

**THE EFFECT OF STOCK MARKET LIQUIDITY ON
STOCK RETURNS: EVIDENCE FROM THE NAIROBI
SECURITIES EXCHANGE**

BY

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D63/88828/2016

**A RESEARCH PROJECT SUBMITTED IN PARTIAL
FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF
DEGREE OF MASTER OF SCIENCE IN FINANCE (MSC
FINANCE), SCHOOL OF BUSINESS, UNIVERSITY OF NAIROBI**

NOVEMBER 2018

DECLARATION

I, the undersigned, declare that this research project is my original work and has not been submitted to any other college, institution or university for academic credit.

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ACKNOWLEDGEMENT

With all due respect and gratitude, special thanks goes to my research project supervisors Dan Chirchir CFA and Dr. Mirie Mwangi for providing unlimited, invaluable and active guidance throughout the research study. Thank you and God bless you.

I would also like to acknowledge the efforts of my lecturers at the University of Nairobi who have been with me throughout the Master of Science Finance programme and whose guidance helped me through to the project phase. I also wish to acknowledge the efforts of the staff at the Nairobi Securities Exchange and the Central Bank of Kenya for furnishing me with the relevant data that facilitated my analysis.

DEDICATION

To my wife Gladys Cheronno and my lovely children Oscar Kemboi and Arya Chepchumba. I thank you for your words of encouragement and support during the period of this study.

To my father David Cheroigin and mother Esther Kirwa for your support and making my academic dream a reality.

To my siblings for your love and assistance.

May God bless you all.

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ABBREVIATIONS

CAPM	Capital Asset Pricing Model
CDS	Central Depository System
CMA	Capital Market Authority
EMH	Efficient Market Hypothesis
NASDAQ	National Association of Securities Dealers Automated Quotations
NSE	Nairobi Securities Exchange
NYSE	New York Stock Exchange
P/E	Price Earnings Ratio
US	United States

ABSTRACT

One of the risks associated with company stocks is stock liquidity. Stocks with high liquidity are attractive to investors and increases demand for such stocks in the stock market. Increasing the attractiveness and demand for company stocks makes it easy and inexpensive to finance and increase capital for company development. Therefore, the objective of this study was to ascertain whether stock market liquidity affects the level of stock returns at the Nairobi Securities Exchange. In order to achieve the objective of the study, the research design was correlational and the population of the study consisted of all the listed firms at the Nairobi Securities Exchange. Secondary data for the period was collected from NSE data bank. The NSE All Share Index was used a proxy for the stock market return and its monthly data was collected between the years 2013 to 2017. Volume of shares traded was used as a proxy for liquidity. Multiple regression model was used for the purpose of analysis to determine the nature of the relationship. Empirical results of the regression model revealed that there is a strong correlation between stock market liquidity and return of listed firms at the Nairobi Securities Exchange. However, it is recommended that studies should be undertaken to determine other factors that might influence stock return other than stock market liquidity.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

One of the key roles of the securities exchange is to provide liquidity which is imperative because it makes investment less risky and more attractive (Ngugi, 2003). Savers are able to acquire assets and sell them swiftly and economically when they require to liquidate their investments or even or rebalance their portfolios (Demirguc-Kunt and Levine, 1996). Owing to the importance of liquidity in facilitating exchange of stock, the second important consideration for a stock investors become the returns as a result of such investment decisions.

Dalgaard (2009) describes liquidity as the degree of monetary resource or security can be obtained or exchanged in the market without influencing the cost of that asset. Dalgaard clarifies that a liquid asset is portrayed by an abnormal state of exchanging activity and assumes a crucial role in the working of financial markets. Financial markets are said to be liquid if an investor holding such an asset can sell them at market prevailing prices and does not incur considerable losses so as to get cash to fulfil other commitments (Amihud, 2002). Liquidity is one of the important characteristic of a well-functioning financial market more so for investment plans and financial assets. Traders, policy makers, and academicians have developed keen interest on the study of liquidity (Brennan, Chordia, Subrahmanyam and Tong, 2012).

