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STOCK MARKET LIBERALIZATION, STOCK MARKET PERFORMANCE AND ECONOMIC GROWTH IN KENYA

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A Research Paper Submitted to the Department of Applied Economics in the School of Economics in Partial Fulfillment of the Requirements for the Award of the Degree of Master of Economics (Finance) of KenyattaUniversity

December, 2013

DECLARATION

This Research Paper is my original work and has not been presented for a degree or any other award in any other University.

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DEDICATION

To my beloved parents Francis and Beatrice Kinuthia for their kind support in my entire academic endeavor and to my wife Ann Muthoni and daughter Shirleen Wanjiku.

ACKNOWLEDGEMENTS

I praise the almighty God for this far He has seen me through. I have put a lot of effort in this Research Paper. However, it would not have been possible without the kind support and help of many individuals. I extend my sincere thanks to all of them.

I am grateful to my supervisor Professor Martin Etyang who has been my source of inspiration and guidance throughout the duration of this paper. He greatly impacted a lot of support and knowledge to my work. I am also very grateful to Professor Almadi Obere for his assistance and immense contributions in this study. I would like to acknowledge the contributions of Dr. Susan Okeri, Dr. Paul Gachanja, Dr. Stephen Gitahi and Dr. Diana Ngui Muchai. I highly appreciate the support of Dr. Tom Mburu in the course of my master's degree study at Kenyatta University. I highly appreciate the support and contributions from the school of economics teaching members of staff namely; Dr. Omolo, Dr. Onono, Dr. Mbuthia, Dr. Korir, Dr. Muthoga, Dr. Manyasa, Dr. Makori, Dr. Makambi, Mr. Muthui and Mr. Silas. Mr. Antony D. Bojana deserves appreciation for editing the final work.

My gratitude goes to all my family members who gave me support during the programme and towards my educational career. My profound appreciation goes to my colleagues Josphine, Gwaro, Mogusu, Mugwanja, Joyce and Monica at Barclays Bank for their support. I extend my sincere gratitude to my fellow students Maina, Njoroge, Ngetich, Omondi, Ruttoh, Wafula and Waweru and friends Lomuket and Kibathi.

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ACRONYMS AND ABBREVIATIONS

ADF: Augmented Dickey-Fuller

APT: The Arbitrage Pricing Theory

CBK: Central Bank of Kenya

CIC: Capital Issue Committee

CMA: Capital Markets Authority

FDI: Foreign Direct Investment

GDP: Gross Domestic Product

GLS: Generalized Least Squares

IAPM: International Asset Pricing Model

IPOs: Initial Public Offerings

KNBS: Kenya National Bureau of Statistics

NSE: Nairobi Securities Exchange

OLS: Ordinary Least Square Method

PP: Phillips-Perron Test

VAR: Vector Autoregression

VECM: Vector Error Correction Model

OPERATIONAL DEFINITION OF TERMS

Cost of equity capital: Is the rate of return required by a company's common stockholders.

Financial repression: Is any of the measures that governments employ to channel funds to themselves, that in a deregulated market, would go elsewhere.

Foreign Investor: Is defined as any person who is not a local or an East African investor or a body not incorporated in Kenya or in East African Community Partner State.

Foreign Portfolio Flows (Investment): Is the entry of funds into a country where foreigners make acquisition of financial assets (which includes stock, bonds, deposits, and currencies).

Foreign Turnover: Is the net value of shares or equity owned by foreigners after deducting net purchase from net sales.

Gross Domestic Product: Refers to the market value of all final goods and services produced within a country in a given period.

Investment: Investment refers to an increase in capital stock in the economy.

Local Investor: Is defined as an individual who is a citizen of Kenya, a company incorporated under the Companies Act of Kenya or any other body corporate established or incorporated in Kenya under the provision of any law in which Kenya citizens or the government of Kenya has beneficial interest in 100% of its ordinary shares.

Market Capitalization: Is the total value of the issued shares of a publicly traded company; it is equal to the share price times the number of shares outstanding.

Market Liquidity: Is the degree to which an asset or security can be bought or sold without causing a significant movement in the price and with minimum loss of value.

Market Integration: Is a market in which there are no barriers to financial flows, and the same risk asset commands the same expected return, irrespective of domicile.

Segmented Market: Is market that is partially or wholly isolated from other markets by one or more market imperfections and there is no free flow of labour, capital, and information.

Stock/Securities Exchange: Is organized and regulated financial market where securities (bonds, shares) are bought and sold at prices governed by the forces of demand and supply.

Stock Market Liberalization: Is defined as a decision by a country's government to allow foreigners to purchase shares in that country's stock market.

Stocks Traded Turnover Ratio: A measure of stock liquidity calculated by dividing the total number of shares traded over a period by the average number of shares outstanding for the period. The higher the share turnover, the more liquid the share of the company.

Venture Capital Funds: Is financial capital provided to startup firms and small businesses by foreigners.

ABSTRACT

The study empirically examined whether stock market liberalization, by improving the functioning of domestic stock market accelerates economic growth in Kenya. The study also evaluated the nature of the relationship between stock market performance and economic growth in Kenya. The stock market liberalization and performance were measured using two variables namely stock market size as measured by stock market capitalization and stock market turnover respectively. The study used quarterly time series data collected through secondary sources and covered a period of 22 years from January, 1991 to December, 2012. The study utilized econometric techniques of Vector Autoregressive (VAR) and Granger Causality Tests to explore the relationships. The empirical results showed a uni-directional causal link that runs from stock market development to economic growth and there is evidence of an indirect transmission mechanism through the effect of stock market development on investment. The study found that stock market liberalization has a significant positive impact on the economic growth in Kenya. There is a strong case for policy recommendation to further develop the stock market as a driver of economic performance in Kenya.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND

Stock market liberalization can be defined as a decision by a country's government to allow foreigners to purchase shares in that country's stock market. Stock market liberalization is a gradual process generally involving several liberalizations subsequent to the first. The theory of the standard international asset pricing model (IAPM) predicts that stock market liberalization may reduce the liberalizing country's cost of equity capital. There are two important empirical implications for stock market liberalization (Henry, 2000b). First, stock market liberalization tends to boost the stock market liquidity. The second implication is that there is an increase in physical investment following stock market liberalization, due to a fall in a country's cost of equity which spurs real private investment.

Research has shown that on average, countries experience large, temporary increases in the growth rate of real private investment following stock market liberalization (Henry, 2000a). If other factors are held constant, such as political and economic reforms, oil prices among others, the relationship between private investment growth and stock market liberalization is observed. Theory shows that stock market liberalization may affect aggregate valuation, the cost of capital, and investment (Henry, 2000a). Thus stock market liberalization will cause a fall in the liberalizing country's cost of equity capital. If stock market liberalization reduces a country's aggregate cost of equity capital, it will also cause a temporary increase in the growth rate of investment, via the Stock market development. Stock market liberalization leads to an increase in stock market size and turnover which eventually leads to growth in private investment.

Henry (2000a) demonstrates that a country's cost of equity capital has the equity premium and the risk-free rate. Thus, there are three reasons why stock market liberalization might cause a fall in the liberalizing country's cost of equity capital. First, stock market liberalization facilitates risk sharing between domestic and foreign residents which reduce the equity premium. Second, allowing foreigners to purchase domestic shares might increase net capital inflows, which in turn reduces the risk-free rate. Finally, Levine and Zervos (1998a) demonstrate that increased capital inflows may also increase stock market liquidity. Increased liquidity will also reduce the equity premium (Amihud & Mendelson, 1986; Amihud, Mendelson & Lauterbach., 1997).

According to (Lee and Wong 2009), a possible channel through which financial liberalization can contribute to growth is that it helps develop more liquid financial markets. They opine that once people have more freedom to make their own financial choices and decisions, the cost (monetary and non-monetary) of funding economic and financial activities should also be lower than otherwise. Consequently, the lower cost would stimulate financial market activities and thereby lead to an increase in market liquidity (Lee, & Wong, 2009).

De Santis and Imrohoroglus (1997) explain that new investors broaden the market, dampening the effect of order flow shocks on prices and may also make prices efficient by increasing the precision of public information regarding fundamental values. The impact of foreign investors on the performance of the stock market is, however, not clear. It is for example observed that greater foreign participation in the market may cause stock volatility. Sellin (1996), regards foreign investors' participation as noise trading, therefore a source of excess volatility in the market. Krugman (1993) also argues that financial integration is unlikely to spur economic development.

The financial sector of any economy in the world plays a vital role in the development and growth of the economy (Akingunola et al., 2013). The development of this sector determines how it will be able to effectively and efficiently discharge its major role of mobilizing fund from the surplus sector to the deficit sector of the economy. This sector has helped in facilitating the business transactions and economic development. If a financial system is well-developed, it will enhance investment by identifying and funding good business opportunities, mobilize savings, enable the trading, hedging and diversification of risk and facilitate the exchange of goods and services. All these result in a more efficient allocation of resources, rapid accumulation of physical and human capital, and faster technological progress, which in turn results in economic growth (Akingunola et al., 2013). Financial sector, therefore, stimulates economic development through a variety of channels. Since the financial system performs the vital function of raising funds, and channeling funds to productive investment, successful financial liberalization is usually an important component of a country's strategy for economic growth (Akingunola et al., 2013).

