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Natural resource endowment, stock market development and economic growth in Africa

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A research project submitted to the Wits Business School in partial fulfillment of the requirements for the degree of Master of Management in Finance and Investments.

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Abstract

The inability to create sustainable wealth has plagued many resource endowed economies on the African continent. Natural resource wealth has not translated into to economic growth, in fact studies done illustrate that of lack of education and subsequent poor economic performances are linked to natural resource endowment. Revenue emanating from the extraction of natural resources is not being effectively managed and this is evident in the level of corruption on the African continent. Natural resource endowed economies rely on rent and commodity exports as their main source of income and due to this dependency, these economies are more prone to volatile income streams as a result of changes in the prices of commodities.

The inadequate investment in human capital has resulted in African stock markets not developing further despite having some of the oldest stock exchanges in the world. The Johannesburg Securities Exchange was established in 1887 and the Egyptian Stock Exchange in 1887. This research investigated three natural resource endowed countries; South Africa, Nigeria and Egypt. These countries also happen to have the more sophisticated stock markets as compared to other countries on the continent; however these markets remain relatively small and illiquid compared global stock markets.

The purpose of this paper is to ascertain whether stock market development increases economic growth when natural resources revenue is modelled as a determinant for stock market development. The paper also seeks to determine whether the lack of stock market development could be attributed to the natural resource curse, a phenomena where resource endowment is associated with poor economic performance.

The results show that natural resource revenue and liquidity enhance economic growth, Nigeria displayed symptoms of suffering from the natural resource curse. The paper also finds that the type of natural resource that a country is endowed with has different effects on economic performance and that the growth of an economy has a significant relationship with the price of commodities. The study concludes that if natural resource endowed economies are to manage its resource revenue efficiently and focus on improving institutional quality and the level of human development. An increase in institutional quality will enhance stock market integrity, while an increase in human development will foster local participants to learn about the stock markets. An increase in the number of participants will enhance stock market liquidity.

Declaration

I declare that this research project is my own work.

This report is being submitted in partial fulfillment of the requirements for the degree of Master of Management in Finance and Investments at the Wits Business School. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorization and consent to carry out this research.

Tebogo Mekgwe

29/03/2014

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CHAPTER 1

Introduction

The first chapter of this paper introduces the background on which the study is based on. The problem statement is presented and highlights the key dynamics that Africa is currently experiencing from a natural resource endowment, stock market development and economic growth perspective. The rest of the chapter comprises of the research objectives and the research questions that the paper addresses.

1.1 Background

This paper focuses on one of the enduring topics in modern economics of whether financial development causes economic growth. Empirical investigation of the link between stock market development and economic growth has yielded different conclusions. Gurley and Shaw (1955) argued that financial sector was the main difference between developed and developing countries as the financial system of developed countries were accorded greater status. They also found that financial markets promote economic growth and simultaneously enhance the accumulation of physical capital; this is consistent with the findings by Goldsmith (1969) and McKinnon (1973).

There is significant literature on the indicators of stock market development, with liquidity being the main indicator for development. Yartey (2008) argued that the level of stock market liquidity determines the quantity of savings channelled to it, which further enhances its development. Demirguc-Kunt and Levine (1996) argued that liquidity enhances capital accumulation and promotes long term economic growth. Levine and Zervos (1996), Naceur et al (2007) and Bencivenga et al (1996) all had similar findings. Stock markets that are more liquid enhance long-term investment and accelerate economic growth (Levine 2007). Corporate et al (2004) also argued that stock market creates liquidity that facilitates economic growth.

Other indicators of stock market development include inflation, development of the banking sector and income. Naceur et al (2007) and Yartey and Adjisi (2007) argued that low levels of inflation contribute to stock market development and economic growth as investors are not prepared to risk their profits being eroded as a result of high inflation. Levine and Zervos (1998) found the banking system's support services had contributed to the development of

the stock market. This argument was supported by Demirguc-Kunt and Levine (1996) and Yartey and Adjisi (2007).

Goldsmith (1969) argued that an increase in real income and wealth will enhance economic growth. Supporting the same argument, Garcia and Liu (1999) and Yartey (2008) argued that real income and income growth are the most important determinants of stock market development. Bjonland (2008) found stock markets returns were positively correlated with higher oil prices and that these returns were attributed to the income and wealth effect. Bjonlard (2008) further argued that governments of oil exporting countries now have more income and can stimulate economic growth through infrastructure expenditure.

The African continent is blessed with a vast array of non-renewable resources which are the basis of income through rent and commodity export. These commodities are the principal source of public revenue and national wealth, which in theory should be a catalyst for economic growth; however this is not the case in most African countries. The paper, through the regression model will investigate whether any of the subject countries display symptoms of suffering from the resource curse which is described as a situation where an economy has an export-driven resource sector that generates significant income and wealth but simultaneously experiencing sluggish growth (Hagland 2011).

The paper will also investigate the Dutch disease which is described as the syndrome of rising exchange rates (over-valuation of currency) as a result of a subsequent surge in resource exports stemming from a natural resource boom (Gylfason 2001). This phenomenon will be modelled in the regression model through the analysis of exchange rates and economic growth. Resource endowed economies are vulnerable to commodity price fluctuations and as a result, these economies are faced with export price volatility. Hagland (2011) argued that the surge of commodity prices has encouraged more African countries to be become more dependent on the export of natural resources.

1.3 Problem statement

A number of resource endowed economies in Africa are still being affected by civil wars and poor institutional quality. However, one would expect that the revenues generated from production would at least have a positive effect on the economy i.e. growth in GDP. This is more so because the prices of natural resources have been on an upward trend in the past decade and revenues have soared. The problem is that there has been poor economic growth

in natural resource endowed African economies despite an increase in revenues emanating from resources' production.

On the other hand, a declining gross saving (as a % of GDP), poor institutional quality and lack of human development have resulted in the stagnation of the stock markets (Demirguc-Kunt and Levine 1996). There is a lack of stock market participation from local and institutional investors because the locals are not knowledgeable enough to participate in the stock market while institutional investors may feel that African stock markets are not efficient to warrant investing. Unemployment and income inequality also prohibits participation in the stock market which often results in inactivity and illiquidity. This may be the reason why some African resource endowed economies fail to reach their full potential form a GDP growth perspective.

1.4 Research objectives

The objectives of this research are as follows:

- To determine whether stock market development promotes economic growth when income (rent and commodity exports) is modelled as determinant of stock market development.
- To investigate the dangers that are associated with resource dependence on economic growth.
- To ascertain whether these economies display any symptoms of the natural resource curse or Dutch disease and whether these phenomena are dependent on the type of commodity that an economy is endowed with.
- To investigate how volatility of commodity prices affects economic growth
- To construct a regression model that will explain the relationship between stock market development and economic growth.

1.5 Research questions

- Do the identified stock market development indicators enhance economic growth?
- Does the type of commodity that an economy is endowed with determine its impact on economic growth?
- Could the lack of stock market development in resource endowed economies be attributed to elements of natural resource curse or the Dutch disease?

- Is the relationship between income (rent and resource exports) and economic growth sufficient to diagnose if an economy is suffering from the natural resource curse?
- Is the relationship between exchange rate volatility and economic growth sufficient to diagnose if an economy is suffering from the Dutch disease?
- How does the volatility of commodity prices affect the export of natural resources and subsequently economic growth?

1.6 Gap in the literature

The relationship between stock market development and economic growth is one that has been widely researched in modern economics and has drawn varying arguments. The topic on natural resources and economic growth has also been widely debated and the issue of natural resource curse and Dutch disease is synonymous with this particular topic. These areas have been researched independently of each other and the current research will combine both strands on literature while trying to model how volatility in the price of commodity affects economic growth.

1.7 Structure of the thesis

The rest of the paper is organised as follow: the next section is the literature review. Chapter 3 represents the research methodology. Chapter 4 provides empirical results and chapter 5 represents the conclusion and recommendations for policymakers.

Chapter Summary

The chapter provides the background to the study and highlights some of the key determinants of stock market development which are discussed in depth in the literature review section of the paper. Income and liquidity were identified as the most important stock market development indicators.

CHAPTER 2

2.1 Introduction

This chapter highlights the extant literature similar to this research. The chapter is organised as follows. Section 2.2 presents the history and overall characteristics of African stock markets and how these markets have evolved since their establishment particularly South Africa, Egypt and Nigeria. Section 2.3 discusses the determinants that are considered to make a significant contribution to the development of stock markets. Section 2.4 presents the relationship between stock markets and economic growth particularly at how liquidity, saving mobilisation and risk diversification affect economic growth. Section 2.5 discusses the relationship between commodity prices (oil and gold) and the stock market. Section 2.6 discusses natural resource endowment and how dependence on these resources affects economic growth. The chapter summary concludes the paper.

2.2 Evolution of stock markets in Africa

Traditionally, African stock markets are known to be narrow and illiquid, this is usually attributed to low income levels, poor institutional quality and exposure to external shocks (Dahou et al 2009). Ntim et al (2007) argued that stock markets in Africa are extremely illiquid, with limited activity and this affects their information efficiency. The liquidity problem and subsequent inflated transaction costs all contribute to the lack of development and ultimately the lack competitiveness of African stock markets (Hearn 2008). Overall, most of the African stock markets, despite some being established a long time ago are still in their infancy and are characterised by few listed companies and low market capitalization (Ndikumana 2001).