Fund managers get their investment management fees by creating portfolios that suit their customers' time horizons and liquidity preferences (Amihud, 2002). He noticed that in spite of their clear significance, liquidity is not considered as an important factor in comparison to the way risk is considered in the research studies. Capital Asset Pricing Model gives less careful consideration to the impacts of stock liquidity and investment periods on expected returns.

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, 2016).

Although the markets have been recovering from the crisis, market participants are still concerned about the low level of liquidity in the financial markets in both advanced and emerging market economies and has led to increase in liquidity related risks and shocks. The price impact of buys and sells has increased in several markets especially in the European markets even though large trades are not as many as they were before the financial crisis. In 2005 large trades were approximately 25% of total transactions as compared to slightly over 15% in 2015 indicating that buying or selling large amount of securities in the developed markets may still be difficult as compared to 10 years ago. This is worrying since the market liquidity is a significant factor in ensuring the overall growth of the economy (IMF, 2015).

Due to the liquidity concerns among policy makers, there have been crucial transformations and developments in financial markets in developed and emerging markets over the recent years that have resulted to conflicting effects on the liquidity of stock market. The major changes include implementation of stringent regulations in the financial sector, changes in monetary policies and the implementation of changes in the business models of most banks and other financial institutions as a result of the new strict regulations. These changes have resulted to both positive and negative outcomes on the liquidity in the developing and emerging stock markets (IMF, 2015).

In Kenya, the Nairobi Securities Exchange has experienced periods of high and low returns on shareholders investments since it was constituted in 1954. Among other factors such as the prevailing political environments in the economy, the stock market liquidity has been noted to be one of the major causes of variations in stock returns in the NSE. Even though the NSE is in general considered highly liquid market and more active in terms of trades as compared to most of the other markets in East Africa and the sub-Saharan Africa, the low level of securities market liquidity is still considered a huge challenge facing the Kenyan securities market with decreased level of liquidity specifically experienced in the equity and bonds secondary markets (CMA, 2015). Kenya's Nairobi Security Exchange in the past had low liquidity level and high volatility with regard to share prices and returns. Liquidity has been increasing with the bid ask spread decreasing and the trading volumes increasing in the last ten (10) years (CMA, 2015).

1.1.1 Stock Market Liquidity

Kyle (1985) describes market liquidity as complex idea particularly on the grounds that it envelops various value-based properties including tightness, depth and resiliency. Amihud and Mendelson (1986) discovered proof that asset returns incorporate a noteworthy premium for the quoted bid-ask spread. Other papers have over the years explained in details the important role that liquidity plays in determining the expected returns.

Amihud (2002) proposes the proportion of absolute return to dollar exchanging volume as a proportion of liquidity. Brennan and Subrahmanyam (1996) propose estimating liquidity by the connection between value changes and request streams. Datar, Naik, and Radcliffe (1998) suggests measuring liquidity by share turnover. Chordia, Huh and Subrahmanyam (2009) use an illiquidity measure which includes constraints like return volatility and volume into the illiquidity measure.

Ngugi (2003) analysed the effect of exchange rate activity and liquidity of the NSE to the actualized institutional and approach changes during the revitalization procedure. The investigation secured the period January 1990 to June 2002. The examination contemplated the microstructure theory for exact investigation testing for market reaction to the

accompanying fundamental changes: moves in exchanging framework, fixing of the administrative framework, change of tax collection strategy, and unwinding of capital controls. The study finding indicated that the level of stock returns influenced to a large extent the volume of trading activities.

1.1.2 Stock Returns

Stock return is compensation an investor receives for holding a stock in a particular period. This gain can either be in form of dividends or capital gain. There are quite a number of factors affecting stock returns. The expected return is the return an investor anticipates on an investment in the next period while the historical rate of return is the return on an investment over the holding period (Reilly & Brown, 2012).

Basu (1977) demonstrated that stocks with high earnings/price proportions (or low P/E proportions) earned altogether higher returns than stocks with low earnings/price proportions. The outcomes showed that distinctions in beta could not be explained. In a subsequent report, Basu (1983) demonstrated that this "E/P impact" isn't simply seen among little capitalization stocks.

A later report by Jaffe, Keim and Westerfield (1989) affirmed this finding and furthermore demonstrated that the E/P impact does not simply show up in the period of January, as had been guaranteed by a few analysts. The E/P impact is an immediate logical inconsistency of the CAPM; beta ought to be the only thing that is important.

