THE RELATIONSHIP BETWEEN STOCK MARKET LIQUIDITY AND ECONOMIC GROWTH IN KENYA

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DECLARATION

This research project proposal is my original work and has not been submitted for the award of a degree at the University of Nairobi or any other university.

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BY SUPERVISOR

This research project proposal has been submitted for the examination with my approval as the candidate's Supervisor;

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MR. MWACHITI

Supervisor

DEDICATION

To my family for their continued support in my life's pursuits, to the University of Nairobi, Lenana School and Sony Complex Primary School for molding me to whom I am to date. I would like to make a special dedication to my wife Bridget Okoth for her strategic view of life and her influence to the pursuit of my goals, thank you for being the rock in my life. To my mother, Mrs. Zilpher Oracha, who always has faith in my abilities and all my accomplishments, thank you for always being around and ensuring that my abilities are realized.

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LIST OF ABBREVIATIONS

ADF	Augmented Dickey-Fuller
AIC	Akaike Information Criterion
ARDL	Autoregressive Distributed Lag
CMA	Capital Markets Authority
CBK	Central Bank of Kenya
EAC	East African Community
EPZ	Export Processing Zones
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GoK	Government of Kenya
IPO	Initial Public Offering
KENGEN	Kenya Electricity Generating Company Limited
KES	Kenya Shillings
LSE	London Stock Exchange
NSE	Nairobi Securities Exchange
SEX	Special Economic Zones
SIC	Schwarz Information Criterion
VAR	Vector Auto Regression
WDI	World Development Index

ABSTRACT

A stock market is a creation of the financial ecosystem, with the primary aim of driving efficient capital formation and allocation. The stock market also acts as an enabler to both the public and private sectors to finance new initiatives as well as drive growth and innovation through raising of long-term capital. The paper examined the relationship between stock market liquidity and economic growth in Kenya. Researcher employed the ordinary least squares regression (OLS) using quarterly time series data running from 2010 to 2014, together with Augmented Dickey Fuller (ADF) for testing stationary as well as Bounds Testing for cointegration for existence of long run relationships between variables. Using Wald test for bound testing, it was found out that the variables in the model were co-integrated, meaning presence of a long run relationship between economic growth and the various variables in the model. The results from Granger Causality test established unidirectional causality running from stock market liquidity (LIQY) to gross domestic product growth rate (GDPG). The paper concludes that stock market liquidity impacts growth in Kenya in the long run and insignificantly in the short-run.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Stock markets provide myriad of benefits to an economy. World over, stock markets enhance formation, accumulation and allocation of capital in economies. Levin (1991) notes that, in addition to provision of trading, arbitrage, speculation, investment and hedging platform to market participants, stock markets act as mechanisms for price discovery and information dissemination. Olweny and Kimani (2011) observe that stock markets act as vehicles for capital mobilization – they enable corporations and countries to raise long term capital which in turn supports funding of new projects and expansion of operations. These in turn boosts economic performance as various productive economic sectors can access capital.

The prominence of the stock market in Kenya's economy has steadily risen, and has become a cornerstone of the economic growth witnessed of late through the ability to allow ordinary citizens to participate in the trading of securities. Several high-profile IPO's have been conducted within the past decade with the highest profile ones being KENGEN IPO (2006) and Safaricom IPO (2008). These IPO's increased the number of participants in the stock market by some conservative estimates up to tenfold.

There are two divergent views on the stock market liquidity effects on economic growth. One school of thought posits that a liquid market may hamper growth by granting investors the ability to quickly trade in their portfolios thus minimizing the incentive for institution of proper controls and direction to the corporate managers.

Conversely, stock market liquidity is viewed as a key pillar of economic growth through the re-direction of capital to the most profitable ventures and giving firms ready access to capital at minimal costs.

Several studies undertaken in the past decade or so have more or less re-affirmed the correlation between financial development (both Banking sector and the Stock market) and economic growth – the focus of this paper is the stock market and more specifically the stock market liquidity, a measure which has not received its fair share of scrutiny and yet by far is the best proxy for market performance and its associated effects on economic growth.

1.1.1 Stock Market Liquidity

A stock market acts as one of the key economic institutions designed primarily to promote capital formation and increase efficiency in capital allocation. The stock market is also a medium through which private and public sector players can finance projects both new and ongoing.

Initially, this was not the case as Traditionalist theorists believed that financial markets generally had no correlation with economic growth, a proposition that led to several studies that have since debunked this line of thought. Several studies have been conducted that have consistently shown the relation between stock markets and economic growth. Some of these studies include Abu (2009), Solarin et al (2011) and Olweny 2011. In his paper, Osinubi (2007) goes further to argue that assuming rationality in resource allocation, capital resources should be provided to industries that do have the capacity and capability of increasing their production and productivity. In cases where the opposite happens, then

the rate of expansion of the economy suffers, thus clearly showing that the stock market is an important intermediary in attaining economic growth and is perceived to have a positive relationship with economic growth. He further contends that corporate entities benefit from the stock market in the form of provision of long-term debt financing and equity capital and a continuous source of capital for development and/or expansion and this has a positive impact on economic growth.

Majority of profitable investments are long term and require a long run commitment of capital argues Levin and Zervos (2010) in their paper whose underpinning theme is that liquid markets are of essence to growth. Savers who typically tend to be risk averse usually are not willing to commit their savings or wealth for longer periods, hence; stock markets provide an avenue through which such investors are able to participate since it will be providing assets which can be sold quickly and economically.

Ceteris paribus, it would be reasonable to argue that liquid markets encourage participation by investors since they are able to invest in both short term and long term projects while retaining the ability to economically sell their stake and recover their wealth and also participate in profit distribution. This therefore, means that higher stock market liquidity, translates to lower barriers to investment in both short term and the long-run projects which has the effect of increasing returns due to the reduction in attendant financing costs.

Stock markets are an integral component of economic growth in twofold. On the one hand the stock market allows for listed entities to raise long term funding at economical costs while on the other hand providing an avenue for investors with surplus resources to invest them and earn returns. Through the forces of supply and demand, it therefore creates a

market place for resources which are then directed to their most rewarding use. This results in economic growth which generates more need for resources which are then again raised through the Stock market, Alile (1984).

The Stock market plays a fundamental role in providing the secondary market for investors and financial institutions willing to trade their securities. A liquid market is characterized by a number of features; key among them is that it is a market where large transactions can be executed with minimal or no impact on security prices Brunnermeier et al. (2009).

Sarr et al. (2002) identifies four principal categories of liquidity measures. Financial assets trading costs and secondary markets trading frictions are captured by the first category referred to as the transaction costs measures. Volume-based measures fall under the second category and differentiate liquid markets based on the volume of transactions in relation to variability of market prices. On the other hand, Market price movements towards the equilibrium price are captured by the equilibrium price-based measures principally to measure the resiliency of the market. Finally, the fourth category deals with market-impact measures. In this category markets are differentiated based on the difference between change in prices due the level of liquidity from alternate factors, such as receipt of new information or established market conditions for gauging the speed of price discovery and market resiliency.

In undertaking this study, all these factors are important; however, the study lays emphasis on two key measures that will act as the best proxies for liquidity in a stock market in the Kenyan context. The first will be the ratio of total value of shares traded to GDP also referred to as the value-traded-to-GDP ratio. This measure is critical since the value of

shares traded as a share of GDP is likely to change depending on the ease with which traders are able to execute orders. It does not take into account the transaction costs involved, however, it can act as a proxy for ease of trade which takes into account the transactions costs, thus if it is very difficult or expensive to trade then the ratio would be low. The second is the value of shares traded as a fraction of total value of stocks traded on the stock market – the market capitalization. The indicator should give a positive correlation as shown in Levine (1996) where greater turnover was a true predictor of faster growth.

1.1.2 Effect of Stock Market Liquidity on Economic growth

Literature observes that stock markets boost economic growth through provision of secondary markets to investors and financial markets. This is typically achieved through lowering of costs in a stock market that then allows for investment into dynamic technologies. (Nowbutsing & Odit, 2011)

Stock price determination left to an efficient market goes a long way in helping investors make sound investment decisions and allocate capital to the most profitable ventures.

Given that most investments require long term commitment of funds, liquid stock markets act as a buffer in reducing the downside risks to such investments by giving the investors a large latitude of flexibility in terms of accessibility and decisions concerning their savings. Yartey and Adjasi (2007).

In a liquid market, Investors are not beholden to project lifespans, but rather can quickly liquidate their investments even prior to the project completion by easily (without much time and effort) and cheaply (through low transaction costs) disposing their stakes and

gaining access to their funds. This allows for greater investments in long term projects that are both profitable and underpin long-term economic growth.