Generally, stock markets in Africa were established with the sole purpose of boosting domestic saving and enhancing the quality and quantity of local investment (Kenny and Moss 1998). However, merely increasing the number of stock markets adds no value if an enabling environment that fosters the stock market to perform its liquidity and informational functions is created (Allen et al 2011). African stock markets do not have much depth (measured by listing and capitalization) except for Egypt and South Africa that account for a significant portion of the continents market capitalization. The other stock markets on the continent remain relatively small, from a market capitalization and listed companies perspective (Allen at el 2011).

Andrianaivo and Yartey (2009) argue that when compared to stock markets in other economies, African stock markets are still relatively small and are only dominated by a few firms that have a lion's share of the total market capitalization. Yartey and Adjasi (2007) also stated the liquidity is a big problem in African stock markets and this can be identified by the wide spreads between the bid and the offer prices. They also argued that active trading only occurs in few stocks that normally represent the bulk of the market capitalization.

Poor infrastructure is one the main reason for the lack of development. This can be witnessed by the time it takes for a transaction to be settled once it has been executed (traded) (Senbet 2008). Some African stock markets do not have the appropriate legislative and regulatory frameworks to deal with capital market dynamics such as insider trading and if such legislations exist, they are poorly enforced (Mlambo and Biekpe 2007).

Most stock markets in Africa do not have a central depository system (Yartey and Adjasi 2007). While some stock markets exclude foreign participation and in some cases, local institutional investors and governments do not trade actively in the secondary market and due to the fact that most of the stock markets in Africa are in their infancy, market participant usually lack experience with regard to listing and issuing shares and this further impedes on the development of the stock markets (Andrianaivo and Yartey 2009).

However, African stock markets have over the years achieved returns far higher than those of developed economies even when those revenues are converted into dollars, both in terms of absolute returns and on a risk adjusted basis (Senbet and Otchere 2008). In support of this finding, Clark (1998) argued that despite the infrastructure bottlenecks that are crippling the African stock markets, these markets remain highly profitable and are often considered more lucrative than other developed markets. The Ghana stock market was actually voted as the world's best performing market for the 2004 financial year end amassing a total return of 144 percent in US dollar terms (Databank 2004).

However, it must be emphasised that while African stock markets offer higher returns compared to other markets, the volatility of this return is also relatively high (Erb et al 1996). The extreme volatility can be attributed to the lack of liquidity, size of the market and as often in Africa, political turmoil and instability (Kenny and Moss 1998).

Erb et al (1996) argued that there is limited integration between African stock markets and world stock markets. The segmentation and the associated volatility translates to investors

demanding compensation, usually in the form of higher returns for a given level of risk. The issue of segmentation is not an absolute limitation for African stock markets as it provides foreign investors an opportunity to diversify their portfolios. In addition, integration of African stock markets would require adequate regulatory and legislative frameworks in order to protect stakeholder's interest and improve the integrity of the market (Mlambo and Biekpe 2007).

2.2.1 Overview of the South African stock market

The Johannesburg Securities Exchange is the largest and oldest stock markets in Africa. It was established in 1887 and now has become the most sophisticated stock exchange on the continent. The JSE adheres to robust corporate governance framework and regulatory standard. These frameworks include the King I and King II reports. The exchange has over the decades evolved from the traditional floor based stock trading to a sophisticated stock exchange with a central depository, the Southern African Financial Instruments Clearing and Settlement System. In addition to its fully electronic trading capabilities, trading is facilitated through London Stock Exchange's TradElect (Hearn 2010, Allen et al 2011).

In 2001, the JSE entered into a partnership with the London Stock Exchange, a partnership that was centred on dissemination of information, remote listing and dual listing opportunities. This initiative enabled companies such as Anglo American, Telkom and Sasol being listed on international stock exchanges such as the LSE and NYSE (New York Stock Exchange). Such liberalization has resulted in the JSE increasing the flow of foreign investment into its local assets (Ndako 2010). Through the delisting of underperforming companies that no longer met listing requirements, the JSE has been able to maintain its integrity and market efficiency.

The JSE now also developed other markets such as the financial derivative and agricultural product markets. In addition it has a very active and liquid bond market. The Bond Exchange of South Africa (BESA) has automated trading settlement capabilities was established in 1996 (Ndako 2010). The JSE through its sophistication provides financial information to market participants and its performance has been impressive over the years. The Exchanges's market capitalisation is ranked as one of the largest in the emerging markets sphere. At the end of the 2006 financial year, the JSE had the 2nd highest market capitalisation (as percentage of GDP) among the top 50 countries (Economist 2007).

Since the 20th millennium, the JSE has gone through some reformation and introduced some positive initiatives including the introduction of the single stock future in 2001 which enabled market participants to gain geared equity exposure and remained the biggest international participant in single stock futures in 2007. The introduction of SATRIX ETF's (exchange traded funds) in 2002 which market participants are able to hedge their underlying exposure or track a pool of shares through a diversified equity portfolio. The JSE managed to operate the 12th largest (volume based) derivatives exchange in 2007 (Ndako 2004).

2.2.2 Overview of the Nigerian Stock Exchange

In 1959 at the Barback committee, a recommendation was made which saw the birth of Nigerian Stock Exchange (NSE) in 1960 but trading actually commenced in 1961. In fact, the exchange launched as the Lagos Stock Exchange but it became the NSE in 1976 following recommendation of Dr. Okigbo's committee (Samuel and Oka 2010).

Though the stock market was established in 1961, Areago (1990) states that he the first ordinary shares were issued and traded in 1959 and these shares belonged to Nigeria Cement Limited. This was followed by John Holt Investment Company Limited offering its ordinary and preference shares to the public in 1960. These trades were, however, under the supervision of the LSE (London Stock Exchange). The Nigerian Stock Market is currently the largest and most liquid stock exchange in West Africa and currently has nine branches (all fitted with trading floors) in the following cities Kaduna, Port Harcourt, Abuja, Onitsha, Idiban, Kano, Yola, Benin and Lagos which serves as the Head office. These branches were established between 1961 and 2005 (Allen et al 2011).

The Nigerian secondary market is made up of Nigeria Stock Exchange and the Abuja commodities Exchange which are open to both local and international investors and currently has no limits to the percentage of foreign ownership in a company (Sanni 2008). There are a number multinational affiliated companies listed on the NSE and despite being the 3rd largest stock exchange after Egypt and South Africa, there is still a lack of interest from local companies (Allen et al 2011). This could be attributed to the cost affiliated with public quotation, fear of diluting ownership, losing control through public quotation and strict listing requirement (Osinubi 2004). A Central Clearing Depository System was introduced in 1997 and in 1999. The NSE has a fully Automated Trading System (ATS) which was initiated to improve market efficiency and promote transparency (Osinubi 2004).

2.2.3 Overview of the Egyptian Stock Market

The Egyptian Stock Exchange is one of the oldest exchanges on the African continent and is comprised of two exchanges namely Alexandria Stock Exchange (est. 1888) and Cairo (est. 1903). In fact, the Egyptian Stock Exchange is referred to Cairo and Alexandria Stock Exchange (CASE) was at one point ranked 5th in the world in terms of market capitalization (Mecagni and Sourial 1999).

However, due to the nationalization of the industry and the implementation of controversial central planning policies around the early 1950s, the ESE was left marginalized and this led to a significant reduction to stock market activity. As a result, the exchange remained effectively inoperable throughout the 1980s. A breakthrough came in the 1990s when the ESE underwent a significant overhaul when market-orientated reforms, government liberalization policies and privatization programs aligned the country's operations and policies to internationally accepted standard. This helped to stimulate the development of the equity markets (Aly et al 2004, Mecagni and Sourial 1999).

In Egypt, securities with low liquidity and those that have been de-listed are traded over-the-counter. Misr Central Clearing and Depository (MCSD) is used in the clearing and settlement of all stock transactions. Although trading is electronic, ESE is yet to implement a fully Automated Trading System (ATS). In 2007, NILEX market was established to facilitate the trading of small to medium enterprises (Allen et al 2012, Aly et al 2004).

2.3 The determinants of stock market development.

The literature identifies a number of determinants playing an important role in the development of the stock market including liquidity.

2.3.1 Liquidity

Liquid markets offer investors the opportunity to have access to their savings and simultaneously improve confidence in the stock market. Yartey (2008) argues that the level of stock market liquidity determines the quantity of savings channelled to it which further enhances it development. Demirguc-Kunt and Levine (1996) also argued that liquidity is an important stock market development determinant because liquid markets enhance capital allocation and ultimately long-term growth of the economy. Liquidity also affects the type of investment that that an individual would undertake because liquid markets facilitate the

transfer of capital economically, thus minimizing transaction costs and making long-term investments favourable (Bencivenga et al 1996).

However, the topic of liquidity has also attracted some criticism with Bhide (1994) arguing that excess liquidity may have an adverse effect on corporate governance through the encouragement of investor myopia. The relative ease at which investors can buy and sell securities makes it difficult for firms to attract investors with a long-term commitment to the company, thus, creating corporate governance problems. Garcia and Liu (1999) argued that liquidity may have an adverse effect on growth as a result of a decrease in saving stemming from externalities in the accumulation of capital. Shleifer and Vishny (1986) argue that excess liquidity increases investor myopia.

2.3.1.1 Measuring liquidity

The development of stock markets is measured by market capitalization to GDP and by the turnover ratio (Randall et al 1999). They further argued that the most appropriate indicator would be one that is independent of the stock market prices such as turnover velocity as changes to the number of listed stock was an indication of financial deepening.

