTGDPN	ALSIN
56.97996	-1.085377	-0.992219	9.448423	0.000197
-113.2028	0.669917	0.716363	-4.276292	-0.000179
-89.81414	2.884728	1.254254	-17.18327	-0.001035
-92.26038	1.370702	0.415623	-11.31319	2.69E-05
-54.75385	2.104879	1.411762	-13.84806	-0.000666

Unrestricted Adjustment Coefficients (alpha):

D(HDIN)	-0.004238	0.005218	0.005323	0.009375	0.001869
D(MCAPGDPN)	-6.070063	3.194346	-1.592387	-0.300569	-1.551598
D(SMTN)	-0.690592	-1.258386	0.385879	0.165517	0.040714
D(VSTGDPN)	-0.549639	-0.010214	-0.098872	0.008266	-0.089465
D(ALSIN)	-6270.386	1570.045	-1325.053	-629.0735	-774.4396

1 Cointegrating Equation(s): Log likelihood -209.4217

Normalized cointegrating coefficients (standard error in parentheses)

HDIN	MCAPGDPN	SMTN	VSTGDPN	ALSIN
1.000000	-0.019048	-0.017413	0.165820	3.46E-06
	(0.00242)	(0.00134)	(0.01508)	(1.0E-06)

Adjustment coefficients (standard error in parentheses)

D(HDIN)	-0.241390
	(0.35203)
D(MCAPGDPN)	-345.8718
	(104.955)
D(SMTN)	-39.34986
	(25.2237)
D(VSTGDPN)	-31.31841
	(5.35738)
D(ALSIN)	-357286.4
	(64647.0)

2 Cointegrating Equation(s): Log likelihood -179.9470

Normalized cointegrating coefficients (standard error in parentheses)

HDIN	MCAPGDPN	SMTN	VSTGDPN	ALSIN
1.000000	0.000000	-0.001332	-0.019933	7.37E-07
		(0.00087)	(0.00417)	(5.1E-07)
0.000000	1.000000	0.844241	-9.751662	-0.000143
		(0.07316)	(0.34920)	(4.3E-05)

Adjustment coefficients (standard error in parentheses)

D(HDIN)	-0.832066	0.008094
	(0.75717)	(0.00762)
D(MCAPGDPN)	-707.4809	8.728249
	(198.986)	(2.00262)
D(SMTN)	103.1030	-0.093463
	(28.9014)	(0.29087)
D(VSTGDPN)	-30.16212	0.589723
	(11.9095)	(0.11986)
D(ALSIN)	-535019.9	7857.530
	(130673.)	(1315.11)

3 Cointegrating Equation(s): Log likelihood -172.4768

Normalized cointegrating coefficients (standard error in parentheses)

HDIN	MCAPGDPN	SMTN	VSTGDPN	ALSIN
1.000000	0.000000	0.000000	-0.029311	1.31E-06
			(0.00478)	(5.6E-07)
0.000000	1.000000	0.000000	-3.808355	-0.000504
			(0.70815)	(8.3E-05)
0.000000	0.000000	1.000000	-7.039822	0.000428
			(0.98167)	(0.00012)

Adjustment coefficients (standard error in parentheses)

D(HDIN)	-1.310133	0.023449	0.014618
	(0.89392)	(0.01815)	(0.01008)

D(MCAPGDPN)	-564.4621	4.134646	6.313885
	(232.205)	(4.71507)	(2.61961)
D(SMTN)	68.44562	1.019694	0.267748
	(30.4660)	(0.61863)	(0.34370)
D(VSTGDPN)	-21.28206	0.304505	0.414035
	(13.8429)	(0.28109)	(0.15617)
D(ALSIN)	-416011.4	4035.113	5684.368
	(147648.)	(2998.09)	(1665.69)

4 Cointegrating Equation(s): Log likelihood -168.5316

Normalized cointegrating coefficients (standard error in parentheses)

HDIN	MCAPGDPN	SMTN	VSTGDPN	ALSIN
1.000000	0.000000	0.000000	0.000000	-1.99E-06
				(2.4E-07)
0.000000	1.000000	0.000000	0.000000	-0.000932
				(4.3E-05)
0.000000	0.000000	1.000000	0.000000	-0.000364
				(5.3E-05)
0.000000	0.000000	0.000000	1.000000	-0.000112
				(8.3E-06)

Adjustment coefficients (standard error in parentheses)

D(HDIN)	-2.175046	0.036299	0.018514	-0.259862
	(0.90565)	(0.01724)	(0.00903)	(0.11549)
D(MCAPGDPN)	-536.7314	3.722655	6.188962	-40.24965
	(269.579)	(5.13160)	(2.68733)	(34.3780)
D(SMTN)	53.17497	1.246568	0.336540	-9.646964
	(34.2685)	(0.65232)	(0.34161)	(4.37009)
D(VSTGDPN)	-22.04467	0.315835	0.417471	-3.544120
	(16.0943)	(0.30636)	(0.16044)	(2.05242)
D(ALSIN)	-357972.9	3172.841	5422.910	-36073.66
	(168275.)	(3203.22)	(1677.47)	(21459.2)

APPENDIX XV

ERROR CORRECTION MODEL RESULT – NIGERIA.

Dependent Variable: D(HDIN)
Method: Least Squares
Date: 9/21/19 Time: 06:22
Sample (adjusted): 1995 2018
Included observations: 24 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(HDIN(-1))	0.545862	0.206729	2.640465	0.0385
D(MCAPGDPN(-2))	-0.019905	0.008322	-2.391841	0.0539
D(MCAPGDPN(-3))	0.009118	0.003260	2.796262	0.0313
D(SMTN(-1))	-0.020491	0.006441	-3.181162	0.0190
D(SMTN(-3))	-0.008313	0.005893	-1.410736	0.2080
D(SMTN(-4))	-0.032725	0.008314	-3.935740	0.0077
D(VSTGDPN(-1))	0.196660	0.066437	2.960071	0.0253
D(VSTGDPN(-3))	0.215372	0.063252	3.404985	0.0144
D(VSTGDPN(-4))	0.013268	0.016254	0.816290	0.4455
D(ALSIN(-1))	-1.28E-05	4.91E-06	-2.614412	0.0399
D(ALSIN(-2))	4.20E-06	3.08E-06	1.364782	0.2213
D(ALSIN(-3))	-2.24E-05	4.46E-06	-5.015000	0.0024
D(ALSIN(-4))	-2.87E-05	6.38E-06	-4.496714	0.0041
ECT(-1)	-2.650111	0.434559	-6.098394	0.0009
C	0.072715	0.015309	4.749643	0.0032

R-squared	0.930369	Mean dependent var	0.004048
Adjusted R-squared	0.767896	S.D. dependent var	0.031791
S.E. of regression	0.015316	Akaike info criterion	-5.344046
Sum squared resid	0.001407	Schwarz criterion	-4.597959
Log likelihood	71.11248	Hannan-Quinn criter.	-5.182126
F-statistic	5.726292	Durbin-Watson stat	1.886569
Prob(F-statistic)	0.020619		

APPENDIX XVI

BREUSCH – GODFREY SERIAL CORRELATION LM TEST RESULT – NIGERIA.

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.050458	Prob. F(2,4)	0.9512
Obs*R-squared	0.516573	Prob. Chi-Square(2)	0.7721

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 9/21/19 Time: 06:25
Sample: 1995 2018
Included observations: 24
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(HDIN(-1))	0.027655	0.285197	0.096968	0.9274
D(MCAPGDPN(-2))	0.000228	0.011053	0.020600	0.9846
D(MCAPGDPN(-3))	5.48E-05	0.004051	0.013522	0.9899
D(SMTN(-1))	0.000393	0.008425	0.046657	0.9650
D(SMTN(-3))	0.000278	0.007665	0.036224	0.9728
D(SMTN(-4))	-0.000777	0.010554	-0.073596	0.9449
D(VSTGDPN(-1))	-0.002418	0.089315	-0.027070	0.9797
D(VSTGDPN(-3))	-0.002630	0.080113	-0.032829	0.9754
D(VSTGDPN(-4))	0.002443	0.021128	0.115612	0.9135
D(ALSIN(-1))	3.06E-07	6.53E-06	0.046858	0.9649
D(ALSIN(-2))	-9.93E-08	4.13E-06	-0.024071	0.9819
D(ALSIN(-3))	1.96E-07	5.62E-06	0.034780	0.9739
D(ALSIN(-4))	-1.54E-08	8.11E-06	-0.001902	0.9986
ECT(-1)	0.001490	0.548689	0.002715	0.9980
C	-0.000728	0.019612	-0.037122	0.9722
RESID(-1)	-0.129193	0.718952	-0.179696	0.8661
RESID(-2)	0.141982	0.742661	0.191180	0.8577

R-squared	0.024599	Mean dependent var	5.05E-17
Adjusted R-squared	-3.877007	S.D. dependent var	0.008389
S.E. of regression	0.018526	Akaike info criterion	-5.178476
Sum squared resid	0.001373	Schwarz criterion	-4.332910
Log likelihood	71.37400	Hannan-Quinn criter.	-4.994967
F-statistic	0.006305	Durbin-Watson stat	1.591383
Prob(F-statistic)	1.000000		

APPENDIX XVII

BREUSCH – PEGAN – GODFREY HETEROSKEDASTICITY TEST RESULT – NIGERIA.