The downside is that a market that is too liquid can also encourage undesirable business takeovers that stifle growth and innovation in the medium to long term. Another aspect of liquidity is the rigor that investors put into holding managers to account especially when they hold no significant stake. Once an investor has the ability to quickly sell off or buy stocks, they typically do not become as involved if their stake is not significant compared to an investor holding significant stake. This may result in corporate governance issues which may adversely affect economic growth. As evidenced in Levine (2003) liquid markets tend to shift investor focus from corporate control to profit making through shares trading in the secondary market due to ability to quickly and cheaply transact. -and end up causing both investor myopia and diffusion in project ownership, Yartey and Adjasi (2007). Levine (2003) proceeds to bring up an interesting point by questioning the overall economic efficiency assuming a misallocation of resources due to mismanagement arising from reduced investor scrutiny driven by liquid markets which further impales the ability of the economy to project efficiency.

From economic theory, price changes usually result in two types of effects – substitution or income effects. Should income effect dominate substitution effect, any increase in returns to savings in a more liquid market will lead to a lower savings rates (Barth et al.2004). Contrariwise, if savings drop satisfactorily, mobilization of capital for projects becomes difficult.

Liquid markets allow for frequent transactions due to ease and minimal cost. From behavioral economics, this typically results in more incentives for investors to spend in other areas of the economy. This drives economic growth from both the demand and supply side. In addition, given the relative ease of investing in the stock market, this affects savings rate as well as incomes since liquid markets provide an alternate higher yield channel. This is so since such markets give investors alternatives with higher yields/risk and are efficiently priced compared to debt saving, thereby providing increased utility to those who save as well as higher returns on savings. Efficiently priced higher yield/risk alternatives are made possible by the accumulation of expertise while utilizing economies of scale and make this available to the public. (Dalsenius 2007). Whether or not this also leads to higher savings rates does, however, depend on whether the income or substitution effect, with respect to present and future consumption, dominates (Mukhopadhyay et al. 2011).

Liquid markets in the true sense of the word operate on the premise of directing capital from borrowers to lenders efficiently through the reduction of both information and transaction costs while promoting information asymmetry between both sellers and buyers, (Dalsenius 2007). This is ambiguous, because despite the fact stock markets are instrumental in reducing informational costs as well as minimizing costs, more often than not the latter is achieved at some cost. Nowbutsing et al. (2011) argues that possibility to minimize agency costs exists in scenarios where there is only one longer term manager or owner. However, agency costs are bound to surge where there is reduced observability due to varied and short termed ownership arrangements in liquid markets. Hence it cannot be concluded with certainty that liquid market results into minimal agency costs. Ideally, it is

expected that stock market capitalization gives potential investors reliable information regarding performance of a firm e.g. through dividend policy.

Per Dalsenius (2007) stock market usually directs issuing of stock where a company sells its shares to a first-hand holder of stock stand for a very small percentage of the total trades that go there. Hence it might seem to a casual eye that the often-speculative trading forth and back of stocks have little to do with any efficient allocation of resources that might promote growth. But equity is essentially an infinite stream of uncertain incomes and most investors have predetermined time horizons for their investments.

The expected continuation of an efficient market where the investor can trade the equity off for an efficient price, at the time of his choosing, is therefore; extremely essential for how the investor will value the equity at the time of purchase. Only then will each holder of stock from the initial issuer be able to expect getting the optimal utility of the equity and therefore be willing to pay appropriately. If inefficiencies and high transaction costs can be expected further down the line, they will affect the price that the initial issuer of stocks can get for the equity (Barber at el. 2001).

Subsequently if a company wishes to use equity to finance its projects, then an efficient allocation of resources can occur only if the stock markets are efficient (liquid). But instead of issuing equity, a company might choose to issue debt or a very frequently, a combination of the two. Therefore, to obtain funds for present activities in exchange for future income flows (which is uncertain) firms can use both debt or equity financing. Literature suggest that where equity markets are not efficient, the efficiency of accessing present funding is likely to be compromised and so is the impact on growth (Dalsenius 2007).

Levine and Zervos (2010) posit that economic growth effects of stock market liquidity are not dependent on banking sector development. They argued that rapid economic growth is experienced in economies where banking sector is well developed and stock markets are liquid while in economies with superficial financial sector development combined with illiquid stock markets, there tends to be a deceleration in economic growth. Despite the level of bank development, the country with a higher liquid markets experience faster economic growth and on the other it also experiences faster growth when it has a developed banking sector with illiquid stock markets. Consequently, liquid stock markets impact on economic growth irrespective of banking development.

Moreover, while countries with more liquid markets enjoy superior efficiency and rapid growth, there is need for further investments in equity markets besides financing through sale of new equity. Retained earnings and bank loans plays a major role on most corporate capital creation. Albeit this incident is not wholly understood, if the corporate equity raise so does the market liquidity in developing countries. This is because the rise in capital raised through bank loans and bonds is highly linked to greater stock market liquidity. Stock markets tend to accompaniment not replaced bank and bond issues.

1.1.3 Economic Growth

Economic growth in its most literal sense is simply the increase of an economy's output over a given period. A variety of factors can contribute to economic growth which then translates to rising per capita output. In linking economic growth to the stock market and further to its liquidity, this study examines the overall breadth and depth of financial systems of which the Stock market is an integral part. The financial system through the

stock market contributes to economic activity that translates to growth through several channels.

First and foremost, the stock market is instrumental in producing relevant information and allocating capital. In all countries, especially the developing countries, the high cost of capital necessitates prudent allocation to the most productive activities with the overall assumption that information costs are negligible. The intermediary role of the financial systems and more specifically through the stock market between savers and borrowers is paramount in underpinning access to capital for firms and redistributing risk from individual savers.

Secondly, the stock market as a larger part of the financial system plays a major role in applying incentives and hindrances to borrowers through the creation of an environment that allows savers or shareholders to effectively monitor how their funds are being used. This translates to greater corporate governance which in turn translates to actions that drive shareholder value.

Third is that the stock market through various financial instruments provide a platform for the trading, hedging and pooling of risk. This considers the different risk appetites of individual savers and aggregates it thus diversifying the risk. This is an important role as most high return investments also tend to have a high-risk profile.

1.1.4 The Nairobi Securities Exchange

Stock market dealings in Kenya date back to the 1920s when the country was a British protectorate. During this period to early 1950s stock market trading was done on gentleman's agreement basis with physical trading floor completely non-existent. Rules

and regulations to guide brokerage activities were not formal. It was until 1953 when the London Stock Exchange (LSE) officially reorganized NSE as an overseas stock exchange. The registration of NSE under the provisions of the Societies Act was done in 1954 giving NSE the mandate to regulate activities of stock market in Kenya. Furthermore, during its infant periods, transaction activities were mainly conducted through telephone or over a cup of tea and determination of prices depended entirely on negations between the trading parties.

During the first post-independence ten years, NSE was a regional stock market for the East African Community mostly listing industrial shares and public securities particularly those that were issued by Kenya, Uganda and Tanzania governments. In 1968 there were 66 public securities listed at the stock market with Kenyan Government owning 45 percent, Tanzanian Government 23 per cent and Uganda owning 11 per cent. With the collapse of the East African Community (EAC) in 1975, NSE delisted securities domiciled in Uganda and Tanzania.

The year first privatization that was concluded through the NSE was in 1988 the GoK sold 20 per cent of its stake of the Kenya Commercial Bank. In 1990s NSE experienced various developments including: the 1990 establishment of CMA in accordance to the provisions of the Capital Markets Authority Act of 1990 mandating CMA to promote and facilitate efficient capital market in Kenya; the incorporation of NSE under the Companies Act in 1991. The International Finance Corporation in 1994, ranked the NSE 20-Share Index as a top performing stock market, after achieving a return of 179 per cent in dollar standings. These developments among others resulted into the escalation of the number of stock

market actors – from stock brokerage firms to investment banks, listed firms, credit rating agencies as well as establishment of custodial institutions.

The privatization of Kenya Airways in 1996 brought on board over one hundred thousand investors and was the largest share issuance in the history of the NSE and subsequently reduced GoK ownership from 74 per cent to 26 per cent. With the intention to further spur activity in the NSE, the government expanded the scope for foreign investment in 1998 through the removal of Capital Gains Tax and the setting up of tax-free Venture Capital Funds. In November 2004, the Central Depository System was introduced which enables the automation of transactions settlement at NSE.

The NSE trading hours increased from 2 to3 hours (10am – 1pm) and subsequently increased to 5 hours (10am – 3pm). The new system combined increased clarity in the placing of bids and offers together with increased capabilities in market surveillance. It further introduced near real-time transmission of trading information.

