

**EFFECT OF FINANCIAL LIBERALIZATION ON THE
LIQUIDITY OF SECURITIES EXCHANGE MARKET IN
KENYA**

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Exchange Market in Kenya**

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other University.

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DEDICATION

To my father Remjius Odhiambo, mother Millicent Akoth, wife Annmic Kemuma, daughters Gabriella Akinyi and Tasha Achieng', sisters Valentine Akinyi and Cynthia Awuor, brothers Geoffrey Oluoch and Tony Warren.

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ACRONYMS AND ABBREVIATIONS

CBK	Central Bank of Kenya
CMA	Capital Markets Authority
EMC	Emerging Markets Countries
ECM	Error Correction Mechanism
GDP	Gross Domestic Product
IMF	International Monetary Fund
MSCI	Morgan Stanley Capital Index
IMFC	International Monetary & Financial Committee
LDC	Less Developed Countries
MPC	Stock market liquidity Committee
NSE	Nairobi Securities Exchange
OLS	Ordinary Least Squares
QMLE	Quasi-maximum likelihood estimator
RER	Real Exchange Rate
SAP	Structural Adjustment Programme
SDF	Stochastic Discount Factor
SDR	Special Drawing Rate
UNCTAD	United Nations Conference on Trade and Development
U.S	Unites States
VAR	Value at Risk

DEFINITION OF TERMS

Capital flow	Capital flows refer to the movement of money for the residents and non-residents of a country for the purpose of investment, trade or business production, including the flow of capital within corporations in the form of investment capital, capital spending in that particular country,(IMF, 2016).
Financial liberalization	This is the elimination of a series of impediments in the financial sector in order to bring it in line with that of the developed economies, occurs when a country opens up its stock markets to foreign investors, at the same time allowing domestic firms“ access to international financial markets, (Bekaert & Harvey, 2003).
Financial stability	Is the smooth operation of the system of financial intermediation between households, firms, and the government through a range of financial institutions supported by a myriad financial infrastructure, (Faure, 2013).
Foreign Exchange variability	This is the risk associated with unexpected movements in the exchange rate, (Mirchandani, 2013).
Liberalization Index	Measures the degree of economic liberalization in each EU member country by identifying legal and regulatory barriers, fiscal competition, monopoly rights, regulatory barriers, price regulation, fiscal barriers, and tax privileges like specific VAT exemptions that are in place only for public

players and not for private counterparts,(Gu & Baomin, 2009).

Stock market

Is the market where equity securities such as stocks, representing ownership shares in particular corporations issuing the securities, are traded. These instruments are usually issued by big corporations and promise a return (in the form of dividends) based solely on performance of the issuing corporation (Bernard, Ezeabasili, & Nzotta, 2013).

Stock market liquidity

Refers to the ability of investors to buy and sell securities in the stock market with easy Transfers (Levine, 1998).

Liquidity

Is the ability to transact quickly and without substantially moving prices, and market depth as the ability to transact at the current market price Glen (1994).

Market Variability

Is the measures how spread out a market's returns are likely to be. It is the measure of a shift or change in the markets returns,(Ozturk, 2008).

ABSTRACT

Financial experts have always considered capital market as the central element of the economies financial success, the Kenyan stock market is still small compared to the stock markets in other emerging markets, it is largely dominated by some few large firms that representing a high proportion of total market capitalization. The number of listed firms is also small, Kenyan stock market just as many African stock markets are illiquid, Shares are rarely traded and there are large gaps between buy and sell orders. Usually, trading occurs in only a few stocks, those that represent the majority of market capitalization, Low liquidity implies that there is difficulty in supporting a local market with its own trading systems, market analysis, and brokers because business volume is too low. The finance experts' view that foreign investment benefits to developing economies by increasing the availability of capital, based on this view, the capital deficient countries heavily resort to foreign financing as the primary source to achieve rapid economic growth and through their positive impact on productivity and the general economic well-being of the host country. The study aimed to establish the effects of financial liberalization on the liquidity of securities exchange market in Kenya. The study identifies the position of stock market liquidity at Nairobi security exchange during the period from 2000 to 2015. For measurements of liquidity at NSE the study used four measuring tools: foreign exchange variability, liberalization index, market volatility, and capital inflow. Also, the study aimed at establishing the moderating effect of market risk on the stock market liquidity. The model adopted for testing the relationship in a simple regression model. It was established that foreign exchange variability, liberalization index, market volatility, and capital inflow did have significant effect upon the securities exchange market in Kenya. This study was motivated by the assumption that this discussion ignored the experiences of developing countries in their early phase of industrialization. In addition, there is a lack of proper attention on the analysis of the issue of capital inflow in the context of neo-liberal economic reforms and financial deregulation. Large swings in capital flows into and out of emerging markets can potentially lead to excessive volatility in asset pricing and supply of credit in the economy. The study adopted a mixed research design approach guided by a complex factorial and analysis research design and a purposive sampling technique. This study reviews Kenya's experience with large capital inflow over 15 years (2000-2015). The findings of the study revealed that the moderating effect of market risk on the foreign exchange variability, liberalization index, market volatility, and capital inflow was valid on individual case analysis and not in a joint case analysis. Setting of consistent interest rates suitable for Kenya's economic growth, implementation of open market operation to keep track of the evolving monetary aggregates, management of stable and competitive exchange rates and implementation of proper economic policies relating to the exchange rate regime are the recommendations that the study made.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Financial liberalisation involves free movement of capital in and out of a country with extension to who can buy and sell a certain financial asset. In the last three decades several developed and developing countries have moved towards liberalization of their financial systems. Countries eased bank interest rates, lowered compulsory reserve requirement and barrier to entries, reduced government interference on credit allocation and privatised many banks and insurance companies. Juxtaposing these definitions of financial liberalisation and market liquidity does not immediately suggest a direct causal link from the former to the latter. However, we would argue that there is an indirect link between the two concepts. 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 (Lee, Wong, Lee, & Wong, 2016).

Financial markets have a fundamental role in the economic development of a country. The markets form the intermediary link in facilitation of the flow of funds from savers to investors. By providing an institutional mechanism for mobilizing domestic savings and efficiently channelling them into productive investments, they lower the cost of capital to investors and help in accelerating economic growth of the country. Financial intermediation between borrowers and savers is done by financial institutions, (Moses, 2013). The credit market enables debt financing for investments. An alternative method of intermediation is through equity financing. This is only possible through the development of capital markets.

Capital markets, which deal with securities such as stocks and bonds, are associated with financial resource mobilization on a long-term basis. By raising capital directly from the

public, one has a lower cost of capital. Capital markets also allow for spread of ownership among the public, thereby distributing risks and wealth amongst smaller investors. For investors, they provide an effective vehicle for making investment choices which suit their own preferences of risk and returns based on available information. As such, capital markets help the economy to generate more savings and productive investments (Aduda, Masila, & Onsongo, 2012).

The regulation of the financial markets, implies among other measures: interest ceilings, high reserve ratios and implicit credit programs these leads to lower investment ratios and further has a negative impact on growth, according to financial liberalization theorists. The roots of a clear formulated liberalization theory for financial markets traces back to the works of (Kodongo, 2011), which aimed to explain persisting growth disparities between countries. Methods like interest ceilings and the administratively guided allocation of loans in certain industrial areas, seem to cause ‘financial repression’ which leads to qualitative and quantitative distortions in investment; further on these distortions cause economic inefficiencies and repress economic development in less developed countries,(Organization for economic Co-operation and development, 2002).

For most emerging markets, liberalization is an essential policy tool that attracts much needed foreign capital for investment purposes, (Phylaktis & Ravazzolo, 2005). Levine (1998) shows liquidity as the easy and speed with which capital market agents can convert assets into purchasing power at agreed prices. It is an important indicator of stock market development because it signifies how the market helps in improving the allocation of capital and thus enhancing the prospects of long-term economic growth. Focusing on liquidity, Bencivenga et al. (1991) argues that stock market liquidity plays a key role in economic growth. So without a liquid stock market, many profitable long term investments would not be undertaken because savers would be reluctant to tie up their investments for long periods of time. In contrast, a liquid equity market allows savers to sell their shares easily, thereby permitting firms to raise equity capital on favourable terms. By facilitating longer term, more profitable investments, a liquid

market improves the allocation of capital and enhances prospects for long term economic growth.

On the other hand, the mechanism through which financial liberalization generates a net positive effect remains less conclusive. It has been suggested that financial and other capital liberalization will directly encourage flows of funds from capital-rich economies to capital-poor economies (Mirdala, 2006). Financial liberalization also has an indirect effect on growth. By strengthening and fostering development of the domestic financial sector through imposing discipline on macroeconomic policies, it can lead to a more stable macroeconomic environment (Ahmed, 2010). It is strongly argued that financial liberalization can have strong positive effects on economic performance. However, after the prescribed financial liberalization, the domestic economy has failed to experience impressive performance such as attraction of foreign investment or halt capital flight (Akpan, 2004). Financial liberalization generates tremendous financial booms and busts in the short-run, but these booms and busts have not intensified in the long-run. The debate over the macroeconomic effect of financial liberalization on developing economies remains a controversial issue.

Financial liberalization serves as a panacea to financial constraints in a financially repressed economy. Under the financial repression regime, the monetary authorities impose high reserve requirements, bank-specific credit ceilings and selective credit allocation, mandatory holding of treasury bills and bonds issued by the government, and finally a non-competitive and segmented financial system (Achy, 2003). Theories of financial repression associated especially with Mckinnon and Shaw postulated that administrative control of financial markets by the government distorts interest rate thereby lowering it. The resultant effect of this is that savings is discouraged, consumption is encouraged and the quantity of investment is crippled.

Liquidity or the ease with which an asset can be traded in a timely manner at low cost, plays an important role in financial markets. A severe liquidity decline is widely cited as an important catalyst of the financial contagion that prevailed during the 2007-2009

financial crises (Rosch & Kaserer, 2013). According to Geithner (2007), one aspect of maintaining market stability is ensuring the adequacy of liquidity in normal times. While many early liquidity studies focus on the US markets, research on liquidity in global markets is attracting increased attention. The growing body of international liquidity research is important for a number of reasons. First, international markets are predominantly order-driven markets (Jain, 2005), which differ from the US quote-driven markets where market makers stand ready to provide liquidity. Second, an international setting provides a rich environment in which to consider the impact of different legal, economic, and political environments on liquidity.

According to (Siddiqui, 2014), the mainstream economists and international financial institutions view that the foreign investment in developing countries would benefit those countries by increasing the availability of capital. This would have a positive impact over productivity and the general economic well-being of the host country they examine the link between capital inflow, financial development, and economic growth. Alfaro & Chanda, (2004) argue that countries with developed financial markets are able to attract capital inflow more efficiently. According to them, the potential of foreign direct investment (FDI) to create backward linkages in the absence of well-developed financial markets is severely impeded.

In order for the economies to shield themselves from the vagaries of exchange rates, (Saxena, 2006) sitting Lane and Milesi-Ferretti 2006 argue that emerging markets should promote local currency debt markets and increase the role of FDI and portfolio equity inflows. In fact, some of these countries (Brazil, Colombia, Thailand, the Czech Republic, Mexico and Malaysia) have been successful in issuing domestic currency denominated bonds in the international market. The importance of foreign capital, among others is that these flows and capital mobility more generally, allow countries with limited savings to; (i) attract finance for productive investment projects, (ii) foster the diversification of investment risk, (iii) promote inter-temporal trade, and (iv) Contribute to the development of financial markets. The proponents of foreign capital argue that foreign capital can supplement domestic investment and thus lead to higher

growth rates. It can also reduce the potential balance of payments constraints on growth (Alfaro & Chanda, 2004).

Broadly two arguments have been put forward with regards to capital control; first, it is said that capital inflow to developing countries are largely influenced by factors from the supply-side. The government's premarket reform policy will encourage foreign investors to invest. Secondly, the easy monetary policies in the developed countries encourage the exporting of capital into developing countries. This is largely due to more easy and larger access to liquidity. It is expected that in developing countries the returns would be higher (Adil, 2003). Financial market reforms aim to improve the financial system of a country. These reforms should, in particular, include policies that should induce higher economic growth. Most of the relevant literature has proposed that financial liberalization creates financial market efficiency, thereby generating savings, investment and higher growth. Various other authors have criticized financial liberalization policies and claimed that past financial crises are in fact linked with such policies (Akinsola & Odhiambo, 2017).

In a situation when monetary policies in developed countries is tightened, the differential falls and capital inflow can slow down and even start flowing in reverse, but (Ahmed, Zlate, & Ahmed, 2013) finds such discussions ignore the experience of developed countries in their early phase of industrialization. There is also a lack of attention paid to the analysis of the issue of capital inflow in the context of neoliberal economic reforms and financial deregulation. Capital controls may mitigate financial fragility; they are less effective for meeting macroeconomic targets (Chang, Spiegel, Chang, Liu, & Spiegel, 2015).

The proponents of stock markets emphasize the importance of having a developed stock market in enhancing the efficiency of investment. A well-functioning stock market is expected to lead to a lower cost of equity capital for firms and allow individuals to more effectively price and hedge risk. Stock markets can attract foreign portfolio capital and increase domestic resource mobilization, expanding the resources available for

investment in developing countries. Recognizing the importance of stock market on economic growth, prudential authorities such as World Bank, IMF and ADB undertook stock market development programs for emerging markets in developing countries during 80s and 90s and they found that, emerging stock markets have experienced considerable development since the early 1990s. The market capitalization of emerging market countries has more than doubled over the past decade growing from less than \$2 trillion in 1995 to about \$5 trillion in 2005 (Yartey, 2008). As a percentage of world market capitalization, emerging markets are now more than 12 percent and steadily growing (Standard & Poor, 2005).

1.1.1 Financial liberalization and stock market liquidity in developed markets

Davis and Presno, (2014); sitting Rey (2013); Kristin and Warnock, (2012) show that capital flows into and out of emerging markets are largely driven by global factors. They both show that a measure of global risk is one of the main determinants of international capital flows. Meanwhile, country-specific characteristics are largely irrelevant for driving capital flows into and out of a particular emerging market economy. Reinhart and Reinhart (2008) argue that surges in capital inflow into emerging markets are associated with a higher likelihood of banking, inflation and currency crises, and contribute to economic and financial instability.

Madhavan (1992) relates the liquidity with information asymmetry and argued that the quality of information possessed by market makers and the traders significantly influence market depth and the size of the bid-ask spread. Thus, higher the information asymmetry, widen the spread, lowering the market depth and market liquidity. Ahn and Chueng, (1999) conclude that Low liquidity is portrayed with a significantly high negative relationship between the spread and market depth. Pagano and Röell (1996) observe that greater transparency in the trading process enhances market liquidity by reducing the opportunities for taking advantage of less informed or non-professional participants. Cornell and Sirri (1992) find market liquidity increasing with information asymmetry, as insiders are able to obtain superior execution for their trades relative to

the contemporaneous liquidity traders, concluding that the presence of informed traders to the market does not necessarily reduce market liquidity (Ali & Jalbani, 2009).

Emerging markets do have some macro-economic features that could induce higher commonality in liquidity. For example, emerging markets usually do not have many alternative investments (for example, bonds) or even if they have, the markets may not be well developed. As a result, investors facing liquidation needs cannot easily diversify their liquidity shock among several asset classes, thus causing the co-variation in liquidity in one asset market. It has also been well acknowledged that liberalization of emerging markets and international fund flows have reduced cost of capital and increased liquidity of these markets. If international fund flows also reduce the commonality in liquidity, there should not be any problem. If they cause more commonality, which increases the liquidity risk in emerging markets, it would become a concern for both investors and regulators. Therefore, an investigation into the impact of international fund flow on the market liquidity risk is both necessary and valuable (Lesmond, 2005).

A stock market is liquid when a large transaction take place without affecting prices of securities or a stock is illiquid when “sell orders” are filled with lower price than “buy orders”. Stock markets are trapped in low liquidity high risk premium equilibrium (Pagano, 1993). Investors have fewer opportunities to diversify their portfolios are at high risk. Less opportunities of diversification cause a panic amongst the investors and they start to fill lower price sell orders then stock market investors start to bear losses. There are so many causes of illiquidity. But, question that how to measure the liquidity or illiquidity and what are the tools to be used for such measurements, having gone through the literature and find that there is no any single tool through which one can directly measure the stock market’s liquidity, instead some indirect or proxy tools have been used to measure the liquidity of individual stock, individual market, cross-listed firms or commonality in liquidity across the market (Zheng, 2006).

The past two decades have witnessed two waves of large capital inflow sweeping through many emerging market economies. The first wave commenced in the early 1990s and ended with the Asian crisis in 1997. The second one started in 2003, and ended in 2008 in the wake of the global financial crisis. While capital inflow often help deliver the economic benefits of increased financial integration, they also create important challenges for policy-makers because of their potential to generate overheating, loss of competitiveness and increased vulnerability to crisis (Elekdag, 2009).

The costs and benefits of financial liberalisation to the economy and conclude that the positive impact of financial liberalisation on economic growth far outweighs its negative impact associated with the triggering of financial crises potentially. Brockman and Chung (2003); Chung (2006); Eleswarapu and Venkataraman (2006) state that countries with superior legal and regulatory environments for shareholder protection have more liquid stock markets than those with inferior legal and regulatory environments. Another strand of research focuses on the cross-sectional relation between corporate governance structure and stock liquidity within a country. For example, Chung et al. (2010) examine the relation between corporate governance and stock market liquidity using a sample of United States stocks and show that firms with a superior governance structure have more liquid markets for their shares than those of other firms.

1.1.2 Financial Liberalization and liquidity in the Nairobi security Exchange

The Stock market in Kenya is one of the most highly developed stock markets among the Eastern and Central African countries. However, by international standards it is still young and developing. There is one stock exchange in Kenya, known as the Nairobi Securities exchange (NSE), formerly known as the Nairobi Stock Exchange, where the trade in stocks and shares, among other capital market instruments, takes place. The NSE was established in 1954, with 46 listed companies. Although the stock market in Kenya is still developing, it plays an important role in the process of economic development in Kenya through various ways. These include the mobilisation of

domestic savings to bring about the reallocation of financial resources from dormant to active agents, the enhancement of the inflow of international capital, as well as the facilitation of government's privatisation programmes (Capital Markets Authority, 2012a).

Long-term capital is deemed crucial for economic development, as evidenced by the positive relationship between long-term capital and economic growth (Demirguc & Levine, 1996). In recognition of this, Kenya initiated the revitalisation of the stock market in the late 1980s. The reforms undertaken by Kenya as part of the revitalisation process stretched over three decades, and include the formation of a regulatory body (Capital Markets Authority - CMA) in 1989, to assist in the creation of an environment conducive to the growth and development of the country's stock market; and the replacement of the "Call-Over" trading system by the floor-based "Open-Outcry System" in 1991.

Despite the extensive reforms implemented in the stock market, the number of listed companies failed to pick up significantly. Currently, the stock market has about 60 listed firms, which is less than the number of listed companies in 1970, a period before the commencement of the reforms. Although the number of listed companies failed to pick up on the growth momentum, market capitalisation, total value traded and turnover ratio have all responded positively to the reforms. They increased in the early 1990s, but declined between 1995 and 2001, before increasing again sharply between 2002 and 2008 (World Bank, 2012). It is worth noting that although these three measures of stock market development have improved over the years, the improvement was not good enough to liberate Kenya's stock market from being labelled "developing".

Despite the stock market revitalising efforts, Kenya's stock market continues to face a number of wide-ranging challenges. These include: lack of awareness, low investor confidence, lack of competitive pressure in the local market, vulnerability to shocks and low levels of capital-market liquidity. As a result, investors have relied on banks for short-to-medium term loans. Furthermore, savers have had to contend with a thin

financial basket. It is interesting to note that although the stock market in Kenya is shallow, narrow and thin by international standards, it remains one of the largest stock markets in Africa; and its role in the development of Kenya's economy can, therefore, not be ignored.

Prior to the adoption of the open-door policy in 1990s, the financial system in Kenya was a closed and centralised one, with the absence of financial markets, the financial system was equivalent to the banking system. With major instruments of securities exchange market in Kenya are open market operations, cash and liquidity ratios, credit ceiling, and reserve requirements. In the 1990's the authorities relied more on the indirect instruments, the most active being open market operations (Connell, Maturu, Mwega, Ndungú, & Ngugi, 2010). In order to conserve foreign exchange and control pressures on the balance of payments, the government of Kenya chose controls instead of liberalization. The controls were an easy response to certain balance of payments and inflationary pressures, but they created major distortions in the economy that were not evident in the 1990's.

During the era of the fixed exchange rate regime that covered the period of 1966-1992, Kenya just like many of the developing countries, had to frequently devalue its currency as an attempt to reduce the negative effect that RER misalignment had on its economy. The adoption of a floating exchange rate system in 1993 marked the peak of efforts to make the RER more aligned to the market determined equilibrium RER and thus eliminate RER mismanagement (Oude, 2013). Up to 1974, the exchange rate for the Kenyan Shilling was pegged to the US dollar, but after discrete devaluations the peg was changed to the SDR. Between 1974 and 1981 the movement of the nominal exchange rate relative to the dollar was erratic depreciating the rate by 14% (Connell et al., 2010). Exchange rate controls were maintained until 1990's being response to the balance of payment crisis in 1971/72.

The global economic melt-down of 2007-2008 led to a sharp drop in the NSE's performance, this was followed by a bull run that ended about four years later in 2011

due to a regional drought and famine outbreak. This was also followed by a bull run that ended in 2015 due to a depreciation of the Shilling against the Dollar. It is therefore believe that the market has bottomed out and that prices should start to gradually rise over time. Comparatively, high yields were observed at the end of the four year periods mentioned above (2007, 2011, and 2015). Thus when bond yields rose, equities declined. The 91-Day bills generally had higher returns than both the 182-Day and the 364-Day bills. The bills were routinely oversubscribed especially towards the end of 2015 underscoring a bias for short-term more certain investments (Dyer & Blair Investment Bank, 2016).