Levine and Zervos (1996) also use the ratio of market capitalization divided to GDP as measure of stock market development, with the underlying assumption being that the depth of the stock market has positive correlation with risk diversification and capital mobilization. This is consistent with assumptions made by Demirguc-Kunt and Levine (1996) that there is a positive correlation between the size of the stock market and the ability to diversify risk and mobilize capital. Levin and Zervos (1996) use two measures of liquidity. The first measure is the turnover ratio which is value of shares traded divided by the market capitalization; the last measure for liquidity is market capitalization to GDP which measures the value of traded stock relative to the overall size of the economy. Rousseau and Watchel (2000) also use the turnover ratio and market capitalization to GDP to measure stock market development and in addition, they argue that both ratios have a positive coefficient with the former being significant.

Yartey and Adjisi (2007) argued that macroeconomic stability and the development of the banking sector are important determinants for stock market development in Africa. These determinants are discussed in more detail.

2.3.2 Macroeconomic stability

Yartey and Adjisi (2007) argued that an unstable macroeconomic environment makes an economy's financial system to be vulnerable as it adds to the problem of information asymmetry. Kemboi et al (2012) also argue that an increased stability in the macroeconomic environment creates predictability in the stock market making it very attractive to investors. Low levels of inflation contribute to the stock market development and economic growth as local and international investors are not willing to risk their profits being eroded as a result of high expected inflation (Naceur et al 2007, Yartey and Adjisi 2007).

However Boyd et al (2001) found a non-linear relationship between stock market development and inflation; in fact, he argued that there is a diminishing impact on stock market development as inflation increases. Similarly Yartey (2008) found no significant relationship between stock market development and inflation.

2.3.3 Development of the banking sector

According to Yartey and Adjisi (2007), Garcia and Liu (1999); the stock markets and the banking sector are complements rather than substitutes. They also argued that inter-bank liquidity and support services from an efficient banking system are important determinants for stock market development. Levine and Zervos (1998) also found that the relationship between indicators of stock market development and those of bank sector development are significant. This is attributed to the fact that a banking system's support services contributes to stock market development and this corroborates with arguments brought forward by Yartey and Adjisi (2007) that stock markets and the banking sector are complements rather than substitutes. Furthermore Demirguc-Kunt and Levine (1996) show that there is a high correlation between indicators of stock market development and banking sector development.

2.3.4 The Income level

According to Garcia and Liu (1999), real income and income growth are important determinants for stock market development, which are highly correlated with the size of the stock market. They argue that high income growth contributes to the development of the stock market through two channels. One, an increase in income levels stimulates an improved general environment for business. Two, income enhances the quality of education which has a positive influence on the stock market.

Yartey (2008) also found that the level of income was a determinant for stock market development. In support, La Porta et al (1996) argues that an increase in the level of income has a positive impact on stock market development through better education and creating a more conducive environment for business.

2.3.5 The level of saving

Saving is also considered a determinant for stock market development. The rationale is that the more investor save their income, the higher the likelihood that the saved capital will flow to the stock market (Garcia and Liu 1999). They also found that stock market liquidity and the level of real income are market capitalization predictors, while the stabilizing variable (inflation) does not carry any explanatory power.

2.4 Stock Market and Economic growth

One of the most interesting discussions in economics is whether the development of financial systems, particularly stock market development causes economic growth. There has been extensive research done on this particular topic. Luintel and Khan (1999) found that the financial stocks affect the growth rate of an economy. Goldsmith (1969) reports significant association between financial development and economic growth.

According to Levine and Zervos (1996), there is positive and significant correlation between stock market liquidity and future rates of economic growth and capital accumulation after controlling for the political factor. Ajte and Janonovic (1993) argued that the volume of trading has a positive impact on the growth of an economy. Beck and Levin (2003) found that stock market development has a strong correlation with the rates of growth of real GDP per capita. They also argued that stock market liquidity and banking development both have the ability to predict the future growth of an economy.

These finding are also consistent with Demirguc-Kunt (1994) who found that stock markets can enhance economic development. Demirguc-Kunt and Levine (1996) argued that large stock markets have less volatility, are relatively liquid and more integrated than smaller markets. Levine (1991) found a strong and positive correlation between the growth of an economy and the stock market through issuing new financial resources to corporations. The positive correlation between stock market development and economic growth is consistent

with Rajan and Zingales (1998), Spears (1991), Trabelsi (2002) and Levine and Ross (1998). In addition the latter found strong statistically significant relationship between the growth of an economy and its stock market.

2.4.1 Liquidity and economic growth

Liquidity of a stock market plays an important role in its development. This is mainly due to the fact that liquidity makes investments more attractive by reducing the level of risk associated to it. Bencivenga et al (1996) argued that liquidity also reduces the cost of foreign funds. Liquidity in the stock markets improves the allocation of capital and further promotes prospects for long-term growth in an economy (Levin 1996). As a result of stock market liquidity, firms are able to acquire capital with ease, thus, enhancing capital allocation, investments and economic growth (Paudel 2005).

A fairly liquid and developed stock market affects the pattern at which money is demanded and a growing stock market creates liquidity which ultimately enhances economic growth (Carporale et al 2004). The stock markets attract capital inflow from foreign investors and its information asymmetry plays an important role in the efficiency of the broader financial systems (Naceur et al 2007). Without a liquid stock market, investors would be reluctant to take on profitable long-term investment because of the inability to unwind the position with relative ease. Liquidity creates an efficient platform for which firms can raise equity capital, (Bencivenga et al 1996). In addition, Levine (1997) argued that stock markets that are more liquid in nature have the ability to create long-term investment and ultimately accelerate economic growth through reduced transaction costs.

However, increased liquidity can have a detrimental effect on economic growth through three channels. Firstly, the income and substitution effect may reduce saving rates. Secondly, by removing the risk element of an investment, increased liquidity may lower saving rates due to the ambiguous effects on the uncertainty of savings. Lastly, increased liquidity promotes investor myopia, adversely affecting the governance of corporates and this reduces the growth of an economy (Demirguc-Kunt and Levine 1996). Liquidity has been singled out as one of the main reasons attributed to the lack of stock market development in Africa and subsequent low economic growth (Adjasi and Biekpe 2007).

2.4.2 Saving mobilisation

In modern economics, it is widely expected that stock markets enhance economic growth by boosting domestic saving and simultaneously increasing investments (Singh 1997). Saving plays an important role in the development of stock market as it serves as an alternative channel for savings mobilisation and efficient resource allocation which promotes accumulation of capital.

The accumulation of capital is then utilised by corporate firms to finance large projects through the issue of equity and this ultimately enhances economic growth (Seetanah et al 2012). Through the use of economies of scale and expertise, intermediaries and stock markets are able to offer savers a higher yield and this further encourages savings (Garcia and Liu 1999). In addition, Levin and Zervos (1996) argued that through saving mobilization, stock markets magnify the set of viable investment projects which require large capital injections and some benefit from economies of scale.

The stock market plays an important role in the mobilisation of savings by increasing the variety of stocks available to investors which will enable them to diversify they risky portfolios (Dailami and Atkin 1990). A stock market that is efficient encourages more investments by financing projects that lead to economic growth, mobilization of savings, capital allocation and reduction of risk through diversification (Corporale et al 2004).

2.4.3 Risk diversification

New financial instruments have been designed to enhance risk diversification and allocation. Although these instruments have had a perceived positive effect on economic growth through better resource allocation and risk minimization, the 2008 financial crisis also illustrated that the misuse of these financial innovations can depress the short-run economic growth (Cavenaile et al 2011).

Growth of an economy should be an indication of a profitable and more active financial intermediation system. It will lead to the creation of a more efficient financial system that acts as a catalyst for economic growth through the pooling of funds, risk diversification and the liquidity management (Masoud 2013). This is consistent with the argument made by Saint-Paul (1992) that risk diversification through integrated stock markets is a vehicle in which the growth of an economy is influenced by stock market development.

Devereux and Smith (1994) show that the diversification of risk though integrated stock markets serves as an alternative vehicle through which the stock market can enhance economic growth. Investors have an alternative of investing in a risk-free asset with a lower yield and projects that offer higher expected return. Through the diversification of unsystematic risk of risky projects and acquiring information on prospects of the economy, stock markets and financial intermediaries can adjust allocation towards more productive investments and hence accelerate economic growth (Greenwood and Jovanovic 1990).

2.5 Linkage between commodity prices and the stock market

Different countries in Africa have different resources and these include oil, gold etc. This section discusses the impact of various commodities on the stock market.

2.5.1 The impact of oil price fluctuations on stock markets

Oil has over the years become a very important commodity in world economics and one would expect that its price changes would be correlated to changes in stock price (Huang et al 1996). Shocks that are associated with oil price tend to have influence on stock prices and the magnitude of the impact depends on the industry.

2.5.1.1 Oil companies

A commonly held view is that rallying stock prices are particularly beneficial for oil companies because their cash flows are directly related to the spread between the actual oil price and the cost of extraction. El-Sharif et al (2005) found a positive relationship between the price of crude oil and the stock values of companies in the oil and gas sector. Similarly, Nandha and Faff (2008) found that an increase in the price of oil has a negative effect on stock returns for all listed sectors except on the returns of mining, oil and gas sectors.

Al-Mudhaf and Goodwin (1993) conducted a firm-specific analysis on the returns 29 oil companies that are listed on the New York Stock Exchange and they found that oil price shocks had a positive effect on the export returns of the listed companies with large assets in domestic oil production. This is consistent with the argument by Arouri and Rault (2010) that a positive relationship exists between oil price shocks and the stock market returns in oil-exporting countries.

The topic investigating the relationship between oil prices and stock market has been widely research drawing various conclusions from various authors. Sardorsky (1999) concluded that changes in the price of oil are important determinant of stock market returns and that a negative relationship exists between the two variables. These finding are also supported by Driesprong et al (2003), Miller and Ratti (2009) and Chen (2009).