Liberalizing restrictions on international portfolio flows tends to boost domestic stock market liquidity, which positively affects productivity and growth. Therefore, liberalization can spur growth in the Kenyan economy through stock market liquidity and private investment. After experiencing moderately high growth rates during the 1960s and 1970s, Kenya's economic performance during the 1980s and 1990s was far below its potential (Republic of Kenya 2003). From 1991 to 1993, Kenya had its worst economic performance since independence. Growth in GDP stagnated, and agricultural production shrank at an annual rate of 3.9%. Inflation reached a record 100% in August 1993. In 1993, the government of Kenya began a major programme of economic reform and liberalization measures to stabilize the economy and restore sustainable

growth. A series of economic measures and structural adjustment programmes were undertaken with the assistance of the World Bank and the International Monetary Fund (IMF). As part of this program, the government eliminated price controls and import licensing, removed foreign exchange controls, privatized a range of publicly owned companies, reduced the number of civil servants, and introduced conservative fiscal and monetary policies. It was expected that the reforms would restore macroeconomic stability with greater reliance on market forces and enhanced private sector participation in the development process. Financial sector reforms were part of the economic reforms. The 1984 study, "Development of Money Markets in Kenya," became a blue print for structural reforms in the financial markets which culminated in the formation of a regulatory body; the Capital Markets Authority (CMA) in 1989 to assist in the creation of a conducive environment for the growth and development of the country's capital markets (IFC /CBK 1984).

Table 1.1 shows a trend of improved stock market performance after stock market liberalization in 1995.

TABLE 1.1: NSE Gross Market Statistics, 1990 – 2011

Year	1990	1994	1995	1996	2000	2005	2010	2011	2012
Market Capitalization. (KShs. Bn)	10.9	1,286.6	1,230.5	1,190.2	1,306.0	36.6	110.3	78.1	12,822.8
Shares Turnover (KShs. Bn)	0.2	3.1	3.3	3.9	3.6	4,826.9	13,070.3	12,429.6	86.7

Source: NSE

Turnover increased from a low of Kshs.0.2 billion in 1990 to Kshs.3.3 billion in 1995 reaching a high of Kshs.110.3 billion in 2010. The same trend was also followed by the market capitalization, with the highest level of Kshs. 13,070 billion being recorded in 2010 from 10.9 billion in 1990.

Figure 1.1 shows the economic performance in Kenya in terms of GDP growth and stock market performance as percentage of GDP from 1990 to 2012. Stock market performance is measured in terms of turnover ratio, total value of stocks traded and Market capitalization of listed companies. These indicators are shown in the figure as percentage of GDP.

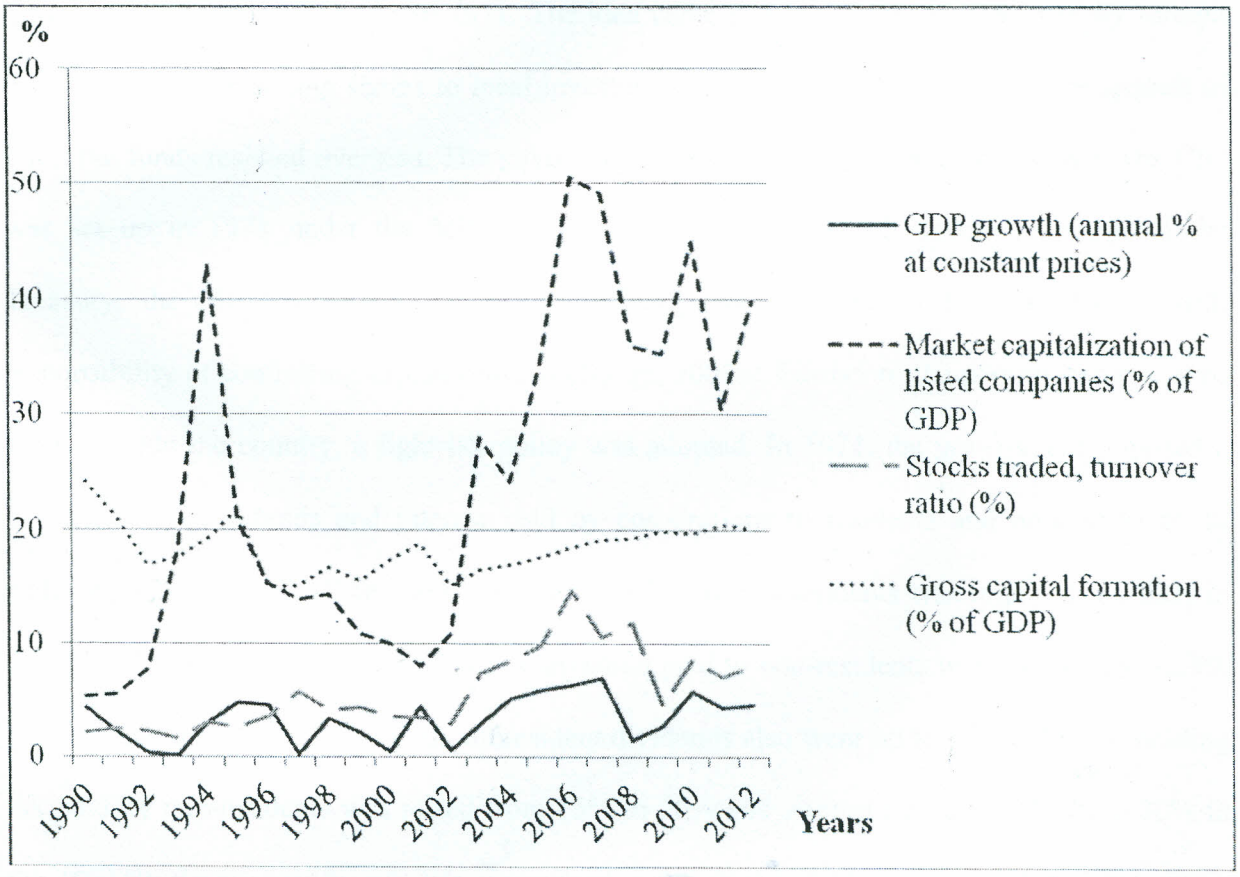

Figure 1.1: Economic and stock market performance in Kenya for the period 1990 – 2012

Source: Computations using data from NSE, KNBS and World Bank.

The stock market shows significant improvements in all indicators with market capitalization (% of GDP) rising from a low of 5.28% in 1990 to a high of 49.2% in 2006. Turnover ratio (%) rose from 2.10 in 1990 to 5.78 in 1997 and 14.63 in 2006.

In the1970s, the government saw a need to directly monitor the operations of the stock market in an effort to ensure that capital raised in the market was not used for investment outside the country (Republic of Kenya, 1969). Tight taxation policies were implemented to reduce repatriation of funds by foreigners and to raise government revenue.

The government made a first attempt to regulate the stock market with the establishment of the Capital Issue Committee (CIC) in 1971. The idea came due to an observed practice by foreign investors that after selling shares to local investors, they were following up with the request to remit the funds realized overseas. The government wanted to discourage such a move. The CIC was set up in 1971 under the Ministry of Finance, consisting of representatives from the Treasury, the Ministry of Commerce and Industry and the Central Bank of Kenya with responsibility of controlling capital outflow (Ngugi, 2003a). Further to the control movement of funds outside the country, a tight tax policy was adopted. In 1971, the government imposed a 12.5% tax on dividends and interest paid by corporations to residents and non-residents. In addition, a 20% tax on all fees and royalties payable to non-residents was imposed. Further, in the 1974/75 fiscal year, the rate of tax on dividend paid to non-residents was raised from 12.5% to 15%; the rate of withholding tax on resident dividends also went up to 15%. The withholding tax paid by non-residents was raised from 15% to 20% and interest rate from 12.5% to 20% in the 1974/75 fiscal year. Stamp duty was raised to 3% in the 1973/74 period while withholding tax for dividends was raised to 15% in 1974/75. In June, 1975, a capital gain tax of 36% was introduced. This was progressively reduced by 50% in 1981 and 25% in 1982 (Ngugi, 2003a).

During the revitalization period, capital controls were relaxed for offshore borrowing in February 1994 and a complete liberalization of offshore borrowing was implemented in May, 1994. Some restrictions on inward portfolio investment were lifted in January 1995, therefore, allowing participation of foreign investors in the Nairobi Stock Exchange trading under guided policy. Foreign investors were permitted up to 20% of equity for inward portfolio investment that is aggregate of each stock and a 2.5% limit for individual investors (Ngugi, 2003a). In 1995, foreign investors' participation in the stock market was increased to 5% for an individual investor and 40% aggregate in any locally controlled company so as to encourage foreign portfolio investment (CMA annual report, 1999). The entire exchange control act was repealed in December, 1995 (Ngugi, 2003a). Henry (2000b) identifies the date of a country's first stock market liberalization with a verifiable occurrence of any of the following: liberalization by policy decree, establishment of the first country fund, or an increase in the investability index of at least 10%. Thus, it can be noted that the official liberalization date for NSE was January 1995. The subsequent policies were measures to further encourage foreign portfolio flows through the NSE.

In 1998, the government expanded the scope for foreign investment by introducing incentives for capital markets growth including the setting up of tax free Venture Capital Funds, removal of Capital Gains Tax on insurance companies' investments, allowance of beneficial ownership by foreigners in local stockbrokers and fund managers to improve market liquidity (Ngugi, 2003a).

On 26 July, 2002, the foreign investor regulations were amended providing a 25% minimum reserve of the issued share capital for locals while the balance of the 75% was a free float for all classes of investors. A local investor is defined as an individual who is a citizen of Kenya, a company incorporated under the Companies Act of Kenya or any other body corporate

established or incorporated in Kenya under the provision of any law in which Kenya citizens or the government of Kenya has beneficial interest in 100% of its ordinary shares. The 25% minimum reserve applies during initial public offerings (IPOs) and government of Kenya privatizations (Ngugi, 2003a).