Financial reforms continued in the second phase from 1997 to 2007 on the IMF MDGs programme. This round of financial reforms differed from that in phase one as it focused more on (i) deregulation of the banking sector, (ii) refinement to and enhancement of the markets and infrastructure established earlier; and (iii) integration of the domestic financial markets with the rest of the world. Measures in this phase ranged from recapitalising the state-owned commercial banks like National Bank of Kenya, Commercial Bank of Kenya, Consolidated Bank, restructuring their operations, introducing strategic investors to these banks, listing their shares in the stock exchange, allowing Kenyan firms to open foreign exchange accounts, permitting domestic residents to buy shares, refining the interbank money market, introducing flexibility to the exchange rate system, and encouraging domestic entities to issue bonds (Gertz, 2007).

1.1.3 Nairobi Security Exchange

The NSE is categorized into three market segments: i) Main Investment Market Segment (MIMS); ii) Alternative Investment Market Segment (AIMS); and iii) Fixed Income Market Segment (FIMS) (Capital Markets Authority, 2002). The MIMS is the main quotation market. Companies listed under this segment are further categorized into four sectors that describe the nature of their business, namely: a) agricultural; b) industrial and allied; c) finance and investment; and d) commercial and services (Capital Markets

Authority, 2002). The AIMS provides an alternative method of raising capital to small, medium-sized and young companies that find it difficult to meet the more stringent listing requirements of the MIMS. The FIMS, on the other hand, provides an independent market for fixed income securities, such as treasury bonds, corporate bonds, preference shares and debenture stocks, as well as short-term financial instruments, such as treasury bills and commercial papers (Capital Markets Authority, 2002; Nairobi Securities Exchange, 2012).

The Exchange now operates an Automated Trading System, designed to electronically match buy and sell orders in a transparent process that involves member firms of the NSE placing bids and asking prices in a centrally accessible electronic order book. The benefits of this system include greater transparency in the placement of bids and offers. The system also improves market surveillance and transmits, almost in real time, trading information relating to index movements and the price and volume movements of traded securities. More current information will become readily available to a wider constituency of the market, facilitating the decision-making process, and reducing the risk of participating in Kenya's capital markets (Nairobi Securities Exchange, 2012). The major functions of the NSE include the listing of companies, the settlement of trading, market administration and control, market surveillance, the publication of a monthly review, the monitoring of the activities of listed companies, and the announcement of price-sensitive, or other information, on listed companies through online channels.

In 1991, the NSE was registered under the Companies Act; and it phased out the "Call-Over" trading system in favour of the floor-based "Open-Outcry System". Subsequently, the stock exchange embarked on an extensive modernisation exercise, including a move to more spacious premises at the National Centre in July 1994. These facilities include a modern Information Centre. Computerisation has also been enhanced, and with increasing trading volumes, electronic trading has now become feasible. In recent years, it acquired a central depository and settlement system, which has reduced settlement periods (Nairobi Stock Exchange, 1996).

In the same year, efforts were made to reduce listing costs, where the costs of initial public offerings for shares, debentures, and bonds were made tax-deductible expenses. In 1998, all the costs incurred by companies in the process of acquiring international credit rating were made tax deductible – in an effort to enable firms to access cheaper funds from foreign capital markets (Government of Kenya, 1996). However, part of these benefits were crowded by the costs charged by the CMA on market participants. Consequently, this, together with other listing requirements, failed to cut down significantly on the entry barrier for new companies (Nairobi Stock Exchange, 2002).

In 1995, the Kenyan Government also relaxed the exchange controls for locally controlled companies subject to an aggregate limit of 20%, and an individual limit of 2.5%. These were doubled to 40% and 5%, respectively, in the June 1995 budget – to help encourage foreign portfolio investments (Government of Kenya, 1996). A series of incentives were put in place to encourage investments in the Nairobi Stock Exchange. These included a favourable tax regime that exempted listed securities from stamp duty, capital gains tax and value added tax. Withholding tax on dividends was low, at 5% for residents and 10% for non-residents (Government of Kenya, 1996).

The entire Exchange Control Act was repealed in December 1995 (Nairobi Stock Exchange, 1996; Nairobi Stock Exchange, 2002). The number of stockbrokers has grown steadily to 20 from the original six at its inception in 1954. Commission rates, which were once among the highest, have also come down considerably, from 2.5% to between 2% and 1%, on a sliding scale for equities, and 0.05% for all fixed interest securities for every Shilling (Nairobi Stock Exchange, 1996; Nairobi Stock Exchange, 2002).

1.2 Statement of the Problem

The Nairobi securities exchange is fairly small compared to stock markets in other emerging markets in Africa. It is dominated by some few large firms that represent a high proportion of total market capitalization and the number of listed companies is also

still small, NSE still suffers from infrastructural challenges, trading, clearing, and settlement systems have seen radical changes but still facing some hitches in their operations (Senbet, 2008). That slows information production, hampers activity and turnover, and renders financial integration difficult. Despite the problems of small size and low liquidity, returns in the NSE have generally been high. After controlling for risk, returns are similar to those realized in developed markets even when the results are converted into dollars. Therefore, this market represents unexploited opportunities for international investors. They are diversification opportunities that are minimally lowly correlated with the global system and its risk. African stock markets are illiquid and there are large gaps between buy and sell orders (Kovaleva & Lori, 2012). Usually, trading occurs in only a few stocks, those that represent the majority of market capitalization (Yartey & Adjasi, 2007).

Liquidity plays a pivotal role in financial exchange markets. Without the availability of counter-offers, markets risk being inadvertently replaced by individualized bilateral contracts. Liquidity of NSE currently stands at Ksh. 0.808 billion falling short of the target of Ksh. 1 Trillion placed on 2015. The NSE had a bear run in 2015, the listed company's value shrunk by Ksh 250 Billion with a drop of market capitalization dropping to Ksh. 2.05 Trillion from Ksh. 2.30 Trillion in 2015, there was also a fall on cumulative returns on investments by 20.97% as measured by NSE 20 share index that dropped to 4040.75 points from 5,112.65 points in 2014, the Kenyan shilling equally weakened by 12.92% to close at 102.31 units against the dollar from 90.60 in 2014 this was noted with foreign traders trading in 5 securities: Safaricom 21.6%, Equity 26.8%, KCB 14.8% and EABL 15.9%. despite NSE being one of the most developed in Africa, the number of foreign traded securities raises questions on the market liquidity (Dyer & Blair Investment Bank, 2016).

Despite Kenya having one of the deepest foreign exchange rate markets in Africa, liquidity is significantly low, this is due to lack of market makers to augment strong brokerage culture, the strength of market is based on the countries strong contract enforcement policies, market depth as well as capacity of local investors with major

concerns on product diversification towards market capitalization at NSE. This has seen the government through the treasury consider the allowing NSE to introduce short-selling aimed at boosting liquidity of the exchange and attracting more investors with restriction to only licensed market participants. NSE has gone through a number of structural changes in legal and institutional changes which are aligned with the international standards not much has really been achieved in terms of the diversity of financial instruments traded on the exchange. The economy is undergoing structural breaks affecting the markets liquidity i.e GDP calculation, introduction of more foreign direct investment on infrastructural development and legislation changes attracting more investments With a weakened liquidity (Nyasha & Odhiambo, 2014).

Despite the extensive reforms implemented in the stock market, the number of listed companies failed to pick up significantly. Currently, the stock market has about 60 listed firms, which is less than the number of listed companies in 1970, a period before the commencement of the reforms. Despite the stock market revitalizing efforts, Kenya's stock market continues to face a number of wide-ranging challenges, low levels of capital-market liquidity. As a result, investors have relied on banks for short-to-medium term loans. Furthermore, savers have had to contend with a thin financial basket. It is interesting to note that although the stock market in Kenya is shallow, narrow and thin by international standards. (Ikikii & Nzomoi, 2013) studied on Financial Risk Hedging Practices and Performance of Firms Listed in Nairobi Securities Exchange (NSE), Kenya, (Ang, Bosire, & Muiru, 2014) looked at The Effect of Automation on Stock Market Efficiency: A Case of Nairobi Securities Exchange, (Kiio & Ambrose, 2017) conducted a study on Financial Risk Hedging Practices and Performance of Firms Listed in Nairobi Securities Exchange (NSE), Kenya. But this study will narrow down to look at the Effect of financial liberalization on the liquidity of securities exchange market in Kenya.

1.3 Objectives of the study

The study sought to address the following general and specific objectives:

1.3.1 General objective

To study sought to establish the Effect of financial liberalization on the liquidity of securities exchange market in Kenya.

1.3.2 Specific Objectives

The specific objectives were:

1. To establish the effect of foreign exchange variability on the liquidity of the Securities exchange Market in Kenya.
2. To explore the effect of Liberalization index on the liquidity of the Securities exchange Market in Kenya.
3. To determine the effect of market volatility on the liquidity of the Securities exchange Market in Kenya.
4. To evaluate the effect of capital inflow on the liquidity of the Securities exchange Market in Kenya.
5. To examine the moderating effect of market risk on relationship between Financial Liberalization and the liquidity of the Securities exchange Market in Kenya.

1.3.3 Research Hypotheses

The study was guided by the following hypotheses;

- H₀₁:** Foreign exchange variability has got no influence on the liquidity of the Securities exchange Market in Kenya.
- H₀₂:** Liberalization index has no significant influence the liquidity of the Securities exchange Market in Kenya.
- H₀₃:** Market volatility has no significant effect on the liquidity of the Securities exchange Market in Kenya

H₀₄: Capital inflow has no significant influence on the liquidity of the Securities exchange Market in Kenya.

H₀₅: Market risk has no moderating effect on relationship between financial liberalization and the liquidity of the Securities exchange Market in Kenya.

1.4 Justification of the Study

1.4.1 Policy Makers

The findings of the study would aid the policy makers especially at the Central Bank and capital markets authority to enable them come up with the necessary regulations to guide the policy-making and drafting of regulatory framework to guide the relationship between benefits of capital control and stock market liquidity.

1.4.2 Investors

The existing and potential investors would be interested on the findings of the study to provide them with the prospects of the Kenyan stock market by enabling them make informed decisions regarding the investment opportunities on the economic trends of the market based on the market trends and the effects it has on the market performance i.e. with respect to private investment and expansion.

1.4.3 General Market Participants

The interest of the capital Markets to ensure stability of foreign exchange variability premium that comes with the trading activities i.e. FDI is of essence to provide expert advice and analysis of market activities and operations to enable regulate the market to ensure/ sustain the strength of the local currency. The study also provides analytical information that can be useful to the local and international stock markets and financial analysts to recommend informed decisions to the regulators and policy makers in Kenya.

1.5 Limitations of the Study

The main limitation of the study was the inability to, appropriately, capture the long term impact of financial liberalization on the liquidity of Kenyan stock market. This is because available data on securities market liquidity in Kenya is required and in-depth data collection and review. Despite of this limitations, the study still offers useful implications for future studies. With the view that financial market liberalization is influencing securities market liquidity in Kenya and portfolio investment inflows this future studies could focus on an econometric analysis of the impact of liberalised capital market on the development of domestic financial markets in Kenya.

1.6 Scope of the Study

The study sought to examine the effect of Effect of financial liberalization on the liquidity of securities exchange market in Kenya. The capital inflow, Liberalization index, market volatility and foreign exchange variability. The study covered fifteen years from 2000-2015 and focused on the liquidity of the Nairobi securities exchange.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents an analysis of the reviewed literature relevant to the subject of the study. It provides the reader with an account of the theoretical grounds of the research problem being studied. The specific areas covered here are theoretical review; empirical review, the conceptual framework and review, critic to existing literature and research gap.

2.2 Theoretical Review

This section reviews the various theories that have been advanced on market liquidity that informs this study. Five theories anchored this research due to their predominance in studies related to stock market liquidity. They include the market microstructure theory, expected utility theory, trading cost theory, prospect theory and arbitrage pricing theory.

2.2.1 Expected utility theory

The theory was established by Daniel Bernoulli in 1738, it is a theory concerning people's preferences with regard to choices that have uncertain outcomes (gambles). This theory states that if specific axioms are satisfied, the subjective value associated with an individual's gamble is the statistical expectation of that individual's valuations of the outcomes of that gamble. This theory has proven useful in explaining some popular choices that seem to contradict the expected value criterion (which takes into account only the sizes of the payouts and the probabilities of occurrence), such as occur in the contexts of gambling and insurance. In the presence of risky outcomes, a decision maker could use the expected value criterion as a rule of choice i.e. higher expected value investments are simply the preferred ones. The predictability of exchange rates is expected to affect both the volume and variability of trade flows based on the investors

preference with regards to choice of uncertain exchange rate market, (Barkoulas, Baum, & Caglayan, 2002).

Expected Utility theory states that the decision maker chooses between risky or uncertain prospects by comparing their expected utility values, i.e., the weighted sums obtained by adding the utility values of outcomes multiplied by their respective probabilities. The expected utility theory takes into account that individuals may be risk-averse, meaning that the individual would refuse a fair gamble (a fair gamble has an expected value of zero). Neoclassical economic theory cast the savings outcome as the results of people trading off current versus future consumption. The decisions to how much one wants to consume in the present and how much can be in the future is based on the expected utility over the planning period. An individual expectations because of future compensation provided by extra income is more than the benefit of using it for today's consumption (Mongin, 1997).

Risk aversion implies that their utility functions are concave and show diminishing marginal wealth utility. The risk attitude is directly related to the curvature of the utility function: risk neutral individuals have linear utility functions, while risk seeking individuals have convex utility functions and risk-averse individuals have concave utility functions. The degree of risk aversion can be measured by the curvature of the utility function. Expected utility theory is a theory about how to make optimal decisions under risk. It has a normative interpretation which economists particularly used to think applies in all situations to rational agents but now tend to regard as a useful and insightful first order approximation. In empirical applications, a number of violations have been shown to be systematic and these falsifications have deepened understanding of how people actually decide (Rabin, 1999).

2.2.2 Market Microstructure Theory

In modern finance theory, efficient market hypothesis (EMH) is one of the most important concepts in the relevant literature of market liquidity. According to Fama

(1970), all information that is new in the market on any firm, is immediately captured in the share price of the firm suggesting that price changes occur only with new information. According to Markowitz, (1952) an investor's decision is only determined by risk and return. In the real world however, financial markets are more complex and full of frictions such as trades do not arrive simultaneously in the marketplace; and that information is asymmetric. Market microstructure theories predict a negative relationship between security liquidity and volatility, microstructure research is especially interested in transaction costs and liquidity, which differ greatly across emerging markets, (Bekaert & Harvey, 2003).

The different frictions in the market are the basis of the market microstructure theory (Cohen, Maier & Schwartz, 1986). These frictions can be distinguished into two groups: the real frictions, which are shortfalls in the organization of the market and take up real resources and have an effect on all participants in the market in the same way, while informational friction reallocates wealth between participants in the market making market liquidity an additional factor for market participants to consider when making decisions (Stoll, 2000). Liquidity is a complex concept and several researchers have defined it in different ways. According to Baker (1996) there is a shortage of a specific and widely accepted definition of liquidity available in literature. Wyss (2004) also argues that lack of a specific definition can be due to the several dimensions liquidity has. Literature identifies width, depth and resiliency as the three dimensions of liquidity (Harris, 1990).

Building on the market frictions, depth factors (Ho & Stoll, 1981; Amihud & Mendelson, 1986; Stoll, 2000) which postulate the primary role of market-makers as liquidity providers should be compensated for due to price risk on inventory. Width factors (Easley & O'Hara, 2002; Kyle, 1985; Glosten & Milgrom, 1988) which focus on asymmetric information among market participants and show how market-makers who set the bid-ask spread should also be compensated for due to adverse selection costs. This theory is relevant to the study as it shows that illiquidity is a form of market friction which reallocates wealth between participants in the market hence investors should

consider it when making decisions as it translates to stock returns hence making this study relevant.

This theory is relevant to the study as it gives an insight on market depth as a dimension of liquidity and how it relates to stock returns. The theory gives a theoretical prediction that market width is negatively related to stock return which will be the basis of study's hypothesis testing on market depth. Price proposition turns out to be surprisingly powerful in predicting behavior in economic strings and includes specifically the basis of institutional analysis: institutions yield different social outcomes because they alter incentives that agents face. Two fundamental propositions about the effect of the quantity of money on the economy predate the emergence of monetary economics as a recognized discipline of study. The first is that increases in the quantity of money that are not accompanied by corresponding increases in real output eventually lead to inflation (Milonakis, 2009).

An increase in some inputs relative to other fixed inputs will in a given state of technology cause total to increase; but after a point the extra output resulting from the same additions of extra inputs is likely to become less and less. This falling off of extra returns is a consequence of the fact the new doses of the varying resources have less and less of the fixed resources to work with (Olicy & Swift, 2006).

Liberalizing policies are intended to make the market system less incomplete and less imperfectly competitive by removing some restrictions on free trade and competition. The desirability of such policies is the topic of the third theorem of neoclassical welfare economics, concerning the gains from trade and other forms of liberalization. Considering (i) Efficiency of the Invisible Hand, (ii) Optimal Allocations, (iii) Gains from Liberalization as the theorem; claims that liberalization makes Pareto improvements possible, but they cannot be guaranteed unless those directly harmed by liberalization are suitably compensated. The first theorem shows that perfect markets generate Pareto efficient allocations. Under several important qualifications, the second theorem shows that any particular Pareto efficient allocation can be achieved through

perfect and complete competitive markets with appropriate lump-sum redistribution of wealth (Hammond, 1992).

With globalization and international capital flows, financiers roam every corner of the world searching for the last drop of profits. This class has gained enormous power by undermining others, in particular labor. Today, capital does not need to move at all; the simple threat of moving undermines the fallback position of labor. Thus, to correct this imbalance of power a set of progressive policies is needed to control international flows and to achieve sustained full employment and greater equality of income and wealth. According to this view, capital controls limit the ability of international financiers and multinationals to curtail labor. Also, they advance the objective of full employment at least in the short to medium term (Epstein & Epstein, 2000).

Following neoclassical theory, capital controls are just bad policies because they remove the discipline of the international market which, as the National Center for Policy Analysis (1998) explains, always stands to reward countries that implement effective pro-growth policies. Nonetheless, governments of many countries have used capital controls. There are different forms of controls; negative interest rates, controls on foreign investment, lending restrictions, dual exchange rates, just to mention a few. For example, in Venezuela to cope with inflows during mid-1990s, exchange controls were used. Romania closed its foreign exchange variability in 1996, South Africa postponed the elimination of its remaining controls in 1996 (Rowden, 2011).

Prohibition of prepayments of foreign loans was the tool used in Brazil in 1994. In terms of direct controls, Chile and Brazil are two good examples. Chile imposed a one-year minimum maintenance period for nonresident inflows, while Brazil prohibited some nonresident transactions, (Gu & Baomin, 2009) sitting Goh (2005) explains, Malaysia relied on controls to regain monetary autonomy. Friedman and Schwartz's attribution of causality from money to business cycles was criticized by (James, 1970), who claimed that they had committed the post hoc ergo propter hoc fallacy assigning a causal relationship to two events on the basis of which happened first. In a rejoinder,

(Friedman, 1970) argued that temporal precedence was only one of several criteria from which they inferred the direction of causality and that the case for a significant role for money in leading to business cycle fluctuations was clear independent of the precise timing of changes (Nagel, 2003).

.2.2.3 Trading Cost theory

This theory as originated by Amihud and Mendelson (1986) looks at the trading costs that are as a result of trading a stock. Real markets experience frictions which affect the asset prices hence these frictions should be incorporated when determining asset prices. Further, they evaluate that costs associated with the transaction affect stock prices concluded that stocks with larger bid-ask spreads, had higher returns. In addition, they established that trade associated costs can either increase or decrease as a result to variations in time of transactional costs.

Transaction costs causes the market to be segmented, as short-term investors hold comparably more liquid stocks in comparison to long-term investors. However, even though most investors have the option to avoid stocks with higher costs of transaction Amihud and Mendelson (1986) found that the expected stock return has a positive concave relationship with transaction costs. Additionally, investors who are hold their stocks for longer periods can get a premium as a result of illiquidity that exceeds the expected transaction costs through holding stocks with higher spreads (Amihud, Mendelson & Pedersen, 2005). In Comparison to investors who hold stocks for a long period, investors who hold stocks for shorter periods, are more vulnerable to costs as a result of transacting on a more frequent basis. For long term investors, costs of transaction can be depreciated over the total holding period.

Information asymmetry is also an important factor in influencing transactional costs. In a perfect market, all market participants are assumed to be similarly informed on the risky asset payoff. However, in practice, different participants have different information due to the fact that market participants are accessible to different information or their

abilities to process and transform information from similar sources is different. Being a source of liquidity, the essential feature of Asymmetric information is that trading process involves decisions made by traders who have superior information compared to others. These informed traders, trade when they can make huge profits off the market, buying when they know the stock is undervalued and selling when they know the stock is overvalued (Morck, Bernard & Wayne, 2000).

Moreover some investors are also large in comparison to others in a way that they are able to influence prices in the market, either due to their size or as a result of the advantage of the information they hold. To a market-maker, he always loses with informed traders and bears the costs of such trades; thus, they have to find ways to offset these losses through the uninformed traders. These gains arise from the bid-ask spread. Rational, competitive market-makers set their bid and ask prices accordingly, and more extreme information asymmetries lead to wider bid-ask spreads which shows that the market is less liquid (Ding, Nilsson & Suardi, 2013).

In a perfect market, for all periods, all market participants are present. Hence, a buyer has instantaneous accessibility to all the sellers in the market. However, practically, this is not the case. Agents incur market participation costs like costs of monitoring movements in the market. In addition to market participation costs, agents incur execution costs per each transaction. Costs associated with the transacting process causes a significant difference between the buying price and the price at which the asset is being sold at. Transaction costs which are associated with trading such as transaction taxes, fees paid to process orders and brokerage fees also affects market liquidity. Costs such as transaction taxes are seen as primitive transaction costs while other types of transaction costs are as a result of other market imperfections (Atkins & Dyl, 2007).