Per Georgakopoulos (1996) disclosure of information enhances market efficiency since the informed traders are able to obtain information at no cost thereby ensuring efficiency in the market exchange. To this effect, the CMA has for decades now published guidelines on standards of disclosure for listed firms. These cover requirements for public offerings as well as continued reporting regulations.

1.2 Statement of the Problem

This study establishes the impact of stock market liquidity on the long run economic growth in Kenya. This is because most studies in several countries focus on the stock market development and not singularly on the stock market liquidity. The few studies that have looked at stock market liquidity have been done in developed countries apart from

Chipaumire and Ngirande (2014) which focused solely on South Africa and Abdul-Khaliq (2013) which was focused on Jordan. This study therefore focuses on Kenya and applies modified tests to investigate the link between liquidity of the stock market and economic growth. There is some evidence that stock market liquidity has a greater impact on the long run economic growth compared to market size, and this study will try to test if this also applies to Kenya. Again, liquidity of the stock market is said to be firmly related to economic growth though one or two studies fails to see its impact on growth, in this study we will see in the context of Kenya whether there is, if at all, a relationship between stock market liquidity and economic growth and the direction of the relationship.

From elementary economics, one of the key planks of economic growth is the rate of capital formation which is a function of savings and investment as well as inflow of foreign capital. For most developing countries, post the global financial crisis of 2008, FDI drastically reduced as most advanced economies faced recession and this resulted in more focus in capital formation from domestic markets. This has led to a growth and strengthening of the stock markets.

The developments above have thrust stock market to the forefront of funds attraction. Stock markets attract funds through pooling of domestic savings by offering savers a channel through which to invest at relatively inflation beating rates of return. It has also been documented that FDI flows at higher rates to markets that are liquid and of course in conjunction with rules and regulations that allow for ease of cross border movement of funds. Stock market also acts as a barometer of economic performance which provides the strongest market signal to investors on the highest yield markets.

However, most studies focus on the financial sector development alone of which the Stock market is a part, and its effect on economic growth. This study goes a step further and tries to link the liquidity of the stock market to economic growth, with the expectation being that decoupling stock market liquidity from financial sector development can give a clear indication of its impact on economic growth and therefore provide policy solutions to regulators on how to maximize its positive impacts and minimize the destructive one.

This study therefore attempts to address the gap in linking stock market in general and specifically its liquidity to the economic growth in Kenya.

1.3 Research Objective

Overall, this study aims to examine the relationship between the liquidity of the stock market and economic growth in Kenya.

The paper seeks to specifically answer the following research question;

i. What is the relationship between stock market liquidity and economic growth in Kenya?

1.4 Significance of the Study

This paper is significant on two fronts. The first is that Kenya being a developing economy and one of the top African economies projected to grow fastest in the coming decades, stock market liquidity then becomes an important aspect as its breadth, depth and resilience act in concert to promote investor participation in the stock markets as well as build investor confidence.

Secondly, a market that is liquid enough promotes transactions both in terms of numbers as well as volumes. This, in the most basic aspect, acts as a rough bell-weather of economic performance as it will result in more investors preferring to trade at the NSE and from institutional economics reduce the cost of establishing market prices due to the huge numbers of buyers and sellers which then promotes market efficiency and in turn increased returns.

In summary, the stock market liquidity – growth nexus is of significant interest since being able to quantify the level of economic growth attributable to stock market development and liquidity can guide policy makers in implementing policies that promote stock market efficiencies and in turn generate economic growth. To a large extent this is important in the sense that Kenya being a developing country, would benefit from inflows of foreign investments a good portion of which would come in through the secondary markets of the stock market.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter reviews various studies that link liquidity of the stock market to growth in the economy. The chapter highlights major theories of economic growth and theoretical perspectives of stock market liquidity and economic growth. Subsequent to this will be an empirical review of the relationship between economic growth and liquidity in the stock market, before concluding with a brief literature overview.

2.2 Theoretical Review

2.2.1 Solow Growth Model

The basic model of economic growth is the Solow model developed by Solow (1956) which was an improvement over the Harrod-Domar model which at its best was a delicate balance in a long-run economic system where the rate of increase of the labour force as well as the ratios of savings and capital-output ratio, are the key parameters. The Solow model forms the basis of almost all analyses of economic growth. This theory shows how saving, growth in population and technological advancement induce economic growth over time. The model states that differential growth rates in different countries over time emanates from their differing levels of saving, population and technological progress.

The Solow growth model assumes that production function has constant returns to scale; diminishing returns to each factor input; constant saving rate; exogenous technology; the model also shows how capital accumulation, population growth and technological advancement interact to generate a country's output. The model has faced various criticisms since it fails to consider entrepreneurship which may be one of the vehicles behind

economic growth and also the robustness of institutions which aid economic growth. Moreover, it does not make clear how or why technological progress occurs. These limitations have led to the development of endogenous growth theory, which considers technological progress as an endogenous factor.

In this study, the Solow growth model lays the foundation for growth models. Its weaknesses that are well documented including but not limited to treating capital as homogenous and pliable which it is not and flexibility of factor prices which typically ring difficulties in modelling for steady growth.

2.2.2 Endogenous Growth Model

This model was developed by Romer (1990) and Aghion and Howitt (1992). The model attempts to overcome the weaknesses of the Solow Growth Model by treating technological progress as an endogenous factor within the economy. Moreover, this model argues that additional factors such as institutions, trade policies, government, policy and education/ human capital are key drivers of economic growth.

Abu-Sharia (2003) notes that human capital is developed through improvement in educational level of the labor force by providing quality and specialized training which in the end boosts labor productivity. On the other hand, increased investment on scientific research and development enhances technological progress and innovations whose end product is new methodologies of production and entirely new goods and services.

Hansson (1997) emphasizes that it is only when the structure and functioning of the financial market is effective and efficient that human capital and technological progress can propel economic growth. Therefore, this model suggests that stock market influences

economic growth through three channels, improving capital productivity through allocation of resources from surplus units to deficit units; channeling savings into investment; and boosting economy-wide saving rate. It is for this reason that I adopt this growth model for my study.

2.2.3 Determinants of Economic growth

If economic growth is characterized as a maintained increment of GDP over a particular period, a few elements can precipitate that maintained increment. Taking after traditional development hypotheses, two perspectives can be considered. First is the neoclassical growth hypothesis which considers technological advances and growth in the population to be the primary drivers of growth with accumulation of capital basically deciding the capital to labour proportion in the enduring state. Keynesian growth hypothesis is the second, and which concentrates especially on investment (and savings) as a segment of total demand and as an expansion to the aggregate stock of capital (Pearce, 1986). Considering the traditional determinants of growth, several studies have investigated the various growth and development sources and their different impacts (Ackley, 1970).

Among these sources of development are: capital accumulation, labor supply, output or yield, and other variables. To this degree, the stock market can act as a pool for savings which then spur investment thus impacting economic growth. In this light, the Stock Market can be considered as a factor in determining economic growth.

A country's ability to pool resources in the form of savings that are then channeled to investments is thus important to drive and sustain economic growth and in this respect financial development and specifically the stock market which in its most efficient form

should be liquid enough to allow for the seamless movement of funds between investors and investment vehicles.

Other drives of economic growth include, but not limited to openness too International trade. This is important as it drives countries towards sectors in which they have considerable comparative advantage thus increasing market efficiency. Government expenditure is also a key factor in driving economic growth provided it is oriented towards productive activities and not merely rent seeking.

2.3 Review of empirical studies

In the review of empirical studies, four scenarios can be obtained indicating the nature of the association between development of stock market and economic growth. First is the supply leading hypothesis which posits that there is indication of unidirectional correlation between economic growth and the stock market development. Second line of thought argues that the relationship between the two is bidirectional causality. However, a third line of thought posits that growth in the economy precedes development in the stock market such that as an economy experiences rapid expansion, demand for stock market products increases leading to development of the market. The last scenario postulates that there is no causal correlation between the two factors, namely, development of stock market and economic growth.

In the 2006 study of the relationship between development of stock market and economic growth in the context of Belgium for the period 1831 to 2002, Van Nieuwerburgh et al (2006) findings showcased that economic growth in Belgium is causal to stock market development in the period 1935 to 2002.

In 2006, N'Zue applied time series single-equation analysis to examine the performance of Ivorian stock market and growth of the economy. Utilizing data from 1976 to 2002, the study established a correlation relationship between development of stock market to economic growth is unidirectional. In his model, he adopted market capitalization ratio, turnover ratio and four-firm concentration as his control variables.

Majid (2007) studied short-run dynamics and long-run elasticities between financial sector development and economic growth, by the use data for Indonesia between 1998 and 2006. His ancillary variables were inflation, investment (measured by the ratio of gross fixed capital formation to GDP nominal) and financial development (where total bank deposits liabilities as a share of GDP nominal was a proxy). The study reported that economic growth was more responsive to inflation, investment and financial development in that order.