1.1.3 The Relationship Between Stock Market Liquidity and Stock Returns

Haugen and Baker (1996) found out that the stock liquidity is one of the basic factors in clarifying stock returns across the world markets. Their report demonstrates that the cross-sectional stock returns in developed markets have basic determinants from time to time and from nation to nation. It also demonstrated that the liquidity of stocks is one of the critical determinants of stock returns.

Estrada (2000) demonstrates that partial deviation concerning the mean is a valuable constant in clarifying the industry segment returns in developing markets. Additionally, he showed that the partial deviation may be a conceivable variable to be utilized in a Capital Asset Pricing Model system to register the expense of value in developing markets.

A study by Archarya (2005) found unanswered quest on the causal relationship between corporate stock liquidity and returns of the stocks recommending a further examination on the question. A study by Jun, Marathe and Shawky (2003) found a positive link between stock liquidity and stock returns in markets that are in an emerging phase. The study by Barro (1991) tested market liquidity in relation to multiple variables that included capital accumulation, productivity and private saving rates. His study did not reveal in depth relationship as the variables on liquidity were measured against many other variables.

1.1.4 Nairobi Securities Exchange

The Nairobi Securities Exchange (NSE) has grown gradually over time. In a study done by Ngugi and Njiru (2005), it was established in 1920s when Kenya was under colonial rule. In 1954, the Nairobi Securities Exchange comprised of stock dealers that were enrolled using the existing Societies Act. Trading of securities was limited to residents from Europe. Africans and Asians had no rights to transact in NSE securities. When Kenya attained its independence in 1963, Asians and Africans were allowed to transact at the NSE.

A Central Bank of Kenya study done in 1984 titled, Development of Money and Capital Markets in Kenya but popularly known as a blueprint for structural reforms in the financial markets helped the creation of a regulatory body (Ngugi, Murinde and Green, 2003). Because of the critical role in Kenyan economy and in the East African Community at large, NSE becomes an important reference for this study owing to variety of stocks traded in the market.

1.2 Research Problem

The 2007/2008 global financial crisis drew attention to the importance of liquidity. Market participants recognize that evaporation of liquidity can lead to considerable price decline of asset that cannot be explained by the asset's fundamentals (Florackis, Kontonikas and Kostakis, 2013). An investor who is considered rational is expected to ask for an extra return in order to invest in stocks which are illiquid. The theoretical models show that this relationship should hold in equilibrium.

The study by Archarya (2005) found unanswered question on the link between the variables under study and recommended further examination. A study by Jun, Marathe and Shawky (2003) concluded that there is a positive link between stock market liquidity and financial instrument returns in emerging markets. The study by Barro (1991) tested market liquidity in relation to multiple variables that included capital accumulation, productivity and private saving rates. His study did not reveal in depth relationship as the variables on liquidity were measured against many other variables.

Ngugi (2003) did a study on what determines the level liquidity of the securities market at the NSE. She found out that with regard to regulatory reforms, there were positive moves in strengthening the regulatory system and facilitating gains in liquidity with enhanced investors' confidence and reduced information asymmetry. Further, she noted that NSE has witnessed taxation reforms aimed at reducing transaction costs and relaxed capital controls to allow foreign investors participation. The question of interest to policy makers and researchers is whether these efforts bear the expected outcome of increasing liquidity of stock.

Ayako (2005) did a study on effects of liquidity on stock return on NSE. He found no relationship between liquidity and return. However, NSE has experienced some development especially in the use of technology, regulatory reforms and organizational changes such as demutualization, automation of the NSE, self-listing which conforms to international standards. Moreover, NSE underwent structural break during the sample period and are likely to affect liquidity.