Figure 1.2 shows the trend of foreign portfolio investment at the NSE. Foreign investors' trading recorded a peak of 52.5% of the total market trading in December, 1996 while a consistent downward trend was recorded from June, 1997.

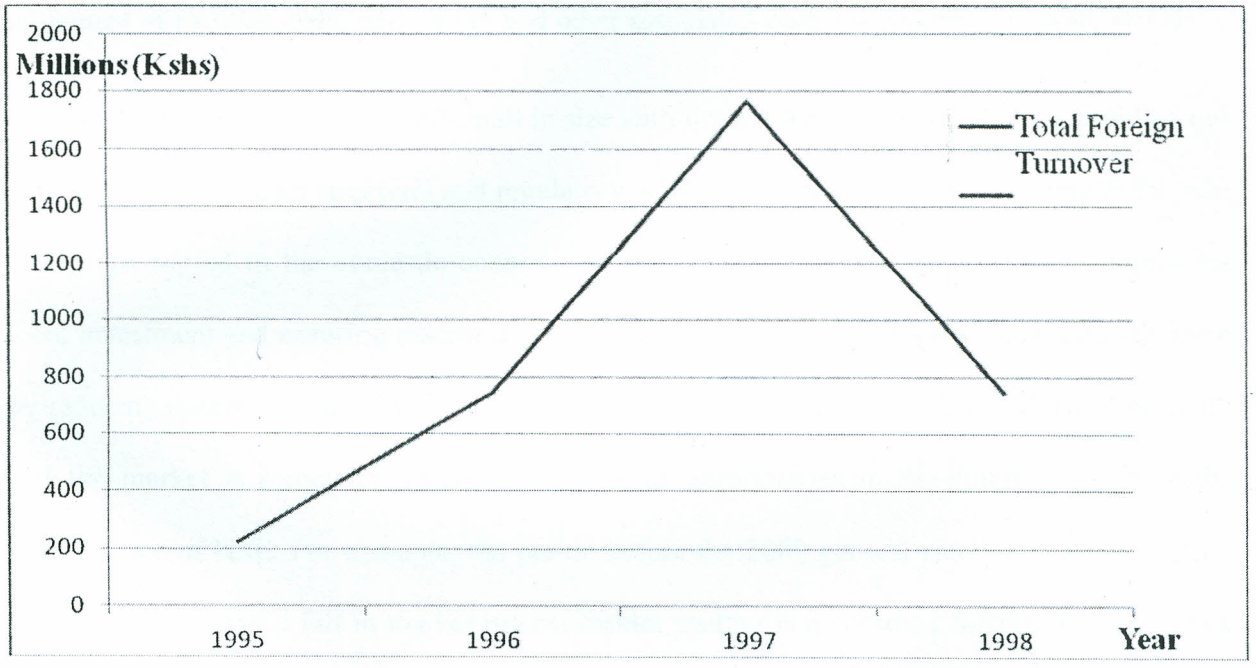

Figure 1.2: NSE Total Foreign Turnover (Kshs millions)

Source: Computations using data from NSE.

Foreign portfolio investment had an upward growth from 1995 recording a peak in 1997. Initially, when foreign investors were allowed to trade in January, 1995, a slow growth in foreign trading was recorded. Inflow of foreign trade increased tremendously with the increased limit of

foreign participation in July 1995. There was tremendous growth in foreign investors' activities, increasing from 3% in 1995 to 44% in June 1997, with a peak in December 1996 of 52.5%. This growth can lead to a conclusion that market performance during the 1996-1997 periods was to a large extent controlled by foreign operations (Ngugi, 2003a).

In July, 2011, the Nairobi Stock Exchange Limited changed its name to the Nairobi Securities Exchange Limited. The change of name reflected the strategic plan of the Nairobi Securities Exchange to evolve into a full service securities exchange which supports trading, clearing and settlement of equities, debt, derivatives and other associated instruments (NSE website, 2013).

The capital market in Kenya is still small in size with limited listings, relatively low liquidity and is faced with significant structural and regulatory weaknesses (Nyangoro, 2012). Despite the role of foreign capital in the domestic economy, consideration should also be given to improving local investment and ensuring macroeconomic stability as these will improve market confidence by reducing uncertainty and drive stock market growth. The NSE suffers from a lack of liquidity and the market is somewhat speculative. Political uncertainties in the country do affect the performance of NSE. For example, the period before the 2002 general election saw a reduction in share trading and a fall in market prices. Insider trading is a common feature of many stock markets and the NSE is not different. Although there are laws to prevent insider trading, enforcements are not always effective and investors get worse prices and rates of return.

1.2 STATEMENT OF THE PROBLEM

Like many other developing countries one of the most fundamental objectives of Kenya's macroeconomic policies is to sustain high economic growth in an attempt to move from a developing to a developed economy. One of the key pillars to achieving this is attracting local

and foreign investment in the key strategic sectors of our economy. To achieve this, the government must look at ways that attract foreign investment in our country. One way of attracting foreign investment is through the liberalization of the Nairobi Securities Exchange.

Financial sector stimulates economic development through a variety of channels. Since the financial system performs the vital function of raising funds, and channeling funds to productive investment, successful financial liberalization is usually an important component of a country's strategy for economic growth (Akingunola et al., 2013). Despite the efforts made to promote growth of the capital market and the financial sector in general, the contribution of the sector to economic development was viewed as unsatisfactory as the economy hanged on the balance with dwindling inflows of foreign savings and low stock market performance. Consequently, the government viewed the reform of the sector as the best option especially if the economy was to shift its reliance on domestic resources to finance domestic investment (Republic of Kenya, 1974). Nyangoro (2012) opine that Kenya still has low levels of portfolio inflows but this has been growing over time. Hence, it is important to consider the likely effect of such flows on the economy. The Exchange was opened to foreign investors for the first time in January 1995. Given that the stock market is liberalized, it is necessary to be cognisant of the implications of this on the economic growth. This study sought to examine the role of liberalization as a catalyst of stock market performance and economic growth in Kenya. The study will also add to the knowledge gap on understanding the impact of stock market liberalization in Kenya.

It is against this background that this study intended to empirically examine the impact of stock market liberalization on the performance of Nairobi Stock Exchange and GDP growth rate in Kenya. The study further sought to find out if economic growth influences performance of the stock market or if it is the stock market that affects economic growth.

1.4 RESEARCH QUESTIONS

This study addressed the following questions:

i. What is the impact of stock market liberalization on Kenya's economic growth?

ii. What relationship exists between stock market performance and economic growth in Kenya?

iii. Is there causality between economic growth and stock market performance in Kenya?

1.3 OBJECTIVES OF THE STUDY

1.3.1 General Objective

The broad objective of this study was to consider the impact of liberalization of Nairobi Securities Exchange on economic growth in Kenya. The study set out to demonstrate whether there was a structural shift in economic growth that took place in 1995 as a result of liberalization.

1.3.2 SPECIFIC OBJECTIVES

i. Determine the impact of stock market liberalization on economic growth in Kenyan.

ii. Determine long run or short run relationship that exists between stock market performance and economic growth in Kenya.

iii. Determine direction of causality between stock market performance and economic growth in Kenya.

1.5 SIGNIFICANCE OF THE STUDY

The study measures the impacts of stock market liberalization policy on stock market performances and GDP growth rate. This would assist the Kenya government in implementing policy decisions on stock market liberalization and the path to go further in creating a more

efficient capital market. Stock/securities market authorities would also be able to make decisions on whether subsequent stock market liberalization would generate consistent results to improve stock markets performances. The study will help enrich the literature and also provide secondary source to researchers willing to carry out further studies in this area.

The study is also expected to provide important quantitative information for sound investment decisions to the public. Stock market liberalization did not constitute a complete opening to foreign investors. Rather, stock market liberalization is a gradual process generally involving several liberalizations subsequent to the first. Thus, the investing public will be enlightened on the possible implications of liberalization and thus be able to know what to anticipate in future in case of a subsequent policy on liberalization.

1.6 SCOPE OF THE STUDY

This study is restricted to assessing the effect of stock market liberalization on the performance of NSE and economic growth in Kenya. The stock market under study is the Nairobi Securities Exchange. The study covered 22 years using quarterly data from January, 1991 to December, 2012.

1.7 LIMITATIONS OF THE STUDY

This study has certain limitations that need to be taken into account when considering its contribution. One of the limitations of this study was lack of availability of quarterly data. This prompted frequency conversion of the data from annual to quarterly which was done using Eviews. Secondly, the concept of liberalization has been studied from a rather narrow empirical perspective. The study has not examined the supervisory and regulatory imperatives of the market. Another limitation of this study is that the study is restricted to the impact of stock

market liberalization on the performance of the NSE and economic growth. Hence, its findings cannot be generalised to other segments of the financial market and economy such as stock market volatility, policy reforms, savings, and public investments among others.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

In this chapter, theoretical and empirical literature review is carried out. This chapter has reviewed the existing literature on stock market liberalization, beginning with the theoretical literatures that relates to liberalization. Subsequently, the review focused on studies that were conducted to examine the effects of stock market liberalization on stock market performance and economic growth. Finally, an overview of the studies is done showing the knowledge gap.