Deb and Mukherjee (2008) investigated the correlation between real GDP and three stock market development measures namely; stock market capitalization as a share of GDP, volume of shares traded as a share of GDP and volatility which was measured by the moving average of standard deviation of quarterly stock prices. Their results showed that real sector growth impacts stock market performance as well as stock volatility, however, the relationship is unidirectional.

In examining how development of financial sector responds to movements in economic performance, Dawson (2008) applied panel data econometric analysis utilizing data for 44 developing countries for the period 1974-2001. The study revealed that for models that

are consistent with economic theory, financial sector development positively and significantly influences economic performance.

Using a panel for seven SSA countries, Olufisayo (2009) adopted Autoregressive Distributed Lag (ARDL) Model to determine how economic growth responds to developments on the stock market. The study revealed that for South Africa and Egypt, there exists a co-integrating vector between development of stock market and economic growth implying presence of a positive long-run relationship. This affirms that development of stock market granger causes economic growth. Within the Vector Autoregressive (VAR) framework it is evident that a bidirectional relationship exists between development of the stock market and economic growth for Morocco, Ivory Coast, Zimbabwe and Kenya. For Nigeria, the association is weak particularly when market capitalization (market size) is used as a measure for the level of stock market development.

In Mauritius, Nowbutsing (2011) applied data for the period 1989 – 2006. Using market capitalization to GDP ratio and volume of shares traded to GDP as stock market performance proxy, the study found that both long-run elasticities and short-run dynamics of stock market positively and significantly influenced economic growth.

Osamwonyi (2013) use panel data for Kenya Ghana and Nigeria for the period 1989 to 2009 to examine the link between stock market development and economic growth. The study used Granger causality test and regressed five proxies of stock market – value of stocks traded, number of listed securities, stock turnover ratio, stock market capitalization and stock market index against real GDP. It was revealed that in Nigeria and Ghana there was no causal relationship while a bidirectional causal relationship was evident in Kenya.

Abdul-Khaliq (2013) studied the connection between stock market liquidity and economic growth in Jordan during the 1991-2011 period, using a simple linear regression analysis with stock market capitalization and turnover ratio as the principal proxies to stock market liquidity. Study findings indicate that market capitalization does not exert significant influence on economic growth, while turnover ratio significantly impacts on economic growth rates. On the other hand, Chipaumire and Ngirande (2014), in studying South African economic growth and stock market development, used OLS and time series data for the period 1995-2010, together with Augmented Dickey Fuller (ADF) for testing stationarity. The study concluded that stock market liquidity impacts growth in South Africa.

In examining the role of stock markets in explaining economic growth in Asia, Azam et al (2016) used a panel for Singapore, China, Bangladesh and India, running from 1991-2012. The ARDL results show a long-term co-integration between foreign direct investment, economic growth, inflation and stock market development. Save for China, the other three countries exhibited a positive correlation for economic growth and stock markets.

2.4 Conceptual framework

This study is modelled on the premise that economic growth depends on some factors as identified in the literature.

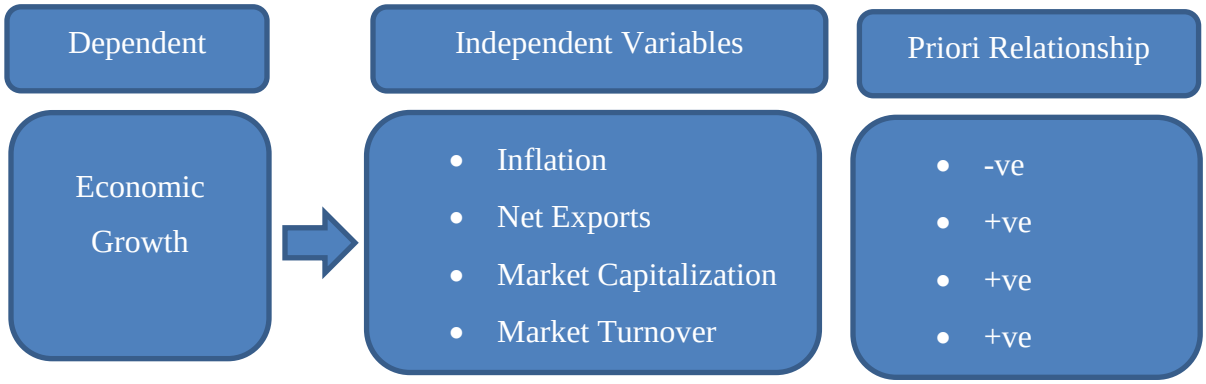
In a standard production function where output (Y) in time 't' is a function of capital (K) and invested in time 't' and labour (L) invested in time 't';

$$Y_t = \propto K_t L_t$$

In looking at capital, we look at the accumulation of capital to fund projects. The ease with which savers and borrowers are brought together such that surplus funds are channeled to where there are deficits is a core function of the financial system. The stock market, as part and parcel of a financial system, is influential in pooling funds for investments in long terms projects. Given the risk inherent in such projects, a liquid market goes a long way in facilitating investor participation.

In looking at the liquidity stock market and based on the literature review, I will focus on size (market capitalization) as well as liquidity (turnover ratio). Given the importance of openness to trade in economic growth, I will go further and include net exports as a variable together with Inflation as a control variable.

Figure 1: Conceptual Framework



2.6 Summary of Literature Review

In academic literature, the stock market liquidity role on economic growth performance has not received the requisite attention, particularly for Kenya given that the NSE is one of the most developed bourses on the African continent with consistent returns over the past two decades.

The literature review is inconclusive on the relationship, whether unidirectional, bi-directional, demand led or independent. Most studies ignore the impact of Inflation which I believe has a very significant impact on growth Majid (2007) and will therefore adopt for my study. Likewise, studies like Nzue (2006) use FDI as proxy for capital inflows which fails to take into account net inflows, I therefore chose to use net exports as a proxy for openness to trade.

There are numerous studies on the relationship between development of financial sector and economic growth in Kenya. However very little knowledge exists to the role that stock market liquidity plays in this whole equation. This study has thus been motivated by the need to place spotlight on the financial development and growth nexus focusing on stock market measures of financial market development and more specifically stock market liquidity which in my view is yet to receive its adequate share of in-depth analysis. The study therefore seeks to examine how Kenya's economic growth responds to changes in Stock market liquidity.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter entails the methods and procedures will employ in investigating the correlation between stock market liquidity and economic growth in the Kenyan economy. It presents the research design and the data sources as well as the data collection method that will be employed. It will show stepwise procedure of the model specification model diagnostic and stability tests, estimation techniques and definition and measurement of the data variables.

3.2 Research Design

The study will adopt quantitative research design. This is because, as Creswell (2013) notes, quantitative research design allows for modeling of scenarios to answer questions on aspect of relationship between variables while holding some factors constant for the purpose of explaining, predicting and controlling certain phenomenon.

3.3 Data Sources and Collection

Based on the literature review conducted and research objectives identified, monthly secondary time series data (2010 – 2014) will be utilized for this study. The data for real GDP at current prices as well as GDP growth will be obtained from the various issues of quarterly economic reports as published by Kenya National Bureau of Statistics (KNBS).

Data on government consumption expenditure, Inflation and Net Exports will be extracted from the Central Bank of Kenya (CBK). The number of shares traded and their price will be obtained from the NSE. These will be further used to compute the market liquidity and

the market capitalization. In obtaining the market capitalization, the study will use the monthly average share prices and the total number of shares issued at stock level and aggregate to obtain full market data.

The study will adopt the approach used by Chipaumire and Ngirande (2014) and combine exports and imports to get net exports then divide it with GDP to get the ratio (TRDY). Data on total value of domestic shares, market capitalization and the turnover will be obtained from the NSE website (NSE).

3.4 Model Specification

The empirical model to be adopted in this study was obtained from the studies of Chipaumire and Ngirande (2014), Levine (2013) and Dalsenious (2007), with minor modifications. Their model follows:

$$\text{Growth}_t = \alpha X + \beta(\text{STK\_LIQ}) + \mu \quad (1)$$

Where X is a set of control variables, alpha is a vector of coefficient on X and Beta is an estimate of the coefficient on the liquidity of the stock market, STK_LIQ, Growth_t is the real GDP growth rate at time t and μ is an error term. The study uses country specific constants and assumes the model below;

$$Y_t = \beta_1 * X1_1 + \beta_2 * X1_2 + \beta_3 * X1_3 + \beta_4 * X1_4 + \beta_5 * X1_5 + \mu_t \quad (2)$$

$X1_1$ to $X5_t$ are the independent variables:

$X1_1$ = Government consumption/GDP,

$X1_2$ = Value of shares traded/GDP;

$X1_3 =$ Market Capitalization/GDP,

$X1_4 =$ The inflation, and

$X1_5 =$ Net exports/GDP.