Many studies have largely emphasised on liquidity challenges facing stock markets with little emphasis on stock return. Zavala (2005) indicated that many Africa's Stock Exchanges are little, underdeveloped and illiquid. They have a tendency to work in separation from different markets, have low exchanging volumes, are protected from rivalry by national controls and face obstructions to capital versatility due to high expenses of movement and correspondences (NSE , 2014)

Despite the importance of liquidity, few studies have been done in the Kenyan context on the causal relationship between stock market liquidity and stock returns at the Nairobi Securities Exchange. Ayako (2005) found out that liquidity had no effects on return while Koech (2012) found a very weak correlation between liquidity and return of stocks listed at the NSE. On the other hand Okanga (2014) found that illiquidity was positively significant to illiquidity and excess stock return. Kahuthu (2017) did a study to determine whether stock market liquidity has an effect on financial instrument returns from 2012 to 2016. Her study looked at both the width and depth aspects of liquidity measured by bid-ask spread and turnover rate respectively. Kahuthu (2017) empirical findings showed that market depth was insignificant to stock returns while market width was significant. Her inferential analysis showed that liquidity had a significant effect on stock returns but not the main predictor of stock returns.

Due to the great importance market liquidity plays, the knowledge gap on the different dimensions of liquidity and perceptions of market participants on liquidity, the conflicting findings from previous studies and the economic and regulatory changes in the Kenyan market, there is great importance to further analyze the association among the variables of liquidity like bid-ask spreads and the turnover rate on stock returns in the Kenyan context. The study seeks to answer the question: What is the effect of liquidity on the stock returns of companies listed at the Nairobi Securities Exchange?

1.3 Research Objective

To investigate the effect of stock market liquidity on the stock market return at the Nairobi Securities Exchange.

1.4 Value of the study

This study can be used by scholars and researchers as a base for more discussions on the effect of stock market liquidity on stock returns of companies listed on Nairobi Securities Exchange. The study will offer a basis on further improvement of the various theories advanced to explain the effect of the stock market liquidity and stock returns.

Fund and investment managers may use the findings of this study to make investments from an informed position on how the variables under study determination their margins and the investor's investment horizon. The study will also help the investment consultants and portfolio managers to offer quality services to clients.

The findings of the study will be important to understanding stock market liquidity risk and its impact on the stock returns in Kenya since the risk of disruptive rapid decreases in liquidity in the market, how to assist mitigate the risk of a liquidity meltdown or reduce their impact if they occur. The study will be important in the formulation of policies by market regulators that are aimed at improving trading mechanisms which could generate substantial economic benefits. The study will highlight the significance of devising trading mechanisms that will generally lead to the growth of liquidity.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter provides the theoretical foundation relevant to the model in order to identify and analyze the main theory in use and its applicability to the study. It gives a summary of previous studies done by different researchers in this field by summarizing the theoretical literature review on both market liquidity and stock returns and an empirical review on studies previously done. It looks at the different measures of liquidity, how to compute return and studies done in the topic. The literature on the subject is as found in the journals, previous finance research papers and textbooks by different authors. The chapter will also include the overview and gaps in literature and conceptual framework.

2.2 Theoretical Review

Three theories will anchor this research due to their predominance in studies related to stock market returns. They include the trading volume theory, efficient market hypothesis, trading costs theory and trading quantity theory .The market microstructure theory is applied to show the market frictions and how liquidity as a market friction relates to stock returns. Trading cost theory is used so as to shed more light on the width aspect of liquidity and how it influences stock returns while the trading quantity theory will give an insight on the depth aspect of liquidity and how it relates to stock returns.

2.2.1 Efficient Market Hypothesis

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. Fama (1970) exhibited the efficient market hypothesis in terms of a fair game model, contending that investors can be sure that a current market cost completely reflects all accessible data about a security and the reflected return dependent on this cost is predictable with risk.

As indicated by Efficient Market Hypothesis (EMH), any two securities or portfolios with a similar state unexpected result vectors must be estimated indistinguishably. Fama (1991) takes note of that market productivity are a continuum; the lower the exchange cost in a market, including the expense of getting data and exchanging, the more effective the market. 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.

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 and Stoll, 1981; Amihud and 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 and O'Hara, 2002; Kyle, 1985; Glosten and 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.

Reilly (2006) contends that for stock market to be named proficient, some conventions are made. First, an expansive number of investors and analysts aimed at making profits need to analyze and value the stocks separately. Secondly, new data in regard to securities goes to the market in an arbitrary manner, and the planning of one declaration is mostly independent of others. Third point is that security prices needs to quickly adjust and reflect the impact of new data. Despite the fact that the value modifications might be blemished, it is impartial. Implying that occasionally the market will over-adjust and different occasions it will under-adjust, however it can't be anticipated which one will happen at some random time. Consequently there will be no exchange benefits.