The above costs have a direct effect on the trader's profit with both the buyer and being affected. These costs are a representation of presence of market frictions in the stock markets hence can be seen as a determinant of market illiquidity since it affects the price investors are trading at in the market. Markets with high transaction costs are less liquid

as compared to their counterparts with low exogenous transaction costs (Atkins & Dyl, 2007).

The tightness or gap of the bid-ask spread is the most common measure of trading cost as source of illiquidity. It is normally calculated as the difference between the buying price of a stock known as the bid price and its selling price known as the ask price which directly calculates the cost of a small trade execution. The bid-ask spread has two components; one which compensates market-makers for costs of holding inventory, fees associated with processing of orders, and/or monopoly profits. Due to the transitory nature of this component, the effect it has on stock prices is unrelated to the stock's underlying value. The adverse selection component which is the second component of the bid-ask spread is as a result of the possibility of market-makers trading with unidentified informed traders. In a competitive market, market makers have to increase the bid ask spread so as to recover from the losses incurred as a result of informed traders with superior information from uninformed investors (Atkins & Dyl, 2007).

This theory is relevant to the study as it shows how market width as a dimension of liquidity is related to stock returns. The theory gives a theoretical prediction that market width is positively related to stock return which will be the basis of study's hypothesis testing on There are two distinct approaches within the Market Power theory: the structure-conduct-performance and the relative Market Power hypothesis (Stiroh & Rumble, 2006). According to the structure conduct performance approach, the level of concentration in the banking market gives rise to potential market power (Jeon & Miller, 2005). Song, Storesletten, and Zilibotti, (2014) who construct a growth model consistent with salient features of the recent Chinese growth experience: high output growth, sustained returns on capital investment, extensive reallocation within the manufacturing sector, sluggish wage growth, and accumulation of a large trade surplus. The salient features of the theory are asymmetric financial imperfections and heterogeneous productivity across private and state-owned firms.

Economic theory predicts that capital should flow towards countries, regions and firms where it commands the highest returns. Yet, this prediction is contradicted by the data (Barberis, 2012) document that, within non-organization for Economic cooperation and development economies, capital inflow are negatively correlated with productivity and output growth: on average, capital does not to flow into the countries that offer the best investment opportunities. This observation has been labeled as the allocation puzzle.

The model economy is a non-monetary small "semi-open economy" where consumers demand two goods, one produced by domestic firms and one produced abroad. As in SSZ there are pervasive frictions in the domestic economy: the more productive firms are credit constrained, whereas the less productive firms have access to external (bank) financing. Due to capital controls, domestic savers, firms, and banks cannot access the international credit market. Nor are foreign agents allowed to hold any domestic assets. Only the government (e.g., through the central bank) can hold positive or negative debt positions versus the rest of the world, matching trade flow imbalances (Song et al., 2014).

Eichengreen, Rose, and Rose, (2014) analyze a country with rigid nominal wages and a fixed exchange rate.¹ They show that, absent the ability to implement policies that address the nominal wage distortion or that change the exchange rate and price level directly, controls should be tightened temporarily in periods of large capital inflow to prevent wages from rising to levels from which they are then unable to fall when the capital inflow dry up, resulting in unemployment. Farhi, (2012) show that the argument for temporary controls that are adjusted counter-cyclically (i.e., that are imposed or tightened in response to inflow surges or declines in the world interest rate, and then loosened when the surge subsides or world interest rates recover) carry over to the cases of imperfectly flexible wages and exchange rates.

Policy makers continue to attempt to implement first-best policy responses where possible, using conventional monetary and fiscal policies in response to macroeconomic fluctuations and conventional regulatory instruments at the domestic level in response to

financial risks. Bhagwati and Ramaswami (1963) famously made the argument in the context of trade policy that when there is a domestic distortion, intervening with the first-best domestic intervention beats responding with a second-best tariff or quota. That argument applies in the current context as well.

The experience of countries that have liberalized their markets has shown that the assumption that markets will naturally produce a competitive result is not always justified. Part of the problem derives from the difficulty of defining the relevant market. The number of different generation companies that directly compete with each other depends on the strength of the transmission system and the capacity of interconnectors between regions and countries (Twomey, Green, Neuhoﬀ, & Newbery, 2005).

2.2.4 Prospect theory

The theory was established in 1977 and developed in 1992 by Kahneman and Tversky it as a psychologically more accurate description of decision making, compared to the expected utility theory, it is a behavioral economic theory that describes the way people choose between probabilistic alternatives that involve risk, where the probabilities of outcomes are known. The theory states that people make decisions based on the potential value of losses and gains rather than the final outcome, and that people evaluate these losses and gains using certain heuristics. The model is descriptive: it tries to model real-life choices, rather than optimal decisions, as normative models do.

The theory describes the decision processes in two stages; during editing, outcomes of a decision are ordered according to a certain heuristic. In particular, people decide which outcomes they consider equivalent, set a reference point and then consider lesser outcomes as losses and greater ones as gains. The editing phase aims to alleviate any framing effects. It also aims to resolve isolation effects stemming from individuals' propensity to often isolate consecutive probabilities instead of treating them together. The editing process can be viewed as composed of coding, combination, segregation, cancellation, simplification and detection of dominance. In the subsequent evaluation

phase, people behave as if they would compute a value (utility), based on the potential outcomes and their respective probabilities, and then choose the alternative having a higher utility (Barberis, 2012).

Some behaviors observed in economics, like the disposition effect or the reversing of risk aversion/risk seeking in case of gains or losses (termed the reflection effect), can also be explained by referring to the prospect theory. An important implication of prospect theory is that the way economic agents subjectively frame an outcome or transaction in their mind affects the utility they expect or receive. The original version of prospect theory gave rise to violations of first-order stochastic dominance. That is, prospect A might be preferred to prospect B even if the probability of receiving a value x or greater is at least as high under prospect B as it is under prospect A for all values of x , and is greater for some value of x . Later theoretical improvements overcame this problem, but at the cost of introducing intransitivity in preferences. A revised version, called cumulative prospect theory overcame this problem by using a probability weighting function derived from rank-dependent expected utility theory. Cumulative prospect theory can also be used for infinitely many or even continuous outcome (Consob, 2010).

2.2.5 Arbitrage pricing theory

Is a theory that was introduced by Ross in 1977, it is a general theory of asset pricing that holds that the expected return of a financial asset can be modeled as a linear function of various macro-Economic factors or theoretical market indices, where sensitive changes in each factor is represented by a factor-specific beta coefficient. The model derived rate of return will then be used to price the asset correctly, the asset price should equal the expected end of period price discounted at the rate implied by the model. The price diverges should bring it back into line. Models for exchange rate determination imply an ambiguous effect of stock market liquidity defined in money aggregates, exchange rate, rapid money expansion in a country, stable demand for money, and depreciation of nominal exchange rate. Most models would predict that in

the long run, an increase in a country's money growth would be reflected wholly on the price level with the latter offset by a depreciation of the exchange rate.

APT is a general theory of asset pricing that holds that the expected return of a financial asset can be modeled as a linear function of various macro-economic factors or theoretical market indices, where sensitivity to changes in each factor is represented by a factor-specific beta coefficient, the model derived rate of return will then be used to price the asset correctly the asset price should equal the expected end of period price discounted at the rate implied by the model, if the price diverges, arbitrage should bring it back into line (Amodu, 2014).

Exchange rate determination models imply an ambiguous effect of stock market liquidity, defined in terms of money aggregates, on the exchange rate: a more rapid rate of monetary expansion in one country, against the background of a stable demand for money, tends to depreciate the nominal exchange rate, and vice versa, most theoretical models would predict that in the long run, an increase in the country's money growth would be wholly reflected in the price level, with the relative increment in the latter offset by a depreciation of the exchange rate though the results differ from one model to the some models suggest the existence of initial overshooting of the rates with subsequent gradual correction, though the empirical evidence is not strong, (Aron, Muellbauer, & Sebudde, 2015).

The close coordination with stock market liquidity that sterilized inventions assumptions may not be easy to achieve in practice. At least three major problems can be identified: First, stock market liquidity and exchange rate objectives may be inconsistent. The monetary authorities will find it harder to prevent appreciation pressures while at the same time raising the interest rate, (Elkayam, 2004). Secondly, Distraction risk prevails, (Kithitu, Karanja, & Keraro, 2014) argues that the authorities might be tempted to postpone fundamental adjustments hoping that intervention will attain success; the study showed that during the 1970s interventions against a weak dollar was primarily used as a substitute for money tightening in the U.S that in turn led to one of its worst recessions.

Thirdly, sending wrong signal about stock market liquidity would most likely occur, intervention to resist appreciation might confuse the market when the central bank is raising interest rate to fight inflationary pressure.

When intervention in the foreign exchange variability are small, or when net positions are on a trend of quick reverse, preserving the stance of stock market liquidity through sterilization operations was comparatively easy. But as interventions become larger, or go on for longer in same direction, conflict between monetary and exchange rate objectives become progressively difficult to solve, (Mohanty & Turner, 2005). A sterilized intervention could be effective through the portfolio balance channel or through signaling channel. However, the close coordination with stock market liquidity that sterilizes intervention assumptions may not be easy to achieve in practice. Three major potential problems can be identified: stock market liquidity and exchange rate objectives may be inconsistent, the monetary authorities will find it harder to prevent appreciation pressure while still raising interest rates; destruction risk; sending the wrong signal about stock market liquidity .

2.3 Conceptual Framework

A conceptual framework is a group of concepts that are broadly defined and systematically organized to provide a focus, rationale and a tool for the integration and interpretation of information (Trochim, 2002). Kombo and Tromp (2009) defines it as a set of broad ideas and principles taken from relevant fields of enquiry and used to structure a subsequent presentation. Mugenda and Mugenda (2003), on the other hand defines a conceptual framework as why a study conceptualizes the relationship between variables in the study and shows the relationship graphically or diagrammatically. It is a hypothesized model identifying the concepts under study and their relationship. The conceptual framework of the relation between the independent variables and dependent variable from the literature review by the study is shown in figure 2.1. It assumes that the relationship between the independent variable and independent variable is linear, though moderated by market risk.

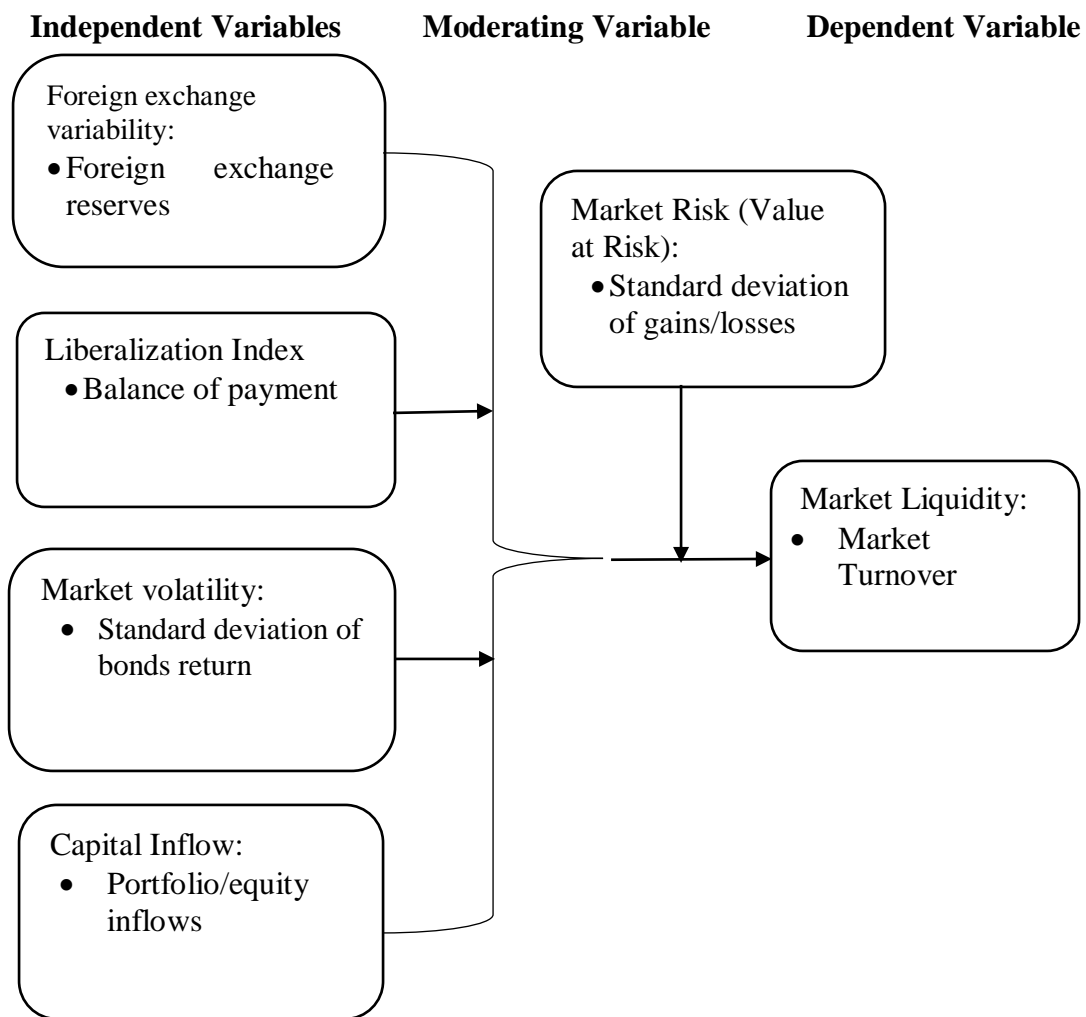


Figure 2.1: Conceptual framework

2.3.2 Foreign exchange variability

Exchange rate is becoming more responsive to international shifts in asset preferences, which could increase exchange rate volatility. From 2002 to 2007, EME currencies had come under strong appreciation pressures. In addition, many central banks had resisted appreciation by engaging in forex intervention on an unprecedented scale and for far longer than expected. Several central bank papers discuss the various rationales for

intervention in forex markets. For example, Mohan stresses that intervention can counter self-fulfilling one-way expectations. It can also help insulate the local economy from external shocks. Apart from highlighting precautionary motives for reserve accumulation, Saxena, (2006) also states the need for intervention to prevent cycles of real exchange rate appreciation followed by sudden currency collapse. Experience shows that the path from a fixed exchange rate policy to a more flexible one can be fraught with problems, for example, that in 23 of 29 cases which he examined where countries abandoned fixed exchange rate regimes in favor of more flexible ones, the change was accompanied by a financial crisis. There appears to be a tendency to back down too late from a fixed exchange rate, and then only when the financial market forces the government to change tack (Taylor & Obstfeld, 2003).

Following the turbulent period 1997–2002, a growing number of EMCs adopted inflation targeting (IT), moving away from fixed exchange rate regimes. But IT gives rise to a policy dilemma during surges in inflows: on one hand, appreciation pressures raise concerns about export competitiveness; on the other, resisting appreciation by accumulating reserves generates inflation pressures. As a way out of this dilemma, countries engage in sterilized intervention to prevent overshooting while keeping inflation low. But sterilized intervention is costly if domestic interest rates exceed those of the reserve currency, and there is also a limit to how much Treasury paper domestic banks are willing to accumulate in their portfolios. Thus, if the pressures persist, the real exchange rate may eventually appreciate either through nominal appreciation or inflation (or both), as was the case in most countries with dollar pegs (or near-pegs) in recent years, (Miranda, 2008).

Most emerging countries focus on exchange rate targeting. In pre-crisis periods, when inflows are strong and the risk of exchange rate appreciation is high, imposing controls on inflows to reduce appreciation gives rise to strong trade benefits, this takes place at a time when cash flows are strong and restraint on foreign funding of the banking system is less problematic for domestic firms. In a crisis, however, funding constraints are more binding on firms as cash flows decline while the reversal of capital inflow puts

downward pressure on the exchange rate. Controls on capital inflow at these times are more problematic for firms, with negative implications for GDP growth, but one should not lose sight of the fact that these distorting policies are the result of a choice not to follow an independent stock market liquidity supported by flexible exchange rates (Roulet & Blundell-Wignall, 2014).

2.3.2 Liberalization Index

Empirical examinations of the effects of financial liberalization on the economy need to begin with the identification and estimation of variables that gauge quantitative changes in the degree of deregulation and opening of financial markets. Since there is no generally accepted measure of financial liberalization, most studies develop graded indices over time in terms of a multifaceted measure of financial liberalization that covers a number of aspects of financial reform (Abiad, Oomes, & Ueda, 2008).

Throughout the 1980s, deposit and lending rates in the banking sector were strictly under the control of the government. The relaxation of control over these interest rates went through three different phases of liberalization in the 1990s. As a result, the interest rates fluctuated more widely and frequently throughout the 1990s, which may indicate growing competitiveness of the bank loan and deposit markets (Phuan, Tuanku, Rahman, & Lumpur, 2009). Financial liberalization index will be constructed employing principal component method Interest rate regulation, liberal exchange rate policy, banking policy reforms, easing of credit supply, introduction of prudential norms, money market reforms, share market reforms, bond market reforms, current account liberalization, capital account liberalization, bank ownership, reserve requirements and institutional reforms (Adikari, 2014).

The following arguments have been raised to support the positive relationship between financial liberalisation of both credit (i.e. banking) and capital markets vis-à-vis economic growth. First, it is claimed that introducing market principles and competition in banking markets increases interest rates on deposits, which leads to higher saving

rates. This, in turn, increases the amount of resources available for investment. If financial liberalisation includes opening up the capital account, capital inflow (in terms of both credit and equity investment) may increase, again raising the availability of funds for investment and growth. In both cases financing constraints of firms are reduced and investment will rise, leading to higher growth (Adikari, 2014)

The argument that liberalizing and opening up financial systems - to allow for diversification and the enhancement of economic growth, as well as the stability of financial deepening may not be correct after all, given the aftermath of the prevailing global financial crisis and its effect on emerging markets' economies. Broad empirical studies and cross-country analyses have shown that financial liberalization is systematically associated with greater instability and, for good reason; capital flows are markedly procyclical and exacerbate economic fluctuations when they do not actually cause them.

Liberalization policies expose countries to vicissitudes associated with changes in economic circumstances outside the countries (Philip, 2007), particularly in the case of countries perceived to be highly vulnerable and non-resilient to external shocks like some SSA countries. For example, a sudden change in lenders' perceptions of "emerging markets risks" can ultimately lead to huge capital outflows, undermining the viability of an entire financial system. Some scholars believe that free capital flows can deepen domestic economies through the stimulation of capital formation (Fischer, 1998).

2.3.3 Market Volatility

Structural adjustment programs funded and introduced by international funding agencies has been implemented by a number of developing countries. This has resulted into the high inflow of FDI into these economies. The outflow of capital in the world rose to 30% which was more than three times the rate of world exports. Volatility of exchange rate is a sort of risk challenged to international traders and investors engaged in FDI. So we may conclude that volatility of exchange rate is a factor that curtails the trade volume

and reduces the investment. This volatility when appears in developed nations causes instability all over the world. It is a wide recognized fact that exchange rate volatility in LDCs is the key factor to bring economic instability all over the world (Ellahi, 2011).

Openness to a market provides domestic residents with opportunities for diversification and may contribute to investment by reducing the country's cost of capital; it also alters the stock market liquidity environment, however, by increasing the degree of de-facto capital mobility. One of the central propositions of international monetary economics is that an increase in capital mobility leads to a sharp tradeoff between internal and external objectives of stock market liquidity. An extreme version of this proposition states that when capital mobility is perfect, a country cannot simultaneously pursue an exchange rate target (an external objective) and an interest rate target (an internal objective). One of three elements must be sacrificed: capital mobility must be restricted, the exchange rate must be freed, or domestic policy objectives must be ignored (Connell et al., 2010).

Bluedorn, Duttagupta, Guajardo, and Topalova, (2013), suggest that the high variability and low predictability of capital flows is pervasive across all economies and will likely continue in a climate of increasing financial globalization. Thus, emerging market economies are not subject to any greater fickleness in capital flows than advanced economies. As such, policymakers everywhere will need to live with this volatility and use macroeconomic and macro prudential measures that help maintain overall economic and financial resilience to such volatility.

A large number of industrial and a growing number of developing countries now have domestic inflation targets administered by independent and transparent central banks. These countries place few restrictions on capital mobility and allow their exchange rates to float. The domestic focus of stock market liquidity in these countries does not have any obvious international cost. Inflation targets have lower exchange rate volatility and less frequent "sudden stops" of capital flows than similar countries that do not target inflation. Inflation targeting countries also do not have current accounts or international

reserves that look different from other countries. This system was not planned and does not rely on international coordination. There is no role for a center country, the IMF, or gold. It is durable; in contrast to other monetary regimes, no country has been forced to abandon an inflation-targeting regime (Andrew, 2006).

2.3.4 Capital inflow

The influx of large capital inflow has induced policy makers to adopt a variety of measures to prevent overheating and real currency appreciation, and reduce the economy's vulnerability to a sharp reversal of inflows. These measures include exchange rate intervention, sterilization, fiscal policy, and capital controls. A key policy decision for countries facing large capital inflow is to what extent to resist pressures for the currency to appreciate by intervening in the foreign exchange. One of the main motivations for intervention is the concern that massive capital inflow may induce a steep exchange rate appreciation in a short period of time, damaging the competitiveness of export sectors and potentially reducing economic growth. Moreover, if net capital inflow take place in the context of a current account deficit, the real appreciation could exacerbate the external imbalances, heightening the vulnerability to a sharp reversal of capital inflow market (Leslie , Timothy , & Alex , 2006).