$\mu_t =$ This is the error term.

B_1 to B_5 are the independent variables' coefficients to be estimated while U_t is the error term.

Following from theory and previous empirical works of Chipaumire and Ngirande (2014), Levine (2013) and Dalsenious (2007) on stock market liquidity and economic growth nexus; the specific econometric model for this study, assuming a constant C, can thus be explicitly expressed as follows;

$$Y_t = C + \beta_1(GOVY) + \beta_2(LIQ\_GDP) + \beta_3(MCAP\_GDP) + \beta_4(PI) + \beta_5(TRDY) + \mu_t \quad (3)$$

Where;

$Y_t =$ GDP Growth

$(GOVY)_t =$ The ratio of government consumption expenditure to GDP;

$$GOVY_t = \frac{Government\ Consumption}{GDP}$$

$(LIQ\_GDP)_t =$ Ratio of total value traded in GDP;

$$LIQ\_GDP_t = \frac{(Listed\ Share\ Price | Number\ of\ shares\ traded)}{GDP}$$

$(MCAP_{GDP})_t =$ Ratio of market capitalization to GDP;

$$(MCAP_{GDP})_t = \frac{(Listed\ Share\ Price|Number\ of\ shares\ issued)}{GDP}$$

$(\mathrm{PI})_t = \text{The inflation rate;}$

$(\mathrm{TRDY})_t = \text{Ratio of exports} - \text{imports divided by GDP;}$

$$(TRDY)_t = \frac{Exports - Imports}{GDP}$$

3.5 Variable Definition and Priori expectations

GOVY & PI – From theoretical economic literature, it has been proven that Government consumption has a positive correlation to economic growth through the increase in output. Further, studies such as King and Levine (2004); Agenor and Montiel (2008) have proven the existence a positive relationship between macroeconomic stability and economic activity.

TRDY – This the fraction of net exports as a fraction of GDP to gauge the level of openness in the economy. This is supported by literature that re-affirms positive correlation to long-run economic growth.

Thus, the above three variables - GOVY, PI & TRDY – are used primarily to estimate the extent of correlation between stock market liquidity and long run economic growth.

MCAP_GDP is included since the belief in upcoming corporate profits will amplify stock market liquidity without entailing a coinciding reduction in transaction costs, also per Levine (2003), market capitalization, is also liable to this price effect.

LIQ_GDP is also a control for the endogenous factors in a market that may influence number and value of shares traded. Given the literature reviewed, I expect a positive correlation in relation to economic growth.

3.6 Analytical Techniques

This study used time series data analysis and the model was estimated in the light of OLS estimation procedure. OLS is simple and widely used in empirical work and will yield best linear unbiased efficient estimator for the model coefficients when the disturbance term is normally, independently and identically distributed i.e. n.i.i.d.

3.6.1 Unit Root Test

Time series data are characterized with unit roots and as a precondition before time series modeling, unit root testing must be conducted to ensure that all variables are stationary, otherwise running the model without ensuring that variables are stationary may lead to illogical results (commonly referred to as spurious results). In checking for unit roots on variables both at level and at first difference, Augmented Dickey Fuller (ADF) test was utilized. Unit root resting is critical for reflecting long-run relationships and alleviates chances of running a spurious regression that results from estimating non-stationary variables.

3.6.2 Co-integration Test

Having checked for unit roots, the study employed Bounds Testing approach to Co-integration as proposed by Pesaran et al. (2001), to check for existence of long-run relationships. This is a powerful technique of co-integration especially when the variables in question have interchanging integration order particularly I(0) and I(1) as depicted in

chapter 3. Error-correction model was then estimated in order to capture the short-run dynamics of the relationships.

3.6.3 Granger Causality Test

The Granger causality test was employed to determine whether GDP growth in Kenya causes stock market liquidity or vice versa. It is imperative to perform the Granger causality test because the presence of co-integration between two variables does not necessarily prove the direction of causality. This test enables one to determine direction of causality between variables.

3.6.4 Diagnostic Tests

Diagnostic tests were carried out to establish whether the model is consistent or not. These tests include test for normality, serial correlation and heteroscedasticity test, and checking for stability of the model using CUSUM test.

CHAPTER FOUR: RESULTS AND DISCUSSION

4.1 Introduction

This chapter documents the results of the tests conducted on the data and a description oif each result.

4.2 Descriptive Statistics

Table 4.1 below indicates the summary descriptive statistics. The average GDP growth rate during the study period was 5.9 per cent. The highest GDP growth rate was 8.7 per cent realized in 2010Q3 while the lowest was 4.3 per cent realized in 2012Q2. Average LQY and MACY was 2.3 and 171.7 respectively. The maximum and minimum LIQY was 4.084 and 1.09 reported in 2014Q4 and 2011Q4 respectively. The maximum and minimum MACY stood at 216.4 and 109.6 reported in 2013Q3 and 2014Q1 respectively.

Table 1: Summary of Descriptive Statistics

	GDPG	GOVY	LIQY	MACY	PI	TRDY
Mean	5.965	25.336	2.307	171.742	8.038	-0.197
Median	5.800	23.104	2.265	175.437	6.888	-0.199
Maximum	8.700	42.463	4.084	216.383	19.187	-0.135
Minimum	4.300	16.469	1.019	109.595	3.333	-0.248
Std. Dev.	1.437	6.983	0.703	31.952	4.828	0.029
Skewness	0.548	1.381	0.356	-0.397	1.133	0.152
Kurtosis	2.059	3.961	3.700	2.192	3.025	2.833
Jarque-Bera	1.738	7.123	0.829	1.069	4.278	0.100
Probability	0.419	0.128	0.661	0.586	0.118	0.951
Sum	119.290	506.718	46.138	3434.836	160.750	-3.946
Sum Sq. Dev.	39.208	926.609	9.384	19398.144	442.964	0.016
Observations	20	20	20	20	20	20
GDPG	1.000					
GOVY	0.263	1.000				
LIQY	0.142	0.188	1.000			
MACY	0.637	0.105	0.088	1.000		
PI	-0.259	-0.188	-0.571	-0.385	1.000	
TRDY	0.096	0.193	-0.095	0.198	-0.462	1.000

The standard deviations were small for the individual study variables signifying that the data used in the study are clustered closely around the mean implying that they do not change a lot and thus more reliable for analysis. The skewness of the variables ranged between -0.4 and 1.4 indicating that the distributions are moderately skewed. Similarly, the kurtosis was greater than zero for all the variables implying the distributions had heavy tails hence leptokurtic.