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.781815	Prob. F(14,6)	0.6724
Obs*R-squared	13.56433	Prob. Chi-Square(14)	0.4827
Scaled explained SS	2.017382	Prob. Chi-Square(14)	0.9999

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 9/21/19 Time: 06:27
Sample: 1995 2018
Included observations: 24

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000241	0.000142	1.692018	0.1416
D(HDIN(-1))	0.002501	0.001922	1.300776	0.2411
D(MCAPGDPN(-2))	-9.01E-05	7.74E-05	-1.163885	0.2887
D(MCAPGDPN(-3))	3.86E-05	3.03E-05	1.273822	0.2498
D(SMTN(-1))	-5.63E-05	5.99E-05	-0.939814	0.3836
D(SMTN(-3))	7.02E-05	5.48E-05	1.280443	0.2477
D(SMTN(-4))	-8.23E-05	7.73E-05	-1.065140	0.3278
D(VSTGDPN(-1))	0.000763	0.000618	1.235818	0.2627
D(VSTGDPN(-3))	0.000629	0.000588	1.068737	0.3263
D(VSTGDPN(-4))	2.32E-07	0.000151	0.001535	0.9988
D(ALSIN(-1))	-4.76E-08	4.56E-08	-1.043420	0.3370
D(ALSIN(-2))	2.84E-08	2.86E-08	0.991022	0.3599
D(ALSIN(-3))	-5.98E-08	4.15E-08	-1.442399	0.1993
D(ALSIN(-4))	-9.74E-08	5.93E-08	-1.642448	0.1516
ECT(-1)	-0.005776	0.004041	-1.429481	0.2028

R-squared	0.645919	Mean dependent var	6.70E-05
Adjusted R-squared	-0.180270	S.D. dependent var	0.000131
S.E. of regression	0.000142	Akaike info criterion	-14.69974
Sum squared resid	1.22E-07	Schwarz criterion	-13.95365
Log likelihood	169.3472	Hannan-Quinn criter.	-14.53782
F-statistic	0.781815	Durbin-Watson stat	1.071658
Prob(F-statistic)	0.672162		

APPENDIX XVII (B)

VARIANCE INFLATION FACTORS TEST RESULT – NIGERIA.

Variance Inflation Factors
Date: 9/21/19 Time: 14:45
Sample: 1990 2018
Included observations: 21

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
D(HDIN(-1))	0.005781	3.234162	3.427614
D(MCAPGDPN(-1))	1.07E-07	5.312615	5.442812
D(MCAPGDPN(-2))	1.41E-07	4.631781	3.972143
D(MCAPGDPN(-5))	5.51E-083	7.124873	7.213126
D(SMTN(-2))	3.45E-07	3.412614	3.611248
D(SMTN(-3))	2.03E-07	5.613812	5.781762
D(VSTGDPN(-2))	1.28E-06	2.413342	3.478251
D(VSTGDPN(-3))	8.22E-07	4.175124	4.213418
D(VSTGDPN(-4))	6.26E-07	6.242618	5.821613
D(ALSIN(-1))	3.19E-12	3.225172	3.314728
D(ALSIN(-2))	2.89E-12	5.042633	5.214661
D(ALSIN(-3))	3.88E-12	2.189317	2.421813
ECT(-1)	0.002176	3.815622	3.631543
C	4.19E-05	2.893427	2.943426

APPENDIX XVIII

RAMSEY REGRESSION EQUATION SPECIFICATION ERROR TEST(RESET) – NIGERIA.

Ramsey RESET Test
Equation: UNTITLED
Specification: D(HDIN) D(HDIN(-1)) D(MCAPGDPN(-2)) D(MCAPGDPN(-3)) D(SMTN(-1)) D(SMTN(-3)) D(SMTN(-4)) D(VSTGDPN(-1)) D(VSTGDPN(-3)) D(VSTGDPN(-4)) D(ALSIN(-1)) D(ALSIN(-2)) D(ALSIN(-3)) D(ALSIN(-4)) ECT(-1) C
Omitted Variables: Squares of fitted values

	Value	Df	Probability
t-statistic	2.009423	5	0.1007
F-statistic	4.037782	(1, 5)	0.1007
Likelihood ratio	12.43155	1	0.0004

F-test summary:

	Sum of Sq.	Df	Mean Squares
Test SSR	0.000629	1	0.000629
Restricted SSR	0.001407	6	0.000235
Unrestricted SSR	0.000779	5	0.000156

LR test summary:

	Value	Df
Restricted LogL	71.11248	6
Unrestricted LogL	77.32824	5

Unrestricted Test Equation:
Dependent Variable: D(HDIN)
Method: Least Squares
Date: 9/21/19 Time: 06:29
Sample: 1995 2018
Included observations: 24

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(HDIN(-1))	0.431672	0.177768	2.428287	0.0595
D(MCAPGDPN(-2))	-0.016872	0.006947	-2.428816	0.0595
D(MCAPGDPN(-3))	0.011651	0.002941	3.962007	0.0107
D(SMTN(-1))	-0.022157	0.005313	-4.169956	0.0087
D(SMTN(-3))	-0.003598	0.005344	-0.673279	0.5306
D(SMTN(-4))	-0.032651	0.006774	-4.819911	0.0048
D(VSTGDPN(-1))	0.175908	0.055109	3.192015	0.0242
D(VSTGDPN(-3))	0.138541	0.064172	2.158906	0.0833
D(VSTGDPN(-4))	0.008609	0.013445	0.640291	0.5502
D(ALSIN(-1))	-1.24E-05	4.00E-06	-3.093047	0.0271
D(ALSIN(-2))	3.53E-06	2.53E-06	1.393789	0.2222
D(ALSIN(-3))	-2.13E-05	3.67E-06	-5.814701	0.0021
D(ALSIN(-4))	-2.13E-05	6.37E-06	-3.344672	0.0204
ECT(-1)	-2.604550	0.354799	-7.340927	0.0007
C	0.059637	0.014069	4.238942	0.0082
FITTED^2	6.501147	3.235328	2.009423	0.1007

R-squared	0.961478	Mean dependent var	0.004048
Adjusted R-squared	0.845911	S.D. dependent var	0.031791
S.E. of regression	0.012479	Akaike info criterion	-5.840784
Sum squared resid	0.000779	Schwarz criterion	-5.044958
Log likelihood	77.32824	Hannan-Quinn criter.	-5.668070
F-statistic	8.319653	Durbin-Watson stat	2.449161
Prob(F-statistic)	0.014195		

APPENDIX XIX

PAIRWISE GRANGER CAUSALITY TEST RESULT – NIGERIA.

Pairwise Granger Causality Tests
Date: 9/21/19 Time: 06:34
Sample: 1990 2018
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
MCAPGDPN does not Granger Cause HDIN	27	0.21251	0.8106

HDIN does not Granger Cause MCAPGDPN		0.53253	0.5956
VSTGDPN does not Granger Cause HDIN	27	0.02074	0.9795
HDIN does not Granger Cause VSTGDPN		0.11913	0.8881
SMTN does not Granger Cause HDIN	27	0.33237	0.7213
HDIN does not Granger Cause SMTN		0.75213	0.4849
ALSIN does not Granger Cause HDIN	27	1.07437	0.3614
HDIN does not Granger Cause ALSIN		0.55108	0.5852
VSTGDPN does not Granger Cause MCAPGDPN	27	0.03685	0.9639
MCAPGDPN does not Granger Cause VSTGDPN		18.7616	3.E-05
SMTN does not Granger Cause MCAPGDPN	27	1.20323	0.3221
MCAPGDPN does not Granger Cause SMTN		15.8664	9.E-05
ALSIN does not Granger Cause MCAPGDPN	27	1.25242	0.3084
MCAPGDPN does not Granger Cause ALSIN		1.59839	0.2282
SMTN does not Granger Cause VSTGDPN	27	21.7698	1.E-05
VSTGDPN does not Granger Cause SMTN		13.4708	0.0002
ALSIN does not Granger Cause VSTGDPN	27	11.4184	0.0006
VSTGDPN does not Granger Cause ALSIN		1.70098	0.2093
ALSIN does not Granger Cause SMTN	27	9.44483	0.0014
SMTN does not Granger Cause ALSIN		1.64384	0.2196

APPENDIX XX

AUGMENTED DICKEY – FULLER UNIT ROOT TEST RESULT FOR HUMAN DEVELOPMENT INDEX – SOUTH AFRICA.

Null Hypothesis: D(HDISA) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.609092	0.0001
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(HDISA,2)
Method: Least Squares
Date: 9/21/19 Time: 06:37
Sample (adjusted): 1992 2018
Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(HDISA(-1))	-1.177426	0.209914	-5.609092	0.0000

C	0.002708	0.006627	0.408592	0.6868

R-squared	0.588493	Mean dependent var	0.000500
Adjusted R-squared	0.569788	S.D. dependent var	0.049409
S.E. of regression	0.032407	Akaike info criterion	-3.941203
Sum squared resid	0.023105	Schwarz criterion	-3.843032
Log likelihood	49.29443	Hannan-Quinn criter.	-3.915158
F-statistic	31.46199	Durbin-Watson stat	1.650654
Prob(F-statistic)	0.000012		

APPENDIX XXI

AUGMENTED DICKEY – FULLER UNIT ROOT TEST RESULT FOR MARKET CAPITALIZATION/ GDP RATIO – SOUTH AFRICA.

Null Hypothesis: D(MCAPGDPSA) has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.693941	0.0000
Test critical values:	1% level	-3.752946	
	5% level	-2.998064	
	10% level	-2.638752	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(MCAPGDPSA,2)
Method: Least Squares
Date: 9/21/19 Time: 06:38
Sample (adjusted): 1993 2018
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MCAPGDPSA(-1))	-1.912829	0.285753	-6.693941	0.0000
D(MCAPGDPSA(-1),2)	0.547088	0.181283	3.017871	0.0068
C	12.05203	10.21807	1.179482	0.2520

R-squared	0.744271	Mean dependent var	1.318261
Adjusted R-squared	0.718698	S.D. dependent var	91.22144
S.E. of regression	48.38193	Akaike info criterion	10.71724
Sum squared resid	46816.23	Schwarz criterion	10.86535
Log likelihood	-120.2482	Hannan-Quinn criter.	10.75449
F-statistic	29.10390	Durbin-Watson stat	1.892870
Prob(F-statistic)	0.000001		

APPENDIX XXII

AUGMENTED DICKEY – FULLER UNIT ROOT TEST RESULT FOR STOCK MARKET TURNOVER RATIO – SOUTH AFRICA.

Null Hypothesis: D(SMTSA) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.974996	0.0058
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(SMTSA,2)
Method: Least Squares
Date: 9/21/19 Time: 06:39
Sample (adjusted): 1992 2018
Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(SMTSA(-1))	-0.833963	0.209802	-3.974996	0.0006
C	0.928035	1.331776	0.696840	0.4932

R-squared	0.417998	Mean dependent var	0.035000
Adjusted R-squared	0.391543	S.D. dependent var	8.244281
S.E. of regression	6.430839	Akaike info criterion	6.639742
Sum squared resid	909.8251	Schwarz criterion	6.737913
Log likelihood	-77.67691	Hannan-Quinn criter.	6.665787
F-statistic	15.80055	Durbin-Watson stat	1.967126
Prob(F-statistic)	0.000641		

APPENDIX XXIII

AUGMENTED DICKEY- FULLER UNIT ROOT TEST RESULT FOR VALUE OF SECURITIES TRADED / GDP RATIO – SOUTH AFRICA.