Since the early 1990s, there is an upsurge in foreign capital flows to developing economies, particularly into emerging markets. One view argues that capital inflow do help to increase efficiency, a better allocation of capital and to fill up the investment-saving gap. Adherents to that view advise countries to launch capital account liberalization. In economics, any change tends to have both positive and negative outcomes. Despite access to foreign funds in general and (FDI) in particular have helped to finance economic development and encouraged positive growth externalities as increased in efficiency and a better allocation of resources, and associated transfer of technology the abrupt improvement of the process of integration of emerging market countries with international capital markets has brought problems for the host economies. Some studies have analyzed that capital inflow create some difficulties for

the recipient countries in the form of real appreciation of their currencies. These difficulties include loss of competitiveness by exporters, spending boom, asset market bubbles, banking crises and the undermining of a strategy to achieve monetary stability by pegging the exchange rate, (Rashid, 2009).

The global financial markets have experienced significant turmoil since the 2008 U.S. financial crisis. Not only have the global financial shocks affected advanced economies, but they have also spilled over to emerging countries such as Brazil, Russia and Korea, affecting their financial markets and, in particular, their foreign exchange variability. Increased uncertainty from high exchange rate volatility can affect emerging financial markets in many ways. Notably, it discourages international trade in emerging markets where financial instruments for the hedging of exchange rate risks are not well developed. It also threatens the soundness of financial companies and firms, which usually face currency mismatch problems (Tytell & Wei, 2005).

The effects of capital inflow on domestic financial indicators depend on the ways in which they flow into an economy. They also depend on whether the inflows are sustainable or temporary. In practice, however, it is not easy to differentiate between temporary and sustainable inflows. Theoretically, the forces driving capital inflow, although they differ country to country, can be classified into three clusters: first, an exogenous increase in the domestic productivity of capital, second, an autonomous increase in the domestic money demand function and, third, external factors, such as a reduction in international interest rates. Capital inflow can be traced to either international reserves 'accumulation or a current account deficit, depending upon the exchange rate regime. Under a pure float exchange rate regime where there is no intervention by the central bank, the net increase in capital asset via capital inflow would be associated with a similar increase in imports and therefore a widening current account deficit. On the other, if the exchange rate regime is fixed and the central bank intervenes to counter appreciation pressure, then capital inflow would be visible in increase in foreign exchange reserves (Rashid, 2009).

Increasing capital flows around the world have influenced domestic policies. Growing global markets have made a significant contribution to improved discipline in the area of monetary and fiscal policies, punishing bad policies and rewarding good ones. The need for more disciplined monetary policies has fostered a higher degree of independence of central banks and contributed to global disinflation. Not only has the increased independence of central banks improved stock market liquidity practices, it has also triggered an evolution in the nature of the monetary transmission mechanism. Stock market liquidity now affects the economy more through inflation expectations and exchange rates (Rogoff, 2006).

Brafu-Insaaidoo and Biekpe, (2011) state that the implications for public policy in sub-Saharan Africa. First, the ability to stabilize growth in investments requires that sub-Saharan African countries implement policies that attract greater inflow of foreign capital. In particular, the results suggest that foreign direct investments and debt inflows complement domestic investments in the emerging and frontier market economies of sub-Saharan Africa. There need to be policy efforts aimed at achieving a stable macroeconomic and political environment through reductions in inflation volatility and political resolutions for entrenched democracy in governance. Monetary and financial policy measures that ensure stability in the provision of domestic credit to the private sector should also be pursued.

The influx of large capital inflow has induced policymakers to adopt a variety of measures to prevent overheating and real currency appreciation, and reduce the economy's vulnerability to a sharp reversal of inflows. These measures include exchange rate intervention, sterilization, fiscal policy, and capital controls. A key policy decision for countries facing large capital inflow is to what extent to resist pressures for the currency to appreciate by intervening in the foreign exchange. One of the main motivations for intervention is the concern that massive capital inflow may induce a steep exchange rate appreciation in a short period of time, damaging the competitiveness of export sectors and potentially reducing economic growth. Moreover, if net capital inflow take place in the context of a current account deficit, the real appreciation could

exacerbate the external imbalances, heightening the vulnerability to a sharp reversal of capital inflow market, (Patnaik & Shah, 2012).

2.3.5 Market risk

The implications of market risk element in any market is significant expansion of market risk for achieving liquidity as a proximate target as well as ensuring simultaneous interest rate cuts. Unfortunately, all efforts of stock market liquidity makers to achieve a long-term macroeconomic stability by providing a huge financial infusion during market crisis cannot help to predict unwelcome developments in future. Despite some acceptable macroeconomic indicators such as GDP growth, lower inflation, exchange rate stability as well as the improved balance of payments in selected advanced economies, there is an unacceptable unemployment rate which would have been even higher without such monetary interventions (Birutė, 2010).

The banking system plays a key role in administering payments in a world lacking a tangible medium of exchange, but is nevertheless regarded just as any other industry. Following Tobin (1963), the NME attributes to banks, and to their products, no peculiar characteristics. Therefore banks affect neither real variables nor the price level, but simply bring together the demand for and supply of securities. It is rather the Government's regulatory activity which assigns banks a special place in monetary arrangements. Fama, (1980) states that this theoretical framework concerns a non-monetary economy, i.e. the Walrasian economy in which exchange is carried out, not between agents but through the auctioneer. In the absence of a physical means of payment, the NME soon meets the Wicksellian problem of price level indeterminacy, the solution of which requires the control of a nominal quantity which acts as a peg or an anchor for the price level (Patinkin, 1961). In this connection, NME theorists (Fama, 1980) also call for a tangible currency, but on an entirely different basis. Besides the micro-economic consideration that, for small payments, a hand-to-hand medium of exchange may be more efficient than an accounting system, they focus on the unit of

account function and aim to bring forth the numéraire of the Walrasian model as that very unit (Patnaik & Shah, 2012).

Market risk cannot be avoided but greatly relies on the operations and the financial activities of the market. Central to the monetarism of the early 1970s is the equation $MV = PT$. The resurrection of the equation itself would not have caused a very great stir. The equation is a truism, and any objection would be on the grounds of its undue narrowness as a framework for reasoning about the economy. The impetus to the revival is given by two ultimately empirical claims namely that the velocity of circulation is stable and there exists a 'natural' rate of unemployment. Governments might, by budgetary policy, push the level of unemployment below the natural rate, but if they did, not only inflation, but accelerating inflation, would be the inevitable consequence. It is also implied that the economy is self-righting and will always find its own way back to the natural rate of unemployment. More recently, the idea of 'rational expectations' has been seized upon by some monetarists to uphold the argument that demand management must be ineffective, (Worswick, 1981).

2.3.6 Market Liquidity

Stock market liquidity is the reason to be interested in money but one should not forget that the target even now is political. It should bring the European countries with rather stable democratic constitutions closer together and allow them to develop into a political union (Platzer, 2014). The consensus among economists is that stock market liquidity has its primary effects over relatively long time intervals that is, quarters or years rather than days or weeks (Sheehan, 1983). The view that, in the long run, stock market liquidity can affect only nominal variables is now widely held, both within the Federal Reserve and among economists generally. Moreover, there is a growing consensus that to achieve maximum sustainable economic growth, the main objective of stock market liquidity should be price stability. On the other hand, there has never been agreement about how monetary policies are transmitted through the economy to prices, (Connell, 2010).

Liquidity management refers to the planning and control, necessary to ensure that the organization maintains enough liquid assets either as an obligation to the customers of the organization so as to meet some obligations incidental to survival of the business. Efficient working capital management involves planning and controlling current assets and current liabilities in a manner that eliminates the risk of inability to meet due short term obligations on one hand and avoids excessive investment in these assets on the other hand (Eljelly, 2004).

Effective liquidity and working capital management consists of applying the methods which remove the risk and lack of ability in paying short term commitments in one side and prevent over investment in these assets in the other side by planning and controlling current assets and liabilities (Lazaridis & Tryfonidis, 2006). When the liquidity is excessive it means that there is accumulation of ideal funds and this may lead to lower market performance of securities and profitability whereas inadequate liquidity may result in interruptions of the business operations (Rebecca, Oluoch, & Fredrick, 2014).

What motivates these exchange rate management practices? Following the turbulent period 1997–2002, a growing number of EMCs adopted (IT), moving away from fixed exchange rate regimes. But IT gives rise to a policy dilemma during surges in inflows: on one hand, appreciation pressures raise concerns about export competitiveness; on the other, resisting appreciation by accumulating reserves generates inflation pressures. As a way out of this dilemma, countries engage in sterilized intervention to prevent overshooting while keeping inflation low. But sterilized intervention is costly if domestic interest rates exceed those of the reserve currency, and there is also a limit to how much Treasury paper domestic banks are willing to accumulate in their portfolios. Thus, if the pressures persist, the real exchange rate may eventually appreciate either through nominal appreciation or inflation (or both), as was the case in most countries with dollar pegs (or near-pegs) in recent years (Xafa, 2008).

A large number of industrial and a growing number of developing countries now have domestic inflation targets administered by independent and transparent central banks.

These countries place few restrictions on capital mobility and allow their exchange rates to float. The domestic focus of stock market liquidity in these countries does not have any obvious international cost. Inflation targets have lower exchange rate volatility and less frequent “sudden stops” of capital flows than similar countries that do not target inflation. Inflation targeting countries also do not have current accounts or international reserves that look different from other countries. This system was not planned and does not rely on international coordination. There is no role for a center country, the IMF, or gold. It is durable; in contrast to other monetary regimes, no country has been forced to abandon an inflation-targeting regime (Joshua, 2013).

2.4 Empirical Review

The nature of the linkage between liquidity and exchange rate depends on the level of financial development of a country. This hypothesis is shown to be largely validated in developing countries, which provides fairly robust evidence suggesting the importance of financial development for the relationship between liquidity and exchange rate. This result is useful for policymakers in terms of choosing a rational development for the domestic financial system in developing countries. Precisely, if the objective is to stabilize exchange rates, developing countries should begin to favor the development of their financial markets. In contrast, the strength of financial institution allows an advanced country to mitigate the real exchange rate volatility due to a monetary shock, (Hong & Pham, 2018).

Contrary to common perceptions of the foreign exchange market being highly liquid at all times, there is significant cross-sectional and temporal variation in liquidities, substantial costs due to foreign exchange market illiquidity for carry traders, and ample evidence of commonality in liquidities, i.e., strong co-movements across the liquidity of different currencies. Such commonality implies that foreign exchange market liquidity is largely driven by shocks that affect the foreign exchange market as whole rather than individual foreign exchange market rates. It also implies that the foreign exchange market is likely to become illiquid precisely when the U.S. equity and bond markets are

illiquid - given the large liquidity co-movements across markets that we document - impairing the efficacy of international and cross asset class diversification as a means of reducing liquidity risk,(Mancini, Ranaldo, & Wrampelmeyer, 2013).

Cook and Devereux, (2005) developed a model of capital inflow that are linked to exchange rate regime. The key message of their analysis is that a hard peg is undesirable in the absence of commitment in fiscal policy. They made argue that if fiscal policy must be financed by money creation rather than direct taxation, then a fixed exchange rate rule may cause both over-borrowing and a subsequent exchange rate crisis. Chakraborty, (2003) discussed the relationship between capital inflow, real effective exchange rate for India between 1993Q2 to 2001Q1. Net capital inflow are defined as the aggregate of FDI, portfolio investment and external commercial borrowing and rate of growth of domestic credit and rate of inflation are used as proxies for monetary and fiscal policies, respectively. Using an unrestricted VAR framework, the study provides evidence that the real effective exchange rate is response to one standard deviation innovation to foreign capital inflow.

The most effective ways to deal with capital inflow would be to deepen the financial markets, strengthen financial system supervision and regulation, where needed, and improve the capacity to design and implement sound macroeconomic and financial sector policies. Steven, (2006) addresses the consequences of capital inflow and appropriate monetary measures to control its effects on Australian economy. He reported that the complications which arise under a floating exchange rate are not of the same order of magnitude as the monetary control problems the economy had when capital was less mobile but financial prices were heavily regulated. The evidence also reveals that the Australian economy had for some years, the inflation target, rather than the exchange rate, is anchor for policy. Finally, he stated that many open economy have perhaps less scope to allow large exchange rate moves without significant first-round inflationary or deflationary effects.

External capital does not simply flow in reaction to investment opportunity as measured by the magnitude of the financing gap or the current account deficit alone. International investors typically factor-in exit potentials/strategies in their decision to move into any

economy. In this regard, a country's current earning and also the size of its official reserves matter a great deal. It is a measure of confidence in the economy and obviously offers some kind of unwritten guarantee that the exchange rate can be reasonably defended against wild swings over the short-term. Apparently, increased domestic savings and comparatively impressive growth are important attractions for private capital inflow. Typically, arbitrage opportunities and prospects for quick capital gains emerge and are often inadvertently protected by the weak regulatory environment (often presenting as poor or absence of market regulating institutions). In the circumstance, short-term capital flows are attracted by such opportunities - high returns on equities, high interest rates, exchange rate appreciation, etc. (Usman , 2014).

Sen, (2014) examined the interactions between the real exchange rate, level of capital flows, volatility of flows, fiscal and stock market liquidity indicators and the current account surplus for Indian economy for the period 1993Q2 to 2004Q1. Their results indicate that the variables are co-integrated and each Granger causes to the real exchange rate. The evidence from the generalized variance decomposition analysis suggest that determinants of real exchange rate, in descending order of important include net capital flows and their volatility, government expenditure, current account surplus and the market risk.

Noy and Vu, (2007) in their study examines the impact of capital account policies on FDI inflows. Using an annual panel dataset of 83 developing and developed countries for 1984-2000, they find that capital account openness is positively but only very moderately associated with the amount of FDI inflows after controlling for other macroeconomic and institutional measures. Furthermore, their study also finds that capital controls are easily circumvented in corrupt and politically unstable establishments. Blundell-Wignall and Roulet, (2013) review the experiences of a number of European countries in coping with capital inflow. They discuss the nature of the inflows, their implications for macroeconomic and financial stability, and the policy responses used to manage with them. The findings of their study suggest that as

countries become more integrated with international financial markets, there is little room to regulate capital flows effectively.

Edwards, (2013) investigated the dynamic association between exchange rate regimes, capital flows and currency crises in emerging economies. The study draws on lessons learned during the 1990s, and deals with some of the most important policy controversies that emerged after the Mexican, East Asian, Russian and Brazilian crises. In his study he also evaluates some recent proposals for reforming the international financial architecture that have emphasized exchange rate regimes and capital mobility. While analyzing the problems and challenges associated with this policy perspective, including issues related to optimal exit policies and exchange rate feedback rules under floating regimes, he concludes that under the appropriate conditions and policies, floating exchange rates can be effective and efficient.

Lloyd, (2009) analyzed the volatility of exchange rate and foreign direct investment link for Nigeria using secondary time series data set ranging over the time 1970 to 2004. The study applied two econometric techniques of OLS and ECM. The major outcomes of the study include a positive and robust link between foreign direct investment and exchange rate, a negative impact of structural adjustment programme on real inward FDI, the major cause attributed to this negative impact is identified as deregulation accompanied by exchange rate volatility. The main outcome suggested that foreign investors must not be worried about the exchange rate volatility. The study recommended that it is required for central Bank of Nigeria to attain stable exchange rate in real terms so that production in home country is enhanced and bring positive increase in real FDI along with internal and external balance maintenance.

Ogunleye, (2009) analyzed the relationship between volatility of exchange rate and foreign direct investment for the sub Saharan Africa region taking the Nigeria and South Africa. The study stated that, share of FDI is low across the globe because of risk of exchange rate volatility. Using a time series data set this study applied two stage least square techniques of estimation the variable of exchange rate volatility was found by

using the GARCH model. The major findings highlighted that exchange rate volatility has harmful impacts on flow of FDI. The sources of exchange rate volatility were identified as inflation and nominal foreign reserves shocks in both the countries of this region. Recommendations include that in order to reduce the harmful impacts of exchange rate volatility it is required to introduce the exchange rate and FDI policy coordination.

Adeoye and Lauterbach, (2008), studied the daily volatility of the exchange rate between the US Dollar and 43 other currencies in 1990-2001. The study uses several macroeconomic variables, that proxy for the domestic economy uncertainty, wealth, and openness to international markets, as controls in the analysis. The well-known GARCH statistical behavior of exchange-rate volatility was also accounted for. The main finding of the study was that exchange rate volatility was positively correlated with the real domestic interest rate and with the degree of central bank intervention. In the panel, the study finds positive correlations between exchange rate volatility, real interest rates and the intensity of central bank intervention.

Quinn (1997) constructed international financial market liberalization index. It measures the extent of a country's restrictions on the flow of international finance using the detailed text of the IMF's Annual Report of Exchange Arrangement and Exchange Restrictions (AREAER). Capital Account openness is scored on graduating 0-4 scale, Current account openness on a 0-8 scale and international agreements on a 0-2 scale, where the larger number represents more liberalized. The resulting 0-14 range indicator is an overall measure of the intensity of international financial liberalization. Quinn constructed the index for 1950-1997 for 21 OECD countries and for the years 1959, 1973, 1982, 1988, 1997 for 43 developing countries.

Bandiera (2000) developed financial liberalization index using 8 dummy variables representing the various dimensions of liberalization, interest rates, pro-competition measures, reserve requirements, directed credit, banks' ownership, prudential regulation, capital account and exchange rate liberalization. Laeven (2003) constructed financial

liberalization index similar to Bandiera. He includes the six variables to measure financial liberalization. But excludes the measures related to stock market and external sector in his index. Kaminsky and Schmukler (2001) examined the short-run and long-run effect of financial liberalization on capital market by constructing a comprehensive chronology of financial liberalization in 28 developed and emerging economies since 1973. They used three measures of financial liberalization: capital account liberalization, domestic financial system liberalization and stock markets liberalization. (Kaminsky & Schmukler, 2008).

Financial liberalization index can be built on average of domestic financial liberalization focus on interest rate regulations and complement with information on the regulations reserve requirements, credit allocation and foreign currency deposits, Capital account liberalization focus on offshore borrowing by non –financial corporations, multiple exchange rate markets and control on capital outflows. (Demirguc & Detragiache, 1998) constructed domestic financial liberalization for 53 developing countries. They use the first date in which some interest rate were liberalized and create dummy variable with zeros for periods in which interest rates are subject to controls and ones for the liberalized periods. Financial liberalization index is used as measure of financial liberalization by Abiad and Mody (2005).

They used six dimensions; credit/reserve requirement, interest rate controls, entry barriers and or lack of procompetition policies, restrictive operational regulations, the degree of privatization in the financial sector, and control on international financial transactions. For each dimension is given a score on a graded scale as; with zero corresponding to being fully repressed, one to partially repressed, two to largely liberalize and three to fully liberalized. Kraay (1998) constructed capital account openness to measure financial liberalization. He used data on actual capital inflow and outflows as a percentage of GDP. The sum of the inward and outward foreign direct investment, portfolio investment and other investment in the financial account of the balance of payment are considered as capital inflow and outflows. But Lane and Milesi-Ferretti (2001) have use portfolio and direct investment assets and liabilities as a

percentage of GDP as an indicator of financial openness. Shrestha (2005) constructs a financial liberalization index for Nepal employing the principal component method. He uses eight variables of financial policies to construct the index. The index shows the degree of financial liberalization at a particular time. Bandiera et.al. (2000) construct an index of financial liberalization for eight developing countries using principal component method. They examine total effect of financial reform on aggregate private savings in Chile, Ghana, Indonesia, Korea, Malayasia, Mexico, Turkey and Zimbabwe.

Trends in the world market show market participants witnessed the market liquidity on securities drying up as a precursor to the crisis in the real economy due to the 2007/2008 global financial crisis. Among the major markets, the United States securities market seemed to have greatly suffered a deterioration of liquidity from the financial crisis with its market bid-ask spreads increasing from an average of 0.03% to a high of 0.27%. Nevertheless, the US market is still highly liquid in comparison to the other big markets. In Europe the effective spread increased from a low of 0.67% to a high of 3.5% after the crisis while in emerging markets the bid-ask spread of approximately 0.5% increased to a high of 1.5% (International Monetary Fund, 2016a).

Further attempts were made by Aliyu (2009a) and employed standard deviation measure of exchange rate volatility based quarterly observation and further assesses the impact of exchange rate volatility on non-oil export flows in Nigeria between 1986 and 2006. Empirical result revealed that exchange rate volatility decreased non-oil exports in Nigeria. In another study, Aliyu (2009b) examined the impact of oil price shock and exchange rate volatility on economic growth in Nigeria and measuring exchange rate volatility as the consumer price index based real exchange rate approach. But he failed to examine the degree and persistency of exchange rate volatility using standardized econometric.

2.5 Critique of existing literature relevant to the study

The relationship between financial liberalisation and economic growth has been extensively studied and so there is no shortage of empirical studies supporting that the former positively impacts the latter. However, the evidence is less apparent as to how a more liberalised financial system delivers growth. In theory, more liquid stock markets can induce more studies on firms, given the incentives to profit from new information (Boot & Thakor, 1997); more liquid stock markets can stimulate greater corporate control, leading to more efficient resource management of firms, and more liquid markets can better facilitate the channelling of savings into long-term investment, increasing capital allocation efficiency. Hence, a possible channel that financial liberalisation can contribute to growth is that it helps develop more liquid financial markets (Lee & Wong, 2009).

Aduda, Chogii, and Murayi, (2014) did a study on the Effect of Capital Market Deepening on Economic Growth in Kenya. Mwangi and Ondigo, (2014) did a study on the effect of foreign direct investments on economic growth in Kenya. Kamaan, (2014), did a study on the effect of stock market liquidity on economic growth in Kenya, similarly Gichuki, Oduor, and Kosimbei, (2012) did a study on the choice on the optimal stock market liquidity instrument for Kenya. On the contrary this study sought to establish the effect of capital control liberalization on stock market liquidity in Kenya as its contribution to the capital inflows have not been placed as consideration by the previous studies issues that lead to mispricing of assets due to interest rates, foreign exchange rates, market risk and public debt level of the economy always pausing the question; should Kenya markets promote local currency debt markets and increase the role of FDI and portfolio equity inflows to ensure strength in the market or implement the controls.