2.5.1.2 The dynamics of importing and exporting oil

Park and Ratti (2008) examined 13 European countries concluded that there is a positive relationship between the changes in the price of oil and Norwegian stock market returns, Norway are a net oil exporter and inversely when an economy is an oil importer (a negative relationship exists). Bjornland (2008) argued that increased oil prices may affect oil producing countries through positive income and wealth effect. This means that a rally in the price of oil results in an immediate transfer of wealth from net oil importers to net oil exporters.

2.5.1.3 Income and wealth effect

Bjonland (2008) found that the returns of the Norwegian stock market were positively correlated with the changes in oil price, to be more candid; he argued that higher oil prices increased stock market returns. Empirically, results showed that for every 10 percent increase in the price of oil, there was a subsequent 2-3 percent increase in stock returns. These returns could be attributed to the income and wealth effect. Governments of oil-exporting countries tend to have more income and through infrastructure expenditure stimulate economic activity.

Huang et al (1996) argued that rallying oil prices exerts downward pressure on the rate of exchange and an upward pressure on the level of domestic inflation. Due to the increase in the level of inflation, the discount rate will also rise therefore an increase in the price of oil will have a negative effect on the returns of the stock market.

2.5.2 The impact of gold price fluctuations on stock markets

Gold has over the years been considered a “safe heaven” that enabled investors to mitigate market risk associated with financial markets. Baur and McDermott (2009) examined the role of gold in financial system and they found that during the 2008 financial crisis, developed economies such as Europe and the United States were reliant on gold as a “safe haven”. Gold prices and stock markets are known to be negatively correlated. When there is a decline in the

price of gold, market participants withdraw their investment in precious metal and invest in the stock market; the value of the stock market increases as a result of the influx in investments. Conversely; when there is an increase in the price of gold, stock markets activities tend to decline (Ray 2013).

The consensus among most researchers is that gold acts as an investment manager and simultaneously used as tool for hedging against inflation (Bilal et al 2013). Consistent with this view, Dempster and Artigas (2010) found that there is high correlation between the investment strategies and the prices of gold and the stock market in the periods of deflation and inflation. Bhunia (2013), using the Granger Causality test analysed the causal relationship between gold prices and returns in the stock market found that the gold and stock prices move in tandem during and post a global financial crisis. In addition, Le and Chang (2011) argued that provided that there is sufficient liquidity, stock markets and gold run in tandem.

Mulyadi and Anwar (2012) studied the relationship between gold prices and stocks concluded that an investment into gold was more advantageous than an investment in the stock market. Sumner et al (2010) found that there is no significant relationship between gold and stock market return, in fact, the low correlation between the two variables makes gold an efficient asset that an investor can use for portfolio diversification. Wang et al (2010) using the Granger causality test find that there was no relationship between the gold price and Taiwan's stock market. This finding was also confirmed by Moore (1990) who investigated the relationship between the value of a stock market and price of gold and found that there was a negative relationship between the two.

Mishra et al (2010) using the Granger Causality test analysed the relationship between gold price volatility and the returns on the stock market found that a causal relationship exists between the two. They argued that both stock market returns and gold prices contained information for forecasting one another. Buyuksalvarci (2010) also investigated the relationship between the Turkish stock market returns and the price of gold and found that the relationship was negative and that investors considered gold as an alternative investment when there is a decline in the stock market. These finding are consistent with those of Smith (2001, 2002) and Kaliyamoorthy and Parithi (2012).

2.6 Natural resource endowment and growth

2.6.1 The linkage

The linkage between endowment and economic growth is one that that has been widely studied and has yielded varying empirical findings. Authors that have found a negative correlation between these two variables attribute this to what is dubbed "curse of natural resources". This is described as a phenomenon where natural resource endowed economies has lower economic growth, work done by Sachs and Warner (1995) provides evidence of this phenomenon. In support, Wheeler (1984) found that there is a negative correlation between natural resource endowments and economic performance.

Barbier (2002) found that in most Latin American countries, an abundance of land and natural resources does not necessarily translate to economic growth for the region. 1999 Sachs and Warner (1999) demonstrate that a resource boom can retard economic growth through the Dutch disease. This occurs when an economy's tradable sector is experiences increased return to scale. Atkinson and Hamilton (2003) show that there is a definite negative correlation between natural resource endowment and development when inadequate institutions direct resource revenue to government consumption rather that investments. In support, Mehlum et al (2006) concluded that when an economy has weak institutional qualities, natural resource endowment is a curse but when institutional qualities are robust, endowment is a blessing.

2.6.2 The Education element

Gylfason (2001) and Bravo-Ortega and De Gregorio (2005) argued that the negative relationship between natural resource and economic growth is a direct result of low spending on education and inefficient schooling in endowed economies. If an economy is dependent on natural resources, there is usually no emphasis on education development, this is mainly due to the fact that mineral and energy sector does not necessitate high education levels (Birdsall 1997).

2.6.3 The type of commodity

The type of natural resource that an economy is endowed with may have different effects on economic performances (Auty 2001). This is also consistent with the finding by Woolcock et al (2001) that different types of resources place a wide variety of pressures on institutional capacity and community structures. Gylfason and Zoega (2001) argued that endowment may

hamper incentives that promote saving and investment and this retards economic growth. In addition, demand for capital falls when there is an increase in the share of output belonging to natural resource owners, this result in lower real interest and economic growth.

2.6.4 Point resources

Auty (2001) introduces the concept of point resources which is described as activities that require intensive use of capital energy and mineral resources. Bulte et al (2005) suggests that resource-intensive economies are associated with poor levels of human development and this indicates that the resource curse not only affects economic growth but affects other facets of the economy and this is more prominent in economies that rely on point resources.

2.6.5 The channels

Gylfason (2001) identified three channels which could explain the relationship between endowment and economic growth. One, endowment of commodities usually results in the overvaluation of the domestic currency, a concept known as the Dutch disease whereby an increase in the price of commodities and the associated export increase of these commodities inflate the exchange rate. This definition is consistent to that of Beine et al (2012) who defined it as a case when a boom in the resource sector results in an appreciation of the real exchange rate which will ultimately lead a crowding out effect of the tradable manufacturing sector. This is likely to have a detrimental impact on economic growth as openness to trade with other economies is crucial for growth (Frankel and Romer 1999).

Two, endowed economies tend to be susceptible destructive rent-seeking behaviour, such as the government offering tariff protection to local producers. Rent-seeking may also increase level of corruption in an economy and this could hamper the allocation of resources and ultimately reduce economic efficiency. Complacency of domestic governments tends to be linked to rents resulting from natural resource booms; this deteriorates incentives for diversification and economic reform (Samimi et al 2010).

Three, endowed economies my inadvertently and sometimes deliberately ignore human resource development such as education. This is consistent with arguments made by Bravo-Ortega and De Gregorio (2005), Gylfason (2001) and Birdsall (1997).

Ranis (1991) argued that primary product exports exacerbate income inequality in such a way that the society associates export trade with the interest of the rich few elites. Ranis also argued that the effect of the Dutch disease undermines the competitiveness tradable sectors that are not in a boom phase. In addition, natural resource rent disturbs the wealth creation process into rent-seeking activity. Rents also divert attention from government's need to improve human development.

2.6.6 Measuring resource endowment

Economies that are endowed with natural resources tend to depend on them from an export and production perspective. This tends to be problematic considering the volatility of commodity prices during business cycles. Volatility is considered as a quintessential component of the natural resource curse (Van der Ploeg 2007). Fluctuations in export revenue increases exchange rate volatility and this creates uncertainty that has an adverse effect on export of goods and services (Philippot, 2010).

Sachs and Warner (1995) made use of primary exports over GDP as their preferred indicator for natural resource endowment. Gylfason (2001) made use of natural capital as a percentage of national wealth and in his earlier paper Gylfason (1999) preferred workforce on the primary sector and as an indication. Sachs and Warner (1995) used a single indicator called export dependence. Wood and Berge (1994) also used a single indicator, per capita land area and lastly Gylfason et al (1997) used labour force share. According to the IMF's definition of export dependence, if exports of natural resources constitute at least 25% of an economy's tangible exports, then than economy is considered as natural resource dependent.

Chapter Summary

Stock markets in Africa are characterized by a lack of liquidity. As a result of inactivity, they are relatively small in size, have low market capitalization and are dominated by a number of firms. These markets do however offer higher returns compared to other markets. South Africa has the largest and oldest stock market in Africa. There are a number of factors that promote the development of stock markets, these include; liquidity, macroeconomic stability, development of the banking sector, income and level of saving. Liquidity is measured by two main ratios, market capitalization over GDP and the turnover ratio.

There is a positive relationship between stock markets and economic growth, the liquidity of a stock market improves the allocation of capital and promotes the prospect for long-term growth in economy. Saving mobilisation and risk diversification are the other two aspect of the stock market that enhances economic growth. The next chapter presents the methodology used in this research.

CHAPTER 3

3.1 Introduction

This chapter presents the research methodology that the paper employs. The chapter is organized as follows. Section 3.2 presents data and data sources. Section 3.3 presents the research design including the regression model and variables in the model. Section 3.4 presents the robustness tests.

3.2 Data and Data sources

The data required in this research includes a combination of stock market development indicators, income variables and financial market information. The data is sourced from various databases. The data for the stock market development indicators and income variables was collected from the *World Bank database*. The data for financial markets (currencies and commodity prices) was sourced from *Thomson Reuters*. A cross-referencing check on the data was conducted with data sourced from the *International Monetary Fund* and *Central/Reserve Banks* of the sampled countries namely South Africa, Nigeria and Egypt. These countries have the three largest stock markets on the continent and are also endowed with natural resources.