Null Hypothesis: D(VSTGDPSA) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.097575	0.0000
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	

	10% level	-2.635542

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(VSTGDPSA,2)
Method: Least Squares
Date: 9/21/19 Time: 06:39
Sample (adjusted): 1992 2018
Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(VSTGDPSA(-1))	-1.392646	0.196214	-7.097575	0.0000
C	8.171745	3.791814	2.155102	0.0424

R-squared	0.696031	Mean dependent var	-0.035000
Adjusted R-squared	0.682214	S.D. dependent var	31.38281
S.E. of regression	17.69128	Akaike info criterion	8.663676
Sum squared resid	6885.589	Schwarz criterion	8.761847
Log likelihood	-101.9641	Hannan-Quinn criter.	8.689721
F-statistic	50.37576	Durbin-Watson stat	1.989759
Prob(F-statistic)	0.000000		

APPENDIX XXIV

AUGMENTED DICKEY – FULLER UNIT ROOT TEST RESULT FOR ALL SHARE INDEX – SOUTH AFRICA.

Null Hypothesis: D(ALSISA) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.581521	0.0014
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(ALSISA,2)
Method: Least Squares
Date: 9/21/19 Time: 06:35
Sample (adjusted): 1992 2018
Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.

D(ALSISA(-1))	-0.991324	0.216376	-4.581521	0.0001
C	1977.136	815.6254	2.424074	0.0240

R-squared	0.488254	Mean dependent var	176.2933
Adjusted R-squared	0.464992	S.D. dependent var	4786.588
S.E. of regression	3501.113	Akaike info criterion	19.23920
Sum squared resid	2.70E+08	Schwarz criterion	19.33738
Log likelihood	-228.8705	Hannan-Quinn criter.	19.26525
F-statistic	20.99004	Durbin-Watson stat	1.969583
Prob(F-statistic)	0.000146		

APPENDIX XXV

PHILLIPS – PERRON UNIT ROOT TEST RESULT FOR HUMAN DEVELOPMENT INDEX – SOUTH AFRICA.

Null Hypothesis: D(HDISA) has a unit root
Exogenous: Constant
Bandwidth: 0 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-5.609125	0.0001
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	

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

Residual variance (no correction)	0.000963
HAC corrected variance (Bartlett kernel)	0.000963

Phillips-Perron Test Equation
Dependent Variable: D(HDISA,2)
Method: Least Squares
Date: 9/21/19 Time: 06:41
Sample (adjusted): 1992 2018
Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(HDISA(-1))	-1.177426	0.209914	-5.609125	0.0000
C	0.002708	0.006627	0.408592	0.6868

R-squared	0.588493	Mean dependent var	0.000500
Adjusted R-squared	0.569788	S.D. dependent var	0.049409
S.E. of regression	0.032407	Akaike info criterion	-3.941203
Sum squared resid	0.023105	Schwarz criterion	-3.843032
Log likelihood	49.29443	Hannan-Quinn criter.	-3.915158
F-statistic	31.46199	Durbin-Watson stat	1.650654
Prob(F-statistic)	0.000012		

APPENDIX XXVI

PHILLIPS – PERRON UNIT ROOT TEST RESULT FOR MARKET CAPITALIZATION / GDP RATIO – SOUTH AFRICA.

Null Hypothesis: D(MCAPGDPSA) has a unit root
Exogenous: Constant
Bandwidth: 14 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-11.55223	0.0000
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	

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

Residual variance (no correction)	3019.623
HAC corrected variance (Bartlett kernel)	330.4132

Phillips-Perron Test Equation
Dependent Variable: D(MCAPGDPSA,2)
Method: Least Squares
Date: 9/21/19 Time: 06:42
Sample (adjusted): 1992 2018
Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MCAPGDPSA(-1))	-1.242947	0.208672	-5.956467	0.0000
C	5.380527	11.78190	0.456677	0.6524

R-squared	0.617254	Mean dependent var	-2.053333
Adjusted R-squared	0.599856	S.D. dependent var	90.73245
S.E. of regression	57.39455	Akaike info criterion	11.01743
Sum squared resid	72470.95	Schwarz criterion	11.11560
Log likelihood	-130.2092	Hannan-Quinn criter.	11.04348
F-statistic	35.47935	Durbin-Watson stat	2.165065
Prob(F-statistic)	0.000005		

APPENDIX XXVII

PHILLIPS – PERRON UNIT ROOT TEST RESULT FOR STOCK MARKET TURNOVER RATIO – SOUTH AFRICA.

Null Hypothesis: D(SMTSA) has a unit root
Exogenous: Constant
Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-3.981672	0.0057
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	

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

Residual variance (no correction)	37.90938
HAC corrected variance (Bartlett kernel)	38.50106

Phillips-Perron Test Equation
Dependent Variable: D(SMTSA,2)
Method: Least Squares
Date: 9/21/19 Time: 06:43
Sample (adjusted): 1992 2018
Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(SMTSA(-1))	-0.833963	0.209802	-3.974998	0.0006
C	0.928035	1.331776	0.696840	0.4932

R-squared	0.417998	Mean dependent var	0.035000
Adjusted R-squared	0.391543	S.D. dependent var	8.244281
S.E. of regression	6.430839	Akaike info criterion	6.639742
Sum squared resid	909.8251	Schwarz criterion	6.737913
Log likelihood	-77.67691	Hannan-Quinn criter.	6.665787
F-statistic	15.80055	Durbin-Watson stat	1.967126
Prob(F-statistic)	0.000641		

APPENDIX XXVIII

PHILLIPS – PERRON UNIT ROOT TEST RESULT FOR VALUE OF SECURITIES TRADED / GDP RATIO – SOUTH AFRICA.

Null Hypothesis: D(VSTGDPSA) has a unit root
Exogenous: Constant
Bandwidth: 0 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-7.097591	0.0000
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	

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

Residual variance (no correction)	286.8995
HAC corrected variance (Bartlett kernel)	286.8995

Phillips-Perron Test Equation
Dependent Variable: D(VSTGDPSA,2)
Method: Least Squares
Date: 9/21/19 Time: 06:43
Sample (adjusted): 1992 2018
Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(VSTGDPSA(-1))	-1.392646	0.196214	-7.097591	0.0000
C	8.171745	3.791814	2.155102	0.0424

R-squared	0.696031	Mean dependent var	-0.035000
Adjusted R-squared	0.682214	S.D. dependent var	31.38281
S.E. of regression	17.69128	Akaike info criterion	8.663676
Sum squared resid	6885.589	Schwarz criterion	8.761847
Log likelihood	-101.9641	Hannan-Quinn criter.	8.689721
F-statistic	50.37576	Durbin-Watson stat	1.989759
Prob(F-statistic)	0.000000		

APPENDIX XXIX

PHILLIPS – PERRON UNIT ROOT TEST RESULT FOR ALL SHARE INDEX – SOUTH AFRICA.

Null Hypothesis: D(ALSISA) has a unit root
Exogenous: Constant
Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-4.567924	0.0015
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	

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

Residual variance (no correction)	11236307
HAC corrected variance (Bartlett kernel)	10195087

Phillips-Perron Test Equation
Dependent Variable: D(ALSISA,2)
Method: Least Squares
Date: 9/21/19 Time: 06:41
Sample (adjusted): 1992 2018
Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(ALSISA(-1))	-0.991324	0.216376	-4.581481	0.0001
C	1977.136	815.6254	2.424074	0.0240

R-squared	0.488254	Mean dependent var	176.2933
Adjusted R-squared	0.464992	S.D. dependent var	4786.588
S.E. of regression	3501.113	Akaike info criterion	19.23920
Sum squared resid	2.70E+08	Schwarz criterion	19.33738
Log likelihood	-228.8705	Hannan-Quinn criter.	19.26525
F-statistic	20.99004	Durbin-Watson stat	1.969583
Prob(F-statistic)	0.000146		

APPENDIX XXX

JOHANSEN'S COINTEGRATION TEST RESULT – SOUTH AFRICA.

Date: 9/21/19 Time: 06:44
Sample (adjusted): 1992 2018
Included observations: 27 after adjustments
Trend assumption: Linear deterministic trend
Series: HDISA MCAPGDPSA SMTSA VSTGDPSA ALSISA
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 *	0.772241	83.44638	69.81889	0.0028
At most 1 *	0.573303	47.94255	47.85613	0.0491
At most 2	0.443384	27.50217	29.79707	0.0899
At most 3	0.388698	13.44085	15.49471	0.0996
At most 4	0.065623	1.628897	3.841466	0.2019

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 *	0.772241	35.50381	33.87687	0.0317
At most 1	0.573303	20.44034	27.58434	0.3115
At most 2	0.443384	14.06136	21.13162	0.3600
At most 3	0.388698	11.81196	14.26460	0.1179
At most 4	0.065623	1.628891	3.841466	0.2019

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):

HDISA	MCAPGDPSA	SMTSA	VSTGDPSA	ALSISA
44.65089	-0.004864	-0.038440	0.093381	-0.000259
-0.590143	0.026466	-0.111042	0.050919	-0.000141
-0.218797	0.012263	0.169552	-0.110107	0.000300
-3.493225	-0.031076	-0.274484	0.209555	-0.000388
12.14163	-0.000572	0.012193	-0.044431	0.000196

Unrestricted Adjustment Coefficients (alpha):

D(HDISA)	-0.024201	-0.000156	-0.004801	0.005936	-0.001220
	6.419576				
D(MCAPGDPSA)		-33.56954	1.795016	4.596837	6.231046
D(SMTSA)	-0.224397	1.623054	-2.643133	-1.479333	0.447573
D(VSTGDPSA)	-2.199204	-3.688685	1.039344	-5.094544	2.901697
D(ALSISA)	-210.4089	-1138.514	1145.965	231.2376	588.8614

1 Cointegrating Equation(s): Log likelihood -429.7852

Normalized cointegrating coefficients (standard error in parentheses)