2.2 THEORETICAL LITERATURE REVIEW

McKinnon and Shaw (1973) in their separate studies put forward the financial liberalization thesis contending that a government restriction on the financial system has pinned down the quantity and quality of investment. They postulate that the poor performance of investment and growth in developing countries is a function of interest rate ceiling, high reserve requirement and restrictions in credit allocation mechanism. These elements were the sources of financial repression, the main symptoms of which include low savings, credit rationing and low investment. Financial liberalization includes other policy measures such as the introduction of market incentives for bank managers, the encouragement of private stock and bonds markets, the lowering of reserve requirement and recapitalization, opening up of capital account, strengthening bank regulations and establishment of strong supervisory institutions. McKinnon and Shaw (1973) report that interest rates, along with other financial indicators should be determined by market forces. However, the Central Bank sometimes influences or administers

rate structure via the adjustments of minimum discount rate at which it lends to the banking system.

The main argument of financial liberalization is that removing restrictions on international capital movements permits financial resources to flow from capital surplus countries, where expected returns are low, to capital scarce countries where expected returns are high. This flow of resources into capital scarce countries will reduce the cost of getting capital, increase investment and raise output. McKinnon and Shaw (1973) postulate that removing financial restrictions in any economy can exert a positive effect on growth rates as interest rates rise toward competitive market equilibrium.

It can also be noted that increased monitoring associated with opening a firm's stocks to foreign investors may improve the governance of the firm, which could force the firm's managers to improve on profitability, efficiency and other measures of operating performance. Besides influencing the acquisition of information ex ante, well-developed stock markets may help in exerting corporate control. Stock markets may stimulate greater corporate control by making it easier to tie managerial compensation to performance (Diamond & Verrecchia, 1982) and by facilitating takeovers (Stein, 1988). Thus, if well-functioning stock markets facilitate takeovers, then outsiders can purchase poorly operating firms, change management, and set the stage for greater profitability. Similarly, if well-functioning stock markets make it easier to link managerial compensation with stock price performance, then this helps align the interests of managers with those of firm owners. Through this channel, well-functioning markets can enhance managerial incentives and boost resource allocation. In addition, it makes it easier to tie managerial compensation to stock price performance (Jensen & Murphy 1990), hence enhancing managerial incentives and thereby boosting resource allocation.

Stock markets can also influence risk-diversification and the ability to avoid liquidity risk. Stock markets are best designed for traditional, cross-sectional risk-sharing, where individuals can create a tailor-made portfolio of assets. In better developed markets where it is easier to trade securities, it is easier for agents to construct portfolios with a minimum of middlemen. Markets can also ease liquidity risk (Levine, 1991; Bencivenga, Smith, & Starr, 1995). Liquid equity markets make long-term investment more attractive because they allow savers to sell equities quickly and cheaply if they need access to their savings. At the same time, companies enjoy permanent access to capital raised through equity issues. By facilitating longer term, more profitable investments, liquid markets improve the allocation of capital and thereby boost productivity growth.

On the other hand, Heather and Euclid (1994) opine that it would be misguiding to attribute all forms of government intervention in the financial markets as "financial repression" in the desire for a policy of liberalization. Well-functioning stock markets also influence growth primarily by influencing the efficiency of capital allocation. Theory suggests that as stock markets become more liquid, agents may have greater incentives to expend resources in researching firms (Holmstrom & Tirole, 1993; Boot & Thakor, 1997). In larger more liquid markets, it is easier to profit from new information by trading in well-functioning markets. This improved information about firms improves resource allocation with corresponding implications for economic growth.

Stock markets may also influence risk diversification and avoid liquidity risk. Liquid equity markets make long-term investment more attractive because they allow savers to sell equities quickly and cheaply if they need access to their savings. Simultaneously, companies enjoy permanent access to capital raised through equity issues. By easing longer term, more profitable

investments, liquid markets improve the allocation of capital and thereby enhance productivity growth (Levine, 1997).

A well-functioning stock market can affect economic growth largely through its influence on the efficiency of capital allocation. Boot and Thakor (1997) argue that as stock markets become more liquid, agents may have greater incentives to expend resources in researching firms. In larger more liquid markets, it is easier to profit from new information by trading in well-functioning markets. This improved information enhances resource allocation with corresponding implications for economic growth.

There is also a possibility that the governments might have an incentive to liberalize the stock market timed to coincide with the implementation of other economic reforms and positive future shocks to the marginal product of capital. Therefore, it cannot be concluded that stock market liberalizations necessarily cause investment booms. According to Kawakatsu and Morray (1999), liberalization may not improve the efficiency of emerging markets.

Henry (2003) has reported that in a situation where an emerging country's stock market is completely segmented from the rest of the world, the equity premium embedded in its aggregate valuation will be proportional to the variance of the countries' aggregate cash flows. The study further asserted that when a country's stock market becomes fully integrated, its equity premium will be proportional to the co- variances of the country's aggregate cash flows with those of the world portfolio. Therefore, it is expected that the equity price will fall when a completely or partially segmented emerging country liberalizes its stock market. Holding future cash flow constant, this fall in the equity price will cause a permanent fall in the aggregate cost of equity capital. This will go a long way in increasing the liquidity position of the market. Capital-poor

countries will experience a temporary increase in investment when they liberalize. The theory seems to focus more on market integration.

Manova, (2008) observes that stock market liberalization is more effective in economies with initially less active stock markets and higher trade costs. Naceur, Ghazouani, and Omran (2008) indicate that stock market liberalization has no effect on economic and investment growth whereas the impact on stock market development is negative in the short-run but turns positive in the long-run. However, mixed evidences on the effects of financial liberalization exist in the literature.

There is a growing body of literature stressing a direct relationship between the extents to which financial liberalization can improve performance and the various measures of efficiency. Rajan (2002), reports that the advantages of financial sector liberalization are heavily dependent on the assumption that liberalization takes place under a stable macroeconomic environment. As Auzairy, Ahmad and Catherine (2011) argue, the impact of subsequent stock market liberalization is not as great as the impact of the initial stock market liberalization. This is because the impacts may have already been anticipated at the time of the first stock market liberalization where the rise in equity price index is only during the announcement or implementation of the first stock market liberalization. They opine that the effect of the subsequent policy changes is not found to be statistically significant and therefore, these changes do not bring about the desired effect. Other measures such as trade liberalization and other financial reforms may be more effective in strengthening a country's equity market.

2.3 EMPIRICAL LITERATURE REVIEW

Empirical evidence on the relationship between stock market development and growth suggests a positive link between stock market liquidity and growth. Liberalization increases stock market liquidity which in turn leads to a large causal impact on economic growth by affecting total factor productivity growth.

Levine and Zervos (1998a) provide evidence suggesting that stock market liberalization also increases liquidity. They evaluated the behaviour of stock market size, liquidity, volatility and international integration after 16 emerging market economies liberalized their policies regarding international capital and dividend flows. The study found that stock markets become larger, more liquid, more integrated and more volatile after liberalization.

Levine and Zervos (1998b) examine whether countries experience a permanent increase in the growth rate of their capital stocks when their stock markets become more integrated with the rest of the world. The study found no evidence that increased stock market integration leads to permanently higher capital stock growth rates. Given the evidence regarding the impact of stock market liberalization on the cost of equity capital, a possible explanation is that stock market liberalization may lead to a temporary increase in the growth rate of the capital stock, not a permanent increase. The study was concerned with whether well-functioning stock markets and banks promote long-run economic growth. The results are consistent with the views that financial markets provide important services for growth, and that stock markets provide different services from banks. The study found that stock market size, volatility, and international integration are not robustly linked with growth, and that none of the financial indicators is closely associated with private saving rates.

Stock market liberalization is a specific type of a more general policy reform called capital account liberalization, which is a decision by a country's government to remove restrictions on capital inflows and outflows more generally (Henry, 2000a). In analyzing the impact of stock market liberalization, numerous researchers focus on the impact of different areas such as real economy, investment, and market integration. In terms of the impact on stock market prices or returns, many studies reveal that stock market liberalization has a positive impact. Liberalization is most likely accompanied by an increase in the amount of research done on individual stock and market conditions in the equity markets. This will lead to improved information availability to both foreign and domestic investors.

Henry, (2000a) employs an event study approach that compares the growth rate of private investment during stock market liberalization episodes with the growth rate of private investment during non-liberalization periods. The study comprised a sample of 11 developing countries that liberalized their stock markets. The study found that the mean growth rate of private investment in the three years immediately following stock market liberalization exceeds the sample mean by 22 per cent. This shows that there was a temporary increase in growth rate of private investment after liberalization. However, there is a question whether omitted variables or reverse causality can explain the investment liberalization correlations. The analysis here is motivated by the fact that the political decision to liberalize a country's stock market may be endogenous. Henry (2000a) argues that governments, in general, have an incentive to liberalize the stock market when there is good news about the future. Specifically, liberalizations may be timed to coincide with (1) high points in the world business cycle, (2) the implementation of other economic reforms, and (3) positive shocks to aggregate demand and the terms of trade.

Levine (2000) used data from 15 emerging economies to assess whether international financial liberalization, by improving the functioning of domestic financial markets and banks, accelerates economic growth. The study used Perron's (1989) test for structural breaks to evaluate whether stock market liquidity changes after the policy change date. The study found that liberalizing restrictions on international portfolio flows tends to enhance stock market liquidity. In turn, enhanced stock market liquidity accelerates economic growth primarily by boosting productivity growth.

Bekaert and Harvey (2000) proposed and used a cross-sectional time-series model to assess the impact of market liberalizations in emerging equity markets on the cost of capital, volatility, beta, and correlation with world market returns. Across a range of specifications, the cost of capital always decreases after capital market liberalization. Their study found evidence consistent with the hypothesis that stock market liberalization causes a one-time revaluation of emerging market stock prices and a fall in the cost of capital.