Annual frequency data with a sample period from 1991 to 2011 was used to ensure that there are sufficient data points for the econometric analysis to make provision for the loss in the degrees of freedom. The model comprises 21 observations (19 after differencing).The market capitalization of the listed companies is a very important explanatory variable in our econometric model, the data on this variable is available from 1990 for Egypt, 1991 for Nigeria while data for South Africa is available from prior to 1989. This is the reason why the sample period only started in 1991. The oil revenue for Egypt and Nigeria was not available from 2012.

3.3 Econometric model

The Simple Linear Regression is the most widely used regression for predicting the value of one dependent variable relative to one independent variable. However when an equation has more than one independent variable, the multiple linear regression is applied which is merely an extension of the former regression.

This paper employs the Multiple Linear Regression as the model has more than one explanatory variable. This should enhance the explanatory power (R^2) of the model and will most likely improve the precision of forecasting. Three models are developed for Egypt, Nigeria and South Africa as shown below.

Table 1 below presents the notations of variables included in the models.

Table 1 Variables notation.

Variable	**Notation**
Oil rent	ORNT
Natural gas rent	GRNT
Mineral rent	MRNT
Fuel exports	F_EXP
Mineral exports	M_EXP
Total value of shares traded	TVT
Market capitalization	MKC
Turnover ratio	TNR
Credit provided by banking sector	CPBS
Domestic savings	SAVE
Inflation	INFL
Natural gas price	P_NGS
Gold price	P_XAU
Platinum price	P_XPT
Oil price	P_BRT
South African Rand	ZAR
Nigerian Naira	NGN
Egyptian Pound	EGP
Economic growth	rr_GDP

Model 1- Egypt

$$rr_GDP = \alpha + \beta_1 ORNT + \beta_2 GRNT + \beta_3 F(EXP) + \beta_4 TVT + \beta_5 MKC + \beta_6 TNR + \beta_7 CPBS + \beta_8 SAVE + \beta_9 INFL + \beta_{10} P(NGS) + \beta_{11} P(BRT) + \beta_{12} EGP$$

Model 2- Nigeria

$$rr_GDP = \alpha + \beta_1 ORNT + \beta_2 GRNT + \beta_3 F(EXP) + \beta_4 TVT + \beta_5 MKC + \beta_6 TNR + \beta_7 CPBS + \beta_8 SAVE + \beta_9 INFL + \beta_{10} P(NGS) + \beta_{11} P(BRT) + \beta_{12} NGN$$

Model 3- South Africa

$$rr_GDP = \alpha + \beta_1 MRNT + \beta_2 M(EXP) + \beta_3 TVT + \beta_4 MKC + \beta_5 TNR + \beta_6 CPBS + \beta_7 SAVE + \beta_8 INFL + \beta_9 P(XAU) + \beta_{11} P(XPT) + \beta_{12} ZAR$$

3.4 Definitions and measurement of variables.

This paper has categorized the independent variables into three main groups, these include; stock market development determinants, commodity prices and domestic currency. The stock market development determinants can be broken down to a further three subcategories, these include: income (i), direct stock market determinants (ii) and macroeconomic determinants (iii). The variables are discussed below. The dependent variable is economic growth and it is measures by rr_GDP in the model.

3.4.1 Stock market development indicators independent variables

Fuel and mineral exports which are denoted and F_EXP and M_EXP respectively are determinants for stock market development (income) and also serve as a measure for resource endowment.

3.4.1.1 Income

Oil rents as a percentage of GDP. In some economies, oil rents are a form of property income and they account for a sizable share of the GDP. These rents are mainly payments to government from domestic and foreign companies. The payments are for the use of land and largely permitting the "tenant" to extract oil. Rent from oil extraction also indicates the depletion of an economy's capital stock. This form of income will be specific to Egypt and Nigeria as South Africa is less endowed with oil; this variable will be noted as ORNT in the regression model.

Natural gas rents as a percentage of GDP. In some economies, natural gas rents are a form of property income and account for a sizable share of the GDP. These rents are mainly payments to government from domestic and foreign companies. These payments are for the use of land and largely permitting the "tenant" to extract natural gas. Rent from gas extraction also indicates the depletion of an economy's capital stock. This form of income will be specific to Egypt and Nigeria as South Africa is less endowed with natural gas; this variable will be noted as GRNT in the regression model.

Mineral rent as a percentage of GDP. In some economies, mineral rents are a form of property income and account for a sizable share of the GDP. These rents are mainly payments to government from domestic and foreign companies. These payments are for the use of land and largely permitting the "tenant" to extract minerals. Rent from mineral extraction also indicates the depletion of an economy's capital stock. This form of income will be specific to South Africa as Nigeria and Egypt are less endowed with minerals; this variable will be noted as MRNT in the regression model.

Fuel exports as a percentage of merchandise exports. Export of fuel by endowed economies is a significant injection of income and an overall contributor to the GDP. This variable is a percentage of merchandise export rather than GDP because one would expect that this ratio would higher in endowed economies than economies that are less endowed. This form of income will be specific to Egypt and Nigeria as South Africa is not a major exporter of fuel; this variable will be noted as F_EXP in the regression model.

Mineral exports as a percentage of merchandise exports. Export of minerals by endowed economies is a significant injection of income and an overall contributor to the GDP. This variable is a percentage of merchandise export rather than GDP because one would expect that this ratio would higher in endowed economies than economies that are less endowed. This form of income will be specific to South Africa as Nigeria and Egypt are not major exporters of minerals but of fuel; this variable will be noted as M_EXP in the regression model.

3.4.1.2 Direct stock market determinants independent variables

Total value of shares traded. This measure is calculated as the total value of trade shared divided by GDP. This variable is a good reflector of liquidity and also compliments market capitalization ratio. It also measures the value of equity traded transactions relative to the size of a given economy. Beck and Levine (2004) made use of this measurement as an indicator for stock market development and it will be noted as TVT in the regression model.

Market capitalization ratio. Market Capitalization is an indicator of the overall size of a stock market as a percentage of GDP. This is measured as the value of listed shares divided by GDP. According to Levine and Zervos (1996), there is a positive correlation between

mobilization of capital, risk diversification and the overall size of the stock market. The market capitalization ratio is noted as MKC in the regression model.

Turnover ratio. This ratio measures the value of equity traded transaction relative to the size of the stock market and it is calculated as the ratio of the total value traded divided by market capitalization. The turnover is a measure of liquidity and transaction costs. It complements ratio of value traded to GDP because the former is related to market size and the latter is related to the size of the economy. Liquidity is an important aspect of any stock market because it enhances allocation of capital and promotes prospects of long term growth. The turnover ratio is noted as TNR in the regression model

3.4.1.3 Macroeconomic determinants independent variables

Domestic credit provided by the banking sector as percentage of GDP. Ndako (2005) and Adenuga (2010) use of bank credit to private sector as an indicator for banking sector development. This paper has opted to make use of domestic credit provided by the banking sector mainly because it incorporates both the public and private sector. It also measures the depth of the banking sector and development of the financial sector, this variable is noted as CPBS in the regression model.

Gross domestic savings as a percentage of GDP. Garcia and Liu (1999) argued that when an economy has higher savings relative to its GDP. There is a higher likelihood that capital flows would be channelled through stock markets, this variable is noted as SAVE in the regression model.

Inflation – stabilisation variable. Garcia and Liu (1999) used the inflation variable as a measure of macroeconomic stability. They argued that lower levels of inflation encourage economic activity. This variable is the CPI (consumer price index) and is noted as INFL in the regression model.

3.4.1.4 Commodity prices independent variables

The sampled countries are those that those that are endowed with natural resources and where the movement in the price of commodities affects the economy's ability to export commodities. The paper will focus on gold, platinum, oil and natural gas; these commodities are noted as P_XAU, P_XPT, P_BRT and P_NGS respectively in the regression models.

3.4.1.5 Domestic currency

Commodity price volatility is synonymous with currency fluctuations, the severity of these fluctuations affect mostly endowed economies. The reason behind this is that, when commodity prices are high, there is a decline in the demand for commodity and the domestic currency depreciates. The opposite effect takes place when commodity prices drop, the inclusion of this variable will also assist in identifying whether or not the sample countries display symptoms of the Dutch disease. In the regression model, these currencies are noted as ZAR, NGN and EGP for the South African Rand, Nigerian Naira and Egyptian Pound respectively.

Testing of models

The data is tested for stationarity using the Augmented Dickey Fuller method. This is done to minimise the persistence of shocks and spurious regressions, where two unrelated variables have a high R^2. Using the CUSUM test, the paper tests for the stability of the parameters. The tests for serial correlation and heteroscedasticity are conducted using the Breusch-Godfrey method and the Breusch-Pagan-Godfrey method respectively. Depending on the results of the stationarity test, the data will be tested for cointegration. The null and alternative hypothesis for these tests is discussed in Chapter 4.

Chapter summary

This paper shoes that the multiple regression model (MLR) is used to test and answer the research questions and objectives discussed in chapter 1. The paper uses the EViews software for its regression model. The data is obtained from various sources including the *World Bank* and *IMF databases.* The data will first be tested for stationarity to ensure that the time series is not spurious. For the unit root test, the paper employs the Augmented Dickey Fuller test, Breusch-Godfrey test for serial correlation detection and Breusch-Pagan-Godfrey for the detection of heteroscedasticity. The next chapter presents the results.