2.6 Research Gaps

While the literature reveals that different policy instruments have different effects on output, turnover and liquidity, most of it contradicts expectations derived from theory. The study by Aduda, Chogii, and Murayi, (2014) in their study on the effect of stock market liquidity on economic growth in Kenya, they stated that because of existence of inverse relationship between stock market liquidity shock and economic growth in Kenya the Central Bank of Kenya should formulate policies that reduce interest rates to desirable levels and still seek to achieve low levels of inflation. The results indicate that there are factors that affect economic growth other than monetary actions, the study only narrowed down to the relationship between interest rates and economic growth leaving out the element of control on the stock market liquidity, hence this study intends to establish the effect of post control measures on stock market liquidity in Kenya.

Poghosyan, (2006) studied the macroeconomic sources of foreign exchange risk in New European Union member states. The study modeled the joint distribution of excess returns in the foreign exchange variability and the observable macroeconomic factors using the SDF approach and multivariate GARCH-in mean model. The study found that in post-transition economies real factors play a small role in determining foreign exchange risk, while nominal and monetary factors have a significant impact. Thus the study recommend that the central banks in the EU member countries should continue stabilization policies aimed at achieving nominal convergence with the core EU members as nominal factors play crucial role in explaining the variability of the risk premium failing to address the causes of ailing monetary policies in the system.

2.7 Summary of Literature Reviewed

Liberalized stock markets are strongly associated with countries having significantly inefficient markets. Stock market liquidity appears to be more motivated by activities of financial market volatility or fickle capital flows, concerns about capital inflow triggering an overheating of the economy one side of the debate argues that financial

liberalization and integration are a key foundation for stock market development, liquidity and growth, with capital mobility and access to foreign capital being an important source for investment and the diversification of risk. On the other hand, policy-makers of some emerging market economies (EMEs) have been emphasizing the risks stemming from unfettered control of markets or the macroeconomic and financial stability objectives of their countries. The previous studies present literature showing there is an inverse relationship between liberalization and liquidity of markets leading to questions like; are the controls for financial stability or competitiveness of a countries capital market or is it to compensate for the absence of autonomous macroeconomic and financial policies and effective adjustment mechanisms.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the methodology that was used by the study to find answers to the research hypothesis. The chapter presents the research methodology in the following order: research design, the population, sampling frame, sample and sampling techniques, data collection instruments, data collection procedures, pilot test as well as validity and reliability of the instruments and the model specification explaining how data was analyzed to produce the required information necessary for the study.

3.1.1 Research Design

Kothari (2004) defined research design as a master plan that specifies the methods and procedures for collecting and analyzing the needed information. A research design is the structure, or the blueprint of research that guides the process of research from the formulation of the research questions and hypotheses to reporting the research findings (Wanjiru, 2015). The study used quantitative research design. This research design was selected for the study since the data collected on the study variables was in financial ratios and hence of quantitative nature. The financial ratios computed for each firm during the period of study were then transformed into panels. This approach is useful for this kind of study where both the cross-sectional and longitudinal characteristics of the units being analyzed constitute an important ingredient of the study (Gujarati, 2003).

3.2 Research Philosophy

The study is founded on positivist philosophical paradigm. The underlying assumption of positivism are: the belief that the social world can be studied in the same way as the natural world, i.e. there is a method for studying the social world that is value-free and the explanation of a casual nature can be provided. Positivists assume that the researcher

and the subject of the study are independent and do not influence each other (Guba & Lincole, 1994). The positivists hold that a researcher should strive to achieve objectivity in research by remaining neutral to prevent values and biases from influencing the work by following prescribed procedures.

Positivist's methodology relies heavily on experimental and manipulative methods. These methods ensure that there is a distance between the subjective biases and the objective of the study. This generally involves Hypothesis generation and testing; proving or refuting. Typically, quantitative methods are used. The positivist's position is grounded in the theoretical belief that there is an objective reality that can be known to the researcher, if one uses the correct methods and applies those methods in a correct manner. Research is evaluated using three criteria: validity-the extent to which a measurement approach or procedure gives the correct answer; Reliability-the extent to which a measurement approach or procedure gives the same answer whenever it is carried out; and Generalizability-the extent to which the findings of the study can be applied externally or more broadly outside the study context (Cohen & Crabtree, 2006). These three principles inform the approaches that were applied in data collection, data analysis, interpretation of findings, and formulation of findings.

3.3 Target Population

A population contains a group of individuals or objects from which samples are taken for measurement (Mugenda & Mugenda, 2003). The total population that the study specifies is referred to as the target population (Mugenda, 2008). The study targeted all listed firms between the period of 15 years 2000-2015 (appendix 1) as this is the period of reforms in the Kenyan stock market and a period in which strong growth was experienced in the Kenyan securities market this included 6 firms listed in the agricultural sector, 1 in the automobiles & accessories, 11 firms in the banking sector, 13 in the commercial and services, 5 in construction and allied, 5 in energy and petroleum, 6 in insurance sector, 5 in investment, 1 in investment services, 8 in the manufacturing and allied, 1 in telecommunication, 1 in real estate investment trust and 1

in the exchange traded funds as shown in appendix I. Under financial market liberalization, the study considered; the foreign exchange variability, liberalization index, market volatility, and capital inflow for the period June 2000-June 2015 this is because of the reforms that were put in place as a result of the millennium development goals and the vision 2030 with regards to opening up of the NSE to compete effectively and equally attract sufficient investments. This involved comprehensive data collection on all of the four variables: foreign exchange variability, liberalization index, market volatility and capital inflow variables in consideration for the data collected. The listed firms across the 12 sectors are as shown in table 3.1:

Table 3.1: firms listed in NSE

Sector	Number of firms	Propotion (%)
Agriculture	6	9.68
Auto mobiles & Accessories	1	1.61
Banking	11	17.74
Commercial and Services	13	20.96
Construction and Allied	5	8.06
Energy and Petroleum	5	8.06
Insurance	6	9.68
Investment	5	8.06
Investment Services	1	1.61
Manufacturing and Allied	7	12.81
Telecommunication	1	1.61
Real Estate Investment	1	1.61
Trust		
Total	62	100

Source (NSE, 2015)

3.4 Sample Frame

Kothari (2004) defined a sampling frame as a list of all the items where a representative sample is drawn for the purpose of a study. The sampling frame for this study comprised all the 63 firms listed in NSE as at 31st December 2015, (NSE, 2013).

3.5 Sample and Sampling Technique

Due to a small population size a, census sampling technique will be employed and all the listed financial services firms will make the study sample. A census study occurs if the entire population is very small or it is reasonable to include the entire population, Mugenda, and Mugenda, (1999). It is called a census sample because data is gathered on every member of the population. Since the target population comprised 63 firms listed in NSE, a census of all the firms study was conducted for the study. According to Mugenda and Mugenda (2003), a census is preferred where the population is small and manageable. Further, census method enhances validity of the collected data by eliminating errors associated with sampling (Saunders, Lewis, & Thornhill, 2009).

Kenya's stock and capital market has undergone through a notable evolution over the past decade. A controlled market was maintained in the 1960s and 1970s that were accompanied by maintained exchanged rates, controlled inflows and out flows, market structural policies in the 1970s, the basic motive of control were stemmed by imbalances of payments, steered by these events, the government chose control instead of liberalization.

Due to a small population size a, census sampling technique will be employed and all the listed financial services firms will make the study sample. A census study occurs if the entire population is very small or it is reasonable to include the entire population. It is called a census sample because data is gathered on every member of the population. The study being census study meant that one respondent finance managers were selected

from each organization, thus a sample size of 17 respondents, who will be used in this study.

The frame used in this study consisted of the whole Target Population. Accordingly, 62 listed companies formed the sample of this study. The study adopted a purposive sampling technique to draw data from the NSE, CMA and CBK reports on the stock market liquidity. To check for the aspects influencing the correlation of elements differentials under market liquidity considered by this study, the variability was plotted on the time differentials for both the short and long run periods of June 2000 – June 2015, similarly a sample of one year period (2010). The time scope was considered appropriate to both capture a period of pre-policy implementation and structural changes and the post implementation at the NSE was considered appropriate due to availability of data on daily, monthly, quarterly, semi-annually and annual basis for the considered elements.

3.6 Data collection Instruments

Secondary data was collected with the guide of data collection sheet (appendix II) and was used to construct the estimates for the function parameters. The data was extracted from the NSE periodic reports on security market liquidity, CMA reports and CBK annual reports on the macro-economic aspects: foreign exchange, liberalization index, market volatility and capital inflow. The database provided annual averages for the period under consideration for the period June 2000-June 2015. Preliminary stages of analysis of time-series data involved generation of trend curves depicting the up or down oscillation of observations across the sample period.

3.7 Data collection Procedure

Burns and Grove (2003) define data-collection as the precise, systematic gathering of information relevant to the research sub-problems, using methods such as interviews, participant observations, focus group discussion, narratives and case histories. The study

used secondary data collection sheet to obtain qualitative data for analysis, this was done through cross section data collection from NSE, CMA, CBK and the Kenya bureau of statistics from the library and the websites respectively through the guide of the Secondary data collection guide.

3.8 Pilot Test

The study employed secondary data that was collected by means of pre-designed instrument specified under appendix II. The instrument was designed by the help of experts in finance who includes Lecturers in the Finance field and Finance Managers. To ensure that the instrument captured all the necessary information to determine the required financial ratios, the instrument was discussed with the experts prior to data collection and the necessary review done. Having agreed on the adequacy of the instrument, no further piloting was conducted on the instrument prior to data collection.

3.9 Data Analysis and Presentation

Quantitative data was analyzed using descriptive statistics such as percentages, mean and standard deviation. Data analysis tool R was used to aid in the analysis. Qualitative data collected through Questionnaires was analyzed through content analysis. Content analysis involves coding and classifying data through categorizing or indexing (Hancock & Hancock, 2002), the basic idea is to identify from the transcripts the extracts of data that are informative in some way and to sort out the hidden messages in the interviews. After estimating the models, the finding was presented in tables and charts.

The three common features of a liquid market; tightness, depth, resilience were measured by Foreign exchange variability (FOREX), Capital flow (KFLOW) that measures the short-term capital flowing in and out of the economy. Liberalization index (QL) is the level to which the market is free from policy controls. Market volatility (MV) that measures the price changes variability and demonstrates market symmetry and market risk (m) measures value at risk. 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. Hypothesise that a lower cost would stimulate financial market activities and thereby lead to an increase in market liquidity.

To establish the relationship between the variable, dependent variable (changes in stock market liquidity and the independent variables (foreign exchange variability, liberalization index, market volatility and capital inflow, from the primary data that was collected, a multiple regression model Equation (i) and was used. The model featured ‘Variability of liquidity in securities market in Kenya as the dependent variable. The coefficient of determination was used to interpret the goodness of fit of regression model. T-test on the regression coefficients was used to establish the effects of each independent variable on variability of liquidity of securities exchange market in Kenya as (Nguyen & Mohamed, 2011) state that multivariate regression allows prediction of single dependent variable from more than one independent variable and also the determination of influential dependent variable. In order to analyze the magnitude of association, the coefficient of determination (R^2) was also be calculated and its significant level established (Schmidt-Hebbel, 2010).

$$Y = \beta_0 + \beta_1 FOREX_1 + \beta_2 IQ_2 + \beta_3 MV_3 + \beta_4 kflow_4 + \varepsilon \dots\dots\dots (ii)$$

Where;

β_0 = Model Equation Intercept

$\beta_1, \beta_2, \beta_3$ and β_4 – are coefficient of independent variables

Y – Stock market liquidity

$FOREX_1$ - Foreign Exchange variability

QL_2 - Liberalization Index

MV_3 - Market Volatility

$KFLOW_1$ - Capital Inflow

ε_i - Is the error term.

The study estimated both simple linear regression models and multiple linear regression models. The simple linear regression models which were estimated are as follows:

$$Y = \beta_0 + \beta_1 FOREX_1 + \varepsilon_i \dots \dots \dots (iii)$$

$$Y = \beta_0 + \beta_1 KFLOW_1 + \varepsilon_i \dots \dots \dots (iv)$$

$$Y = \beta_0 + \beta_1 QL_1 + \varepsilon_i \dots \dots \dots (v)$$

$$Y = \beta_0 + \beta_1 MV_1 + \varepsilon_i \dots \dots \dots (vi)$$

Where Y_t : Market volatility

β_0 : Is a constant

β_1 : represents the adjustment on past shocks

$FOREX_1$: represents the adjustment on past shock on foreign exchange

QL_1 : represents the adjustment on past shock on Liberalization Index

MV_1 : represents the adjustment on past shock on Market volatility

$KFLOW_1$: represents the adjustment on past shock on Capital inflow

ε_i - Is the error term.

The moderating effect was tested using a multiple regression model:

$$Y = \beta_0 + \beta_1 FOREX_1 * m + \beta_2 KFLOW_2 * m + \beta_3 QL_3 * m + \beta_4 MV_4 * m + \varepsilon_i \dots\dots\dots$$

..... (vii)

Where:

Y – Is the stock market liquidity

β – Constant

m – The moderating variable

$FOREX_1$: represents the adjustment on past shock on foreign exchange

QL_1 : represents the adjustment on past shock on Liberalization Index

MV_1 : represents the adjustment on past shock on Market volatility

$KFLOW_1$: represents the adjustment on past shock on Capital inflow

ε_i - Is the error term.

The level of significance for the study was considered as 5%. Kolmogorov-Smirnov test on the regression coefficient was used to determine the level of significance of the independent variables on the model. All the quantitative analysis for this study was conducted using the statistical tool R.

3.9.1 Independent Variables

Independent variables were those related to securities exchange market in Kenya: Foreign exchange variability computed using the black and Scholes model inputs (type, rice, strike, expiration date, interest rate, dividend, on a simple volatility calculator (CBOE Executive success) that allows you to input price and find the FX option volatility of a specific currency instrument

Liberalization index, measured using the IMF provided statistics with strong observations on; product market liberalization as a strong indicator of market liberalization.

Market volatility (market riskless returns) and capital inflow (monthly remittance to the economy) and market risk (gains and losses in the stock market) were statistics obtained from the national bureau of statistics and the central bank:

3.9.2 Dependent Variables

Dependent variables constituted of three performance measures that were used in measuring stock market liquidity: Market capitalization: this is a financial approach that measures the market value of a publicly traded company's outstanding shares

Market capitalization (MC) = No of outstanding shares (N) * Closing price per share (P)

Market Turnover: is the measure of stock liquidity calculated by dividing the total number of traded shares outstanding by the average number of shares outstanding for the period.

Market turnover = No. of shares traded/ Average outstanding shares

Trading volume: this is the value shares traded in the market at a particular trading period

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSIONS

4.1 Introduction

The main focus of the study was to determine the effect of financial liberalization on the securities market liquidity in Kenya. The independent variables were foreign exchange variability, liberalization index, market volatility, and capital inflow. The chapter presents the results of data analysis, under which empirical findings were analyzed using descriptive statistics, inferential statistics (under GARCH modelling). The chapter captures the response rate results, characteristics of the respondents, descriptive analysis of the study variables and inferential analysis.

4.2 Findings of Descriptive Statistics

This section presents the descriptive statistical analysis of the collected data based on the results of the entire sample as well as for individual sectors. Summary statistics that encapsulate the measures of central tendency such as the mean, the measures of dispersion such as standard deviation, minimum and maximum observations as well as measures of distribution (Skewedness and Kurtosis) were used.

Table 4.1: Summary of Descriptive Statistics

Component	Mean	Standard Deviation	Minimum	Maximum
Foreign exchange variability	0.3484	0.6073	0.38	0.62
Foreign Direct Investment	0.2425	0.1731	0.54	0.81
Liberalization Index	0.6748	0.1367	0.29	0.45
Balance of payment	0.2662	0.6501	0.35	0.49
Market Volatility	0.3731	0.7928	0.34	0.58
Standard Deviation on bond returns	0.228	0.6104	0.22	0.50
Capital inflow	0.3340	0.7213	0.23	0.44
Equity inflows	0.0283	0.0371	0.26	0.41
Market Liquidity	0.6432	0.1274	0.18	0.24
Market Turnover	0.9745	1.4711	0.21	0.35
Valid N (list wise)	192			

From the data collected from 192 months (Table 4.1), the findings indicate that foreign exchange variability had an antilog of 0.3484, with a maximum of 62% and a minimum of 38%, that deviated by an antilog of 0.6073 on both sides of the mean, this indicates a fair contribution of foreign exchange variability to liquidity of stock market in Kenya as supported by (Tytell & Wei, 2005) stating that not only have the global financial shocks affected advanced economies, but they have also spilled over to emerging countries such as Brazil, Russia and Korea, affecting their financial markets and, in particular, their foreign exchange variability. The findings further indicated that independent directors constituted of 24.26% of foreign direct investment, with a maximum of 81% and a

minimum of 54% that were spread on either side of the mean by 17.31%, On average liberalization index held 67.48% of liquidity in the security exchange market in Kenya with a maximum of 45% and a minimum of 29% that were spread on either side of the mean by 13.67%. Balance of payment owned 26.62% of index with a maximum of 49% and a minimum of 35% that were spread on both sides of the mean this indicates that financial liberalization leads to arbitrage opportunities and prospects for quick capital gains emerging and are often inadvertently protected by the weak regulatory environment. The evidence from the generalized variance decomposition analysis suggest that determinants of real exchange rate, in descending order of important include net capital flows (Sen, 2014).

Most of the market data is skewed, possibly this is facilitated by a clear definition of the market data with defined ceiling, further this could be due to absence of outliers. Market volatility was used as a measure market quality which represented an average of 37.17% of stock market liquidity with a maximum of 58% and a minimum of 34% that were spread on either side of the mean by 79.28%. The risk in the riskless investments had an average representation in stock market liquidity of 22.8% with a maximum 50% and a minimum of 22% that were spread on either side of the mean by 61.04%. This is market condition: Average gain/losses and standard deviation of gains/losses. The market variance levels are shown to be significant in determining the liquidity of the stock market. The risk levels would in a way determine the returns of various securities in the market.

Similarly, capital flow held 33.40% of stock market liquidity, with a maximum of 44% and a minimum of 23% that were spread on either sides of mean by 72.13%. From the findings, Stock market development is proxy of market capitalization as a proportion of capitalization, turnover and cash maintenance. The primary role of a stock market is to provide a market where financial instruments can be traded in a regulated environment without constraint. According to (Aduda et al., 2012) stock market is a vital part of any economic system in which ownership can be bought or sold.

A stock exchange and its presence in an economic system can be justified by the following functions it performs- channels savings into investments. It converts investments into cash, thus supplying market liquidity and helps in evaluating and managing securities. The study measures stock market liquidity using market capitalization, market turnover and cash maintenance. It measures the liquidity of the stock market. The quicker and easier it is to buy or sell the share on the market, the more accurately the price reflects all available information. When the market capitalization is high or on the rise, the market transaction costs will go down and this is expected to have a positive impact on the stock market development. The findings show that there is no stable pattern on the market liquidity between 2000 and 2015. This reflects that the market is not efficient in nature.

4.3 Diagnostic test results

In this section, the regression model indicated in Chapter 3 was estimated and the results are presented. According to Parramore and Watsham (1997), regression analysis tests the statistical strength of the model as hypothesized since they measure the relationships of dependent and independent variables. The regression coefficients indicate change in dependent variable associated with one unit increase in one independent variable, holding other independent variables constant (Studenmud, 2011).

There are a number of assumptions for ordinary least squares estimators which are that the regression model is linear, is correctly specified, and has an additive error term. The error term has a zero population mean. All explanatory variables are uncorrelated with the error term. Observations of the error term are uncorrelated with each other (i.e. no autocorrelation). The error term has a constant variance (i.e. no heteroskedasticity). No explanatory variable is perfect linear function of any other explanatory variables, meaning that there is no perfect multicollinearity and the error term is normally distributed (Studenmud, 2011).

The study carried out tests for normality, multicollinearity, autocorrelation and heteroscedasticity, which are presented below. The study also undertook a test for stationarity and Hausman test to check for random and fixed effects. The study carried out tests for normality using Kolmogorov-Smirnov and Shapiro-Wilk test, multicollinearity, autocorrelation and heteroscedasticity, which are presented below.

4.3.1 Normality Test

According to Greene (2012), it is convenient to assume that the disturbances (error terms/residuals) are normally distributed with zero mean and constant variance. Although normality is not necessary to obtain many of the results in multiple regression analysis, it enables several exact statistical results and proves useful in constructing confidence intervals and test statistics. A normality test carried out using Kolmogorov-Smirnov which involves both individual and joint measures. The null hypothesis established that the data was normally distributed as illustrated in table 4.2, data showed a normal distribution of the data (on liquidity is security market in Kenya) to mean the data was evenly spread through the period under consideration the Kolmogorov-Smirnov test with alpha level of 0.05 and the p-value > 0.05 , hence reject the null hypothesis. Similarly the data was drawn from a normally distributed population, the test hence rejects the hypothesis of normality with p-value being greater than 0.05. Since the p-value > 0.05 , it implies that the data is normally distributed.

Kolmogov_Smirnov (K-S) Test

Under the K-S Test, the hypotheses were as follows:

H_0 : Data came from a normal distribution

H_1 : Data did not come from a normal distribution

If the K-S test statistic is significant, then reject the null hypothesis; otherwise accept the alternative hypothesis that the data is non-normal. The outcome of the test is as shown in table 42.