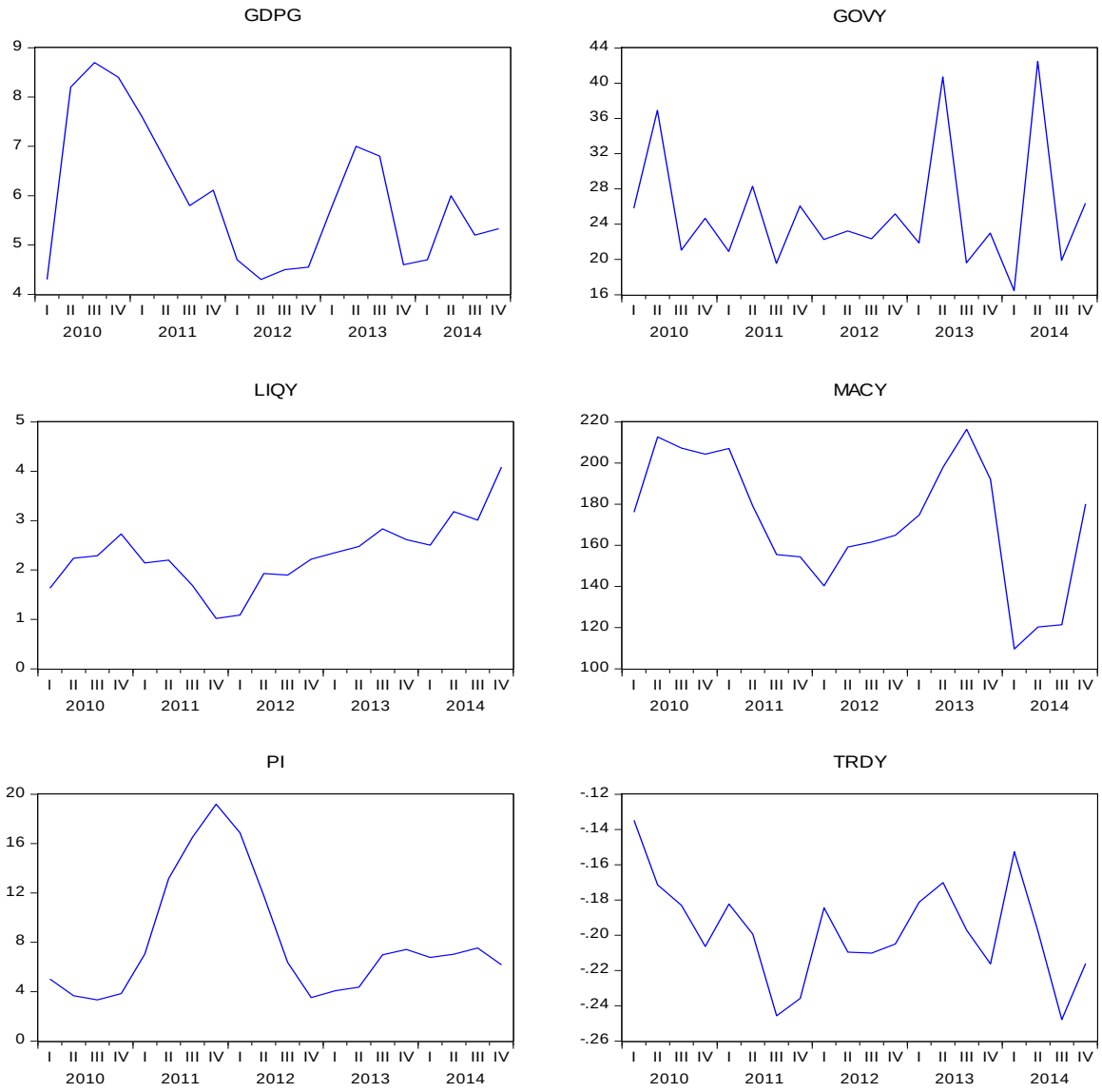
The p-values for the study variables were greater than the conventional 5 per cent leading to the acceptance of the Jarque-Bera null hypothesis that the distribution of the variables is not statistically different from normal.

4.3 Unit Roots Testing

In macroeconomic time series analysis, it is imperative to first examine whether the variables in question are containing unit roots.

Before undertaking unit root testing, there is need to determine whether the variables follow random walks with or without drifts (have a trend or not). This is decided by looking at the graphs of the various variables as shown in **Figure 2** below.

Figure 2: Trend Analysis for Study Variables



The study then adopted the ADF test for unit roots testing. In the Null Hypothesis, the ADF test makes an assumption of presence of unit roots implying non-stationary variables. The test results for this study reveals that the null hypothesis that PI and MACY individually had unit roots at level was rejected implying that these variables are integrated of order zero, I(0). However, GDPG, GOVY LIQY and TRDY were found to individually contain unit roots at level and thus unit root testing was done at first difference for these variables

and the test revealed that upon first difference the variables were stationary as seen in the **Table 2** below.

Table 2: Unit Root Testing

Variables	Intercept	Trend & Intercept	Order of Integration
GDPG	-5.077	-4.766	I(1)
GOVY	-9.814	-6.549	I(1)
LIQY	-4.131	-4.395	I(1)
MACY	-3.321	-3.410	I(0)
PI	-4.047	-3.396	I(0)
TRDY	-5.948	-5.818	I(1)

From unit root testing the study found out that some variables were I(0) while others were I(1). As a result, the study applied the Autoregressive Distributed Lag (ARDL) bounds testing approach by Pesaran et al. (2001) using the general to specific procedure. This approach is normally preferable in estimating relationships where some variables are I(0) while others are I(1). It also presents better results for small samples. First we select the appropriate lag length with the smallest Akaike Information Criterion (AIC) and Schwarz Information Criterion (SIC). For this study the appropriate lag length was one. Once this was done a general model was specified by regressing the differenced dependent variable on first difference of the independent variables lagged once. The model was then tested for serial correlation, heteroscedasticity, normality and stability. The results for the general model are shown in the **Appendix 2**.

4.4 Bounds Testing approach to Co-integration

Pesaran et al. (2004) argues that where ARDL approach is used in regression analysis, the appropriate approach to determining existence of long-run relationship (co-integration) is Bounds Testing. This is an F-Statistics based test where two critical bounds are provided

namely the upper critical bound and the lower critical bound. The golden rule in this test is that when the F-Statistic is greater than the upper bound value, the null hypothesis stating absence of long-run relationship is rejected implying presence of co-integration.

Table 3: F-Statistic for Co-integration Relationship

Wald Test:

Test Statistic	Value	df	Probability
F-statistic	4.131158	(6, 6)	0.1896
Chi-square	12.78695	6	0.0465

Null Hypothesis: C(7)= C(8)= C(9)= C(10)= C(11)= C(12) = 0

Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(7)	-0.464182	0.240732
C(8)	-0.034042	0.093759
C(9)	-2.663104	0.968208
C(10)	-0.020496	0.010912
C(11)	-0.361672	0.11394
C(12)	18.5527	20.93972

Restrictions are linear in coefficients.

Table 4.3 above indicates that for the study model, F-statistic is 4.13. Comparing this to the critical bound values provided in Pesaran et al. (2001) in Table CI (iii) in page 300, it is evident that the variables in this study portray a long-run relationship. Upper bound limit in Pesaran Table is 3.61. Therefore, this study will also conduct an error-correction model in order to capture the short-run dynamics of the dependent variable.

4.5 Long-Run Estimation

Having ascertained presence of co-integration, the next step is to develop the long-run model. **Table 4.4** below shows the estimation of the long-run relationship. As indicated in the table, GOVY has a positive coefficient as was expected, its p-value is less than the conventional 5 per cent level and thus we can conclude that a unit increase in GOVY leads to 0.07 unit increase in GDPG. The variable LIQY also exhibited a positive relationship

with economic growth as was expected. This is certified by the positive coefficient of 1.3 indicating that a unit increase in LIQY results into 1.3 unit increase in economic growth. The p-value for LIQY was found to be significant at 5 per cent significance level. These results are consistent with those found by Nowbutsing (2011), Chipaumire and Ngirande (2014) and Dawson (2008).

The coefficient for MACY was positive and statistically and statistically significant at 10 per cent. These results are similar to those by Olusifayo (2009) and Dawson (2008). TDY also positively and significantly influences economic growth. PI which measures macroeconomic instability negatively and significantly affect economic growth. The p-value is highly significant and a reflective of the results found by Majid (2007).

Table 4: Estimated Long-Run Model

Dependent Variable: GDPG
Method: Least Squares
Date: 11/05/17 Time: 15:08
Sample (adjusted): 2010Q2 2014Q4
Included observations: 19 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.5050	1.6571	2.7186	0.0016
GDPG(-1)	0.5902	0.1960	3.0107	0.0108
GOVY	0.0737	0.0339	2.1712	0.0507
LIQY	1.3102	0.4545	2.8830	0.0478
MACY	0.0899	0.0794	1.0597	0.0602
PI	-0.9728	0.4785	-2.0330	0.0022
TRDY	6.1600	5.6248	1.0951	0.0728
R-squared	0.7185	Mean dependent var		6.0521
Adjusted R-squared	0.5777	S.D. dependent var		1.4199
S.E. of regression	0.9227	Akaike info criterion		2.9544
Sum squared resid	10.2174	Schwarz criterion		3.3023
Log likelihood	-21.0665	Hannan-Quinn criter.		3.0133
F-statistic	5.1040	Durbin-Watson stat		1.7455
Prob(F-statistic)	0.0080			

Serial Correlation Test for the Long-Run Model

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.323561	Prob. F(2,10)	0.7309
Obs*R-squared	1.154802	Prob. Chi-Square(2)	0.5614

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 11/06/17 Time: 14:45
Sample: 2010Q2 2014Q4
Included observations: 19
Presample missing value lagged residuals set to zero.

4.6 Short-Run Dynamics

Important to note is that estimating a model with first differenced variables leads to a loss of crucial long-run equilibrium information. To avoid this, error-correction model is estimated to capture the short-run dynamics of the dependent variable. **Table 5** shows the error correction model estimation.