CHAPTER 4

4.1 Introduction

This chapter presents the empirical findings and data interpretation and it is organized as follows. Section 4.2 presents the data descriptive. Section 4.3 presents the results from model tests including test for stationarity test using the Augmented Dickey Fuller method, the Breusch-Godfrey LM test for serial correlation and Breusch-Pagan-Godfrey for heteroscedasticity. We also discuss the results of CUSUM test for model stability. Section 4.4 presents the regression results and Chapter summary concludes the paper.

4.2 Descriptive statistics

Table 2 below presents the descriptive statistics for Egypt, Nigeria and South Africa variables.

Table 2 Descriptive statistics

PANEL A EGYPT					
VARIABLES	**Mean**	**Median**	**Maximum**	**Minimum**	**Std. Dev.**
RR_GDP	-0.1874	0.3463	3.3532	-4.6229	1.9096
F_EXP	0.0714	-0.7692	24.5186	-15.4992	9.5495
GRNT	0.1970	0.0269	7.6047	-7.7036	2.7461
ORNT	-0.4866	-0.4067	2.2994	-5.6553	1.9690
CPBS	0.0492	-0.5402	12.2788	-8.8000	5.1088
SAVE	14.4209	14.2026	17.1119	11.5081	1.6923
MKC	0.7880	2.1849	39.9848	-54.0038	17.1208
TNR	1.7889	1.2411	25.8679	-21.4305	11.7924
TVT	0.4298	0.0899	21.1995	-14.8254	7.8025
INFL	-0.3192	-0.4983	8.9979	-8.5551	4.6211
P_BRT	1.1195	2.3200	53.3400	-60.6300	20.2942
P_NGS	0.1253	0.1420	2.8380	-4.7400	1.6362
EGP	0.1610	0.0380	0.8410	-	0.2517
PANEL B NIGERIA					
VARIABLES					
RR_GDP	0.3346	-0.5581	23.3816	-30.2911	9.4305
F_EXP	-0.4131	0.0215	3.8592	-5.6190	2.5248
GRNT	0.0458	-0.0650	2.2022	-2.9960	1.1224
ORNT	-0.6852	-0.5022	12.7216	-13.5828	7.1669
CPBS	-0.1869	-0.5900	18.3707	-30.0229	12.4225
SAVE	18.8401	18.0326	39.1113	1.8297	7.8161

MKC	0.8057	0.9391	29.3080	-27.9390	10.2195
TNR	-0.1934	-0.1032	19.8297	-19.4499	8.2611
TVT	-0.0329	0.0060	6.9093	-8.1201	3.3327
INFL	0.2196	0.9663	31.5819	-43.5672	15.1039
P_BRT	1.1195	2.3200	53.3400	-60.6300	20.2942
P_NGS	0.1253	0.1420	2.8380	-4.7400	1.6362
NGN	-0.0916	-1.6000	27.9000	-22.8200	13.9583
PANEL C SOUTH AFRICA					
VARIABLES					
RR_GDP	0.2944	0.3706	4.6130	-5.1485	2.2022
M_EXP	1.2201	0.9487	12.1617	-11.6518	6.0672
MRNT	0.1740	0.1249	1.4168	-0.7247	0.4812
CPBS	3.0646	4.0370	31.6145	-25.2573	13.1346
SAVE	18.6750	18.8687	19.7082	17.2420	0.6887
MKC	2.6564	17.3267	70.3056	-111.4120	50.2949
TNR	-0.3012	0.5017	15.1878	-11.3306	6.2497
TVT	4.5743	4.0553	38.4599	-26.9968	15.5332
INFL	0.1304	0.5208	6.4875	-8.8445	3.6452
P_XAU	14.4479	6.3600	151.4100	-73.3200	57.7777
P_XPT	65.0758	18.8200	403.4400	-364.8100	159.0811
ZAR	0.2398	0.3107	1.8877	-2.9542	1.0760

Table 2 shows that the means of the dependent variable (rr_GDP) for Nigeria and South Africa are positive, 0.3346 and 0.2944 respectively. Egypt has a negative mean of -0.1874. Nigeria has the largest standard deviation (9.4305) meaning that the observations are more spread out than that of Egypt and South Africa. Rent generated from oil (ORNT) has a negative mean and a negative median for Egypt and Nigeria but the rent generated from natural gas has a positive mean and a positive median for the two countries. Credit provided by banking sector (CPBS) has a negative median for both Egypt and Nigeria but the median is positive for South Africa.

Domestic saving (SAVE) has positive values for the mean, median, maximum and minimum for all of the countries. Domestic saving for Nigeria has the largest standard deviation (7.8161). The market capitalization (MKC) has positive values for the mean, median and maximum for all of the countries; South Africa does however have the largest standard deviation (50.2949), the lowest minimum value (-111.4120) and the highest maximum value

(70.3056) for this variable. Similar findings are observed for the total value of shares traded (TVT); these results are to be expected considering that the Johannesburg Stock Exchange is the largest and most liquid stock market in Africa.

Inflation (INFL) has a negative mean and median for Egypt, whereas this variable has positive mean and median for Nigeria and South Africa. Commodity prices have positive means and medians. The price of platinum (P_XPT) has the highest mean (65.0758); the largest median (18.8200); the highest maximum value (403.4400); the lowest minimum (-364.8100) and the largest standard deviation (159.0811). The price of platinum has rallied significantly over the past decade and is currently higher than the price of gold. The Nigerian Naira has the largest standard deviation (13.9583).

4.3 Test for Stationarity

Table 3 Results for stationary tests.

Variable	**ADF t-statistic**	**t-critical values 5%**	**t-critical value 10%**	**Stationarity level**
Panel A Egypt				
GDP	-7.0938	-3.0207	-2.6504	first
ORNT	-3.9981	-3.0207	-2.6504	first
GRNT	-4.6698	-3.0207	-2.6504	first
F_EXP	-6.3891	-3.0207	-2.6504	first
SAVE	-7.0696	-3.0124	-2.6504	second
MKC	-5.2735	-3.0522	-2.6666	first
CPBS	-5.4055	-3.03	-2.6552	second
TVT	-3.0124	-3.0522	-2.6666	first
TNR	-4.1497	-3.0207	-2.6504	first
INFL	-6.3733	-3.0207	-2.6504	first
P_NGS	-5.7207	-3.0207	-2.6504	first
P_BRT	-6.18	-3.0404	-2.6606	second
EGP	-4.4627	-3.0207	-2.6504	first
Panel B Nigeria				
GDP	-7.1126	-3.0207	-2.6504	first
ORNT	-6.9225	-3.03	-2.6552	first
GRNT	-5.7171	-3.0207	-2.6504	first
F_EXP	-6.1919	-3.0207	-2.6504	first
SAVE	-3.9038	-3.0124	-2.6461	level
MKC	-6.0399	-3.0207	-2.6504	first
CPBS	-5.0059	-3.0522	-2.6666	second
TVT	-7.0809	-3.081	-2.6813	second

TNR	-4.2506	-3.0989	-2.6904	second
INFL	-5.3064	-3.0656	-2.6735	second
P_NGS	-5.7207	-3.0207	-2.6504	first
P_BRT	-6.18	-3.0404	-2.6606	second
NGN	-4.5828	-4.5828	-2.6735	second
Panel C South Africa				
GDP	-4.9164	-3.0207	-2.6504	first
MRNT	-4.9403	-3.0207	-2.6504	first
M_EXP	-4.8184	-3.03	-2.6552	first
SAVE	-4.8877	-3.0207	-2.6504	level
MKC	-5.8809	-3.0207	-2.6504	first
CPBS	-5.6269	-3.0207	-2.6504	first
TVT	-4.8257	-3.0404	-2.6606	first
TNR	-4.7516	-3.0656	-2.6735	first
INFL	-6.2058	-3.0656	-2.6735	second
P_XAU	-5.9603	-3.03	-2.6552	second
P_XPT	-6.0089	-3.0207	-2.6504	first
ZAR	-5.3717	-3.03	-2.6552	second

Table 3, Panel A, B, and C shows that the data is stationary at the first and second levels respectively. Domestic saving for South Africa and Nigeria was stationary at unit level, this indicates that the data was already stationary and the unit root test was not required. The test for cointergration cannot be conducted due to the fact that the data is stationary at varying levels.

4.4 Regression Results

Table 4 presents the results for South Africa showing the factors that significantly impacts on economic growth. The result of the estimations show that explanatory variables account for approximately 91.33% variation in economic growth. The F-statistic (6.70) indicates that the explanatory variables are jointly significant (at 5% level of significance) and are capable of explaining changes in economic growth. The probability of the F-statistic is significant at 0.0093. The Durbin-Watson statistic (2.08) illustrates the absence of autocorrelation. The econometric results reveal that mineral export has an insignificant positive effect on economic growth at 5% level of significance.