Kim and Singal (2000), examined the benefits and risks associated with opening of stock markets. Their study found that stock returns increase immediately after market opening without an increase in volatility. Stock markets become more efficient as determined by testing the random walk hypothesis. The sample in the study consisted of the emerging stock markets that are followed by the International Finance Corporation (IFC) in its Emerging Markets Database.

Isendi (2000) carried out a study on the factors that determine investment demand for securities in the NSE using data from January, 1998 to March, 2000. The study showed that information provided by companies was not comprehensive enough for investors to use in decision-making. It also found the market to be inefficient and too illiquid for investors to take advantage of price

changes. However, the study was not studying the impact of liberalization. Also, the data used were from 1998 which is past the NSE liberalization date of 1995. It is, therefore, not possible to analyse the impact of liberalization of NSE in 1995 to its performance and GDP growth.

Fuchs-Schundeln and Funke (2001) analyzed the effects of stock market liberalization on financial and macroeconomic development using a cross-sectional data from twenty-seven countries. The study found an increase in real private investment growth by 6 percentage points in the second year after liberalization and cumulatively by about 14 percentage points in the four years following liberalization. The study also found a rise in real GDP per capita growth of about 1 per cent during the first four years after liberalization and a permanent growth effect of about 0.4 per cent per annum. The study concluded that growth tends to be higher where institutional reforms precede liberalization. The study also concluded that stock market and private investment appear to be two important and interrelated channels through which liberalization enhances real growth. It found that stock market liberalization stimulates stock market development which facilitates private investment, which in turn stimulates growth. The study also concluded that growth tends to be higher where institutional reforms precede liberalization.

Ngugi (2003b) did a study on liquidity of NSE and found that although foreign investors enhance trading activity; their significant contribution to liquidity is curtailed by their noise trading behaviour and regulatory system that transient institutional investors thrive on for trading activity. The study found that enhancing the pull factors for foreign investors in the market is important in order to experience gains in trading activities. This could be coupled with creation of a favourable macroeconomic environment for investment. The study invoked the microstructure theory for empirical analysis testing for market response of trading activity and liquidity of the NSE to the implemented institutional and policy reforms during the revitalization

process. The research did not analyse the impact of liberalization on stock market performance and economic growth.

Tswamuno, Pardee and Wunnava (2007) in their study on financial liberalization and economic growth asserted that liberalization of the equity and bond markets in South Africa did not stimulate economic growth. The study opined that even though liberalization undoubtedly led to a sharp increase in capital flowing into South Africa, investor speculation, caused by an unhealthy macro-economic environment and political uncertainty led to huge fluctuations of capital flows and subsequent capital flight. The study demonstrates that liberalization of the capital account is a necessary, but not sufficient requirement for economic development.

Obere (2009) and Nyang`oro (2012) used the APT in their separate studies to predict normal returns of firms and market respectively due to portfolio flows. The arbitrage pricing theory (APT) specifies a relationship between expected return and risk and depends on the assumption that a rational equilibrium in capital markets precludes arbitrage opportunities. This study will focus on the impact of liberalization on liquidity and private investments. Obere (2009) looked at statistical distribution of returns focusing on firm returns. The study used APT to predict normal returns of firms. The study was not looking at the impact of stock market liberalization. Nyang`oro (2012) used monthly data from April 1996 to December 2011, to investigate the effect of portfolio flows on the performance of Nairobi Securities Exchange (NSE), using a multifactor pricing model. The study observed that foreign portfolio flows push stock prices up when they come in which may be due to increased demand. The study postulates that flows by internal investors are important in determining stock market returns as purchases by local investors push prices up. Hence, active participation of local investors is necessary to drive liquidity as it has a positive impact on returns. It also reflects confidence in the market in

situations where information asymmetry exists between local and foreign investors. In contrast, this study focused on stock market development which is proxied by market capitalization and liquidity level and not firm or market returns. The study also used quarterly data from 1991 to 2012 unlike Nyangoro (2012) that used monthly data from 1996 to 2011.

Olweny and Kimani (2011) carried out a study on causality between stock market performance and economic growth for Kenya using the Granger Causality Test approach technique. The study found that Nairobi Stock Exchange is seen to give lenders of capital an immediate access to their funds while simultaneously offering borrowers a long-term supply of capital. This could be a source of economic growth. The study opined that the stock market being a major component in the financial sector of most developing economies such as Kenya, serves a pivotal role in contributing towards economic growth in these countries. Stock markets fuel economic growth through diversification, mobilizing and pooling of savings from different investors and availing them to companies for optimal utilization. Stock markets are a vital component for economic development as they provide listed companies with a platform to raise long-term capital and also provide investors with a forum for investing their surplus funds. However, the study did not focus on impact of liberalization on stock market performance.

2.4 OVERVIEW OF THE LITERATURE REVIEW

In summary, the above literature shows the beneficial effects of liberalization to stock market liquidity and economic growth. It is also clear from the various studies cited above that liberalization is most effective in emerging economies. Emphasis was placed on literature that covered stock market liberalization. Many countries which have already opened up their stock markets to foreign investors need to understand its effects on the domestic economy before deciding whether they should open up more of their markets or reverse the policies.

Even though there are many studies on stock market liberalization, this study differs from their studies in some dimensions. First, the data used were from 1991 to 2012 so as to enable the study to examine both pre and post-liberalization periods. Second, the study used a detailed country level analysis since it was focusing impact of stock market liberalization in Kenya only. Bekaert and Harvey (2000), Kim and Singal (2000), Levine and Zervos (1998a), Levine and Zervos (1998b), Henry (2000a), Levine (2000) and Fuchs-Schundeln and Funke (2001) examined the effects of financial liberalization in a cross-country setting and Kenya was not among the countries under their study. There is a possibility of differing results in the case of Kenya. Third, the study closed the knowledge gaps by looking into impact of stock market liberalization on stock market performance and economic growth in Kenya. The studies by Obere (2009), Nyang`oro (2012), Olweny and Kimani (2011) and Isendi (2000) were not specifically analyzing the impact of stock market liberalization.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

The broad objective of this study was to measure the impact of stock market liberalization on economic growth in Kenya. This chapter discusses the data and empirical model used to measure this objective. To determine whether stock market liberalization produces positive effects, it is necessary to ultimately observe its effect on economic growth. To better understand the mechanisms behind the liberalization effects, two potential channels through which liberalization can foster growth are focused, namely; its impact on stock market capitalization and its subsequent impact on stock market liquidity. It is assumed here that stock market liberalization will increase market capitalization through foreign portfolio investments.

3.2 RESEARCH DESIGN

A research design encompasses the methodology and procedure employed to conduct a research. The choice of a research design is critical as far as every research is concerned. For the purpose of this study, non-experimental design was used. The reason is because data are already in existence and the study was intended to examine the impact of one variable on the other variable.

3.3 MODEL SPECIFICATION

The focal variables in the analysis were measures of economic growth and stock market performance. Gross domestic product (GDP) was used as a measure of the level of economic growth while market capitalization (% of GDP) was used as a proxy for liberalization and turnover ratio (TOR) was used to reflect the level of stock market performance. The control variable used to avoid possible omitted variable bias is Gross fixed capital formation (% of GDP)

as a proxy of investment (INV). Thus, the framework contains four variables – GDP growth rate, turnover ratio, market capitalization and investment.

The study used a vector autoregressive (VAR) framework to examine the relationship between stock market liberalization, stock market performance and economic growth. This was done after testing the variables of the model for unit root using the Augmented Dickey Fuller (ADF) unit root test to determine the variables' stationarity property.

The VAR methodology is used to test interdependence relationships among variables. In a VAR framework, all variables are treated as endogenous and a theoretical framework is not necessary.

Denote X = (GDP, TOR, MC, INV), the following VAR model is used in the analysis;

$$X_t = \alpha i + \sum_{i=1}^{n} \beta i X_{t-1} + u_t \quad \text{.....3.1}$$

Where;

$X_t = \begin{bmatrix} GDP \\ TOR \\ MC \\ INV \end{bmatrix}$ which is a vector of variables and β_i are vector of coefficients, α_i is a vector of constant terms while u_i is a vector of error terms. GDP is growth rate of gross domestic product, TOR is turnover ratio, and MC is stock market capitalization (% of GDP), while INV is investment as proxied by gross fixed capital formation as a percentage of GDP.

If all the variables of the model were integrated of the same order, for example, I(1), then a Vector Error Correction Model (VECM) could have been constructed in which all variables enter the above model in their first differences. However, since the variables were not cointegrated, an unrestricted VAR model was estimated. In this case, variance decomposition permits inferences to be drawn regarding the proportion of the movement in the particular time series due to its own

earlier "shocks" in relation to "shocks" arising from other variables in the VAR model while the impulse response function traces the time path of the effects of "shocks" of other variables contained in the VAR on a particular variable. From the estimated VAR, Impulse-response functions (IRF) and variance decompositions (VDC) were estimated as a basis for inferences.

The impulse-response functions trace temporal responses of a variable of interest to its own innovations and innovations of other variables in the model. Thus, from the IRF, temporal responses of economic growth (GDP) in relation to improvements in stock market performance can be noted and vice versa. Meanwhile, the VDC attribute the variable's forecast error variance to shocks in other variables and, accordingly, allows the assessment of relative importance of stock market liberalization in accounting for variations in economic growth and vice versa.