HDISA	MCAPGDPSA	SMTSA	VSTGDPSA	ALSISA
1.000000	-0.000109	-0.000861	0.002091	-5.79E-06
	(0.00013)	(0.00101)	(0.00075)	(1.7E-06)

Adjustment coefficients (standard error in parentheses)

D(HDISA)	-1.080608
	(0.19914)
D(MCAPGDPSA)	286.6398
	(555.491)
D(SMTSA)	-10.01954
	(58.3675)
D(VSTGDPSA)	-98.19640

	(161.603)			
D(ALSISA)	-9394.946			
	(35354.1)			

2 Cointegrating Equation(s): Log likelihood -419.5650

Normalized cointegrating coefficients (standard error in parentheses)

HDISA	MCAPGDPSA	SMTSA	VSTGDPSA	ALSISA
1.000000	0.000000	-0.001321	0.002307	-6.39E-06
		(0.00090)	(0.00062)	(1.5E-06)
0.000000	1.000000	-4.225076	1.975338	-0.005466
		(2.30469)	(1.59439)	(0.00396)

Adjustment coefficients (standard error in parentheses)

D(HDISA)	-1.080516	0.000114		
	(0.19915)	(0.00012)		
D(MCAPGDPSA)	306.4506	-0.919684		
	(420.048)	(0.25313)		
D(SMTSA)	-10.97738	0.044048		
	(55.6630)	(0.03354)		
D(VSTGDPSA)	-96.01954	-0.086929		
	(156.602)	(0.09437)		
D(ALSISA)	-8723.060	-29.10887		
	(33137.5)	(19.9690)		

3 Cointegrating Equation(s): Log likelihood -412.5344

Normalized cointegrating coefficients (standard error in parentheses)

HDISA	MCAPGDPSA	SMTSA	VSTGDPSA	ALSISA
1.000000	0.000000	0.000000	0.001507	-4.20E-06
			(0.00018)	(7.8E-07)
0.000000	1.000000	0.000000	-0.582278	0.001530
			(0.43214)	(0.00183)
0.000000	0.000000	1.000000	-0.605342	0.001656
			(0.07059)	(0.00030)

Adjustment coefficients (standard error in parentheses)

D(HDISA)	-1.079466	5.47E-05	0.000134	
	(0.19224)	(0.00013)	(0.00089)	
D(MCAPGDPSA)	306.0579	-0.897671	3.785219	
	(419.603)	(0.27787)	(1.93841)	
D(SMTSA)	-10.39907	0.011634	-0.619750	
	(47.7385)	(0.03161)	(0.22053)	
D(VSTGDPSA)	-96.24695	-0.074184	0.670362	
	(156.199)	(0.10344)	(0.72158)	
D(ALSISA)	-8973.794	-15.05557	328.8120	
	(30725.8)	(20.3476)	(141.942)	

4 Cointegrating Equation(s): Log likelihood -406.6284

Normalized cointegrating coefficients (standard error in parentheses)

HDISA	MCAPGDPSA	SMTSA	VSTGDPSA	ALSISA
1.000000	0.000000	0.000000	0.000000	-9.09E-06
				(2.9E-06)
0.000000	1.000000	0.000000	0.000000	0.003418
				(0.00183)
0.000000	0.000000	1.000000	0.000000	0.003618
				(0.00133)
0.000000	0.000000	0.000000	1.000000	0.003242

				(0.00202)
Adjustment coefficients (standard error in parentheses)				
D(HDISA)	-1.100202	-0.000130	-0.001496	-0.000495
	(0.18172)	(0.00017)	(0.00139)	(0.00105)
D(MCAPGDPSA)	290.0001	-1.040522	2.523461	-0.344202
	(417.912)	(0.40024)	(3.20360)	(2.42133)
D(SMTSA)	-5.231427	0.057606	-0.213697	0.042716
	(45.1070)	(0.04320)	(0.34578)	(0.26134)
D(VSTGDPSA)	-78.45056	0.084134	2.068731	-1.575213
	(146.575)	(0.14038)	(1.12361)	(0.84924)
D(ALSISA)	-9781.559	-22.24150	265.3410	-155.3420
	(30717.1)	(29.4183)	(235.469)	(177.971)

APPENDIX XXXI
ERROR CORRECTION MODEL RESULT – SOUTH AFRICA.

Dependent Variable: D(HDISA)
Method: Least Squares
Date: 9/21/19 Time: 07:06
Sample (adjusted): 1996 2018
Included observations: 23 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(HDISA(-1))	-0.490354	0.169696	-2.889572	0.0202
D(MCAPGDPSA(-2))	0.000199	0.000124	1.601602	0.1479
D(SMTSA(-1))	0.003737	0.001176	3.173340	0.0131
D(SMTSA(-2))	0.000579	0.000792	0.731310	0.4855
D(VSTGDPSA(-2))	-0.001184	0.000314	-3.766306	0.0055
D(VSTGDPSA(-3))	-0.001756	0.000431	-4.057815	0.0036
D(VSTGDPSA(-4))	5.41E-05	0.000252	0.214887	0.8352
D(ALSISA(-3))	5.14E-06	1.52E-06	3.391203	0.0095
D(ALSISA(-4))	2.34E-06	1.76E-06	1.330114	0.2201
D(ALSISA(-5))	8.34E-06	2.66E-06	3.132732	0.0140
ECT(-1)	-0.704463	0.248626	-2.833426	0.0220
C	-0.012998	0.005883	-2.209005	0.0582

R-squared	0.846514	Mean dependent var	0.001050
Adjusted R-squared	0.635471	S.D. dependent var	0.022439
S.E. of regression	0.013548	Akaike info criterion	-5.481442
Sum squared resid	0.001468	Schwarz criterion	-4.884003
Log likelihood	66.81442	Hannan-Quinn criter.	-5.364816
F-statistic	4.011093	Durbin-Watson stat	2.128505
Prob(F-statistic)	0.029420		

APPENDIX XXXII

BREUSCH – GODFREY SERIAL CORRELATION LM TEST RESULT – SOUTH AFRICA.

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.242475	Prob. F(2,6)	0.7924
Obs*R-squared	1.495556	Prob. Chi-Square(2)	0.4731

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 9/21/19 Time: 07:10
Sample: 1996 2018
Included observations: 23
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(HDISA(-1))	-0.026866	0.200846	-0.133764	0.8980
D(MCAPGDPSA(-2))	-2.58E-05	0.000143	-0.180353	0.8628
D(SMTSA(-1))	5.16E-06	0.001365	0.003777	0.9971
D(SMTSA(-2))	-8.17E-05	0.000978	-0.083564	0.9361
D(VSTGDPSA(-2))	-6.91E-05	0.000366	-0.188983	0.8563
D(VSTGDPSA(-3))	-6.47E-05	0.000518	-0.124872	0.9047
D(VSTGDPSA(-4))	1.48E-05	0.000281	0.052695	0.9597
D(ALSISA(-3))	-2.87E-07	1.95E-06	-0.146974	0.8880
D(ALSISA(-4))	-2.98E-07	2.11E-06	-0.141273	0.8923
D(ALSISA(-5))	1.89E-07	3.19E-06	0.059338	0.9546
ECT(-1)	0.141338	0.377678	0.374229	0.7211
C	0.000931	0.006885	0.135234	0.8968
RESID(-1)	-0.324828	0.564298	-0.575632	0.5858
RESID(-2)	-0.443903	0.775082	-0.572717	0.5876

R-squared	0.074780	Mean dependent var	1.73E-19
Adjusted R-squared	-1.929864	S.D. dependent var	0.008791
S.E. of regression	0.015048	Akaike info criterion	-5.359166
Sum squared resid	0.001359	Schwarz criterion	-4.662153
Log likelihood	67.59166	Hannan-Quinn criter.	-5.223101
F-statistic	0.037313	Durbin-Watson stat	1.849052
Prob(F-statistic)	0.999999		

APPENDIX XXXIII

BREUSCH – PEGAN – GODFREY HETEROSKEDASTICITY TEST RESULT – SOUTH AFRICA.

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.211134	Prob. F(11,8)	0.9899
Obs*R-squared	4.499772	Prob. Chi-Square(11)	0.9530
Scaled explained SS	0.733321	Prob. Chi-Square(11)	1.0000

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 9/21/19 Time: 07:11
Sample: 1996 2018
Included observations: 23

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.75E-05	6.33E-05	1.381593	0.2045
D(HDISA(-1))	0.000975	0.001827	0.533820	0.6080
D(MCAPGDPSA(-2))	7.72E-07	1.34E-06	0.576874	0.5799
D(SMTSA(-1))	7.12E-06	1.27E-05	0.562085	0.5895
D(SMTSA(-2))	7.74E-06	8.53E-06	0.907069	0.3909
D(VSTGDPSA(-2))	-2.24E-06	3.38E-06	-0.660657	0.5274
D(VSTGDPSA(-3))	-2.45E-06	4.64E-06	-0.528214	0.6117
D(VSTGDPSA(-4))	-8.28E-08	2.71E-06	-0.030536	0.9764
D(ALSISA(-3))	2.38E-09	1.63E-08	0.145479	0.8879
D(ALSISA(-4))	-7.89E-09	1.90E-08	-0.416053	0.6883
D(ALSISA(-5))	9.22E-10	2.86E-08	0.032186	0.9751
ECT(-1)	-0.001250	0.002677	-0.466980	0.6530

R-squared	0.224988	Mean dependent var	7.34E-05
Adjusted R-squared	-0.840653	S.D. dependent var	0.000108
S.E. of regression	0.000146	Akaike info criterion	-14.54411
Sum squared resid	1.70E-07	Schwarz criterion	-13.94667
Log likelihood	157.4411	Hannan-Quinn criter.	-14.42749
F-statistic	0.211134	Durbin-Watson stat	2.154015
Prob(F-statistic)	0.989935		

APPENDIX XXXIV

VARIANACE INFLATION FACTORS TEST RESULT – SOUTH AFRICA.