Table 4.2: Kolmogorov-Smirnov (K-S) Test Results

Null hypothesis	Test	Statistic	df	Sig.	Decision
Foreign exchange variability	One-sample Kolmogorov-Smirnov Test	.235	192	.098	Reject the null hypothesis
Liberalization Index	One-sample Kolmogorov-Smirnov Test	.200	192	.073	Reject the null hypothesis
Market Volatility	One-sample Kolmogorov-Smirnov Test	.214	192	.092	Reject the null hypothesis
Capital Inflow	One-sample Kolmogorov-Smirnov Test	.168	192	.086	Reject the null hypothesis

Asymptotic significances are displayed. The significance level is 0.05.

4.3.2 Test for Autocorrelation- Durbin- Watson Test

The study carried out the Durbin-Watson (D-W) test to check for test for autocorrelation. The study tested for negative autocorrelation. To test for negative autocorrelation at significance α the test statistic d is compared to lower and upper critical values ($d_{L,\alpha}$ and $d_{U,\alpha}$);

If $d < d_{L,\alpha}$ there is statistical evidence that the error terms are positively auto correlated

If $d > d_{U,\alpha}$ there is no statistical evidence that the error terms are positively auto correlated

If $d_{L,\alpha} < d < d_{U,\alpha}$ the test is inconclusive.

Table 4.3: Durbin-Watson Test

	Statistic	df	(D-W)
em	1.957	192	2.40
Foreign exchange variability	1.744	192	2.14
Liberalization Index	1.859	192	2.421
Market Volatility	1.822	192	2.204
Capital Inflow	0.902	192	2.848

The test posted a Durbin-Watson statistic of more than 2 which is within the two critical values 2-4 Savin and White, (1977).

4.3.3 Heteroskedasticity Test - Glejser Test

The study used the Glejser Test to test for heteroscedasticity. Under the Glejser test, the hypotheses are as follows:

H_0 : There is no problem of heteroscedasticity

H_1 : There is a problem of heteroscedasticity

If the test statistic is statistically significant, then reject the null hypothesis; otherwise accept the alternative hypothesis. Provided in Table 4.4 are the results of regression of the absolute residual value (ARV) on the independent variables.

Table 4.4: Regressing Independent Variables on absolute Residual Values

	Unstandardized	Std.	Standardized		
	Coefficients	Error	Coefficients	t	Sig.
Model	B		Beta		
1 (Constant)	0.019	0.008		2.342	0.0128
FOREX	0.032	0.017	0.168	2.142	0.0002
IQ	0.018	0.023	1.80	2.825	0.0000
MV	0.014	0.033	0.32	0.342	0.0032
KFLOW	0.004	0.251	0.25	0.324	0.0047

The regression equation is $ARV = 0.019 + 0.032*FOREX + 0.018*IQ + 0.014*MV + 0.004*KFLOW$; where: ARV is Absolute Residual Value; FOREX is Foreign exchange variability; IQ is liberalization index; MV is market volatility; and KFLOW is capital flow. This model fitted the data satisfactorily ($F = 2.342$, $p < 0.0128$). The results summarized above indicate that the output coefficients for foreign exchange variability variable posted a sig. value of 0.0128, liberalization index sig. value of 0.0002, market volatility had sig. value of 0.0000 and capital inflow posted sig. value of 0.0047, respectively. It is observed that all the variables were statistically significant at the 5% level. It was, therefore, concluded that there was no heteroscedasticity problem.

Goldberger (1964) argues that the existence of heteroscedasticity is a major concern in the application of regression analysis as it can invalidate statistical tests of significance that assume that the modelling errors are uncorrelated and uniform, hence that their variances do not vary with the effects being modelled. For instance, while the ordinary least squares estimator is still unbiased in the presence of heteroscedasticity, it is inefficient because the true variance and covariance are underestimated. This study, therefore, estimated the model using the GLS. GLS model has the advantage that it corrects the problem of heteroscedasticity. According to Athanasoglou, Delis and Staikouras (2006), the GLS method uses cross-section weights for every observation in

the stock market i at time t , and the true variance components, in order to produce a matrix-weighted average of the within and the between (which is obtained by regressing the cross section averages across time) estimators.

4.4 correlation Analysis

The study carried out a correlation analysis among the variables used in the study. Correlation test is used to determine the level of the relationship between the study variables. Pearson Product Moment Correlation suitable for research data in the form of a ratio. Pearson Product Moment correlation test can produce a correlation coefficient that shows: the relationship, the degree of relationship, and the direction of the relationship (positive or negative). If the Sig. < 0.05 , it means that there is a significant relationship between the variables of the study. If the value of Sig. > 0.05 , it implies that there is no significant relationship between the variables of the study.

A correlation analysis was undertaken to determine the relationship between the dependent variable and the independent variables. Correlation analysis is used to quantify the relationship between two continuous variables. A correlation coefficient is normally between -1 and +1. If it is +1, the indication is that the two variables have a perfect positive linear relationship, while if the coefficient is -1, the indication is that relation is perfect negative linear relationship. If the coefficient is 0, then there would be no linear relationship between the two variables (Louis, Lawrence, & Keith, 2005).

Table 4.5: Correlation matrix for the model

		Liquidity of securities exchange	Foreign Exchange Variability	Foreign Exchange Variability	Foreign Exchange Variability	Foreign Exchange Variability
Liquidity of securities exchange	Pearson	1				
	Correlation					
	Sig. (2- tailed)					
Foreign Exchange Variability	N	192				
	Pearson	.306**	1			
	Correlation					
Liberalization Index	Sig. (2- tailed)	.002				
	N	192	192			
	Pearson	.394**	.496**	1		
Market Volatility	Correlation					
	Sig. (2- tailed)	.000	.018			
	N	192	192	192		
Capital Inflow	Pearson	.465**	.361**	.253**	1	
	Correlation					
	Sig. (2- tailed)	.000	.000	.048		
	N	192	192	192	192	
	Pearson	.487**	.369**	.346**	.477**	1
	Correlation					
	Sig. (2- tailed)	.020	.042	.056	.486	.048
	N	192	192	192	192	192

*. Correlation is significant at the 0.05 level (2-tailed).

From the table 4.5 the relationship between foreign exchange variability and liquidity of securities exchange market in Kenya is (0.306, p value =0.002<0.05). This implies that foreign exchange variability has high significant contribution towards liquidity of securities exchange market in Kenya. There was therefore a strong positive correlation

between liquidity of securities exchange market in Kenya and foreign exchange variability. The results conform to the study by (Sarah & Allan, 2016) whose study established that there is a very close relationship between Capital inflow and liquidity of securities exchange markets of the Emerging Economies, this may also be supported by the fact that the magnitude and direction of this impact differ for the respective capital flow types, this is further corroborated by Cordero and Montecino (2010) who concluded that globalization of international financial markets has caused a significant increase in emerging countries' exposure to the risk of capital flow bonanzas or capital flight.

From the table above the relationship between liberalization index and liquidity of securities exchange market in Kenya is (0.496, p value =0.018<0.05). This implies that liquidity index has a significant contribution towards liquidity of securities exchange market in Kenya. The results from table 4.9 above shows a Pearson correlation of 79.6 at 0.05 level of significance. This implies that there is a positive correlation between liquidity index and liquidity of securities exchange market in Kenya. The results conform to the findings of (Cloyne & Hürtgen, 2014) that stated that given the change in the monetary regime, the response of the economy is likely to be affected by the conduct of liquidity of securities exchange market in Kenya following the initial contraction.

the relationship between market volatility and liquidity of securities exchange market in Kenya (0.253, p value =0.048<0.05). This implies that there is a very close relationship between market price changes and Market performance of the Kenya's security market. Emerging Economies, this may also be supported by the fact that the magnitude and direction of this impact differ for the respective markets, this is further corroborated by Cordero and Montecino, (2010) who concluded that globalization of international financial markets has caused a significant increase in emerging countries' exposure to the risk of market dynamics and exposure.

The relationship between capital inflow and liquidity of securities exchange market is (0.477, p value =0.486<0.05). This implies that capital inflow has a positive and a

significant contribution towards liquidity of securities exchange market. The results from the table show a Pearson correlation of 0.477 at 0.01 level of significance. This implies that there is a positive correlation between capital inflow and liquidity of securities exchange market. There was therefore a strong positive correlation between liquidity of securities exchange market and Capital inflow.

4.5 Inferential Statistics

The study applied a general linear regression model to determine the predictor powers of the effect of foreign exchange variability, liberalization index, market volatility and capital flow on liquidity of securities exchange market in Kenya. The inferential statistics include regression analysis of the model, analysis of variance and coefficient of determination. The results were used to create composite indexes for independent variables.

4.5.1 Regression for foreign exchange variability on liquidity of securities exchange market

In testing the magnitude of and direction of the effect of foreign exchange variability on the liquidity of securities exchange market in Kenya, the following objective one and hypothesis one below were used.

Under objective one and hypothesis one below, the study sought to establish the magnitude and the direction of the effect of foreign exchange variability on foreign exchange variability.

Objective 1: To establish the effect of foreign exchange variability on foreign exchange variability in Kenya.

H₀₁: There is no significant effect of foreign exchange variability on foreign exchange variability in Kenya.

To determine whether there is a relationship, the model $Y = \beta_0 + \beta_1 FOREX_1 + \varepsilon_i$ was fitted. The regression results were as shown in table 4.6. The coefficient of determination (R^2) of 0.579 indicates that foreign exchange variability on its own in the model, explains 57.9% of the variation in the dependent variable (foreign exchange variability). The remaining 42.1% is explained by the other variables. This is supported by the findings of (Mancini et al., 2013) who state that strong co-movements across the liquidity of different currencies implies that foreign exchange market liquidity is largely driven by shocks that affect the foreign exchange market as whole rather than individual foreign exchange market rates

Table 4.6: Linear Regression Model Summary for foreign exchange variability on liquidity of securities exchange market

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	0.773	0.597	0.579	0.577

4.5.2 ANOVA analysis of foreign n exchange variability on liquidity of securities exchange market in Kenya

The F test was significant with a p value =0.000 which is less than the standard p value of 0.05 and this meant that the model was significant. From ANOVA, since p value =0.000 and is lower than p=0.05 (p value 0.000<0.05), this indicates that the model was statistically significant in explaining the contribution of volatility of Inflows to liquidity of securities exchange market in Kenya. The regression results in table 4.7 show that the association between foreign exchange variability and liquidity of securities exchange market in Kenya was significant, (F (1,191) =34.072, p =0.000<0.005).

Table 4.7: ANOVA analysis of foreign exchange variability on foreign exchange variability

Model	Sum of Squares	df	Mean Square	F	Significance level
Regression	11.334	1	11.334	34.072	0.000
Residual	7.651	191	0.333		
Total	18.984	192			

Model coefficients of foreign exchange variability on foreign exchange variability

Table 4.8 shows the model coefficients of the regression results of foreign exchange variability on foreign exchange variability in Kenya. The F test was significant with a p value =0.000 which is less than the standard p value of 0.05 and this meant that the model was significant. From ANOVA, since p value =0.000 and is lower than p=0.05 (p value $0.000 < 0.05$), then the contribution of foreign exchange variability on liquidity of securities exchange market in Kenya is significant.

Table 4.8: Model coefficients of foreign exchange variability on liquidity of securities exchange market in Kenya

Model	Unstandardized Coefficients	Standardized Coefficients	t	Significance level
B	Std. Error	Beta		
(Constant)	0.085	0.574	0.148	0.884
Foreign exchange variability	0.714	0.122	0.773	5.837
				0.000

Kenya in Kenya. With a constant of 0.085, the model estimate for external environment in strategy implementation. The model equation therefore is,

$$Y = 0.085 + 0.714FOREX$$

The gradient coefficient shows the extent to which a unit change in the independent variable causes a change in the dependent variable; that is the change in foreign exchange causes change in liquidity of securities exchange market in Kenya. The gradient coefficient from table 4.8 was positive meaning that a unit change in external environment leads to 5.837 units of positive change in liquidity of securities exchange market in Kenya. This meant that foreign exchange variability was significant (p-value=0.000) in positively influencing liquidity of securities exchange market in Kenya. Where Y is liquidity of securities exchange market in Kenya and *FOREX* is foreign exchange variability. The coefficient for foreign exchange variability (β) was equally significant with ($\beta = 0.714$, $t=5.837$, $p=0.000 < 0.005$) indicating that foreign exchange variability increases at the rate of 0.714. Since p-value =0.000< 0.05, the null hypothesis was therefore rejected and conclusion made that there is a statistically significant and positive relationship between foreign exchange variability and liquidity of securities exchange market in Kenya, this is consistent with the findings of (Ostry et al., 2010) that established that capital controls on certain types of inflows might usefully complement prudential regulations to limit financial fragility and can be part of the toolkit. In particular, by helping fuel credit booms, especially in foreign currency, debt liabilities, including debt recorded as financial FDI, seem to bring significant vulnerabilities to the economy.

4.5.3 ACF plots for foreign exchange variability

The model rejects the null hypothesis H_0 : Foreign exchange variability has got no influence on securities exchange market in Kenya, there is no autocorrelation, and the annual inputs series seems to be a non-stationary process with a mean close to zero but with volatility exhibiting relatively calm periods followed by more turbulent periods.

This is one of the key characteristics mentioned in the introduction of foreign exchange variability and is referred to as volatility clustering.

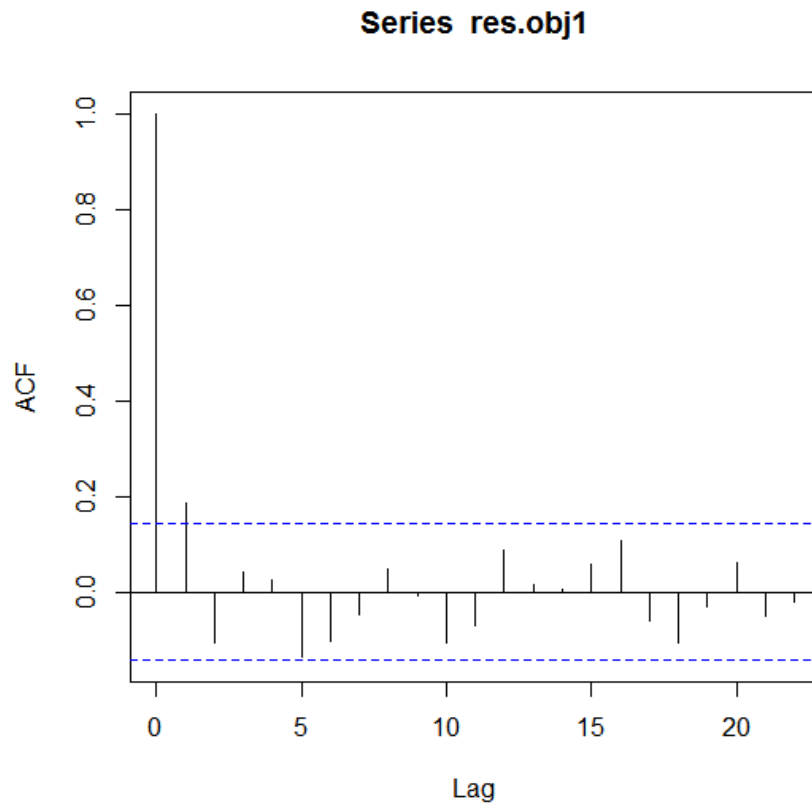


Figure 4.1: ACF returns

Figure 4.1 shows the sample ACF of the return which suggests no significant serial correlation on monthly returns, figure 4.1 shows the sample ACF of the absolute log returns i.e. $|r_t|$. This plot clearly suggest that the monthly returns are not serially independent, combining the four plots, it seems that the monthly returns are indeed seriously uncorrelated but dependent. The autocorrelation plot shows that for the immediate 11 lags, all sample autocorrelation except the 1st and 12th all fall in the 95% confidence bounds indicating the residuals appear to be random. This findings upload those of (Hassan, 2015) in his study on Speculative Flows, Exchange Rate Volatility and Stock market liquidity , South African Experience that notes that the different

consequences of short and long-term currency volatility, the benefits from a moderate degree of short-term volatility, the scope for foreign exchange reserve accumulation (and other prudential tools), and argue that low and stable inflation serves a counter-speculative role by permitting low nominal interest rates, which reduce the currency's speculative appeal without the repression of negative real interest rates. Low interest differentials are also associated with lower exchange rate volatility. Similarly Sen, (2014) examined the interactions between the real exchange rate, level of capital flows, volatility of flows, fiscal and stock market liquidity indicators and the current account surplus for Indian economy, their results indicate that the variables are co-integrated and each Granger causes to the real exchange rate.

4.5.4 Regression for liberalization index and liquidity of securities exchange market in Kenya

The study sought to establish the magnitude and direction of the effect of liberalization index on liquidity of securities exchange market in Kenya, using the following objective two and the hypothesis as stated below.

Objective 2: To determine the effect of liberalization index on liquidity of securities exchange market in Kenya

H₀₂: liberalization index does not have significant role on liquidity of securities exchange market in Kenya

The regression results in table 4.9 show that the association between liberalization index and liquidity of securities exchange market in Kenya was significant, ($F(1,191) = 0.316$, $p = 0.000 < 0.005$). Liberalization index caused a 61.6% variation on liquidity of securities exchange market in Kenya. The regression results were as shown in table 4.10 below:

Table 4.9: Regression Results for liberalization index and liquidity of securities exchange market in Kenya

Model Summary				
Model	R	R²	Adjusted R²	Std. Error
	0.796	0.534	0.316	0.550

4.5.5 ANOVA analysis of liberalization index on liquidity of securities exchange market in Kenya

The F test was significant with a p value =0.000 which is less than the standard p value of 0.05 and this meant that the model was significant. From ANOVA, since p value =0.000 and is lower than p=0.05 (p value $0.000 < 0.05$), this indicates that the model was statistically significant in explaining the contribution of liberalization index on liquidity of securities exchange market in Kenya. The regression results in table 4.10 show that the association between foreign exchange variability and liquidity of securities exchange market in Kenya was significant, ($F(1,191) = 39.774$, $p = 0.000 < 0.005$).

The F test was significant with a p value =0.000 which is less than the standard p value of 0.05 and this meant that the model was significant. From ANOVA, since p value =0.000 and is lower than p=0.05 (p value $0.000 < 0.05$), then the contribution of liquidity index on liquidity of securities exchange market in Kenya is significant. The ANOVA analysis in table 4.10 presents the influence that liberalization index has on liquidity of securities exchange market in Kenya. The findings indicated a P-value of 0.000 that is less than 0.05. This indicates that the model was statistically significant in explaining the impact of the independent variable on liquidity of securities exchange market in Kenya. Therefore it can be concluded that liberalization index had a positively strong significant effect on liquidity of securities exchange market in Kenya.

Table 4.10: ANOVA analysis of liberalization index on liquidity of securities exchange market in Kenya

Model	Sum of Squares	Df	Mean Square	F	Significance level
Regression	12.029	1	12.029	39.774	0.000
Residual	6.956	191	0.302		
Total	18.984	192			

Under objective two and hypothesis two below, the study sought to establish the magnitude and direction of the effect of liberalization index on liquidity of securities exchange market in Kenya.

Model coefficients of Liberalization index and liquidity of securities exchange market in Kenya

Table 4.11 shows the model coefficients of the regression results of liberalization index on liquidity of securities exchange market in Kenya. With a significant constant value p value =0.000 of 0.820, the study concludes that the contribution of liberalization index on foreign liquidity of securities exchange market in Kenya is significant.

Table 4.11: Model Coefficients of liberalization index on liquidity of securities exchange market in Kenya

Model	Unstandardized Coefficients		Standardized Coefficients	t	Significance level
	B	Std. Error	Beta		
	0.820	0.419		1.959	0.062
	0.736	0.117	0.496	6.307	0.000

The model equation therefore is,

$$Y = 0.820 + 0.736QL_2 + \varepsilon_i$$

From the table 4.12 shows the relationship between liberalization index and liquidity of securities exchange market is (0.496, p value =0.000<0.05). This implies that liberalization index has a positive and a significant contribution towards liquidity of securities exchange market. The results from the table shows a Pearson correlation of 0.496 at 0.01 level of significance. This implies that there is a positive correlation between liberalization index and liquidity of securities exchange market.

4.5.6 ACFs for Liberalization Index and stock market liquidity

Figure 4.2 shows positive conditional volatility in Liberalization Index and clearly the series has a slight serial correlation. This findings are consistent with that of (S. Ahmed & Zlate, 2014) on the determinants of net private Liberalization Index to emerging market economies and established that Liberalization Index appear to have discouraged both total and portfolio inflows in light of information in asset.

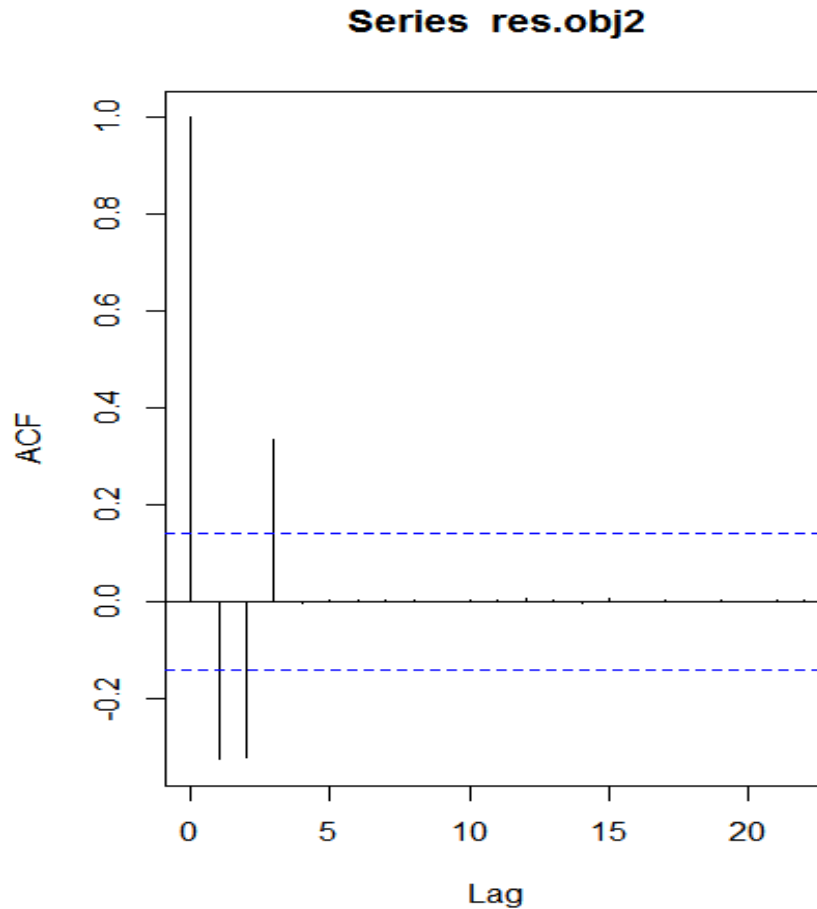


Figure 4.2: ACF returns

Figure 4.2 shows the sample ACF of the returns (r_t). The plot clearly suggest that the monthly returns are serially independent, it seems that the monthly returns are statistically uncorrelated. The long spikes suggest that the percentage changes are not seriously independent and have some ARCH effect. This findings are supported by that of (Bauer & Granziera, 2014) in their study on Stock market liquidity , Private Debt and Financial Stability Risks, that the debt-to-GDP ratio rises in the short run following an unexpected tightening in stock market liquidity. As a consequence, the likelihood of a financial crisis increases, as estimated from a panel logit regression.