Table 5: Error-Correction Model Estimates

Dependent Variable: D(GDPG)
Method: Least Squares
Date: 11/05/17 Time: 15:21
Sample (adjusted): 2010Q3 2014Q4
Included observations: 18 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.2652	0.1409	1.8825	0.0965
D(GDPG(-1))	0.7447	0.2262	3.2918	0.0110
D(GOVY(-1))	0.0498	0.0198	2.5117	0.0363
D(LIQY(-1))	0.0033	0.4709	0.0070	0.9946
D(MACY(-1))	0.0226	0.0071	3.1907	0.0128
D(PI(-1))	-0.0560	0.0725	-0.7728	0.4619
D(TRDY(-1))	7.9395	5.3739	1.4774	0.1778
ECT(-1)	-0.6433	0.3363	-1.9129	0.0230
D2013Q2	1.1944	0.6174	1.9346	0.0891
D2013Q4	-2.3229	0.8034	-2.8913	0.0202

R-squared	0.8646	Mean dependent var	-0.1594
Adjusted R-squared	0.7124	S.D. dependent var	0.9289
S.E. of regression	0.4982	Akaike info criterion	1.7445
Sum squared resid	1.9855	Schwarz criterion	2.2391
Log likelihood	-5.7003	Hannan-Quinn criter.	1.8127
F-statistic	5.6781	Durbin-Watson stat	2.8670
Prob(F-statistic)	0.0113		

The above table reveals that stock market liquidity (LIQY) and market capitalization (MACY) positively influence economic growth. The impact of market liquidity is however not statistically significant at least in the short-run. The lagged GDP growth rate (GDPG(-1)) has a positive and significant impact on short-run GDP growth at 5 per cent significance level. Inflation rate (PI) negatively affects short-run economic growth even though the coefficient is not statistically significant. Government consumption expenditure (GOVY) and net exports (TRDY) influences economic growth positively. The error-correction term, ECM (-1) is -0.64 which means that the speed of adjustment is 63 per cent which shows that the model will correct disequilibrium position at the rate of 63 percent quarterly. All the independent variables jointly determined the GDP growth rate in the short-run since the p-value of F-statistics (0.0113) is less than 5 per cent. The Breusch-Godfrey Serial Correlation LM Test results below shows that there is no autocorrelation.

Serial Correlation Test for the Short-run Model

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	2.182049	Prob. F(2,6)	0.194
Obs*R-squared	7.579413	Prob. Chi-Square(2)	0.062

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 11/06/17 Time: 15:25
Sample: 2010Q3 2014Q4
Included observations: 18
Presample missing value lagged residuals set to zero.

4.7 Granger Causality Test

Granger (1969) postulates that where a relationship exists between two variables then it does not necessarily mean that the variables can be used to predict each other i.e. presence of a long0-run relationship does not necessarily prove causality. Granger suggests that we can say that X causes Y if Y can be better predicted using the historical values of both X

and Y rather than only using historical values of Y. In this study we establish whether GDP growth causes stock market liquidity or the stock market liquidity causes GDP growth. **Table 4.6** below gives Granger Causality Test results indicating a unidirectional causality running from stock market liquidity to GDP growth since the p-values are less than 5 per cent. These results for unidirectional relationship between LIQY and economic growth are similar to thouse found by N'zue (2006) for the Ivorian stock market, Deb and Mukherjee (2008), and Olusifayo (2009). However these results are dissimilar to those found by Osamwonyi (2013) who found a bidirectional relationship for Kenya.

Table 6: Granger Causality Tests

Pairwise Granger Causality Tests
Date: 11/06/17 Time: 16:34
Sample: 2010Q1 2014Q4

Direction of Causality	P-Value	Lag	Decision	Outcome
LIQY does not Granger Cause GDPG	0.0012	2	Reject H0	LIQY Causes GDPG
GDPG does not Granger Cause LIQY	0.3158	2	Accept H0	GDPG does not Cause LIQY
LIQY does not Granger Cause GDPG	0.0153	4	Reject H0	LIQY Causes GDPG
GDPG does not Granger Cause LIQY	0.2928	4	Accept H0	GDPG does not Cause LIQY
LIQY does not Granger Cause GDPG	0.0155	6	Reject H0	LIQY Causes GDPG
GDPG does not Granger Cause LIQY	0.1363	6	Accept H0	GDPG does not Cause LIQY

CHAPTER FIVE: SUMMARY, CONCLUSION AND POLICY RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the study, conclusions, policy recommendations and areas for further research.

5.2 Summary of the Study

This study empirically explored the effect of stock market development on economic growth in Kenya. Particularly, the study focused on stock market liquidity and market capitalization as the key measures for stock market development. The study also sought to examine the nature and direction of causality between economic growth and stock market liquidity. The study employed quarterly time series data running from 2010 and 2014 owing to the scarcity of stock market data.

The macroeconomic variables used included government consumption expenditure, inflation rate and net exports. The model was estimated using ARDL bound testing approach to co-integration and error-correction models. Unit root tests were conducted using Augmented Dickey Fuller test to ensure that the time series variables are stationary. The tests indicated that all variables were integrated of first order save for inflation rate (PI) which was integrated of order zero. This prompted the use of ARDL approach to econometric modelling since there was a mix of I(0) and I(1) variables.

Using Wald test for bound testing, it was found out that the variables in the model were co-integrated, meaning presence of a long run relationship between economic growth and

the various variables in the model. The model estimates indicate that the stock market liquidity positively and significantly impact economic growth in long-run but not significant in the short-run. Also market capitalization as a measure of stock market development positively and significantly impact on economic growth both in the short and long run. The results from Granger Causality test established unidirectional causality running from stock market liquidity (LIQY) to gross domestic product growth rate (GDPG).

In addition, government consumption expenditure (GOVY) has positive and significant impact on economic growth both in the short and long run while net exports (TRDY) has a positive and significant impact on economic growth in the long-run and has positive but insignificant impact on economic growth in the short-run. On the other hand, inflation rate (PI), which is a proxy for macroeconomic uncertainty in the economy, was found to have a negative and insignificant impact on economic growth in the short-run and negative and statistically significant impact on the economy in the long-run.

5.3 Conclusions

To attain the 10 per cent per annum economic growth rate as envisioned in the Kenya's economic blue print – Vision 2030, stock market development through market capitalization and stock market liquidity are crucial elements in this endeavour. The study has empirically demonstrated a unidirectional causality running from stock market liquidity to economic growth and further proved existence of a positive relationship between economic growth and stock market liquidity as well as market capitalization. As a result, a lower-middle income country like Kenya, among other factors should keenly relook and the operations of the NSE particularly the stock market liquidity and market

capitalization with a view to enhance efficiency of trading systems of the market, tax rules, legal and operational environment which could hinder the working of the market.

Statistical evidence of this study has also revealed the critical role played by government investment activities, net exports and macroeconomic stability in enhancing the productive capacity of the economy. It is therefore prudent that these indicators are closely and continuously monitored to ensure that they trend along the requisite trajectories.

5.4 Policy Recommendations

This study has revealed important elements that can help the Kenyan economy and other developing economies to enhance economic productive capacity through stock market development.

The stock market liquidity as a measure of stock market development has been found to play a positive and statistically significant role in affecting GDP growth rate in Kenya. Hence, the important policy question is: what should policy makers do to enhance stock market liquidity? The policy actions should focus on measures that lead to increments in stock market liquidity such as appropriate tax laws, stimulating stock market investments, ensuring economic and political stability and boosting investor confidence in the stock market. The rationale for this recommendation is based on the fact that improved legal and operational environment for the workings of stock market has the overall effect of enhancing stock market trading and encouraging investments through the stock market, both foreign and domestic. Similarly, economic and political stability increase investor confidence thereby improving operations within the stock market.

In this study, government consumption expenditure recorded a positive and statistically significant impact on economic growth rate. Therefore, the study recommends continued government spending particularly on productive sectors of the economy such us manufacturing, agriculture, education, housing etc., since through multiplier-effect such expenditures result into employment creation, boosting of incomes and creation of an enabling business environment. These elements are key in propelling economic growth. Thus, policy makers should ensure that government controls spending and only spend in productive sectors.

Empirical results also show that the inflation has positive and significant impact on economic growth. The policy actions should focus on measures that limit inflation within the governments' upper limit of 7.5 per cent. Thus, the monetary authority should ensure prudential conduct of the monetary policy in controlling inflation. Improving net exports is also key to economic growth. The government should support export activities through optimal custom taxes, encouraging investments in export processing zones (EPZs) and special economic zones (SEZs) and any other export promoting activities.

Finally, the study also found unidirectional causality which runs from stock market liquidity to economic growth. In this regard, policy actions should focus on measures that promote liquidity of the stock market.

There is a great potential of boosting economic performance through stock market development. And as such ensuring macroeconomic stability as well as political stability can greatly ensure increased involvement of investors in the stock market thereby supporting growth.

5.5 Limitations of the study and areas for further research

The principal limitations to this study is that it relied on a very small number of observations (20) owing to the unavailability of time series data pertaining to liquidity and market capitalization variables. The study used quarterly data spanning 2010-2014 period resulting into a small sample size that exposes the estimation to Type II error. A Type II error is committed when the results confirm the hypothesis on which the study was based when, in fact, an alternative hypothesis is true. A sample size that is too small increases the likelihood of a Type II error skewing the results, which decreases the power of the study.