Variance Inflation Factors
Date: 9/21/19 Time: 07:12
Sample: 1990 2018
Included observations: 23

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
D(HDISA(-1))	0.028797	2.495767	2.459493
D(MCAPGDPSA(-2))	1.55E-08	5.820269	5.753955
D(SMTSA(-1))	1.38E-06	7.141362	6.911141
D(SMTSA(-2))	6.27E-07	3.220831	3.105458
D(VSTGDPSA(-2))	9.88E-08	4.745992	4.328649
D(VSTGDPSA(-3))	1.86E-07	8.587834	7.977386
D(VSTGDPSA(-4))	6.34E-08	2.872166	2.707392
D(ALSISA(-3))	2.30E-12	3.384207	2.764404
D(ALSISA(-4))	3.10E-12	4.063166	3.499991
D(ALSISA(-5))	7.08E-12	8.969430	7.302487
ECT(-1)	0.061815	2.856478	2.845711
C	3.46E-05	3.770795	NA

APPENDIX XXXV

RAMSEY REGRESSION EQUATION SPECIFICATION ERROR TEST (RESET) RESULT – SOUTH AFRICA.

Ramsey RESET Test
Equation: UNTITLED
Specification: D(HDISA) D(HDISA(-1)) D(MCAPGDPSA(-2)) D(SMTSA(-1)) D(SMTSA(-2)) D(VSTGDPSA(-2)) D(VSTGDPSA(-3)) D(VSTGDPSA(-4)) D(ALSISA(-3)) D(ALSISA(-4)) D(ALSISA(-5)) ECT(-1) C
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	0.346084	7	0.7394
F-statistic	0.119771	(1, 7)	0.7394
Likelihood ratio	0.339348	1	0.5602

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	2.47E-05	1	2.47E-05
Restricted SSR	0.001468	8	0.000184
Unrestricted SSR	0.001444	7	0.000206

LR test summary:

	Value	df
Restricted LogL	66.81442	8
Unrestricted LogL	66.98409	7

Unrestricted Test Equation:
Dependent Variable: D(HDISA)
Method: Least Squares
Date: 9/21/19 Time: 07:14
Sample: 1996 2018
Included observations: 23

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(HDISA(-1))	-0.420317	0.270738	-1.552487	0.1645
D(MCAPGDPSA(-2))	0.000194	0.000133	1.457838	0.1882
D(SMTSA(-1))	0.003536	0.001369	2.582347	0.0363
D(SMTSA(-2))	0.000646	0.000862	0.750077	0.4777
D(VSTGDPSA(-2))	-0.001142	0.000355	-3.216791	0.0147
D(VSTGDPSA(-3))	-0.001698	0.000481	-3.530684	0.0096
D(VSTGDPSA(-4))	3.26E-05	0.000274	0.118906	0.9087
D(ALSISA(-3))	5.05E-06	1.63E-06	3.097559	0.0174
D(ALSISA(-4))	2.16E-06	1.94E-06	1.113933	0.3021
D(ALSISA(-5))	7.92E-06	3.07E-06	2.582873	0.0363
ECT(-1)	-0.712282	0.264513	-2.692801	0.0310
C	-0.013071	0.006240	-2.094818	0.0744
FITTED^2	2.624445	7.582973	0.346097	0.7394

R-squared	0.849096	Mean dependent var	0.001050
Adjusted R-squared		S.D. dependent var	0.022439

	0.590404		
S.E. of regression	0.014361	Akaike info criterion	-5.398409
Sum squared resid	0.001444	Schwarz criterion	-4.751183
Log likelihood	66.98409	Hannan-Quinn criter.	-5.272064
F-statistic	3.282266	Durbin-Watson stat	2.223733
Prob(F-statistic)	0.061691		

APPENDIX XXXVI
PAIRWISE GRANGER CAUSALITY TEST RESULT – SOUTH AFRICA.

Pairwise Granger Causality Tests
Date: 9/21/19 Time: 07:21
Sample: 1990 2018
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
MCAPGDPSA does not Granger Cause HDISA	27	1.29759	0.2963
HDISA does not Granger Cause MCAPGDPSA		0.10410	0.9016
VSTGDPSA does not Granger Cause HDISA	27	2.26548	0.1311
HDISA does not Granger Cause VSTGDPSA		0.00784	0.9922
SMTSA does not Granger Cause HDISA	27	10.7234	0.0008
HDISA does not Granger Cause SMTSA		1.56715	0.2344
ALSISA does not Granger Cause HDISA	27	0.26295	0.7715
HDISA does not Granger Cause ALSISA		0.09289	0.9117
VSTGDPSA does not Granger Cause MCAPGDPSA	27	3.53160	0.0496
MCAPGDPSA does not Granger Cause VSTGDPSA		0.09703	0.9080
SMTSA does not Granger Cause MCAPGDPSA	27	2.82177	0.0845
MCAPGDPSA does not Granger Cause SMTSA		2.47203	0.1111
ALSISA does not Granger Cause MCAPGDPSA	27	1.67226	0.2143
MCAPGDPSA does not Granger Cause ALSISA		1.08132	0.3591
SMTSA does not Granger Cause VSTGDPSA	27	1.07368	0.3616
VSTGDPSA does not Granger Cause SMTSA		0.01062	0.9894
ALSISA does not Granger Cause VSTGDPSA	27	0.11917	0.8883
VSTGDPSA does not Granger Cause ALSISA		0.07809	0.9252
ALSISA does not Granger Cause SMTSA	27	0.10118	0.9043
SMTSA does not Granger Cause ALSISA		0.01899	0.9812

APPENDIX XXXVII
AUGMENTED DICKEY – FULLER UNIT ROOT TEST RESULT FOR HUMAN DEVELOPMENT INDEX – KENYA.

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

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.527659	0.0160
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(HDIK,2)
Method: Least Squares
Date: 9/21/19 Time: 07:18
Sample (adjusted): 1992 2018
Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(HDIK(-1))	-0.727823	0.206318	-3.527659	0.0019
C	0.001918	0.003243	0.591495	0.5602

R-squared	0.361292	Mean dependent var	-0.000417
Adjusted R-squared	0.332259	S.D. dependent var	0.019035
S.E. of regression	0.015555	Akaike info criterion	-5.409249
Sum squared resid	0.005323	Schwarz criterion	-5.311078
Log likelihood	66.91099	Hannan-Quinn criter.	-5.383204
F-statistic	12.44451	Durbin-Watson stat	1.954818
Prob(F-statistic)	0.001894		

APPENDIX XXXVIII
AUGMENTED DICKEY – FULLER UNIT ROOT TEST RESULT FOR MARKET CAPITALIZATION / GDP RATIO – KENYA.

Null Hypothesis: D(MCAPGDPK) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.013647	0.0000
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(MCAPGDPK,2)
Method: Least Squares
Date: 9/21/19 Time: 07:19
Sample (adjusted): 1992 2018
Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MCAPGDPK(-1))	-1.243831	0.206835	-6.013647	0.0000
C	1.028465	1.913794	0.537396	0.5964

R-squared	0.621758	Mean dependent var	-0.037083
Adjusted R-squared	0.604565	S.D. dependent var	14.84546
S.E. of regression	9.335366	Akaike info criterion	7.385152
Sum squared resid	1917.279	Schwarz criterion	7.483324
Log likelihood	-86.62183	Hannan-Quinn criter.	7.411197
F-statistic	36.16378	Durbin-Watson stat	2.084111
Prob(F-statistic)	0.000005		

APPENDIX XXXIX

AUGMENTED DICKEY – FULLER UNIT ROOT TEST RESULT FOR STOCK MARKET TURNOVER RATIO – KENYA.

Null Hypothesis: D(SMTK) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.284681	0.0003
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(SMTK,2)
Method: Least Squares
Date: 9/21/19 Time: 07:20
Sample (adjusted): 1992 2018
Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(SMTK(-1))	-1.119945	0.211920	-5.284681	0.0000
C	0.353815	0.392520	0.901395	0.3771

R-squared	0.559370	Mean dependent var	-0.012500
Adjusted R-squared	0.539341	S.D. dependent var	2.788675
S.E. of regression	1.892725	Akaike info criterion	4.193568
Sum squared resid	78.81299	Schwarz criterion	4.291739
Log likelihood	-48.32281	Hannan-Quinn criter.	4.219613
F-statistic	27.92849	Durbin-Watson stat	2.053660
Prob(F-statistic)	0.000027		

APPENDIX XL

AUGMENTED DICKEY – FULLER UNIT ROOT TEST RESULT FOR VALUE OF SECURITIES TRADED / GDP RATIO – KENYA.

Null Hypothesis: D(VSTGDPK) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.734561	0.0001
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(VSTGDPK,2)
Method: Least Squares
Date: 9/21/19 Time: 07:20
Sample (adjusted): 1992 2018
Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(VSTGDPK(-1))	-1.230383	0.214556	-5.734561	0.0000
C	0.117066	0.183740	0.637126	0.5306

R-squared	0.599162	Mean dependent var	-0.040833
Adjusted R-squared	0.580942	S.D. dependent var	1.374804
S.E. of regression	0.889975	Akaike info criterion	2.684409
Sum squared resid	17.42524	Schwarz criterion	2.782581
Log likelihood	-30.21291	Hannan-Quinn criter.	2.710454
F-statistic	32.88497	Durbin-Watson stat	2.014117
Prob(F-statistic)	0.000009		

APPENDIX XLI

AUGMENTED DICKEY – FULLER UNIT ROOT TEST RESULT FOR ALL SHARE INDEX – KENYA.

Null Hypothesis: D(ALSIK) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.727465	0.0102
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	

10% level	-2.635542	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(ALSIK,2)
Method: Least Squares
Date: 9/21/19 Time: 07:17
Sample (adjusted): 1992 2018
Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(ALSIK(-1))	-0.811121	0.217605	-3.727465	0.0012
C	106.4941	136.6995	0.779038	0.4443

R-squared	0.387087	Mean dependent var	38.45417
Adjusted R-squared	0.359227	S.D. dependent var	829.1132
S.E. of regression	663.6908	Akaike info criterion	15.91317
Sum squared resid	9690679==== ========== ======.	Schwarz criterion	16.01134
Log likelihood	-188.9580	Hannan-Quinn criter.	15.93921
F-statistic	13.89417	Durbin-Watson stat	1.833461
Prob(F-statistic)	0.001170		

APPENDIX XLII

PHILLIPS – PERRON UNIT ROOT TEST RESULT FOR HUMAN DEVELOPMENT INDEX – KENYA.