In the long run output recovers and higher borrowing costs discourage new lending, leading to a deleveraging of the private sector. A lower debt-to-GDP ratio in turn reduces the likelihood of a financial crisis. These results suggest that Stock market liquidity can achieve a less risky financial system in the long run but could fuel financial instability in the short run. Similar findings are echoed by (Blundell-Wignall & Roulet, 2013) whom in their findings suggest that as countries become more integrated with international financial markets, there is little room to regulate capital flows effectively.

4.5.7 Regression Analysis of Market volatility and liquidity of securities exchange market in Kenya.

In testing the magnitude of and direction of the effect of market volatility on liquidity of securities exchange market in Kenya, the following objective three and hypothesis three below were used.

Objective 3: To establish the effect of Market volatility on liquidity of securities exchange market in Kenya.

H₀₃: Market volatility has no effect on liquidity of securities exchange market in Kenya.

A simple linear regression was performed between liquidity of securities exchange market in Kenya and Market volatility. The findings indicate that there is a significant linear relationship between the Market volatility and liquidity of securities exchange market in Kenya with the indications that market volatility caused a 6.4% variation in liquidity of securities exchange market in Kenya.

To determine whether there is a relationship, the model $Y = \beta_0 + \beta_3 MV_3 + \varepsilon_i$ was fitted. The regression results were as shown in table 4.14. The coefficient of determination (R^2) of 0.023 indicates that market volatility on its own in the model, explains 2.3% of the variation in the dependent variable (liquidity of securities exchange market in Kenya).

The remaining 97.7% is explained by the other variables. The regression results were as shown in table 4.14 below:

Table 4.12: Fitness test model- Market volatility and liquidity of securities exchange market in Kenya

Model Summary				
Model	R	R²	Adjusted R²	Std. Error
	0.253	0.064	0.023	0.879

4.5.8 ANOVA analysis of Market volatility and liquidity of securities exchange market in Kenya

The ANOVA table 4.13 was used to ascertain the significance of market volatility on liquidity of securities exchange market in Kenya tested at 95% level of confidence. The regression results in table 4.15 show that the association between market volatility and liquidity of securities exchange market in Kenya was significant, ($F(1, 191) = 1.567$, $p = 0.223 > 0.005$). This agrees with the findings of (Bjørnland, 2008) that concluded that there is interdependence between liquidity of securities exchange market in Kenya and interest rates by imposing a combination of short-run and long-run restrictions.

Table 4.13: ANOVA analysis of market volatility and liquidity of securities exchange market in Kenya strategy.

Model		Sum of Squares	Df	Mean Square	F	Significance level
1	Regression	1.211	1	1.211	1.567	.223
	Residual	17.773	191	0.773		
	Total	18.984	192			

Model coefficients of market volatility on liquidity of securities exchange market in Kenya

Table 4.14 shows the model coefficients of the regression results of market volatility and liquidity of securities exchange market in Kenya. The F test was significant with a p value =0.000 which is less than the standard p value of 0.05 and this meant that the model was significant. From ANOVA, since p value =0.023 and is higher than p=0.05 (p value $0.000 < 0.05$), then the contribution of market volatility on liquidity securities exchange market in Kenya is positively significant.

Table 4.14 shows the coefficient for market volatility (β) was equally significant with ($\beta = 0.334$, $t=1.252$, $p=0.000 < 0.005$) indicating that for one unit increase in liquidity of securities exchange market in Kenya, market volatility increases at the rate of 0.334. Since p-value =0.000< 0.05, the null hypothesis was therefore rejected and conclusion made that there is a statistically significant and a positive relationship between market volatility and liquidity of securities exchange market in Kenya. This is in agreement with the findings of (Sheehan, 1983) who stated that the consensus among economists is that liquidity of securities exchange market in Kenya has its primary effects over relatively long time intervals that is, quarters or years rather than days or weeks. Moreover, there is a growing consensus that to achieve maximum sustainable economic growth, the main objective of liquidity of securities exchange market in Kenya should be price stability. On the other hand, there has never been agreement about how market policies are transmitted through the economy to prices, (Connell, 2010).

Table 4.14: Model Coefficients of market volatility and liquidity of securities exchange market in Kenya

Model	Unstandardized Coefficients	Standardized Coefficients	t	Significance level
	B	Std. Beta		
		Error		
(Constant)	2.105	1.024	2.056	0.051
Capital inflow	0.334	0.267	1.252	0.223

With the model equation being,

$$Y = 2.105 + 0.334MV_3 + \varepsilon_i$$

4.5.9 ACF Plot for Market volatility and stock market liquidity

The output also included the following tests applied to the standardized residuals and squared residuals. However, while the residuals seem statistically uncorrelated according to ACF shown in Figure 4.3, they are hardly identically distributed from visual inspection, that is, the residuals are not independent and identically distributed through time.

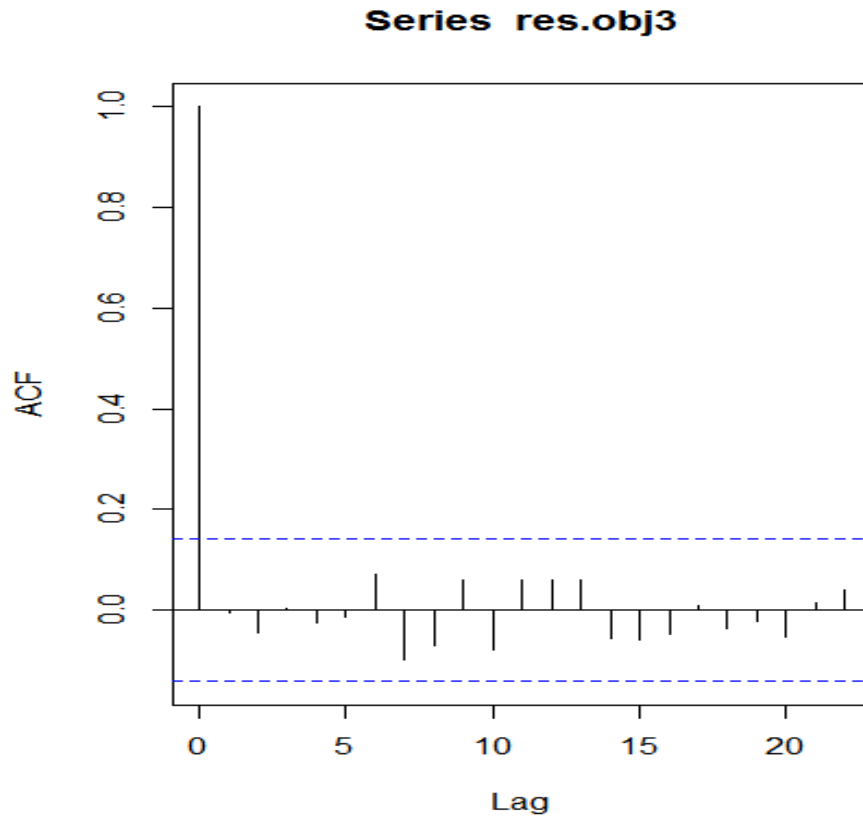


Figure 01: ACF Residuals

The study inspected the ACF of the residuals. It is well-known that for random and independent series of length n , the lag k autocorrelation coefficient is normally distributed with a mean of zero and a variance of $1/n$, and the 95% confidence limits are given by $\pm 1.96/\sqrt{n}$. The ACF plots in Figure 4.3 show that there is no significant autocorrelation left in the residuals from both ARMA-type models for daily and monthly flow. Figure 4.3 shows the sample ACF of the return which suggests no significant serial correlation on the annual variations and the absolute log returns i.e. $|r_t|$. This plot clearly suggest that the monthly returns are not serially independent, combining the four plots, it seems that the monthly returns are indeed seriously uncorrelated but dependent. This findings upload those of (Hassan, 2015) in his study on Speculative Flows, Exchange Rate Volatility and Stock market liquidity.

4.5.10 Regression for Capital Inflow and liquidity of securities exchange market

The study sought to establish the magnitude and direction of the effect of capital inflow on liquidity of securities exchange market. The following objective four and hypothesis four below were used.

Under objective two and hypothesis one below, the study sought to establish the magnitude and direction of the effect of Capital inflow on liquidity of securities exchange market.

Objective 4: To establish the effect of Capital inflow on liquidity of securities exchange market in Kenya.

H₀₄: There is no significant effect of Capital inflow on liquidity of securities exchange market in Kenya.

To determine whether there is a relationship, the model a simple linear regression was performed between liquidity of securities exchange market and capital inflow $Y = \beta_0 + \beta_1 KFLOW_1 + \varepsilon_i$ was fitted. The regression results were as shown in table 4.15. The coefficient of determination (R^2) of 0.327 indicates that capital flow on its own in the model, explains 28.9% of the variation in the dependent variable (liquidity of securities exchange market). The remaining 71.1% is explained by the other variables. The findings indicate that there is a significant linear relationship between capital inflow and liquidity of securities exchange market in Kenya, this was tested at 95% level of confidence. The regression model between Monetary effect and liquidity of securities exchange market yielded significantly high scoring on the values of R^2 (0.327), this implies that changes in monetary policies can explain up to 32.7% of the capital inflow variables on liquidity of securities exchange market as shown in Table 4.15.

Table 4.15: Regression Results for capital inflow and liquidity of securities exchange market

Model	R	R ²	Adjusted R2	Std. Error
	0.572	0.327	0.298	0.745

4.5.11 ANOVA analysis of Capital inflow on liquidity of securities exchange market

The F test was significant with a p value =0.003 which is less than the standard p value of 0.05 and this meant that the model was significant. From ANOVA, since p value =0.003 and is lower than p=0.05 (p value $0.003 < 0.05$), this indicates that the model was statistically significant in explaining the contribution of capital flow to liquidity of securities exchange market in Kenya. The regression results in table 4.19 show that the association between capital flow and liquidity of securities exchange market was significant, (F (1,191) =11.19, p =0.003<0.005). Capital flow caused a 57.9% variation on monetary policies.

Table 4.16: ANOVA analysis of Capital Inflow on liquidity of securities exchange market

Model	Sum of Squares	Df	Mean Square	F	Significance level
Regression	6.214	1	6.214	11.19	0.003
Residual	12.770	191	0.555		
Total	18.984	192			

Model coefficients of Capital inflow on liquidity of securities exchange market

Table 4.17 shows the model coefficients of the regression results of capital flow on liquidity of securities exchange market in Kenya. The F test was significant with a p value =0.003 which is less than the standard p value of 0.05 and this meant that the model was significant. From ANOVA, since p value =0.003 and is lower than p=0.05 (p value $0.003 < 0.05$), then the contribution of capital flow of securities exchange market is significant.

Where Y is liquidity of securities exchange market and KFLOW is capital inflow. The coefficient for capital inflow (β) was equally significant with ($\beta = 0.756$, $t=3.346$, $p=0.003 < 0.005$) indicating that for one unit increase in liquidity of securities exchange market, capital inflow increases at the rate of 0.714. Since p-value =0.003< 0.05, the null hypothesis was therefore rejected and conclusion made that there is a statistically significant relationship between capital inflow and liquidity of securities exchange market , this is in agreement with the finding of Magud and Reinhart, (2007) that states that while in practice capital controls do little to affect the volume of capital flows or other key macro-economic variables, they do tend to "provide room" for liquidity of securities exchange market and tend to make liquidity of securities exchange market more independent in many emerging markets.

Table 4.17: Model coefficients of Capital inflow on liquidity of securities exchange market

Model	Unstandardized Coefficients		Standardized Coefficients	t	Significance level
	B	Std. Error	Beta		
(Constant)	0.429	0.891		0.481	0.635
Capital inflow	0.756	0.226	0.572	3.346	0.003

The model equation therefore is,

$$Y = 0.429 + 0.756KFOW$$

From the table 4.17 shows the relationship between capital inflow and liquidity of securities exchange market is (0.572, p value =0.003<0.05). This implies that capital inflow has a positive and a significant contribution towards liquidity of securities exchange market this is supported by the findings of (Cook & Devereux, 2005) who state that real effective exchange rate is response to one standard deviation innovation to foreign capital inflow, a fixed exchange rate rule may cause both over-borrowing and a subsequent exchange rate crisis. The results from the table show a Pearson correlation of 0.572 at 0.01 level of significance. This implies that there is a positive correlation between capital inflow and liquidity of securities exchange market

4.4.12 ACF Plots for capital flow

Figure 4.4 shows conditional volatility in the capital inflow and clearly the series has no serial correlation. This findings are consistent with that of (Prices et al., 2000) on Asset Prices, Monetary Policy and Macroeconomic Stability was that adjusting monetary policy in light of information in asset prices can improve macroeconomic outcomes even in countries where the central bank is following an inflation-targeting strategy.

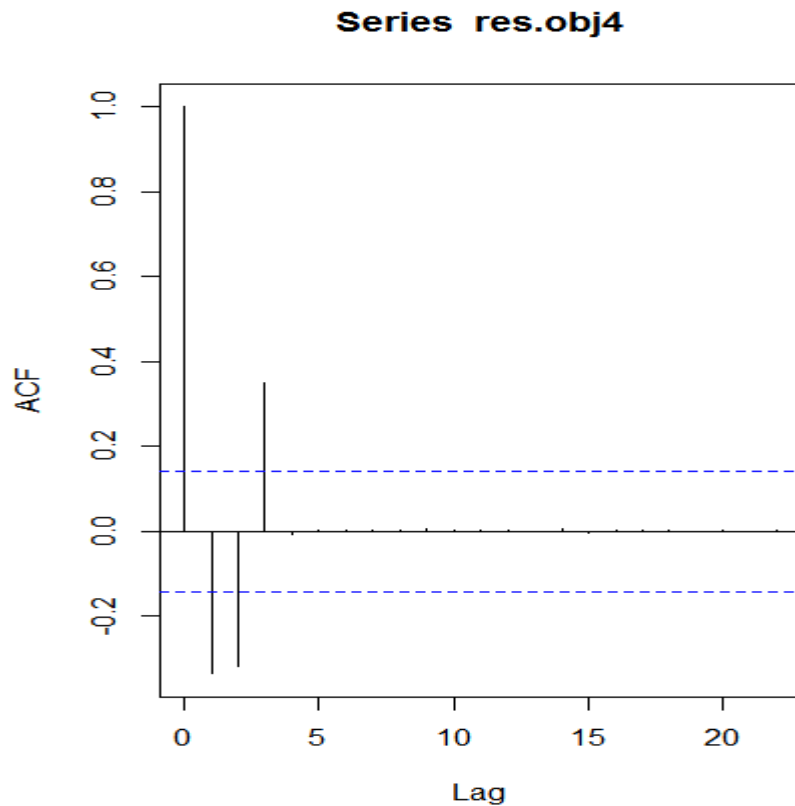


Figure 4.4: ACF Squared returns

Figure 4.4 Left plots annual variations as a result of joint effects 2000-2015 a simple period consisting of 15. A Sample Autocorrelation Function for the annual returns of lags 0 to 20 and the 5% confidence level. This suggests that a conditional mean model is not required for this return series. Figure 4.4 shows the estimated volatility process, this ACF suggests significant and positive serial corrections or conditional heteroscedacity in standardized residual series. Where the number is parentheses is the p-value of the test statistic. Thus the model appears to be adequate in describing the linear dependence in the return and volatility series.

4.6 Regression Analysis for the overall Model

4.6.1 ANOVA analysis of the overall model

The F test was significant with a p value =0.000 which is less than the standard p value of 0.05 and this meant that the model was significant. From ANOVA, since p value =0.000 and is lower than p=0.000 (p value $0.000 < 0.05$), this indicates that the model was statistically significant in explaining the contribution of the independent variables to the dependent variable liquidity of securities exchange market in Kenya. The regression results in table 4.18 show that the association between foreign exchange variability and liquidity of securities exchange market in Kenya was significant, (F (1,23) =495.577, p =0.000<0.005).

Table 4.18: ANOVA analysis of the Overall Model.

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	299.398	1	74.850	495.577	0.000
Residual	3.172	191	0.151		
Total	302.570	192			

4.6.2 Goodness of fit of the overall model

The study sought to establish the magnitude and direction of the effect of effect of the independent variables on the dependent variable (liquidity of securities exchange market in Kenya). To determine whether there is a relationship, the model $Y = \beta_0 + \beta_1 FOREX_1 + \beta_2 IQ_2 + \beta_3 MV_3 + \beta_4 kflow_4 + \varepsilon$ was fitted. The regression results were as shown in table 4.19. The coefficient of determination (R^2) of 0.990 indicated that the independent variables explained 99% of the variation on the dependent variable (liquidity of securities exchange market in Kenya). The remaining

1% is explained by the other variables not considered in this study. With a Durbin-Watson of 1.754 there for the study concludes that there is evidence of positive serial correlation.

Table 4.19: Fitness test model for the Overall Model

Model	R	R ²	Adjusted Square	R Std. Error of the Estimate	Durbin-Watson
	0.995	0.990	0.988	0.389	1.754

4.6.3 Optimal Model Coefficients

Table 4.20 shows the model coefficients of the regression results of foreign exchange variability on liquidity of securities exchange market in Kenya. The F test was significant with a p value of all the four variables (Foreign exchange variability, capital flow, macroeconomic effect, foreign market exchange) being less than the standard p value of 0.05 and this meant that the model was positively statistically significant. From ANOVA, since p value =0.003 and is less than p=0.05 (p value 0.000<0.05), then the contribution of independent variables to liquidity of securities exchange market in Kenya is positively highly significant.

Table 4.20: Coefficients for the Overall Model

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	Beta	Std. Error	Beta		
(Constant)	0.483	0.547		0.882	0.388
Foreign exchange variability	0.447	0.135	0.507	3.304	0.003
Liberalization Index	0.531	0.130	0.548	4.087	0.001
Market volatility	-	0.139	-0.590	-3.841	0.001
Foreign exchange market	0.392	0.125	0.529	3.128	0.005

These predictor variables (foreign exchange variability, liberalization Index, macroeconomic effects and foreign exchange market) explained 88.2% variation in liquidity of securities exchange market in Kenya. Beta coefficients for foreign exchange variability ($t=3.304$, $p=0.003 < 0.05$), liberalization Index($t=4.087$, $p=0.001 < 0.05$), and macroeconomic effects ($t=-3.841$, $p=0.001 < 0.05$) and foreign exchange market($t=-3.128$, $p=0.005 < 0.05$), were all significant, meaning that one unit increase in liquidity of securities exchange market in Kenya increases foreign exchange variability by 0.447 units, Liberalization Index by 0.531 units macroeconomic effects by -0.535 units and decreases foreign exchange market by 0.392 units. This meant that when we consider all the independent variables combined foreign exchange variability, liberalization Index, macroeconomic effects and foreign exchange were highly significant. The fitted model is

$$Y = 0.483 + 0.447FOREX_1 + 0.531QL_2 + 0.535MV_3 + 0.392KFLOW_4 + \varepsilon_i$$

4.6.3 Correlation test – Independent Variables and the Dependent Variable

The independent variable's attributes were tested for the extent to which they correlated with the dependent variables and the set of the four independent variables: foreign exchange variability, liberalization Index, market volatility, and capital inflow. The test was carried out using the Pearson correlation coefficient as presented in table 4.21 indicated a significant correlation between the independent variables at 95% level of confidence, this showed that the independent variables have a strong and a positive effect on the liquidity of securities exchange market in Kenya. From the table 4.20 the relationship between liquidity of securities exchange market in Kenya and liberalization Index policy is (0.572, p value=0.003<0.05), liquidity of securities exchange market in Kenya and foreign exchange market is (0.253, p value= 0.223>0.05), liquidity of securities exchange market in Kenya and macroeconomic effects is (0.796, p value=0.000<0.05), liquidity of securities exchange market in Kenya and foreign exchange market is (0.773, p value=0.000<0.05), capital inflow and macroeconomic effects is (0.508, p value=0.01<0.05), liberalization Index and foreign exchange variability is (0.524,p value=0.007<0.05),capital inflow and foreign exchange market is (0.528, p value= 0.007<0.05), market volatility and foreign exchange reserves (0.566, p value=0.003<0.05) , macroeconomic effects and foreign exchange variability is (0.755, p value=0.000<0.05) and foreign exchange market and foreign exchange variability is (0.513,p value=0.009<0.05).

Table 4.21: Correlation Results for Dependent and the independent variables.