Table 4 Factors that influence economic growth of South Africa

Variable	**Coefficient**	**t-Statistic**	**Prob.**
C	-24.4966	-2.608414	0.035

M_EXP	0.026583	0.395725	0.7041
MRNT	1.744561	2.339096	0.0519
CPBS	0.037525	1.064588	0.3224
SAVE	1.356069	2.688367	0.0312
MKC	0.007373	0.985602	0.3572
TNR	0.031035	0.435153	0.6766
TVT	0.001737	0.068159	0.9476
INFL	0.08621	0.887254	0.4044
P_XAU	0.023252	2.985737	0.0203
P_XPT	-0.015503	-5.463594	0.0009
ZAR	-1.422534	-3.425051	0.0111
R-Squared	0.913295		
F-Statistics	6.70307		
Prob(F-statistic)	0.009304		
Durbin-Watson Stat	2.082264		

Mineral rent has a positive insignificant effect on economic growth at 5% level of significance however; this is significant (0.0519) at a 10% level of significance, meaning that a 1% increase in mineral rent raises economic growth by 1.74% (at 10% level of significance). Credit provided by banking sector has an insignificant but positive effect on economic growth at a 5% level of significance. Domestic savings has a positive significant (0.0312) effect on economic growth at a 5% level of significance, meaning that a 1% increase in domestic savings raises economic growth by 1.36%. Market Capitalization, Turnover ratio, Total value of shares traded and Inflation are all have a positive insignificant effect on economic growth at a 5% level of significance.

The price of gold has a positive significant (0.0203) effect on economic growth at a 5% level of significance; this means that a 1% increase in the price of gold raises economic growth by 0.02%. However, the price of platinum has a negative significant (0.0009) at 5% level of significance; meaning that a 1% increase in the price of platinum decreases the economic growth by 0.015%, this is against our *a priori* expectation. The South African Rand has a negative significant (0.0111) effect on economic growth at a 5% level of significance. This means that a 1% increase in the value of ZAR would decrease economic growth by 1.42%.

Table 5 presents the results for Nigeria showing the factors that significantly impacts on economic growth. The result of the estimations show that explanatory variables account for approximately 87.66% variation in economic growth. The F-statistic (3.55) indicates that the explanatory variables are jointly insignificant at 5% level of significance but are jointly significant at a 10% level of significance and thus are capable of explaining changes in economic growth. The probability of the F-statistic is significant at 0.0653. The Durbin-Watson statistic (2.07) illustrates the absence of autocorrelation. The econometric results reveal that fuel exports have a negative significant (0.0342) effect on economic growth at 5% level of significance, meaning that a 1% increase in the export of fuel decreases economic growth by 2.7%.

Table 5 Factors that influence the economic growth of Nigeria.

Variable	**Coefficient**	**t-Statistic**	**Prob.**
C	6.948162	1.400335	0.2109
F_EXP	-2.709044	-2.730237	0.0342
GRNT	9.434491	3.964124	0.0074
ORNT	-0.726972	-2.345284	0.0574
CPBS	-0.402669	-2.277406	0.063
SAVE	-0.405368	-1.581814	0.1648
MKC	-0.691603	-3.360907	0.0152
TNR	4.162031	3.748887	0.0095
TVT	-7.059327	-3.052595	0.0224
INFL	0.049143	0.457192	0.6636
P_BRT	0.390629	1.780841	0.1252
P_NGS	-3.192686	-2.147126	0.0754
NGN	0.211941	1.247057	0.2588
R-Squared	0.876568		
F-Statistics	3.550821		
Prob(F-statistic)	0.065253		
Durbin-Watson Stat	2.073827		

The rent generated from natural gas has a positive significant (0.0074) effect on economic growth at a 5% level of significance, meaning that a 1% increase in the rent generated from natural gas raises economic growth by 9.43%. However, the rent generated from oil has a negative insignificant (0.0574) effect on economic growth at a 5% level of significance level but the probability for this variable at a 10% level of significance has a negative significant effect on economic growth, this means that a 1% increase in the rent generated from oil decreases economic growth by 0.72% (at a 10% level of significance). Credit provided by banking sector has an negative insignificant (0.0630) effect on economic growth at a 5% level of significance level but the probability for this variable at a 10% level of significance has a significant negative effect on economic growth, this means that a 1% increase in the credit provided by the banking sector decreases economic growth by 0.72% (at a 10% level of significance).

Inflation, the price of oil and the Nigerian Naira all had insignificant positive effects on the economic growth at a 5% level of significance and domestic savings had a negative insignificant effect on economic growth. The price of natural gas has a positive insignificant effect on economic growth at a 5% level of significance but significant (0.0754) at 10% level of significance; this means that a 1% increase in the price of natural gas decreases economic growth by 3.19% (at a 10% level of significance).

Market capitalization has a negative significant (0.0152) effect on economic growth at a 5% level of significance; this means that a 1% increase in market capitalization decreases economic growth by 0.69%. Turnover ratio has a positive significant (0.0095) effect on economic growth at a 5% level of significance; this means that a 1% increase in the turnover ratio raises economic growth by 4.16%. Total value of shares traded has a negative significant (0.0224) effect on economic growth at a 5% level of significance; meaning that a 1% increase in the total value of shares traded decreases economic growth by 7.06%

Table 6 shows the factors that influence the economic growth of Egypt. The result of the estimations show that explanatory variables account for approximately 96.34% variation in economic growth. The F-statistic (13.18) indicates that the explanatory variables are jointly significant at 5% level of significance and thus are capable of explaining changes in economic growth. The probability of the F-statistic is significant at 0.0024. The Durbin-Watson statistic (2.34) illustrates the absence of autocorrelation.

Table 6 Factors that influence economic growth of Egypt

Variable	**Coefficient**	**t-Statistic**	**Prob.**
C	1.767913	0.402698	0.7011
F_EXP	0.035264	3.185479	0.0189
GRNT	0.132231	1.786143	0.1243
ORNT	0.170286	2.604662	0.0404
CPBS	0.044941	5.992305	0.001
SAVE	0.118939	-0.301888	0.7729
MKC	0.01427	-0.603775	0.5681
TNR	0.013168	4.302141	0.0051
TVT	0.023983	3.63974	0.0108
INFL	0.038137	1.385589	0.2152
P_BRT	0.01604	-0.841759	0.4322
P_NGS	0.305042	-2.952941	0.0255
EGP	0.705405	-1.092743	0.3164
R-Squared	0.963469		
F-Statistics	13.18713		
Prob(F-statistic)	0.002377		
Durbin-Watson Stat	2.343576		

The econometric results reveal that fuel exports have a negative significant (0.0189) effect on economic growth at 5% level of significance, meaning that a 1% increase in the export of fuel raises economic growth by 0.11%. The rent generated from natural gas has a positive insignificant effect on economic growth at a 5% level of significance. However, the rent generated from oil has a positive significant (0.0404) effect on economic growth at a 5% level of significance; this means that a 1% increase in the rent generated from oil raises economic growth by 0.44%. Credit provided by banking sector has a positive significant (0.0010) effect on economic growth at a 5% level of significance level; this means that a 1% increase in the credit provided by the banking sector raises economic growth by 0.27%.

Domestic saving, the price of oil, the Egyptian Pound and market capitalization all had insignificant negative effects on the economic growth at a 5% level of significance and

inflation had a positive insignificant effect. The price of natural gas has a negative significant (0.0255) effect on economic growth at a 5% level of significance; this means that a 1% increase in the price of natural gas decreases economic growth by 0.90.

Turnover ratio has a positive significant (0.0051) effect on economic growth at a 5% level of significance; this means that a 1% increase in the turnover ratio raises economic growth by 0.057%. Total value of shares traded has a positive significant (0.0108) effect on economic growth at a 5% level of significance; meaning that a 1% increase in the total value of shares traded raises economic growth by 0.087%

4.5 Diagnostic statistics

4.5.1 Test for serial correlation

Table 7 below presents the results for serial correlation tests. The test for South Africa shows that the F-statistic is 0.3353 with a probability of 0.8595 which is significant at a 5% level of significance. We do not reject the null hypothesis and therefore conclude that the residuals are not serially correlated.

Table 7 Breusch-Godfrey Serial Correlation Test

Country	**F-Statistics**	**Prob. F**
Egypt	1.567897	0.3142
Nigeria	0.899132	0.4759
South Africa	0.335381	0.8595

The model show the F-statistics for Nigeria is 0.8991 with a probability of 0.4759 which is significant at a 5% level of significance. We do not reject the null hypothesis and therefore conclude that the residuals are not serially correlated. The F-statistics for Egypt is 1.568 with a probability of 0.3142 which is significant at a 5% level of significance. We do not reject the null hypothesis and therefore conclude that the residuals are not serially correlated.

4.5.2 Test for Heteroscedasticity

Table 8 below presents the results for heteroscedasticity test. The test for South Africa shows that the F-statistic is 0.5414 with a probability of 0.8256 which is significant at a 5% level of significance. We do not reject the null hypothesis and therefore conclude that the residuals are not heteroscedastic.

Table 8 Breusch-Pagan-Godfrey heteroscedasticity test

Country	**F-Statistic**	**Prob.F**
South Africa	0.541392	0.8256
Nigeria	0.269585	0.9746
Egypt	1.168239	0.4475

The table shows that the test for Nigeria shows that the F-statistic is 0.2695 has a probability of 0.9746 which is significant at a 5% level of significance. We do not reject the null hypothesis and therefore conclude that the residuals are not heteroscedastic. The test for Egypt shows that the F-statistic is 1.1682 has a probability of 0.4475 which is significant at a 5% level of significance. We do not reject the null hypothesis and therefore conclude that the residuals are not heteroscedastic

4.5.3 Test for model stability

The model stability is tested using CUSUM Test. Figure 1(a) shows that the parameter is stable as the cumulative sum of the residuals is within the two critical lines at a 5% level of significance for South Africa.