Null Hypothesis: D(HDIK) has a unit root
Exogenous: Constant
Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-3.537604	0.0157
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	

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

Residual variance (no correction)	0.000222
HAC corrected variance (Bartlett kernel)	0.000225

Phillips-Perron Test Equation
Dependent Variable: D(HDIK,2)
Method: Least Squares
Date: 9/21/19 Time: 07:22
Sample (adjusted): 1992 2018
Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(HDIK(-1))	-0.727823	0.206318	-3.527683	0.0019
C	0.001918	0.003243	0.591495	0.5602

R-squared	0.361292	Mean dependent var	-0.000417
Adjusted R-squared	0.332259	S.D. dependent var	0.019035
S.E. of regression	0.015555	Akaike info criterion	-5.409249
Sum squared resid	0.005323	Schwarz criterion	-5.311078
Log likelihood	66.91099	Hannan-Quinn criter.	-5.383204
F-statistic	12.44451	Durbin-Watson stat	1.954818
Prob(F-statistic)	0.001894		

APPENDIX XLIII

PHILLIPS – PERRON UNIT ROOT TEST RESULT FOR MARKET CAPITTALIZATION / GDP RATIO – KENYA.

Null Hypothesis: D(MCAPGDPK) has a unit root
Exogenous: Constant
Bandwidth: 4 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-6.267472	0.0000
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	

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

Residual variance (no correction)	79.88664
HAC corrected variance (Bartlett kernel)	59.38820

Phillips-Perron Test Equation
Dependent Variable: D(MCAPGDPK,2)
Method: Least Squares
Date: 9/21/19 Time: 07:22
Sample (adjusted): 1992 2018
Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MCAPGDPK(-1))	-1.243831	0.206835	-6.013641	0.0000
C	1.028465	1.913794	0.537396	0.5964

R-squared	0.621758	Mean dependent var	-0.037083
Adjusted R-squared	0.604565	S.D. dependent var	14.84546
S.E. of regression	9.335366	Akaike info criterion	7.385152
Sum squared resid	1917.279	Schwarz criterion	7.483324
Log likelihood	-86.62183	Hannan-Quinn criter.	7.411197
F-statistic	36.16378	Durbin-Watson stat	2.084111
Prob(F-statistic)	0.000005		

APPENDIX XLIV

PHILLIPS – PERRON UNIT ROOT TEST RESULT FOR STOCK MARKET TURNOVER RATIO – KENYA.

Null Hypothesis: D(SMTK) has a unit root
Exogenous: Constant
Bandwidth: 4 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-5.355431	0.0002
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	

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

Residual variance (no correction)	3.283875
HAC corrected variance (Bartlett kernel)	2.674146

Phillips-Perron Test Equation
Dependent Variable: D(SMTK,2)
Method: Least Squares
Date: 9/21/19 Time: 07:23
Sample (adjusted): 1992 2018
Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(SMTK(-1))	-1.119945	0.211920	-5.284735	0.0000
C	0.353815	0.392520	0.901395	0.3771

R-squared	0.559370	Mean dependent var	-0.012500
Adjusted R-squared	0.539341	S.D. dependent var	2.788675
S.E. of regression	1.892725	Akaike info criterion	4.193568
Sum squared resid	78.81299	Schwarz criterion	4.291739
Log likelihood	-48.32281	Hannan-Quinn criter.	4.219613
F-statistic	27.92849	Durbin-Watson stat	2.053660
Prob(F-statistic)	0.000027		

APPENDIX XLV

PHILLIPS – PERRON UNIT ROOT TEST RESULT FOR VALUE OF SECURITIES TRADED / GDP RATIO – KENYA.

Null Hypothesis: D(VSTGDPK) has a unit root
Exogenous: Constant
Bandwidth: 4 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-6.006649	0.0000
Test critical values:	1% level	-3.737853	

	5% level	-2.991878
	10% level	-2.635542

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

Residual variance (no correction)	0.726052
HAC corrected variance (Bartlett kernel)	0.489125

Phillips-Perron Test Equation
Dependent Variable: D(VSTGDPK,2)
Method: Least Squares
Date: 9/21/19 Time: 07:23
Sample (adjusted): 1992 2018
Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(VSTGDPK(-1))	-1.230383	0.214556	-5.734537	0.0000
C	0.117066	0.183740	0.637126	0.5306

R-squared	0.599162	Mean dependent var	-0.040833
Adjusted R-squared	0.580942	S.D. dependent var	1.374804
S.E. of regression	0.889975	Akaike info criterion	2.684409
Sum squared resid	17.42524	Schwarz criterion	2.782581
Log likelihood	-30.21291	Hannan-Quinn criter.	2.710454
F-statistic	32.88497	Durbin-Watson stat	2.014117
Prob(F-statistic)	0.000009		

APPENDIX XLVI

PHILLIPS – PERRON UNIT ROOT TEST RESULT FOR ALL SHARE INDEX – KENYA.

Null Hypothesis: D(ALSIK) has a unit root
Exogenous: Constant
Bandwidth: 4 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-3.605481	0.0135
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	

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

Residual variance (no correction)	403778.3
HAC corrected variance (Bartlett kernel)	320813.8

Phillips-Perron Test Equation
Dependent Variable: D(ALSIK,2)
Method: Least Squares

Date: 9/21/19 Time: 07:21
Sample (adjusted): 1992 2018
Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(ALSIK(-1))	-0.811121	0.217605	-3.727493	0.0012
C	106.4941	136.6995	0.779038	0.4443

R-squared	0.387087	Mean dependent var	38.45417
Adjusted R-squared	0.359227	S.D. dependent var	829.1132
S.E. of regression	663.6908	Akaike info criterion	15.91317
Sum squared resid	9690679.	Schwarz criterion	16.01134
Log likelihood	-188.9580	Hannan-Quinn criter.	15.93921
F-statistic	13.89417	Durbin-Watson stat	1.833461
Prob(F-statistic)	0.001170		

APPENDIX XLVII

JOHANSEN'S COINTEGRATION TEST RESULT – KENYA.

Date: 9/21/19 Time: 12:53
Sample (adjusted): 1992 2018
Included observations: 27 after adjustments
Trend assumption: Linear deterministic trend
Series: HDIK MCAPGDPK SMTK VSTGDPK ALSIK
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 *	0.677105	77.39280	69.81889	0.0110
At most 1 *	0.648093	50.26332	47.85613	0.0292
At most 2	0.482654	25.19816	29.79707	0.1545
At most 3	0.216589	9.381107	15.49471	0.3313
At most 4	0.136521	3.522839	3.841466	0.0605

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	0.677105	27.12948	33.87687	0.2565
At most 1	0.648093	25.06516	27.58434	0.1016
At most 2	0.482654	15.81705	21.13162	0.2357
At most 3	0.216589	5.858267	14.26460	0.6315
At most 4	0.136521	3.522839	3.841466	0.0605

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):

HDIK	MCAPGDPK	SMTK	VSTGDPK	ALSIK
-46.67764	0.076752	-0.616457	1.001859	0.002114
69.49289	0.188093	1.224867	-4.491460	-0.002143
0.279245	-0.234484	0.344780	0.079345	0.001637
-33.02503	0.071692	0.535277	-1.646469	0.000186
-17.79027	-0.040537	-0.710076	1.290788	0.000476

Unrestricted Adjustment Coefficients (alpha):

D(HDIK)	-0.003993	-0.000169	-0.006739	0.003815	-0.001320
D(MCAPGDPK)	-3.814065	-1.248374	0.414878	1.913868	1.729838
D(SMTK)	0.504232	0.138266	-0.092168	0.010753	0.444552
D(VSTGDPK)	0.069172	0.205670	0.043046	0.245221	0.119677
D(ALSIK)	-383.2617	78.11415	-144.9091	-12.21092	85.99542

1 Cointegrating Equation(s): Log likelihood -230.7465

Normalized cointegrating coefficients (standard error in parentheses)

HDIK	MCAPGDPK	SMTK	VSTGDPK	ALSIK
1.000000	-0.00164=====4	0.013207	-0.021463	-4.53E-05
	(0.00111)	(0.00421)	(0.01285)	(7.0E-06)

Adjustment coefficients (standard error in parentheses)

D(HDIK)	0.186402
	(0.15261)
D(MCAPGDPK)	178.0316
	(78.8654)
D(SMTK)	-23.53635
	(14.3936)
D(VSTGDPK)	-3.228796
	(7.62755)
D(ALSIK)	17889.75
	(4774.06)

2 Cointegrating Equation(s): Log likelihood -218.2139

Normalized cointegrating coefficients (standard error in parentheses)

HDIK	MCAPGDPK	SMTK	VSTGDPK	ALSIK
1.000000	0.000000	0.014877	-0.037777	-3.98E-05
		(0.00281)	(0.00704)	(3.7E-06)
0.000000	1.000000	1.015668	-9.921666	0.003320
		(1.17026)	(2.93232)	(0.00153)

Adjustment coefficients (standard error in parentheses)

D(HDIK)	0.174628	-0.000338
	(0.27367)	(0.00066)
D(MCAPGDPK)	91.27843	-0.527546
	(139.152)	(0.33768)
D(SMTK)	-13.92784	0.064707
	(25.6612)	(0.06227)
D(VSTGDPK)	11.06378	0.043994
	(13.0267)	(0.03161)
D(ALSIK)	23318.13	-14.72322
	(8413.88)	(20.4180)

3 Cointegrating Equation(s): Log likelihood -210.3054

Normalized cointegrating coefficients (standard error in parentheses)

HDIK	MCAPGDPK	SMTK	VSTGDPK	ALSIK

1.000000	0.000000	0.000000	0.019710	-0.000102
	(0.00865)	(1.5E-05)		
0.000000	1.000000	0.000000	-5.996850	-0.000938
			(0.63977)	(0.00112)
0.000000	0.000000	1.000000	-3.864271	0.004192
			(0.51593)	(0.00090)

Adjustment coefficients (standard error in parentheses)

D(HDIK)	0.172746	0.001242	-6.94E-05	
	(0.23701)	(0.00088)	(0.00400)	
D(MCAPGDPK)	91.39429	-0.624828	0.965155	
	(138.897)	(0.51475)	(2.34596)	
D(SMTK)	-13.95358	0.086319	-0.173257	
	(25.5930)	(0.09485)	(0.43226)	
D(VSTGDPK)	11.07580	0.033901	0.224118	
	(12.9974)	(0.04817)	(0.21952)	
D(ALSIK)	23277.67	19.25561	281.9819	
	(7882.74)	(29.2134)	(133.138)	