Correlations			Liquidity of securities exchange market in Kenya	Foreign exchange variability	Liberalization Index	Market volatility	Foreign Exchange Market
Liquidity of securities exchange market in Kenya	Pearson Correlation		1				
	Significance level (2-tailed)						
	N		192				
Foreign exchange variability	Pearson Correlation		0.572	1			
	Significance level (2-tailed)		0.003				
	N		192	192			
Liberalization Index	Pearson Correlation		0.796	0.508	1		
	Significance level (2-tailed)		0.000	0.010			
	N		192	192	192		
Market volatility	Pearson Correlation		0.253	0.528	0.566	1	
	Significance level (2-tailed)		0.223	0.007	0.003		
	N		192	192	114	192	
Foreign Exchange Market	Pearson Correlation		0.773	0.524	0.755	0.513	1
	Significance level (2-tailed)		0.000	0.007	0.000	0.009	
	N		192	192	192	192	192

4.7 Regression analysis of moderating effect

4.7.1 ANOVA analysis of the moderating effect of market risk on stock market liquidity.

The regression results in table 4.22 show that the association between market risk (moderating variable) and market liquidity was significant, (F (1, 191) =163.92, p =0.000<0.05).

Table 4.22: ANOVA analysis for the moderated overall model.

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	293.180	1	73.295	163.915	0.000
Residual	9.390	191	0.447		
Total	302.570	192			

4.7.2 Model coefficients of the moderating effect of market risk on securities exchange market in Kenya

To determine whether there is a relationship, the model

$$Y = \beta_0 + \beta_1 FOREX_1 * mkt\ risk + \beta_2 IQ_2 * mkt\ risk + \beta_3 MV_3 * mkt\ risk + \beta_4 kflow_4 * mkt\ risk + \varepsilon$$

was fitted. The regression results were as shown in table 4.23 below.

Table 4.23: Overall Model Coefficients

Model	Unstandardized		Standardized	t	Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
(Constant)	1.875	0.503		0.882	0.001
Foreign exchange variability* <i>market risk</i>	0.056	0.054	0.251	1.041	0.310
Liberalization Index * <i>market risk</i>	-0.145	0.055	-0.686	-2.612	0.016
Market volatility* <i>market risk</i>	0.154	0.053	0.881	2.879	0.009
Capital inflow* <i>market risk</i>	0.110	0.055	0.533	1.994	0.059

From table 4.22, the model shows that the relationship between Foreign exchange, Liberalization Index, Market volatility and capital inflow in presence of moderating variable was significant ($F(1,191) = 10.41$, $p = 0.0000 < 0.05$). This means that the percentage of market liquidity accounted for by Foreign exchange, Liberalization Index, Market volatility and capital inflow in presence of moderating variable was 88.2%. These predictor variables (Foreign exchange, Liberalization Index, Market volatility and capital inflow in presence of moderating variable) explained 88.2 70.8% variation in foreign exchange variability. Beta coefficients for liberalization index ($t = -2.612$, $p = 0.016 < 0.05$) and market volatility ($t = 2.879$, $p = 0.009 < 0.05$), were significant, as for foreign exchange variability ($t = 1.041$, $p = 0.0310 > 0.05$), and capital Inflow ($t = 1.994$,

$p=0.059 < 0.05$) were insignificant with the moderation of market risk, meaning that one unit increase in market liquidity increases foreign exchange variability by 0.056 units, market volatility by 0.154 units and decreases liberalization index by -0.145 units. However, capital Inflow, in presence of moderating variable, was not significant ($t=0.882$, $p=0.001 < 0.05$) this is supported by the findings of Dimitrios and Mathijs (2012) who state that complications which arise under a floating exchange rate are not of the same order of magnitude as the monetary control problems the economy had when capital was less mobile but financial prices were heavily regulated. The fitted model is:

$$Y * m = 1.875 + 0.056FOREX_1 * m - 0.145IQ_2 * m + 0.154MV_3 * m + 0.110MKFLOW_4 * m + \varepsilon_i$$

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes the findings of the study. The study investigated the effect of financial liberalization on securities market liquidity in Kenya. The independent variables that were studied include: foreign exchange variability, liberalization index, market volatility, and capital inflow with the moderating effect of market risk tested. The chapter draws conclusions from the findings and makes recommendations on how capital control liberalization could affect stock market liquidity. The summary of findings, the conclusion and the recommendations are presented. Finally, the chapter proposes areas for further research.

5.2 Summary of findings

The variability in Stock market liquidity adjustments was modelled by using a simple linear regression model including both symmetric and asymmetric models that captures most common stylized facts about index returns such as volatility clustering and leverage effect. Based on the results presented, the following conclusions can be made: The study finds strong evidence that stock market liquidity elements could be characterised by the above mentioned model. Stock market liquidity data showed a significant departure from normality and existence of conditional heteroscedasticity in the residuals series.

Foreign exchange is also established as a significant determinant in stock market liquidity. The fact is foreign direct investment (FDI) plays an important role in the developing of a securities market vis-à-vis foreign exchange reserves developing countries. From the descriptive statistics, these are relevant in determining the market liquidity. FDI can have a positive impact on growth by engaging domestic capital accumulation. Strong domestic investment performance is a sign of high returns to

capital, which in turn will attract more foreign capital. FDI also has potential to enhance growth of domestic firms through complementarity in production and productivity spillovers. Private capital flows as percentage to GDP were used to measure foreign direct investment.

For all periods specified, the inferential analysis was supportive to the symmetric volatility hypothesis, which means policy response are volatile and that positive and negative responses (good and bad news) of the same magnitude have the same impact and effect on the future volatility level. The parameter estimates of the regression model indicate a high degree of persistent in the relationship of the variables which means an explosive relationship. The parameter describing the conditional variance in the mean equation, measuring the risk premium effect for the regression model, is statistically significant in all periods, and the sign of the control parameter is positive. To summarize, the results from all element specifications applied in this study for the 15 years explain that explosive relationship in the process is present in stock market in Kenyan.

Evidence from previous studies on whether financial liberalization affects stock market liquidity showed that there were mixed results based on the nature of the economy either to be an emerging or established economies. In Kenya the results resembled those of the EMEs. The study applied the volatility analysis of panel data for the period (2000 - 2015) to examine the effect of Foreign exchange variability, liberalization index, market volatility and capital inflow on stock market liquidity. To ensure data coverage, annual averages data for the study period was collected.

The findings of the study revealed that the moderating effect of market risk on foreign exchange variability, liberalization index, market volatility and capital inflow was valid on individual case analysis and not on a joint case analysis. The findings were presented in the forms of inferential statistics with all the independent variables having positive effect on stock market liquidity.

5.2.1 Foreign exchange and securities market liquidity in Kenya.

The findings established that foreign exchange had a huge influence on securities exchange market in Kenya with the government always dominated its activities in local currency. The findings of SDF analysis revealed that the elements; foreign direct investment yielded significant correlation to stock market liquidity. This is statistically significant and hence null hypothesis was rejected. Therefore the study rejected the null hypothesis that Foreign exchange variability has no significant effect on securities market liquidity in Kenya.

5.2.2 Liberalization Index and securities market liquidity in Kenya.

The effect of financial market liberalization on securities exchange market in Kenya was related by the data collected with references made on balance of payment, to GDP ratio to positively influence securities exchange market in Kenya, the findings noted that changes in liberalization index noted subsequent changes in policy response that eventually influence stock market liquidity. The analysis produced a coefficient of determination which shows that the variations in the elements of the index. The significance test using Jarque-bera statistics show that the effect of capital inflow was statistically significant and thus the null hypothesis was rejected.

5.2.3 Market Volatility and securities market liquidity in Kenya.

The third objective of the study was to establish the effect of market volatility on securities market liquidity in Kenya. The findings revealed that market volatility has a positive influence on securities market liquidity in Kenya. The findings are supported by the coefficient determination which shows that the variations in market volatility is explained by risk levels in the market determined by standard deviation and variance of bond returns. The effect of market volatility is statistically significant and thus the rejection of the null hypothesis. Meaning the effect is conditional; hence the study

rejects the null hypothesis that Market volatility has got no influence on securities market liquidity in Kenya. The main findings suggest that the symmetric GARCH model captures characteristics of capital control elements, and provide more evidence for both volatility clustering and leptokurtic; Capital control measures and securities market liquidity in Kenya. The results indicated that the model best describes the volatility of intraday market variance.

5.2.4 Capital inflow and securities market liquidity in Kenya.

The fourth objective of the study sought to explore the effect of capital inflow measures on securities market liquidity in Kenya. The results revealed that capital inflow had positive effect on securities market liquidity in Kenya. This finding is supported by the coefficient of determination which shows the variation in the stock market liquidity elements varying with capital inflow i.e. equity inflows etc. this is also statistically significant and so the null hypothesis was rejected. Thus the study rejected the null hypothesis that Capital inflow measures have no significant influences securities market liquidity in Kenya.

5.2.5 The moderating effect of market risk and its relationship with securities market liquidity in Kenya.

To establish the moderating effect of market risk on Foreign exchange variability, liberalization index, market volatility and capital inflow the study established that market risk greatly influenced securities market liquidity in Kenya. The finding is supported by the regression results which showed a negative and insignificant effect on securities market liquidity in Kenya. Therefore the study accepted the null hypothesis that market risk has no moderating effect on relationship between capital control liberalization and the securities market liquidity in Kenya.

5.3 Conclusion

Much of the changes in foreign exchange variability is linked to periods of liberalization, the findings established that foreign exchange was a major factor with great impact on liquidity of NSE. Negative structural policies, such as budget deficits, inflation, and banking industry fragility seem to be major contributors to financial instability sources in Kenya. This may be regarded as episodes of extreme changes in foreign exchange. Most emerging countries focus on exchange rate targeting but at least the Kenyan case is the inflation Targeting measure.

In pre-crisis periods, when inflows are strong and the risk of exchange rate appreciation is high, imposing controls on inflows to reduce appreciation gives rise to strong trade benefits, this takes place at a time when cash flows are strong and restraint on foreign funding of the banking system is less problematic for domestic firms, Kenya's scenario is closely related to this view as has been experienced in the past two decades in the amid economic liberalization. In a crisis, however, funding constraints are more binding on firms as cash flows decline while the reversal of capital inflow puts downward pressure on the exchange rate. Controls on capital inflow at these times are more problematic for firms and the economy at large, with negative implications to GDP growth.

According to the risk aversion theory, FDI decreases as exchange rate volatility increases and similarly there respondents have the view that stock market liquidity has a great influence on exchange rates. This is because higher volatility in the exchange rate lowers the certainty equivalent expected exchange rate. Foreign Investors are concerned with future expected profits, firms will postpone their decision to enter as the exchange rate becomes more volatile. Risk neutral firms will thus be deterred from entering foreign markets in the presence of high levels of exchange rate uncertainty. Risk-aversion arguments are more convincing under short-term volatility because firms are unlikely to be capable of adjusting factors in the short-run as per the conclusion of the finding on exchange rate market. In the short-run, factors of production are usually

fixed, and as a result firms will only be risk-averse to volatility in their future profits. However, the production flexibility argument appears in convincing under the long-term misalignments because firms are now able to adjust their use of variable factors.

The study can then conclude that during the deflationary periods, the Kenyan security market is highly illiquid and subject to increasingly volatile liquidity shocks. Financial market evidence suggests that these liquidity shocks affected the equity returns of firms during financial crisis like for the post 2008 financial crisis, large declines in liquidity occurred simultaneously with international financial shocks such as those that occurred in September 1998 and September 2001. The study established evidence that firms with illiquid balance sheets and markets for their equity were more exposed to these shocks and that this exposure was a predictor of the performance of the firms during this period. The liberalization index for Kenya places the country as more open market as compared to other African markets. This interpretation is supported by time-series evidence that liquidity shocks have even more persistent effects on money demand than on equity market prices in more liberalized systems.

Focussing on developed markets allows the empirical evidence not to be affected by currency constraints. Liquidity premium is higher during market declines and lower in developed markets. Volatility is likely to increase when automation speeds up the dissemination of prices especially when information is hitting the market. The findings show that return volatility and price reversal can be highest under asymmetric information than under full or no information. The amount of collateral is determined endogenously in equilibrium, and is increasing in asset volatility. Moreover, if volatility increases following adverse shocks, funding constraints tighten, and this causes agents to sell assets, amplifying the shocks the resulting increase in uncertainty exacerbates the price drop, causing volatility to be asymmetric and higher on the downside.

Kenya's economy does not universally distrust the providers of foreign capital this is evident from the data collected and also from the majority respondents to the study. Not all money is sweet, but sometimes the volume of flows matters. A large volume of

capital inflow, specifically when it is sometimes indiscriminate in the search for higher yields causes dislocations in the financial system. The subsidization of capital inflow, over-borrowing, the role of exchange rates targeting, and the fiscal foundations of currency crises are key differentiating features of key elements in stock market liquidity in Kenya, thus there needs to be a coordination between monetary and fiscal authorities. The study concluded that since it is evident that the Kenyan Economy is classified as EME in economic reality, the government needs to control the flow of capital into the economy, since its impact is passed on to other elements and so lack of practicality due to wrong diagnosis, similarly the government should encourage productivity of the economy to enable financial stability that in turn will practically regulate the interest rates, foreign exchange rate, consumer price index and ensure balance of elements such as market risk.

On the same point the government should encourage local borrowing despite criticism of its disadvantages, this can be justified on the basis of the long-term benefits that can be generated from the concept, and this benefit is the main economic reason to introduce greater discipline in fiscal policy. It is interesting to note that Kenya receives increased influences from external factors. The major external factors come from the stock markets of developed countries. More interestingly, those countries that liberalized their stock market later are greatly receiving increasing influences from those earlier liberalized markets, this suggest clearly that the cash flows have enhanced interaction and integration at the NSE.

5.4 Recommendations

Central bank of Kenya, and those in emerging economies, should be able to set an interest rate that is consistent and suitable with the goals of the Kenyan economic policy. Policy makers in Kenya should be able to address the threat of higher inflation and higher interest rates and at the same time be able to respond to the economic risk such as recession with lower interest rates. Similarly, a healthy foreign sector should result in an appropriate foreign exchange rate policy that allows for a stable and competitive real

exchange rate in the economy of the country. Challenges may also arise when international investors want to move into the country, especially when the possibilities are arising to profit from a gap between local and foreign interest rates as experienced in Kenya recently.

From the liberalization levels, excess of market risk over money demand is observed in developed economies and some emerging economies, the central banks can prevent this situation by means of open market operations which is aimed at controlling the amount of money in circulation, this control requires policy makers to keep track of the evolution of monetary aggregates, policy makers also need to estimate a money demand function this with extension to the FDIs, and equity flows with critical focus on imports and exports of the economy and government expenditure to counter the inflows to the economy and grow the GDP.

An open market is key to attracting external investments. This is seen to be feasible when countries face large amounts of capital inflow as well as speculative features in the domestic currency when expectations or the perception of risk becomes less favorable. In Kenya, the financial liberalization has increased the volume of inflows and changed its composition but has not prevented the depreciation of the currency posing a challenge to liquidity. It should be noted that financial liberalization is adopted properly can allow governments to maintain a stable and competitive exchange rates, while at the same time pursuing a stock market liquidity that leads to sustainable stability and reasonable levels of inflation thus recommending a policy implementation to govern on capital inflow.

Imperfect substitutability among assets in different currencies helps restore autonomy to NSE. Although portfolio holders ought to in principle be indifferent between interests return and capital appreciation, it is hard to believe that risk aversion plays no role. Changes in Exchange rate are difficult to forecast, and interest differentials have proved to be extremely poor predictors of future currency movement. Though the choice of exchange rate regime is a key element in establishing the environment for price

movement, financial liberalization provides emerging financial markets with the option of implementing proper policies that would still attract investments and asset allocation.

Significant expansion of market risk and countering interest rates for achieving liquidity as an imminent target as well as ensuring simultaneous interest rate cut has been focused on by the market makers. Unfortunately, all efforts of securities exchange market in Kenya to achieve a long-term stability by providing a huge financial infusion during the financial crisis cannot help to predict the unknown developments in future, for example, a reference to the 2007-2008 global financial crisis. If there is an increase in market riskiness with less openness in the market, it means a potential growth of prices and a depreciation of the national currency in this case Kenyan shilling, thus market risk should be analyzed from the aspect of the quantity theory of money. In this respect, it should be noted that the domestic stock market liquidity affects essentially the exchange rate of their currencies. Suggestions for further Studies

5.5 Suggestions for further Studies

The study was limited to the USD as the factor currency but with the ascertained integration of a single monetary region in East Africa, further studies may be undertaken to establish the future of stock market liquidity with statistical tools like R that can enable predictability of volatility events.

A detailed study can be conducted on the individual relationship of the independent variables with the specific stock market liquidity implementation tools to ascertain the consistency of the findings, and this can be tested using a different statistical model approach.

Similar studies may be replicated in other Emerging African Economies to explore further the effects of capital control leveraging/ market control on stock market liquidity with market risk as a moderating variable.

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APPENDICES

Appendix I: List of listed firms in Nairobi securities exchange for the period 2000-2015

COMPANY	YEAR OF LISTING
AGRICULTURAL	
Eaagads Ltd ord 1.25 AIMS	1972
Kakuzi Plc Ord 5.00	1951
Kapchorua Te Co. Ltd Ord 5.00 AIMS	1972
The Limuru Tea co Ltd Ord 20 .00 AIMS	1967
Sasini Ltd Ord 1.00	1965
Williamson Tea Kenya Ltd Ord 5.00 AIMS	1972
AUTOMOBILES & ACCESSORIES	
Car & General (K) Ltd Ord 5.00	1950
BANKING	
Barclays Bank of Kenya LTD Ord 0.50	1986
Diamond trust bank Kenya Ltd Ord 4.00	1972
Equity Group Holdings Ltd Ord 0.50	2006
HF Group Ltd Ord 1.00	1992
KCB Group Ltd Ord 1.00	1989
National bank of Kenya Ltd Ord 5.00	1994
NIC Bank Ltd Ord 5.00	1971
Standard Chartered Bank Kenya Ltd Ord 5.00	1988
Stanbic Holdings Plc Ord 5.00	1970
The Co-operative Bank of Kenya Ltd Ord 1.00	2008
I&M Holdings Ltd Ord 1.00	2013
COMMERCIAL & SERVICES	
Atlas African Industries Ltd GEMS	2014
Deacons (East Africa) Plc Ord 2.50 AIMS	2016
Eveready East Africa Ltd Ord 1.00	2006
Express Kenya Ltd Ord 1.00	1978
Kenya Airways Ltd Ord 5.00	1996
Longhorn Publishers Ltd Ord 1.00 AIMS	2012
Nation media Group Ltd Ord 2.50	1973
Sameer Africa Ltd Ord 5.00	1994
TPS Eastern Africa Ltd Ord 1.00	1997
Standard group Ltd Ord 5.00	1954
Uchumi Supermarket Ltd Ord 5.00	1992
Scan group Ltd Ord 1.00	2006
CONSTRUCTION & ALLIED	
ARM Cement Plc Ord 1.00	1997
Bamburi cement Ltd Ord 5.00	1970

Crown Paints Kenya Ltd Ord 5.00	1992
E.A Cables Ltd Ord 0.50	1973
E.A Portland Cement Co. Ltd Ord 5.00	1972

ENERGY & PETROLEUM

KenGen Co. Ltd Ord 2.50	2006
KenolKobil Ltd Ord 0.05	1959
Kenya Power & Lighting Co. Ltd Ord 2.50	1972
Total Kenya Ltd Ord 5.00	1988
Umeme Ltd Ord 0.50	2012

INSURANCE

Britam Holdings Plc Ord 1.00	2011
CIC Insurance Group Ltd Ord 1.00	2012
Jubilee Holdings Ltd Ord 5.00	1984
Kenya Re Insurance Corporation Ltd Ord 2.50	2006
Liberty Kenya Holdings Ltd Ord 1.00	2007
Sanlam Kenya Pl Ord 5.00	1963

INVESTMENT

Centum Investment Co. Plc Ord 0.50	1977
Home Afrika Ltd Ord 1.00 GEMS	2013
Kurwitu Ventures Ltd Ord 1.00 GEMS	2014
Olympia Capital Holdings Ltd Ord 5.00	1974
Trans-Century Ltd Ord 0.50 AIMS	2011

INVESTMENT SERVICES

Nairobi Securities Exchange Plc Ord 4.00	2014
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MANUFACTURING & ALLIED

B.O.C Kenya Ltd Ord 5.00	1969
British American Tobacco Kenya Ltd Ord10.00	1969
Carbacid Investments Plc Ord 1.00	1972
East African Breweries Ltd Ord 2.00	1972
Flame Tree Group Holding Ltd Ord 0.825 GEMS	2015
Kenya Orchards Ltd Ord 5.00 AIMS	1959
Mumias Sugar Co. Ltd Ord 2.00	2001
Unga Group Ltd Ord 5.00	1971

TELECOMMUNICATION

Safaricom Ltd Ord 0.05	2008
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REAL ESTATE INVESTMENT TRUST

STANLIB FAHARI I-REIT Ord 20.00	2015
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Source: NSE Annual Report 2014-2015

Appendix II: Secondary Data Collection Sheet (Monthly Averages)

Variables	(Annual Averages)	2010	2011	2012	2013	2014	2015
Foreign Exchange variability (Percentage)	Foreign Direct Investment						
	Foreign exchange reserves						
	Inflation rate						
Liberalization Index (Million USD)/Ratio	Balance of Payment						
	Exchange restrictions						
	Govt. Expenditure/GDP ratio						
Market volatility (Million USD)	Standard Deviation of Bond (probability)						
	Variance of bonds return (Probability)						
Capital Inflow Measures (Million USD)	Residency Inflows						
	Portfolio/Equity inflows						
	Current account deficit						
Market Risk (Averages)	Average gains/Losses						
	Standard deviation of gains/Losses						
Stock market liquidity Changes (Averages)	Market Capitalization						
	Market Turnover						
	Cash maintenance						