2.2.2 Trading Cost Theory

The theory was postulated 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. Amihud and Mendelson (1986) in their study on how 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 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 and 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 and 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. 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 and 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 and Dyl, 2007). This theory is relevant to the study as it shows transaction costs as a dimension of liquidity is related to stock returns.

2.2.3 Trading Quantity Theory

Easley and O'Hara (1987) came up with the trading quantity theory which looks at the size of a trade at a particular price. Easley and O'Hara (1987) argued that investors who were informed preferred trading huge amounts of stocks at a particular price. On the other hand, pricing strategies for market makers' depends on the size of the trade; huge trades are

traded at less favorable prices for investors. Hu (1997) tested the trading quantity theory and his findings provided strong evidence which supported the Amihud and Mendelson (1986) transaction cost model and the trading frequency hypothesis. An important source of liquidity under the trading quantity theory is the demand pressure of an asset in the market and is also commonly known as the price impact. Demand pressure describes the possibility of an investor's buying/selling large amounts of stocks in the shortest time possible quickly and without increasing/lowering the price in the market (Sloman & Kelvin, 2007).

In markets with no perfect liquidity, the demand and supply equilibrium is distorted by large orders placed by the huge investors leading to changes in prices; a decrease in prices if the investor is selling and an increase in prices if the investor is buying which is a disadvantage to the investor. The market liquidity level will determine the intensity of the price impact with high liquid markets having lesser price impact. The price impact can also be partly informational. If suddenly a shareholder opts to buy or off load large number of stocks, there is a possibility that other investors in the market will perceive it as a sign that investor has crucial information not available to other investors which may cause pressure on the stock price. However, in efficient markets this type of price impact cannot be permanent since prices will readjust due to the demand and supply forces or else result to speculative bubbles (Hubbard & Obrien, 2009).

Trading volume, which is the common measure of trading quantity, is the amount of traded shares in a particular time interval which can be daily, weekly, and on an annual basis or

any other time interval which is appropriate for analysis. It has a time dimension advantage since the higher the volume the shorter the time needed to trade a specific number of shares. Thus, the values of volume-related measures should be higher in order to indicate high liquidity (Brennan & Subrahmanyam 1996). Trading volume was further advanced to the turnover rate which is the ratio of volume traded to the outstanding amount of the stock.

Turnover rate is considered a more adequate measure of liquidity than trading volume since it makes it possible to compare between different stocks. For high frequency trading stocks, the immediacy price would be smaller since frequent trading reduces the inventory controlling costs. The higher the turnover rate the quicker the stocks trade with fewer costs from time delays. Thus, theoretically, turnover rate is negatively related to bid-ask spreads and stock returns (Chordia, Subrahmanyam, & Anshuman 2011).

2.3 Determinants of Stock Returns

Stock market returns are influenced by the following control variables:

2.3.1 Interest Rates

When the stock prices in an exchange go down, the total value invested also loses value. This may result in a reduced need for money and the interest rate will decrease. Holding all factors constant, the lower the interest rates the higher the stock prices. Higher stock prices may in turn lead to a surge in capital outflows. This will lead to depreciation of domestic currency. This is a clear indication that there exists interrelationship among stock market, interest rate, and exchange rate.

2.3.2 Money Supply

Central Bank of Kenya has the sole mandate of controlling the quantity of money in circulation in the country's economy. The level of money supply in an economy can influence the prices of securities in a positive or negative manner. An increase in the money supply may lead to an increase in the discount rate and will result in lower stock prices and in turn affect the stock returns. (Fama, 1981).

2.3.3 Gross Domestic Product

Most research findings show that the current share prices have a positive relationship with the levels of economic activities which are measured by Gross Domestic Product. A surge in the economic productivity will upturn the expected future cash flows and will lead to a rise in securities prices.

2.3.4 Exchange Rates

In a situation where a country's currency fluctuates very rapidly, the share prices are distorted in the market as a result and this will end up affecting the stock returns.