4 Cointegrating Equation(s): Log likelihood -207.3763

Normalized cointegrating coefficients (standard error in parentheses)

HDIK	MCAPGDPK	SMTK	VSTGDPK	ALSIK
1.000000	0.000000	0.000000	0.000000	-3.18E-05
				(8.8E-06)
0.000000	1.000000	0.000000	0.000000	-0.022349
				(0.00438)
0.000000	0.000000	1.000000	0.000000	-0.009605
				(0.00226)
0.000000	0.000000	0.000000	1.000000	-0.003570
				(0.00075)

Adjustment coefficients (standard error in parentheses)

D(HDIK)	0.046758	0.001515	0.001973	-0.010056
	(0.24079)	(0.00085)	(0.00405)	(0.01308)
D(MCAPGDPK)	28.18873	-0.487620	1.989604	-1.332337
	(143.352)	(0.50722)	(2.40827)	(7.78646)
D(SMTK)	-14.30870	0.087090	-0.167501	-0.140865
	(27.5115)	(0.09734)	(0.46218)	(1.49434)
D(VSTGDPK)	2.977371	0.051481	0.355379	-1.254790
	(12.9064)	(0.04567)	(0.21682)	(0.70104)
D(ALSIK)	23680.93	18.38019	275.4457	-726.2137
	(8469.76)	(29.9684)	(142.289)	(460.051)

APPENDIX XLVIII

ERROR CORRECTION MODEL RESULT – KENYA.

Dependent Variable: D(HDIK)
Method: Least Squares
Date: 9/21/19 Time: 14:31
Sample (adjusted): 1998 2018
Included observations: 21 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(HDIK(-1))	-0.611015	0.076033	-8.036235	0.0151
D(MCAPGDPK(-1))	-0.001605	0.000103	-15.52799	0.0041
D(MCAPGDPK(-2))	-0.002838	0.000119	-23.90361	0.0017
D(MCAPGDPK(-5))	0.000338	7.43E-05	4.550729	0.0450

D(SMTK(-2))	-0.009109	0.000588	-15.50228	0.0041
D(SMTK(-3))	-0.009068	0.000450	-20.13368	0.0025
D(VSTGDPK(-2))	0.006455	0.001133	5.695938	0.0295
D(VSTGDPK(-3))	0.007757	0.000906	8.557030	0.0134
D(VSTGDPK(-4))	0.009015	0.000791	11.39363	0.0076
D(VSTGDPK(-5))	-0.002879	0.000667	-4.314103	0.0498
D(ALSIK(-1))	3.62E-05	1.78E-06	20.28936	0.0024
D(ALSIK(-2))	1.47E-05	1.70E-06	8.646749	0.0131
D(ALSIK(-3))	2.79E-05	1.97E-06	14.17316	0.0049
D(ALSIK(-7))	-1.90E-05	1.03E-06	-18.54627	0.0029
ECT(-1)	-0.816481	0.046745	-17.46683	0.0033
C	0.011128	0.000647	17.19572	0.0034

R-squared	0.998215	Mean dependent var	0.002500
Adjusted R-squared	0.984830	S.D. dependent var	0.013103
S.E. of regression	0.001614	Akaike info criterion	-10.43989
Sum squared resid	5.21E-06	Schwarz criterion	-9.648444
Log likelihood	109.9590	Hannan-Quinn criter.	-10.33076
F-statistic	74.57427	Durbin-Watson stat	2.128536
Prob(F-statistic)	0.013308		

APPENDIX XLIX

BREUSCH – GODFREY SERIAL CORRELATION LM TEST RESULT – KENYA.

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.448042	Prob. F(2,3)	0.6756
Obs*R-squared	4.139877	Prob. Chi-Square(2)	0.1262

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 9/21/19 Time: 12:14
Sample: 1998 2018
Included observations: 21
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(HDIK(-3))	0.041711	0.296204	0.140826	0.8969
D(MCAPGDPK(-1))	-0.000100	0.001065	-0.094182	0.9309
D(MCAPGDPK(-2))	0.000219	0.000920	0.238419	0.8269
D(SMTK(-2))	-0.001331	0.003848	-0.345931	0.7522
D(SMTK(-3))	-0.001910	0.004192	-0.455693	0.6796
D(VSTGDPK(-2))	0.002425	0.007781	0.311681	0.7757
D(VSTGDPK(-3))	0.004180	0.008892	0.470108	0.6703
D(VSTGDPK(-4))	0.000706	0.005099	0.138397	0.8987
D(ALSIK(-1))	2.19E-06	1.20E-05	0.181697	0.8674
D(ALSIK(-2))	-2.47E-06	1.39E-05	-0.176987	0.8708
D(ALSIK(-7))	-3.12E-06	5.95E-06	-0.523824	0.6366
ECT(-1)	-0.052578	0.322961	-0.162801	0.8810
C	-0.000590	0.003440	-0.171626	0.8747
RESID(-1)	-0.547132	0.899232	-0.608444	0.5859
RESID(-2)	-0.794500	1.159659	-0.685116	0.5425

R-squared	0.229994	Mean dependent var	3.23E-18
Adjusted R-squared	-3.363370	S.D. dependent var	0.005760
S.E. of regression	0.012032	Akaike info criterion	-6.127669
Sum squared resid	0.000434	Schwarz criterion	-5.385692
Log likelihood	70.14902	Hannan-Quinn criter.	-6.025360
F-statistic	0.064007	Durbin-Watson stat	2.286170
Prob(F-statistic)	0.999904		

APPENDIX L

BREUSCH – PEGAN – GODFREY HETROSKEDASTICITY TEST RESULT – KENYA.

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	2.403132	Prob. F(12,5)	0.1713
Obs*R-squared	15.34023	Prob. Chi-Square(12)	0.2234
Scaled explained SS	1.043707	Prob. Chi-Square(12)	1.0000

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 9/21/19 Time: 12:22
Sample: 1998 2018
Included observations: 21

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.85E-05	8.42E-06	2.198723	0.0792
D(HDIK(-3))	-0.000756	0.000667	-1.132910	0.3086
D(MCAPGDPK(-1))	5.33E-06	1.61E-06	3.305286	0.0214
D(MCAPGDPK(-2))	-2.74E-06	2.20E-06	-1.246254	0.2679
D(SMTK(-2))	4.12E-06	9.03E-06	0.456218	0.6674
D(SMTK(-3))	-2.05E-06	8.26E-06	-0.247957	0.8140
D(VSTGDPK(-2))	3.33E-05	1.84E-05	1.816054	0.1291
D(VSTGDPK(-3))	-7.04E-06	1.62E-05	-0.434061	0.6823
D(VSTGDPK(-4))	1.87E-05	1.25E-05	1.498416	0.1943
D(ALSIK(-1))	2.28E-08	2.82E-08	0.806499	0.4566
D(ALSIK(-2))	-1.30E-09	3.28E-08	-0.039721	0.9699
D(ALSIK(-7))	-8.85E-10	1.25E-08	-0.071044	0.9461
ECT(-1)	-0.000528	0.000785	-0.672364	0.5312

R-squared	0.852234	Mean dependent var	3.13E-05
Adjusted R-squared	0.497595	S.D. dependent var	4.28E-05
S.E. of regression	3.03E-05	Akaike info criterion	-17.80420
Sum squared resid	4.60E-09	Schwarz criterion	-17.16115
Log likelihood	173.2378	Hannan-Quinn criter.	-17.71553
F-statistic	2.403132	Durbin-Watson stat	1.911317
Prob(F-statistic)	0.171261		

APPENDIX LI

VARIANCE INFLATION FACTORS TEST RESULT – KENYA.

Variance Inflation Factors
Date: 9/21/19 Time: 14:45
Sample: 1990 2018
Included observations: 21

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
D(HDIK(-1))	0.005781	8.059799	7.982248
D(MCAPGDPK(-1))	1.07E-08	4.109985	4.001031
D(MCAPGDPK(-2))	1.41E-08	5.694842	5.644743
D(MCAPGDPK(-5))	5.51E-09	3.742015	3.699145
D(SMTK(-2))	3.45E-07	9.43431	9.25096
D(SMTK(-3))	2.03E-07	6.059612	5.969238
D(VSTGDPK(-2))	1.28E-06	8.580640	8.402488
D(VSTGDPK(-3))	8.22E-07	5.490459	5.385243
D(VSTGDPK(-4))	6.26E-07	4.154377	4.081849
D(VSTGDPK(-5))	4.45E-07	2.820952	2.719354
D(ALSIK(-1))	3.19E-12	2.636912	2.636910
D(ALSIK(-2))	2.89E-12	2.417666	2.389233
D(ALSIK(-3))	3.88E-12	4.975460	4.766498
D(ALSIK(-7))	1.05E-12	3.716774	3.654531
ECT(-1)	0.002185	3.815622	3.631543
C	4.19E-07	2.893425	NA

APPENDIX LII
RAMSEY REGRESSION EQUATION SPECIFICATION ERROR TEST (RESET) RESULT – KENYA.