3.5 DEFINITION AND MEASUREMENT OF VARIABLE

Economic Growth (GDP): Economic growth is defined as the increase in a nation's ability to produce goods and services over time as is shown by increased production levels in the economy. The study used GDP per capita growth rate as a measure of the level of economic growth as it focuses on actual domestic production per person which has a bearing on the general welfare of a country's citizens GDP per capita is the preferred measure of economic growth in line with studies by Ibrahim, 2011; Levine & Zervos, 1996 and Zivengwa et Al., 2011.

Turnover ratio (TOR): Turnover ratio was used as proxy for stock market performance. The turnover ratio is commonly used as an indicator for stock market activities within the financial system (Levine & Zervos, 1998a). Stock market liquidity is the degree to which an asset or security can be bought or sold without causing a significant movement in the price and with minimum loss of value. Liquidity is characterized by a high level of trading activity. To measure

stock market liquidity, the study used the Turnover Ratio, which equals the value of stock transactions divided by market capitalization.

$$\text{Liquidity} = \frac{\text{Total Value Traded}}{\text{Market Capitalization}}$$

Stock market liquidity is expected to have a positive correlation with economic growth (Levine and Zervos 1998a).

Market capitalization (MC): Market capitalization was used as a proxy for stock market liberalization. Stock market liberalization increases market capitalization or size of the stock market through foreign portfolio investment. Market capitalization refers to the product of outstanding shares and market price of equities on a stock exchange. This captures the organised trading of company stocks as a proportion of national output and should thus be positively related with economic growth. Market capitalization as a percentage of GDP is preferred measure of stock market development as it is used to show the growth in terms of size of the stock exchange (Ibrahim, 2011; Levine and Zervos, 1996 and Zivengwa et Al., 2011).

Investment (INV): Investment refers to an increase in capital stock in the economy and is one of the traditional determinants of economic growth. Investment can also enhance the operation of the stock market which eventually feeds into the growth of the economy (Levine & Zervos, 1998a, Zivengwa et Al., 2011). Gross fixed capital formation (% of GDP) is used as a proxy for real investment since time series data for domestic investment are not readily available. Economic theory suggests that increased Foreign Portfolio Investment resulting from liberalization is supposed to stimulate economic growth since it boosts the supply of capital and lowers the cost for local investment (Tswamuno, Pardee, & Wunnava 2007).

3.6 DATA SOURCES

The study used secondary quarterly market level data from the period January, 1991 to December, 2012. The data was obtained from The NSE Fact book, NSE information desk, NSE monthly bulletins, Central Bank of Kenya Statistical Bulletins and CMA and NSE Annual Reports & Accounts (Various years). Data from the Kenya National Bureau of Statistics (KNBS), the Central Bank of Kenya and the World Bank were also used.

3.6 DATA ANALYSIS AND INTERPRETATION

The variables were found to be integrated of different orders and, therefore, not cointegrated. Since there was no cointegration, an unrestricted VAR was used to make inferences on the impact of the stock market liberalization on economic growth. Impulse response functions and variance decomposition functions were analysed from the unrestricted VAR. The Engle-Granger test was used to give the causality relationship among variables.

CHAPTER FOUR

EMPIRICAL FINDINGS

4.1 INTRODUCTION

The data are quarterly spanning the period 1991 quarter one to 2012 quarter four. Data on GDP growth rate and Gross fixed capital formation were obtained from the Kenya National Bureau of Statistics and World Bank data base. Meanwhile, the market capitalization and turnover ratio data are from the Nairobi Securities Exchange. All the data were only available annually and thus a frequency conversion to quarterly was done using Eviews. The frequency conversion was done using the linear-match last method. This inserts the low observation value into the last period of the high frequency data, and then performs linear interpolation on the missing values.

4.2 EMPIRICAL FINDINGS

4.2.1 Stationarity Test.

As a preliminary analysis, each time series variable is subjected to ADF test to test for stationarity. If variables are not stationary in levels appropriate differencing is required until the variables become stationary. Both drift and constant terms are included in the test equation and use the AIC for the optimum lag order in the ADF test. The results for unit root tests in levels are presented in table 4.1. The ADF tests showed that GDP and INV were stationary in levels at the 5% level of significance. This was so because the ADF test statistics were less than the critical values, implying that they were integrated of order 0 that is I (0).

Table 4.1: ADF Unit Root Tests at Levels

Variable	ADF test Statistic	1% critical Value	5% critical Value	10% critical Value	Result
GDP	-3.515998**	-4.080021	-3.468459	-3.161067	Stationary
INV	-3.587224**	-4.068290	-3.462912	-3.157836	Stationary
MC	-2.423758	-4.080021	-3.468459	-3.161067	Non Stationary
TOR	-2.740791	-4.073859	-3.465548	-3.159372	Non Stationary

*Note: the test equations include both drift and trend terms. The lag order in the ADF test equation is based on AIC. *, ** and *** denotes significance at 1%, 5% and10% respectively.*

After first differencing (table 4.2), the results showed that MC and TOR were still not stationary and further differencing was required.

Table 4.2: ADF Unit Root Tests at First Differences

Variable	ADF test Statistic	1% critical Value	5% critical Value	10% critical Value	Result
MC	-2.411263	-4.080021	-3.468459	-3.161067	Non Stationary
TOR	-2.468203	-4.073859	-3.465548	-3.159372	Non Stationary

*Note: the test equations include both drift and trend terms. The lag order in the ADF test equation is based on AIC. *, ** and *** denotes significance at 1%, 5% and 10% respectively.*

After second differencing (table 4.3), the results showed that market capitalization and turnover ratio become stationary at the 1% level of significance. This meant that these two variables (MC and TOR) were integrated of order 2 that is I (2).

Table 4.3: ADF Unit Root Tests at Second Differences

Variable	ADF test Statistic	1% critical Value	5% critical Value	10% critical Value	Result
MC	-5.135727*	-4.086877	-3.471693	-3.162948	Stationary
TOR	-12.82632*	-4.073859	-3.465548	-3.159372	Stationary

*Note: the test equations include both drift and trend terms. The lag order in the ADF test equation is based on AIC. *, ** and *** denotes significance at 1%, 5% and 10% respectively.*

Since the variables were integrated of different orders, they could not be cointegrated and thus the study could not proceed to construct a vector error correction model (VECM). The study, therefore, considered an unrestricted VAR model which was constructed using stationary variables.

An appropriate optimal lag length was found to be 4 using both the Akaike Information Criteria (AIC), the Schwarz information criterion (SC) and Hannan-Quinn information criterion (HQ). Table 4.4 presents the VAR lag order selection criteria. The lowest value for each criterion is its chosen VAR lag length.

Table 4.4: Optimal lag length

Lag	AIC	SC	HQ
0	13.66069	13.78067	13.70876
1	8.922068	9.521928	9.162390
2	7.598476	8.678224	8.031056
3	7.965660	9.525297	8.590498
4	6.133551*	8.173076*	6.950647*
5	6.310924	8.830337	7.320278
6	6.224939	9.224240	7.426550
7	6.574075	10.05326	7.967945

** indicates lag order selected by the criterion*
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Table 4.5 shows the estimated VAR model. From the estimated VAR, variance decomposition and impulse response functions are generated. Each variable entered the model according to its order of integration which means the number of times a variable should be differenced to achieve stationarity. DDMC and DDTOR shows that market capitalization and turnover ratio respectively were differenced twice i.e. they were integrated of order 2. GDP and investment were integrated of order 1.

Table 4.5: Estimated VAR Model

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

	DDMC	DDTOR	GDP	INV
DDMC(-1)	-0.049451	0.005827	-0.013500	-0.011361
	(0.11963)	(0.02189)	(0.02679)	(0.01589)
	[-0.41338]	[0.26620]	[-0.50401]	[-0.71496]
DDMC(-2)	-0.056006	0.005917	-0.016468	-0.012067
	(0.11975)	(0.02191)	(0.02682)	(0.01591)
	[-0.46767]	[0.27001]	[-0.61413]	[-0.75853]
DDMC(-3)	-0.014682	-0.001626	0.007653	-0.008994
	(0.10969)	(0.02007)	(0.02456)	(0.01457)
	[-0.13385]	[-0.08101]	[0.31161]	[-0.61730]
DDMC(-4)	-0.401745	0.081814	0.025462	0.078791
	(0.11727)	(0.02146)	(0.02626)	(0.01558)
	[-3.42571]	[3.81274]	[0.96963]	[5.05778]
DDTOR(-1)	0.078756	-0.019268	0.025379	0.019231
	(0.41431)	(0.07581)	(0.09277)	(0.05504)
	[0.19009]	[-0.25416]	[0.27356]	[0.34943]
DDTOR(-2)	0.098344	-0.018001	0.034542	0.020507
	(0.41341)	(0.07564)	(0.09257)	(0.05492)
	[0.23789]	[-0.23797]	[0.37314]	[0.37343]
DDTOR(-3)	-0.006664	0.000933	-0.017091	0.007504
	(0.39423)	(0.07213)	(0.08827)	(0.05237)
	[-0.01690]	[0.01293]	[-0.19361]	[0.14330]