2.4 Empirical Literature

The empirical literature has been structured according to scope of the studies done under each objective starting with studies done in the developed markets: U.S. and Europe, studies in the emerging markets come next followed by studies in Africa and lastly studies in the Kenyan context.

Past empirical studies over the last five decades on the link between market liquidity and stock returns have yielded varied results. A number of researchers support the view that market liquidity affects the expected returns of stocks while other researchers find no significant relationship.

2.4.1 International Evidence

Amihud and Mendelson (1986) examined the relationship between liquidity and the stock returns for the very first time on the US stocks. Utilizing the Fama & MacBeth (1973) procedure of forming portfolios and using the spread between bids and ask as a natural measure of liquidity, they argued assets that are not liquid could be owned by investors with longer time periods as returns and transaction costs formed an increasing and concave function. They also figured out that increases in the level of liquidity led to decreases in risk-adjusted returns.

These findings were further supported by Brennan, Chordia, Subrahmanyam and Tong (2012) who did a study on stocks listed on the NYSE from January 1983 to 2008, December to determine liquidity on sell orders and the cross-section of stock returns. They found out that the illiquidity on buys is less priced as compared to the illiquidity on sells in the cross-section of returns supporting the idea that liquidity pricing is almost entirely as a result of the sell lambdas. In addition, the cost of the illiquidity of the sells is not only significant statistically but also materially economical.

To try and explain why the indirect relationship between liquidity and returns as an aggregate data or at a firm level, Baker and Stein (2004) built a model using NYSE yearly data from 1927 - 1998 and analyzed it using an OLS regression model. To boost liquidity, the model used investors who were not rational; they react less to order flow information. When there were restrictions on short sales, high market liquidity levels showed that the market had been dominated by this irrational traders indicating an over value. They also suggested that increased levels of liquidity in the market suggested the expected returns for the irrational investors would be lower than normal.

On the contrary, Fang et al. (2009) in his study on market liquidity and firm performance argued that stock market liquidity has a direct effect on the performance of a firm which translates on the stock returns even though they used Zindex a liquidity proxy very similar to the bid ask spread. The pooled regression model used to determine whether there was a relationship between the variables on 1374 companies showed that increases in the liquidity levels led to higher than expected returns.

According to Kato and Loewenstein (1995) there are several challenges associated with transaction costs dimension of liquidity. Some of the problems included that costs associated with the transaction process are difficult to get for tests that span long horizons. In addition, Karpoff and Walkling (1988) and Bhushan (1994) noted that the bid-ask spread which is the most used measure for market width appeared to be inaccurate. As a result of these factors, most researchers supported the use of volumes traded or turnover rate as the proxy for liquidity.

Using turnover rate as the liquidity proxy on their study to investigate the commonality in the determinants of expected stock returns, Haugen and Baker (1996) reported that the turnover rate was statistically significant negative correlation to returns meaning that stocks with low levels of liquidity had higher returns. Also using volume traded as the measure for liquidity, Brennan et al. (1998) did a study to examine the relationship between expected returns and different company characteristics, market liquidity being one of them, using trading volume as the proxy on the NYSE and NASDAQ stocks and also found that trading volume and the stocks returns were significantly negatively correlated for both stocks, thus showing a link between returns and liquidity.

These findings strongly supported the Amihud and Mendelson (1986) transaction cost model. It was also in line with the trading frequency hypothesis which stated that investors who traded at low frequencies would prefer assets with higher transaction costs, thus across assets, there is a concave function between turnover rate and returns and over time stock return is an increasing function of the turnover. This negative relationship survived a number of tests by Chordia, Subrahmanyam, and Anshuman (2001) who also used trading activity that is volume and turnover as their proxies for liquidity in their study on order imbalance, liquidity and market returns done on the S&P500 market index from 1988 – 1998. They found that stock returns and the variability of liquidity was cross-sectional significant. They further reported that the stocks with higher levels of volatility in terms of liquidity had lower returns hence a negative relationship.

Further, Amihud (2002) in his study on illiquidity and stock returns compared to the volume of dollars traded as the measure of illiquidity on stocks traded from 1963 to 1997 in the NYSE, also maintained that there is positive relationship between illiquidity and stock returns. Amihud (2002) showed that part of the expected excess returns can be written as a function of premium illiquidity. He further showed that the premium stocks of smaller companies were greatly affected by illiquidity as compared to the premium stocks of larger companies.