Another limitation of the study is that certain pertinent variables that determine economic growth were not included e.g. technological advancement, human capital etc. thereby limiting the predictive power of the model.

The paper therefore recommends that a further research be done using a larger sample size spanning longer time period and that is inclusive of all pertinent economic growth drivers such technology and human capital.

APPENDIX

I Appendix 1 – Data for the Research Paper

	GDPG	GOVY	LIQY	MACY	PI	TRDY
2010Q1	4.3	25.8173	1.633908	176.1511	5.033333	-0.1348
2010Q2	8.2	36.91874	2.240384	212.697	3.676667	-0.17146
2010Q3	8.7	21.06314	2.288877	207.2014	3.333333	-0.18302
2010Q4	8.4	24.68129	2.731221	204.3107	3.843333	-0.20633
2011Q1	7.6	20.91346	2.145042	207.0448	7.05	-0.1823
2011Q2	6.7	28.29803	2.202173	179.1045	13.16	-0.19931
2011Q3	5.8	19.56301	1.686879	155.4895	16.50667	-0.24562
2011Q4	6.11	26.06681	1.01859	154.3829	19.18667	-0.23574
2012Q1	4.7	22.26774	1.089325	140.2835	16.87	-0.1844
2012Q2	4.3	23.22172	1.926579	159.1925	11.77667	-0.20952
2012Q3	4.5	22.34475	1.898817	161.5996	6.383333	-0.21006
2012Q4	4.55	25.171	2.218101	164.9059	3.53	-0.20488
2013Q1	5.8	21.88109	2.351701	174.7225	4.076667	-0.18121
2013Q2	7	40.69266	2.475131	197.9847	4.366667	-0.17012
2013Q3	6.8	19.62692	2.834077	216.3828	6.996667	-0.1971
2013Q4	4.6	22.9858	2.61548	192.0284	7.423333	-0.21624
2014Q1	4.7	16.46882	2.503384	109.5954	6.78	-0.15261
2014Q2	6	42.46344	3.182702	120.2627	7.033333	-0.19771
2014Q3	5.2	19.90012	3.010787	121.3807	7.543333	-0.24784
2014Q4	5.33	26.37185	4.084351	180.1152	6.18	-0.21599

II Appendix 2 – General Model Results

A1. Regression Results

Dependent Variable: D(GDPG)
Method: Least Squares
Date: 11/05/17 Time: 11:50
Sample (adjusted): 2010Q3 2014Q4
Included observations: 18 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	19.493834	8.058477	2.419047	0.051930
D(GOVY(-1))	0.011709	0.042093	0.278168	0.790221
D(LIQY(-1))	0.127620	0.888474	0.143639	0.890488
D(MACY(-1))	-0.007854	0.014958	-0.525090	0.618349
D(PI(-1))	0.203650	0.146717	1.388039	0.214471
D(TRDY(-1))	-27.383354	16.237316	-1.686446	0.142684
GDPG(-1)	-0.464182	0.240732	-1.928207	0.102098
GOVY(-1)	-0.034042	0.093759	-0.363082	0.728992
LIQY(-1)	-2.663104	0.968208	-2.750551	0.033267
MACY(-1)	-0.020496	0.010912	-1.878270	0.109417

PI(-1)	-0.361672		0.113940	-3.174228	0.019216
TRDY(-1)	18.552704		20.939724	0.886005	0.409717
R-squared	0.796312	Mean dependent var			-0.159444
Adjusted R-squared	0.422884	S.D. dependent var			0.928899
S.E. of regression	0.705667	Akaike info criterion			2.375374
Sum squared resid	2.987795	Schwarz criterion			2.968955
Log likelihood	-9.378368	Hannan-Quinn criter.			2.457221
F-statistic	2.132439	Durbin-Watson stat			2.653474
Prob(F-statistic)	0.182266				

A2. Serial Correlation Test Results

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	2.037894	Prob. F(1,5)	0.2128
Obs*R-squared	5.212083	Prob. Chi-Square(1)	0.0824

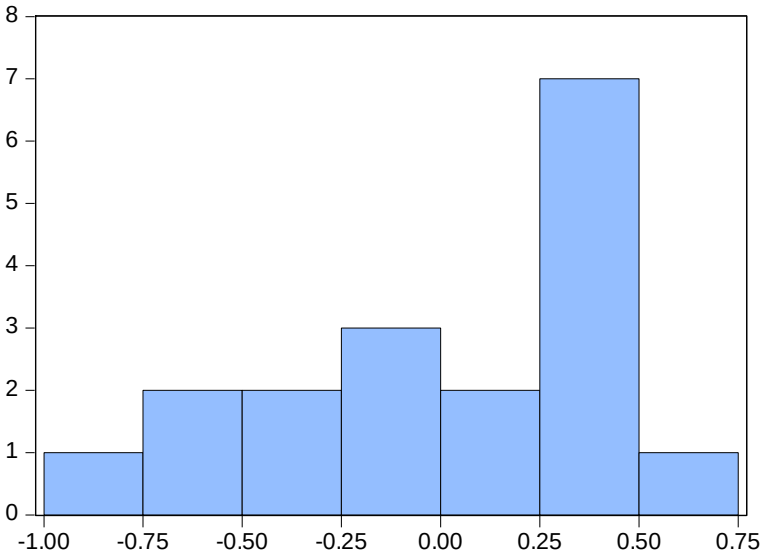
Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 11/06/17 Time: 12:05
Sample: 2010Q3 2014Q4
Included observations: 18

A3. Heteroscedasticity Test Results

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	0.231275	Prob. F(11,6)	0.9825
Obs*R-squared	5.35959	Prob. Chi-Square(11)	0.9125
Scaled explained SS	0.37747	Prob. Chi-Square(11)	1

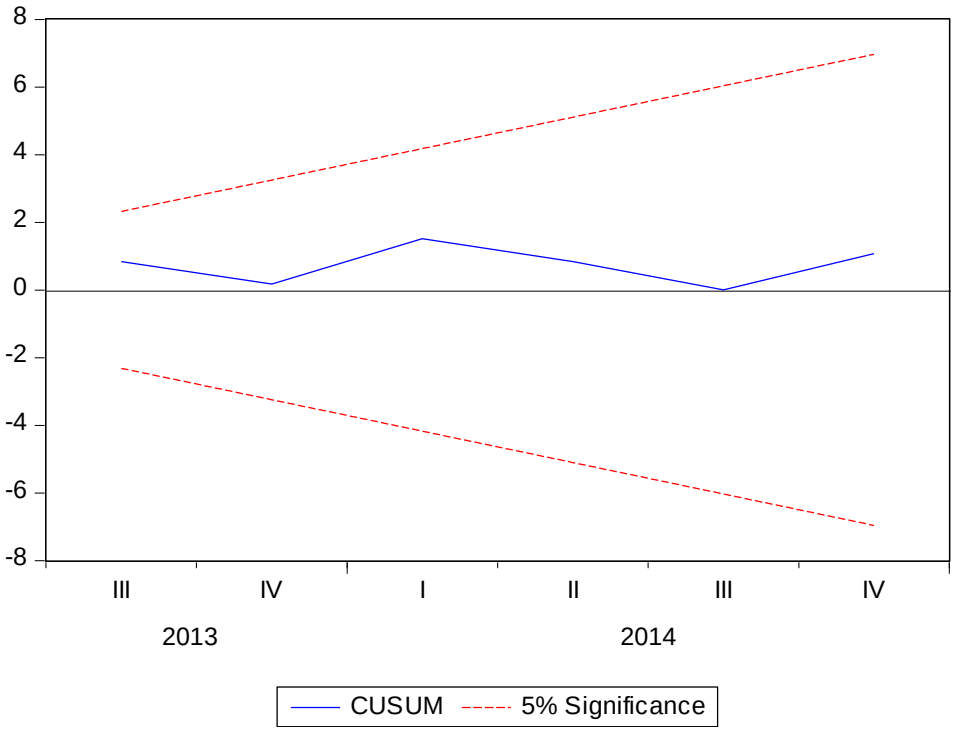
Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 11/06/17 Time: 12:11
Sample: 2010Q3 2014Q4
Included observations: 18

A4. Normality Test



Series: Residuals	
Sample 2010Q3 2014Q4	
Observations 18	
Mean	1.42e-15
Median	0.104322
Maximum	0.516710
Minimum	-0.903256
Std. Dev.	0.419229
Skewness	-0.577075
Kurtosis	2.267720
Jarque-Bera	1.401224
Probability	0.496282

A5. Stability Test



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