DDTOR(-4)	-1.100649	-0.901449	0.015170	-0.089785
	(0.39441)	(0.07217)	(0.08831)	(0.05239)
	[-2.79066]	[-12.4913]	[0.17177]	[-1.71375]
GDP(-1)	-0.552430	0.001167	1.639729	0.014326
	(0.58470)	(0.10698)	(0.13092)	(0.07767)
	[-0.94481]	[0.01091]	[12.5242]	[0.18446]
GDP(-2)	0.495995	-0.016058	-0.673298	-0.009189
	(1.15464)	(0.21127)	(0.25854)	(0.15338)
	[0.42957]	[-0.07601]	[-2.60418]	[-0.05991]
GDP(-3)	-0.495392	0.078641	-0.257352	-0.050771
	(1.15920)	(0.21210)	(0.25957)	(0.15398)
	[-0.42736]	[0.37077]	[-0.99147]	[-0.32971]
GDP(-4)	0.436746	-0.091757	0.221342	0.055694
	(0.59343)	(0.10858)	(0.13288)	(0.07883)
	[0.73596]	[-0.84504]	[1.66572]	[0.70651]
INV(-1)	-0.462750	0.070491	0.046689	1.785488
	(0.82669)	(0.15126)	(0.18511)	(0.10981)
	[-0.55977]	[0.46602]	[0.25223]	[16.2593]
INV(-2)	0.467779	-0.049940	-0.037867	-0.797516
	(1.63499)	(0.29916)	(0.36610)	(0.21718)
	[0.28611]	[-0.16693]	[-0.10343]	[-3.67206]
INV(-3)	-0.016100	-0.034619	0.196836	-0.098020
	(1.62722)	(0.29774)	(0.36436)	(0.21615)
	[-0.00989]	[-0.11627]	[0.54022]	[-0.45347]
INV(-4)	-0.018186	0.054926	-0.198905	0.078341
	(0.81033)	(0.14827)	(0.18145)	(0.10764)
	[-0.02244]	[0.37045]	[-1.09622]	[0.72781]
C	0.614553	-0.724044	-0.066860	0.583330
	(2.79785)	(0.51193)	(0.62649)	(0.37166)
	[0.21965]	[-1.41433]	[-0.10672]	[1.56955]
R-squared	0.368234	0.712207	0.964049	0.983410
Adj. R-squared	0.212723	0.641366	0.955199	0.979326
Sum sq. resids	224.0005	7.499425	11.23122	3.952576
S.E. equation	1.856384	0.339670	0.415678	0.246595
F-statistic	2.367890	10.05357	108.9370	240.8078
Log likelihood	-157.5550	-18.28535	-34.84406	7.973457

Akaike AIC	4.257440	0.860618	1.264489	0.220160
Schwarz SC	4.756394	1.359572	1.763443	0.719114
Mean dependent	0.023449	0.003578	0.448710	17.95020
S.D. dependent	2.092204	0.567194	1.963869	1.715019
Determinant resid covariance		0.002363		
Determinant resid covariance		0.000933		
Log likelihood		-179.3517		
Akaike information criterion		6.032969		
Schwarz criterion		8.028785		

4.2.2 Granger Causality Tests

Granger causality tests results are presented in table 4.6. The results show that there is a uni-directional causality that runs from stock market development to economic growth. Stock market development also had an indirect impact on economic growth in Kenya via its significant influence on investment.

Table 4.6: Granger Causality Tests using Lag 4.

Null Hypothesis:	Observations	F-Statistic	Probability
DDTOR does not Granger Cause DDMC	82	1.93205	0.1142
DDMC does not Granger Cause DDTOR		4.10231	0.0047
GDP does not Granger Cause DDMC	82	1.69327	0.1608
DDMC does not Granger Cause GDP		0.31659	0.8660
INV does not Granger Cause DDMC	82	0.80536	0.5257
DDMC does not Granger Cause INV		6.38187	0.0002
GDP does not Granger Cause DDTOR	82	0.68656	0.6036
DDTOR does not Granger Cause GDP		0.07866	0.9886
INV does not Granger Cause DDTOR	82	0.03199	0.9980
DDTOR does not Granger Cause INV		0.00984	0.9998
INV does not Granger Cause GDP	84	0.95358	0.4381
GDP does not Granger Cause INV		0.06412	0.9923

The variables used to measure stock market liberalization (market capitalization) and stock market performance (turnover ratio) in the study showed that they had a positive influence on investment which is the main determinant of economic growth. The results also indicated a significant relationship that runs from investment to economic growth which is correctly supported by theory. One interpretation of this transmission mechanism is that a stock market that is larger in size leads to higher investment opportunities, rendering stock market investments a better pointer of aggregate investment. Therefore, the results revealed that there is evidence for a demand following hypothesis (GDP growth rate causes stock market capitalization) and also evidence for a supply leading hypothesis via the investment channel.

4.2.3 Variance Decomposition

Variance decomposition functions track deviations in each of the variables. They break down the forecast error variance into components that can be directly attributed to each of the endogenous variables. These results depend on the ordering of the variables and thus presumably exogenous variables are ordered first and those that are presumably endogenous are ordered last. In this study, the variables have been ordered as follows; DDMC, DDTOR, GDP and lastly INV. Table 4.7 show the variance decomposition for these variables. The forecast horizon is 10 years. The standard error for the forecast horizon is almost constant.

Table 4.7: Variance Decomposition functions

Variance Decomposition of DDMC:

Period	S.E.	DDMC	DDTOR	GDP	INV
1	1.856384	100.0000	0.000000	0.000000	0.000000
2	1.883975	97.89703	0.550401	1.257324	0.295248
3	1.898816	96.82764	0.855067	1.854800	0.462491
4	1.926521	94.30142	1.103297	4.040369	0.554914
5	2.148726	93.10691	2.575814	3.733960	0.583316
6	2.149759	93.02892	2.576335	3.736309	0.658434
7	2.153401	92.74950	2.567920	3.884484	0.798100
8	2.159559	92.22979	2.553417	4.329448	0.887348
9	2.224509	88.32026	6.392987	4.421285	0.865467
10	2.226414	88.16932	6.398029	4.565771	0.866879

Variance Decomposition of DDTOR:

Period	S.E.	DDMC	DDTOR	GDP	INV
1	0.339670	12.13382	87.86618	0.000000	0.000000
2	0.340452	12.16075	87.62793	0.001520	0.209797
3	0.341080	12.14301	87.40582	0.024547	0.426617
4	0.341862	12.08936	87.06847	0.359652	0.482515
5	0.452435	7.767144	91.64728	0.205967	0.379607
6	0.454569	8.021239	91.00996	0.581868	0.386935
7	0.456052	8.153447	90.52902	0.931257	0.386279
8	0.460850	8.013806	88.72099	2.835929	0.429275
9	0.531174	10.35148	86.75054	2.574690	0.323289
10	0.532580	10.52520	86.48734	2.582993	0.404466

Variance Decomposition of GDP:

Period	S.E.	DDMC	DDTOR	GDP	INV
1	0.415678	11.96173	8.042761	79.99551	0.000000
2	0.792089	10.62032	7.982217	81.38046	0.017003
3	1.141110	9.204857	7.853899	82.86945	0.071796
4	1.402700	8.469763	8.413992	82.58778	0.528466
5	1.587887	8.608591	9.092318	80.57836	1.720727
6	1.715299	9.035734	9.823716	77.37021	3.770342
7	1.805450	9.581586	10.45087	73.68690	6.280647
8	1.870284	10.18302	10.91339	70.25693	8.646659
9	1.915835	10.69125	11.35275	67.56045	10.39555
10	1.945766	11.16658	11.71688	65.72810	11.38844

Variance Decomposition of INV:

Period	S.E.	DDMC	DDTOR	GDP	INV
1	0.246595	0.386249	18.87123	0.264322	80.47820
2	0.502615	0.137519	18.36019	0.373144	81.12914
3	0.772274	0.073055	17.85131	0.537438	81.53819
4	1.026097	0.231251	17.27878	0.560053	81.92992
5	1.260439	0.426767	17.74546	0.551895	81.27587
6	1.466009	1.443347	18.15678	0.482521	79.91735
7	1.640478	3.173081	18.37174	0.409778	78.04540
8	1.782193	5.211419	18.34445	0.347572	76.09656
9	1.882675	6.244880	18.39171	0.341348	75.02206
10	1.951886	6.719893	18.51232	0.377123	74.39067

Cholesky Ordering: DDMC DDTOR GDP INV

Variance Decomposition of DDMC shows the variance decomposition of stock market capitalization or size. Most of the deviations in stock market size are attributable to its own shocks with an average of 93.7% in all the periods. GDP has the biggest contribution of the deviation in market capitalization with an average of 3.2%. Investment contributes the lowest of the deviation in market capitalization in all the periods.

Variance Decomposition of DDTOR shows the variance decomposition of turnover ratio. From the table, it can be seen that turnover ratio is not purely exogenous; all the shocks are not attributable to its own shocks for any given period. Much of the deviation in turnover ratio is attributable to market capitalization (MC) with 12.1% in first period and an average of 10.1% in all periods. Investment and GDP contribute an average of 0.3% and 1% respectively of the deviation in turnover ratio indicating that the relationship between TOR with GDP and investment is weak.

Variance Decomposition for GDP shows the variance decomposition of GDP growth rate. The variable measuring economic growth (GDP) is highly exogenous in the first period with 79.99% of the deviation in the variable attributable to its own shocks. The impact of its own shock declines over time up to 65.7% by the tenth period indicating the importance of other variables that explain economic growth. Much of the deviation in GDP in the tenth period is attributable to MC (11.2%). The variables measuring stock market performance, namely; market capitalization and stock turnover ratio contributes an average of 10% and 9.6% respectively to deviations in GDP growth rate. This shows that stock market development plays a role to economic growth.

Variance Decomposition for INV shows the variance decomposition of investment. Investment is a highly exogenous variable with an average of 79% of deviation in the variable being a result of its own shocks. Turnover ratio is the most significant in explaining shocks in this variable as shown by an average of 18.2% in all the periods. This shows that turnover ratio is a major determinant of investment in Kenya, a result that tallies with the conclusions from granger causality tests.