Using the Fama and French, three-factor model using turnover rate of shares as their proxy to liquidity on 1990 - 1998 Australian market data, Chan and Faff (2005) investigated the role of liquidity in stock pricing. They added liquidity as their fourth factor through adding return of a portfolio mimicking liquidity and tested the four-factor model using the general method of moments test for over identifying restrictions and reject using the general method of moments test; hence, they found there was enough support their theory to add liquidity as a factor to the three-factor model by Fama and French (1993).

On the contrary, Chen, Firth and Rui (2001) found a positive relationship between trading volume used as the measure of liquidity and changes in the prices of the stocks in their study on the dynamic relation between stock returns trading volume, and volatility despite the use of similar proxies. They used granger causality tests on trading data from nine markets in the US, Britain and Europe i.e Hong Kong, Milan, Tokyo, Toronto, Paris, Zurich, London Amsterdam and New York from 1973 – 2000 to check if volumes

explained returns or vice versa. They further found that some level of information sourced from the volumes traded contributed to the return process which is contrary with the theory.

These findings were also supported by several studies in the emerging markets that found a positive statistical relationship between market liquidity and expected returns. (Jun et al. 2008) analyzed data from 27 emerging markets from 1992-1999 using both cross-sectional and time series data techniques. They explained that the positive link between liquidity and returns could be explained by the low global integration in most emerging markets. As a result to the poor integration of the emerging markets, absence of liquidity in the markets will not be a source of risk hence the cross-sectional returns will not decrease in less liquid markets.

2.4.2 Local Evidence

In Africa, Mpofu (2012) studied the relationship between trading volume and stock returns in the Johannesburg Securities Exchange in South Africa. Vector autoregressive tests were used to analyze the FTSE/JSE index pricing and trading returns data from July, 1988 to June, 2012. The results presented a significant correlation between volume traded and the absolute value of changes in price. Similarly, Ehiedu (2014) did a study on the impact of liquidity on profitability using a simple correlation analysis of some selected companies in the Nigeria Securities Exchange. Ehiedu (2014) study revealed that 75% of the companies support the theory that liquidity has a significant positive correlation with profitability.

In the Kenyan context, Makau, Onyuma and Okumu (2015) did a study on the impact of cross-border listing on stock liquidity: evidence from East African community in which volume traded and stock turnover rate was used as the liquidity measure. The study showed mixed results raising a question on the status of the turnover rate acting as the proxy of liquidity. Averages for both the pre- and post- cross-listing trading volume and turnover rate was calculated and later taken through a five percent level paired t test to test for their significance. Although in most of the results the effects of liquidity was not statistically significant, their general conclusions were cross-listing can boost the firm's stock liquidity with the liquidity proxy determining the direction of the effect that is a positive or negative direction.

Ayako (2005) sought to analyze the effect of trading volume/activity in regards to whether it affects the futures prices. His main concern was to determine the level of power volumes traded could predict how future stock prices reacted. His research was on firms listed at NSE for a period of 5 years between 1998 and 2002. Using Anova tests for analysis, he found out that volumes traded was not significantly correlated trading to stock return of companies listed at NSE. He further contends that his findings are in line with Fama Random Walk theory which implies that a series of stock price changes at NSE does not have any memory although contradictory to Amihud and Mendelson theory that liquidity is significant to returns.