Figure 1(a)

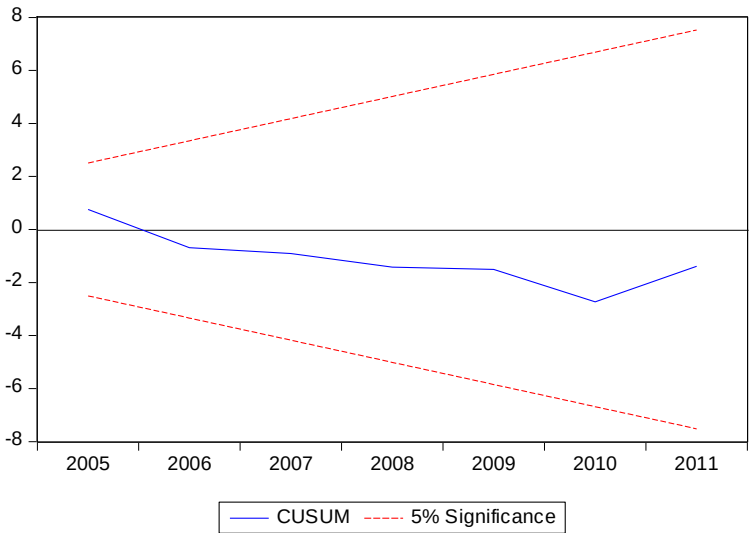


Figure 1(b)

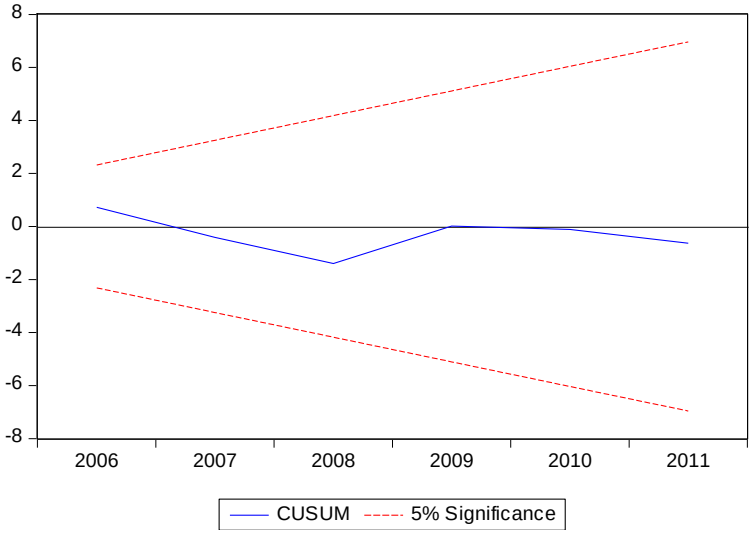
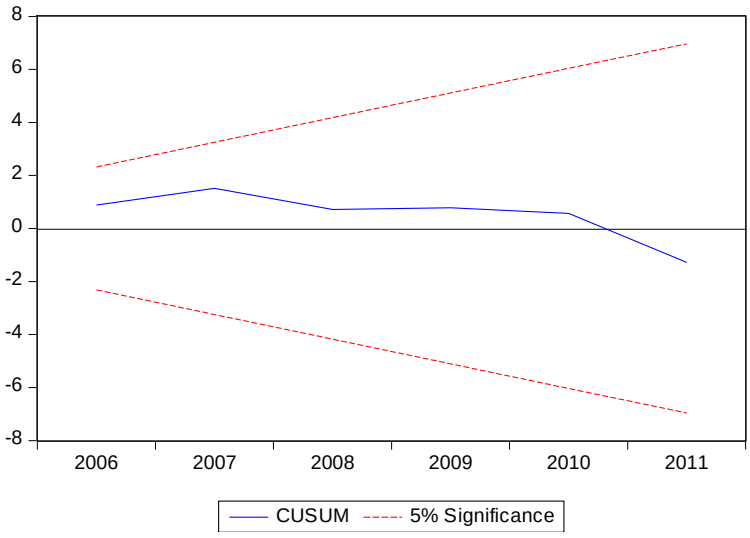


Figure 1(c)



For Nigeria 1(b); the parameter is stable as the cumulative sum of the residuals is within the two critical lines at a 5% level of significance. For Egypt 1(c); the parameter is stable as the cumulative sum of the residuals is within the two critical lines at a 5% level of significance.

Chapter summary

The R-squared value is above 85% for all the regression models, this indicates that the variables account for a very significant portion in the variation in the dependent variable (economic growth). The results of the Augmented Dickey Fuller unit root test imply that the data used for the regression model is stationary (at 1st and 2nd difference) and therefore a test for cointegration was not required. The results of the CUSUM test implies that the regression models are stable, the results of the Breusch-Godfrey LM test indicate that the residuals are

not serially correlated and lastly, the results of the Breusch-Pagan-Godfrey indicate that the residuals are not heteroscedastic.

CHAPTER 5

Discussions and Conclusion

5.1 Introduction

This chapter discusses the results of our findings in conjunction with arguments brought forward in the literature review. Section 5.2 discusses the results. Section 5.3 presents the conclusion and recommendations.

5.2 Discussion

The regression results indicate that fuel export as a percentage of merchandise export has a significant relationship with economic growth, although this relationship is negative for Nigeria and positive for Egypt. The significant result was expected in a resource endowed economy. Natural resource rents had a significant relationship with economic growth for all of the countries; mineral rent had a positive significant relationship with economic growth for South Africa. Natural gas rent had a positive and significant relationship with economic growth for Nigeria but oil rent had negative significant relationship. Natural gas rent tested insignificant for Egypt but oil rent had a positive significant relationship with economic growth. These findings support arguments made by Yartey (2008), La Porta (1996), Garcia and Liu (1999) that income as a determinant for stock market development has a significant relationship on the economic activity of an economy.

The results also indicate that credit provided by banking sector has a significant relationship with economic growth, although this relationship was negative for Nigeria and positive for Egypt. The latter finding supports the argument by Yartey and Adjisi (2007) that stock markets and the banking sector are complements rather than substitutes and both enhance economic activity. Domestic saving had a positive significant relationship with economic growth for South Africa; this was also the finding of Singh (1997) and Corporale at al. (2004). The results also indicated that market capitalization had an insignificant relationship with economic growth for South Africa and Egypt but had a negative significant relationship for Nigeria.

The total value of shares traded had a significant relationship with economic growth for Nigeria and Egypt, although this relationship was positive for Egypt and negative for Nigeria. The turnover ratio had a positive significant relationship with economic growth for Nigeria and Egypt. This supports arguments made by Bencivenga (1996), Levin (1996), Paudel

(2005) and Carporate et al (2004). What this indicates is that stock market liquidity increases economic growth. Egypt and Nigeria's turnover ratios had positive significant effects on economic growth and this finding supports arguments by Randall et al. (1999), Levine and Zervos (1996), Bencivenga et al (1996), Rousseau and Watchel (2000).

As expected with natural resource endowed economies, the price of commodities has a significant relationship with economic growth. The price of natural gas has a negative significant relationship for Egypt and Nigeria. The price of gold has a positive significant relationship with economic growth but the price of platinum has a negative significant relationship with economic growth for South Africa. These findings are in line with Auty (2001) and Woolcock et al (2001) who argued that the type of natural resource that an economy is endowed with may have different effects on economic performances.

5.3 Conclusion and recommendation

This thesis empirically evaluated the relationship between the determinants of stock market development and economic growth. Rent from natural resources enhances economic growth for South Africa and Egypt. Nigeria displays symptoms of the natural resource curse as oil rent had a negative impact on growth. However, the rent from natural gas enhances economic activity. The possible reason behind this is that the revenue in the form of natural gas rent is not as substantial as that of oil. This is also evident in that fact that the natural gas rent was found to be insignificant for Egypt.

To further illustrate the finding that Nigeria might be suffering from the resource curse is the negative significant relationship between fuel exports as a percentage of merchandise exports with economic growth. We can thus conclude the following: income from natural resource revenue, which is a determinant of stock market development, enhances economic growth.
There is no evidence that any of the countries suffer from the Dutch disease as the Nigerian Naira, Egyptian Pound tested insignificant, so overvaluation of domestic currency was not evident. The South African Rand had a negative significant relationship with economic growth, this implied weakening of the domestic currency.

There is no evidence that indicates that direct stock market development determinants (market capitalization, turnover ratio and total value of shares traded) enhance economic growth in South Africa. This thesis concludes as follows: firstly, income and liquidity are important stock market development determinants that enhance economic growth. Secondly,

Nigeria display symptoms of the resource curse. Nigeria also has the least developed stock market and this could indicate that a lack of stock market development is an indirect result of the natural resource curse.

5.3.1 Recommendations

Institutional quality is important in ensuring economic growth; Leiete and Wiedman (1999) argued that endowment of natural resources promotes rent seeking behaviour and this has detrimental effects on the quality of government. Governments need to ensure that there is more transparency and accountability in the management of natural resource revenues and that their policies are prudent enough to combat rent seeking behaviour. Gylfason (2001) argued that rent seeking behaviour has the ability to distort the allocation of resources and this hampers economic activity.

The implementation of a more robust institutional framework would ultimately ensure that natural resource revenue is channelled to other forms of capital (i.e. human capital). Revenue invested in the development of human capital could result in an increased level of participation in the stock market by local investors; this will increase liquidity, efficiency and the size of the stock markets. The lack of competiveness in the stock markets could be a direct result of inadequate knowledge stemming from poor allocation of natural resources revenues. Gylfason (2001) found that education; expected years of schooling and school enrolment were negatively related to the abundance of natural resources.

Only by remedying the early symptoms of natural resource curse, through robust institutional qualities can endowment be a blessing instead of a curse. This will have positive spill over on to the stock market and increase economic activity. In support, Samimi and Salehani (2010) recommended that good governance was crucial in order to transform resource wealth into good economic performance.

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