4.2.4 Impulse Response Functions

The graphs for impulse response functions are presented in figure 4.1.

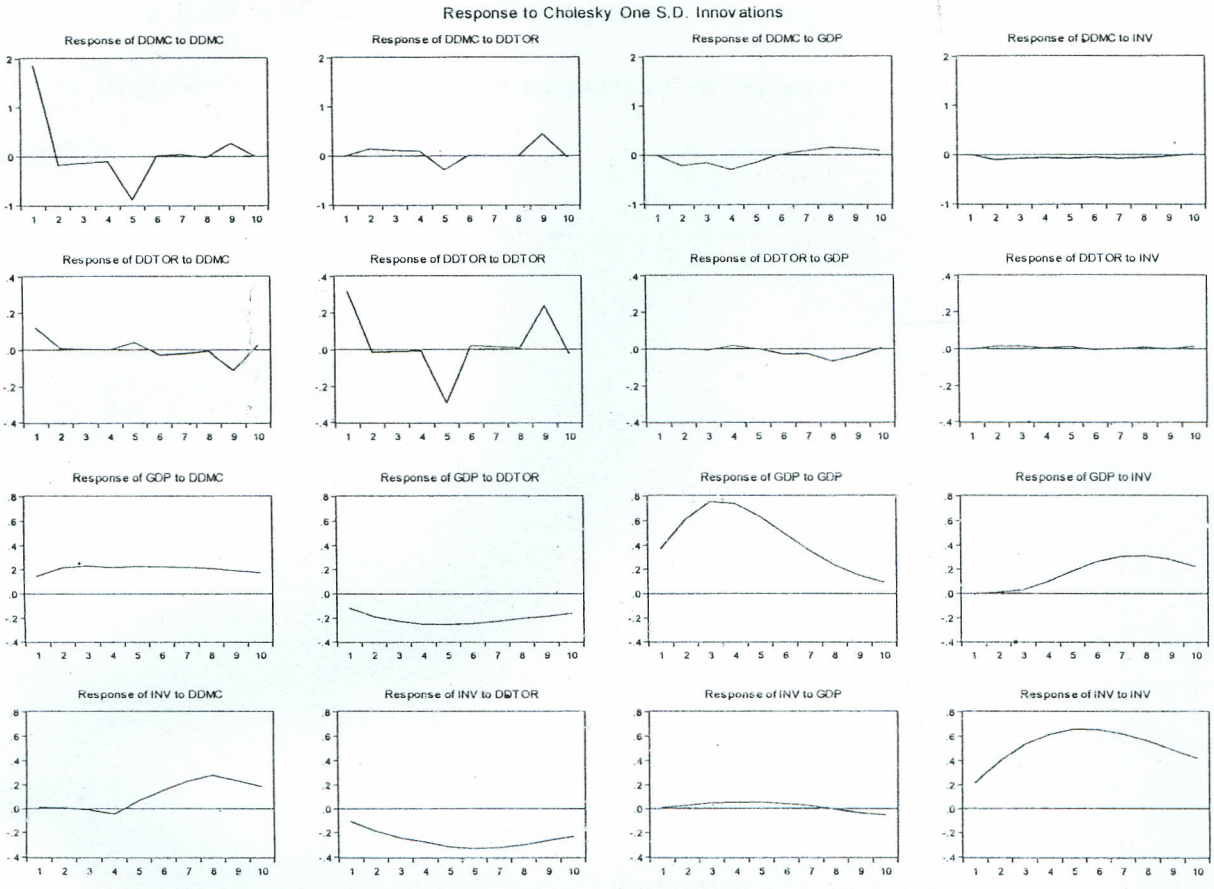

Figure 4.1: Impulse Response Functions

Impulse response functions show how innovations of given endogenous variables stretch through each and every given endogenous variable and eventually how it affects the original variable itself. These indicate how each endogenous variable responds over time to innovations or shocks to each of the endogenous variables in the model.

In this study, the response of stock market capitalization (DDMC) to turnover ratio (DDTOR), GDP growth rate (GDP) and investment (INV) was insignificant. The response of turnover ratio (DDTOR) is also insignificant to the other variables. The response of GDP growth rate (GDP) to

turnover ratio (DDTOR) was negative for all the periods. The response of GDP to itself, stock market size (DDMC) and investment (INV) was positive for all the periods. The response of investment to itself was positive for all the periods. The response of investment to GDP is positive from period one to seven. The response of investment to liquidity and stock market capitalization was insignificant.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND POLICY IMPLICATIONS

5.1 SUMMARY

The study undertook to test whether stock market liberalization had an impact on economic growth. Stock market liberalization had a significant positive impact on stock market capitalization and liquidity of NSE. The incremental effect of stock market liberalization,as measured by stock market capitalization, consequently had a positive effect on economic growth via investment.

The study also undertook to test whether causality existed between stock market performance and economic growth using time series quarterly data from 1991-2012. The results showed that stock market performance granger causes economic growth. The study employed the vector autoregressive modelling technique. Unit root tests were carried out on the variables using the Augmented Dickey Fuller test. Investment and GDP growth rate were stationary in levels; while stock market size and liquidity were stationary after second differencing.

5.2 CONCLUSIONS

The results of the granger causality tests showed that stock market capitalization had an effect on GDP growth rate. The effect also came via investment, that is, stock market size causing investment and in turn investment causing real GDP per capita. Thus, stock market size attracts investment which will have a significant positive impact on GDP growth rate. This shows that stock market liberalization, as proxied by market capitalization, had a positive effect on economic growth in Kenya. GDP growth rate was found to cause both turnover ratio and market capitalization whilst a reverse causality existed between investment and stock market size.

The results of the variance decomposition however, showed that stock market size (MC) and turnover ratio (TOR) are significant variables in explaining GDP growth rate. Results reject reverse causality between stock market development and GDP growth rate in favour of a one-way causality running from stock market capitalization and turnover ratio to GDP per capita. The impulse response functions largely showed that stock market performance had an insignificant effect on GDP growth rate.

5.3 POLICY IMPLICATIONS

The results, in general, suggest that stock market capitalization and turnover ratio have a positive influence on real GDP per capita. Granger Causality tests as well as variance decomposition show an indirect positive effect of stock market capitalization on real GDP per capita via investment. It may be, on this basis, necessary to advocate for policies that can substantially influence stock market capitalization and turnover ratio with the hope that they will significantly increase real GDP per capita.

Given that the results show that there is a positive influence of the stock market on economic growth, it is of utmost importance that the government prioritises the development of the stock market. This can be done through relaxing laws and regulations that have to do with listing requirements for both local and foreign investors so as to encourage more listings on the bourse. This will ensure that there are more players on the stock exchange and thus increases competition and quality of securities investments resulting in a significant influence on economic growth. The relevant authorities can also encourage more trading on the stock market even for the already listed stocks. This can also be achieved through the enactment of favourable laws governing trading in securities such as electronic trading and timely disclosure of accurate

information. Such policies would significantly increase stock market activity with resultant positive spin-offs for the economy even without going via investment.

The impact of stock market capitalization on economic growth also operates via investment. It is thus incumbent upon government to ensure that they develop the financial sector to levels where market capitalization will directly influence growth. One way of doing this is by ensuring efficiency in stock market trades. In the case of Kenya, there is a strong case for policy recommendation to further develop the stock market as a driver of economic performance.

5.4 SUGGESTIONS FOR FURTHER RESARCH

As noted, the study did not examine the supervisory and regulatory imperatives of the NSE. This could be a possible area for further research. It would be interesting to assess if liberalization helped to improve the supervisory and regulatory policies of NSE. The impact of stock market liberalization to stock market volatility due to increased foreign investment is another area of further research.

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APPENDICES

APPENDIX I: Raw Data

Year	GDP per capita growth (annual %)	Gross fixed capital formation (% of GDP)	Market capitalization of listed companies (% of GDP)	Stocks traded, turnover ratio (%)
1990	0.727110224	20.64819763	5.284426275	2.100840336
1991	-1.870589794	19.03009714	5.55726698	2.428256071
1992	-3.968770791	16.58137009	7.759661783	2.201834862
1993	-2.762326572	16.93761611	18.42905643	1.649970536
1994	-0.432663066	18.87307148	43.08808039	2.995169082
1995	1.423012801	21.38558662	20.84825608	2.617801047
1996	1.308570394	16.00905817	15.32476023	3.59056806
1997	-2.154414336	15.38790076	13.90692864	5.776566757
1998	0.652169016	15.67521329	14.36072205	4.106029106
1999	-0.300534859	15.59143148	10.92881398	4.316444927
2000	-1.993521692	16.70880651	10.09881652	3.526128972
2001	1.062195447	18.15155736	8.084095712	3.410362255
2002	-2.116593629	17.23687985	10.82368779	2.940712613
2003	0.186536722	15.83820913	28.03320389	7.456509941
2004	2.299490344	16.25922348	24.17454021	8.542627628
2005	3.091881113	18.69911176	34.06994149	9.825829006
2006	3.519506154	19.08038312	50.55977256	14.63244911
2007	4.173919161	19.36664752	49.14901729	10.64122501
2008	-1.14644589	19.43557648	35.83254664	11.83070729
2009	0.02285788	19.64994271	35.15010408	4.58892663
2010	2.998183793	20.30509846	44.86687141	8.598364668
2011	1.601073799	19.98299696	29.7192731	7.119665887
2012	1.771526347	20.38879514	39.61297385	8.066701902

Source: KNBS, NSE and World Bank Databank