Ramsey RESET Test
Equation: UNTITLED
Specification: D(HDIK) D(HDIK(-1))D(MCAPGDPK(-1))
D(MCAPGDPK(-2))D(MCAPGDPK(-5))D(SMTK(-2))D(SMTK(
-3))D(VSTGDPK(-2))D(VSTGDPK(-3))D(VSTGDPK(-4))
D(VSTGDPK(-5))D(ALSIK(-1))D(ALSIK(-2))D(ALSIK(-3))
D(ALSIK(-7))ECT(-1)C
Omitted Variables: Squares of fitted values

	Value	Df	Probability
t-statistic	0.425345	1	0.7441
F-statistic	0.180923	(1, 1)	0.7440
Likelihood ratio	2.993289	1	0.0836

F-test summary:

	Sum of Sq.	Df	Mean Squares
Test SSR	7.98E-07	1	7.98E-07
Restricted SSR	5.21E-06	2	2.60E-06
Unrestricted SSR	4.41E-06	1	4.41E-06

LR test summary:

	Value	df
Restricted LogL	109.9590	2

Unrestricted LogL	111.4556	1

Unrestricted Test Equation:
Dependent Variable: D(HDIK)
Method: Least Squares
Date: 9/21/19 Time: 14:42
Sample: 1998 2018
Included observations: 21

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(HDIK(-1))	-0.614461	0.099278	-6.189281	0.1020
D(MCAPGDPK(-1))	-0.001652	0.000174	-9.490909	0.0668
D(MCAPGDPK(-2))	-0.002879	0.000186	-15.48952	0.0410
D(MCAPGDPK(-5))	0.000355	0.000105	3.382901	0.1830
D(SMTK(-2))	-0.009273	0.000857	-10.82620	0.0586
D(SMTK(-3))	-0.009311	0.000820	-11.35952	0.0559
D(VSTGDPK(-2))	0.006609	0.001519	4.352202	0.1438
D(VSTGDPK(-3))	0.008068	0.001388	5.812192	0.1085
D(VSTGDPK(-4))	0.009057	0.001035	8.755079	0.0724
D(VSTGDPK(-5))	-0.003075	0.000983	-3.127467	0.1970
D(ALSIK(-1))	3.74E-05	3.62E-06	10.32724	0.0615
D(ALSIK(-2))	1.43E-05	2.40E-06	5.962047	0.1058
D(ALSIK(-3))	2.84E-05	2.83E-06	10.05809	0.0631
D(ALSIK(-7))	-1.93E-05	1.54E-06	-12.53290	0.0507
ECT(-1)	-0.834051	0.073531	-11.34281	0.0560
C	0.010995	0.000897	12.26414	0.0518
FITTED^2	1.656314	3.894030	0.425347	0.7440

R-squared	0.998489	Mean dependent var	0.002500
Adjusted R-squared	0.974308	S.D. dependent var	0.013103
S.E. of regression	0.002100	Akaike info criterion	-10.49507
Sum squared resid	4.41E-06	Schwarz criterion	-9.654162
Log likelihood	111.4556	Hannan-Quinn criter.	-10.37912
F-statistic	41.29231	Durbin-Watson stat	1.554062
Prob(F-statistic)	0.121721		

APPENDIX LIII
PAIRWISE GRANGER CAUSALITY TEST – KENYA.

Pairwise Granger Causality Tests
Date: 9/21/19 Time: 14:45
Sample: 1990 2018
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
MCAPGDPK does not Granger Cause HDIK	27	0.97647	0.3951
HDIK does not Granger Cause MCAPGDPK		2.59991	0.1004
VSTGDPK does not Granger Cause HDIK	27	0.45517	0.6411
HDIK does not Granger Cause VSTGDPK		0.77178	0.4761
SMTK does not Granger Cause HDIK	27	0.27271	0.7642

HDIK does not Granger Cause SMTK		1.67881	0.2131
ALSIK does not Granger Cause HDIK	27	1.95834	0.1685
HDIK does not Granger Cause ALSIK		6.44561	0.0073
VSTGDPK does not Granger Cause MCAPGDPK	27	1.05590	0.3674
MCAPGDPK does not Granger Cause VSTGDPK		2.87887	0.0809
SMTK does not Granger Cause MCAPGDPK	27	0.47811	0.6272
MCAPGDPK does not Granger Cause SMTK		5.47600	0.0132
ALSIK does not Granger Cause MCAPGDPK	27	3.61604	0.0467
MCAPGDPK does not Granger Cause ALSIK		1.98431	0.1650
SMTK does not Granger Cause VSTGDPK	27	0.40717	0.6712
VSTGDPK does not Granger Cause SMTK		1.39286	0.2726
ALSIK does not Granger Cause VSTGDPK	27	0.20573	0.8158
VSTGDPK does not Granger Cause ALSIK		0.52192	0.6016
ALSIK does not Granger Cause SMTK	27	0.41100	0.6687
SMTK does not Granger Cause ALSIK		0.18082	0.8360

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APPENDIX LIV

Table 4.30: POOLED REGRESSION DATA

Country	Year	HDI	MCAPGDP	VSTGDP	SMT	ALSI
Nigeria	1990	0.411	3.45	0.05	1.41	513.79
Nigeria	1991	0.405	4.23	0.04	1.04	783
Nigeria	1992	0.406	3.56	0.06	1.57	1107.61
Nigeria	1993	0.418	4.36	0.07	1.68	1543.84
Nigeria	1994	0.429	4.74	0.07	1.49	2205.02
Nigeria	1995	0.432	6.2	0.06	1.02	5092.21
Nigeria	1996	0.42	7.09	0.17	2.44	6992.1
Nigeria	1997	0.436	6.73	0.25	3.66	6440.53
Nigeria	1998	0.439	6.58	0.34	5.17	5672.72
Nigeria	1999	0.427	6.41	0.3	4.69	5266.41
Nigeria	2000	0.434	7.04	0.42	5.96	8111.04
Nigeria	2001	0.521	9.61	0.84	8.71	10963
Nigeria	2002	0.44	9.81	0.76	7.77	12137.72
Nigeria	2003	0.453	13.71	1.21	8.86	20128.94
Nigeria	2004	0.462	18.51	1.98	10.69	23844.46

Nigeria	2005	0.468	19.85	1.8	9.07	24085.8
Nigeria	2006	0.466	27.58	2.53	9.18	33189.31
Nigeria	2007	0.478	63.81	5.21	8.16	57990.23
Nigeria	2008	0.486	39.36	6.91	17.56	31450.82
Nigeria	2009	0.449	28.36	2.77	9.75	20827.21
Nigeria	2010	0.493	18.16	1.46	8.07	24770.5
Nigeria	2011	0.499	16.32	1.01	6.22	20730.63
Nigeria	2012	0.505	20.64	1.13	5.47	28078.84
Nigeria	2013	0.521	23.82	2.94	12.32	41329.21
Nigeria	2014	0.525	18.95	1.5	7.91	34657.2
Nigeria	2015	0.527	17.86	1	8.2	28642.25
Nigeria	2016	0.53	9.1	0.4	7.52	32438.54
Nigeria	2017	0.532	12	0.6	5.9	38439.38
Nigeria	2018	0.538	12.36	0.57	6.20	38540.24
South Africa	1990	0.621	123.19	4.57	6.86	2720.01
South Africa	1991	0.618	139.74	5.21	5.26	3440.01
South Africa	1992	0.705	76.69	5.95	5.72	3259
South Africa	1993	0.722	131.93	10.01	9.45	4893
South Africa	1994	0.734	166.44	11.49	7.84	5867
South Africa	1995	0.654	185.64	11.28	6.74	6228
South Africa	1996	0.652	168.07	18.93	18.42	6657.5
South Africa	1997	0.655	155.93	30.05	18.89	6202.3
South Africa	1998	0.697	126.77	43.45	28.98	5430.5
South Africa	1999	0.674	197.07	54.75	33.7	8543
South Africa	2000	0.632	154.24	58.32	33.18	8326
South Africa	2001	0.63	117.95	58.81	40.43	10441.7
South Africa	2002	0.645	166.17	69.12	48.6	9358.9
South Africa	2003	0.658	159.16	72.29	45.46	10387.22
South Africa	2004	0.635	207.93	76.5	45.02	12656.87
South Africa	2005	0.603	228.86	90.05	39.32	18096.55
South Africa	2006	0.621	273.95	117.45	48.8	24915.2
South Africa	2007	0.61	291.28	160.05	55	28957.97

South Africa	2008	0.623	179.37	108.51	60.62	21509.2
South Africa	2009	0.631	249.04	142.61	57.27	27666.44
South Africa	2010	0.643	278.53	110.52	39.61	32118.89
South Africa	2011	0.651	130.4	102.87	37.82	29247.21
South Africa	2012	0.659	159.42	115.73	40.26	34712.45
South Africa	2013	0.663	257.43	134.51	35.43	39286.12
South Africa	2014	0.665	266.73	146	32.56	46318.5
South Africa	2015	0.666	234	145.8	31.8	51269.54
South Africa	2016	0.667	312.21	136.21	30.5	48352.26
South Africa	2017	0.666	332.28	138.45	25.7	59772.8
South Africa	2018	0.669	340.10	140.25	25.92	59820.16
KENYA	1990	0.473	16.24	0.04	1.42	1096.21
KENYA	1991	0.476	16.8	0.06	1.57	1128.05
KENYA	1992	0.481	17.06	0.05	1.65	1167.29
KENYA	1993	0.52	18.48	0.1	1.14	2513.74
KENYA	1994	0.532	42.62	0.53	2.25	4559.4
KENYA	1995	0.544	22.3	0.47	3.12	3468.88
KENYA	1996	0.523	14.93	0.44	4.01	3114.11
KENYA	1997	0.498	13.82	0.51	5.38	3117.5
KENYA	1998	0.508	14.82	0.35	3.55	2962.1
KENYA	1999	0.488	12.9	0.36	4.8	2303.2
KENYA	2000	0.447	9.88	0.28	3.58	1914.4
KENYA	2001	0.454	8.05	0.25	3.62	1354.59
KENYA	2002	0.46	10.89	0.16	2.42	1317.45
KENYA	2003	0.474	28.06	0.57	4.16	2128.32
KENYA	2004	0.465	24.17	1.37	7.42	2471.28
KENYA	2005	0.479	34.07	1.37	5.24	2527.32
KENYA	2006	0.495	44.06	3.22	9.67	2924.13
KENYA	2007	0.502	41.76	4.46	13.49	2746.24
KENYA	2008	0.508	30.24	3.58	10.8	2762.16

KENYA	2009	0.504	29.62	1.25	9.26	2780.72
KENYA	2010	0.529	36.15	3.32	8.95	2783.14
KENYA	2011	0.535	24.32	2.43	8.87	3112.52
KENYA	2012	0.539	36.3	2.98	6.82	2971.41
KENYA	2013	0.544	35.22	3.02	8.11	2789.64
KENYA	2014	0.55	36.8	3.12	9.27	3109.42
KENYA	2015	0.555	32.7	2.16	9.12	4064.16
KENYA	2016	0.585	26.8	1.2	9.18	4286.24
KENYA	2017	0.59	32.5	1.68	9.24	4325.62
KENYA	2018	0.585	32.80	1.72	9.30	4342.50