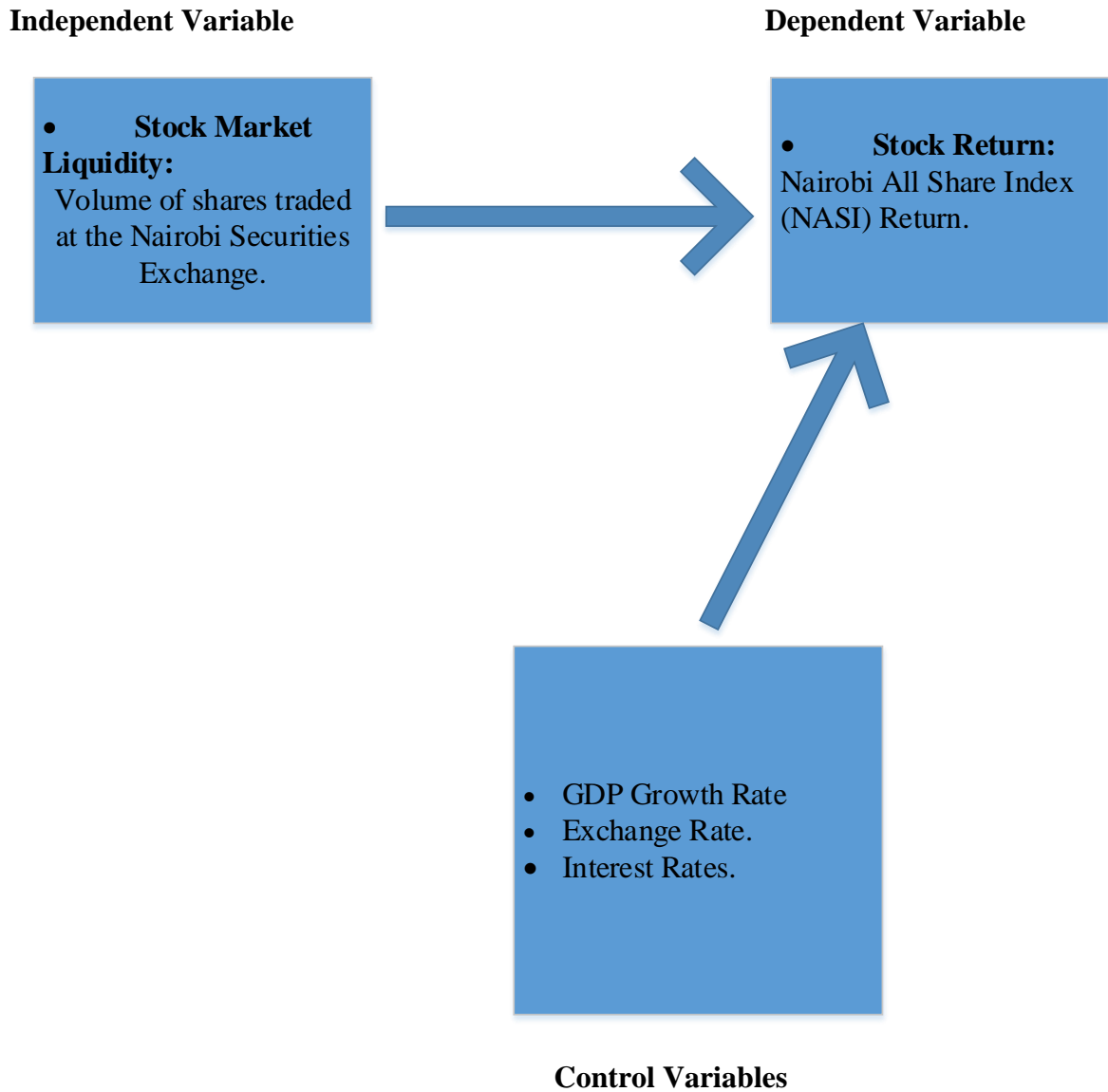
Koech (2012) also did a study on the 57 companies listed in the NSE for a five year period from 2007 to 2011. He used a simple regression model to determine the relationship

between liquidity and stock returns using turnover rate as his proxy and found out that there was a weak correlation between liquidity and stock returns which he concluded not to be statistically significant. This is contradictory to most of the empirical evidence found by most researchers mostly in the developed markets. He further explains that lack of market efficiency as compared to developed markets might be one of the reasons for the contradictory findings.

2.5 Conceptual Framework

Conceptual framework provides an understanding of the subsequent findings by showing the relationship between variables in the study. The framework of this study takes cognizant of the fact that market liquidity plays a role in stock prices. The dependent variable in this study is the return on stocks whereas the independent variable is market liquidity.

Figure 1: Conceptual Framework



2.6 Summary of the Literature Review

In the past 30 years, many empirical studies have been done to investigate the dynamic relationships in the stock market liquidity and how it affects profitability, firm performance, and stock returns particularly in the advanced economies e.g. U.S.A, European markets, and Japan; with Fama (1981, 1990), Geske and Roll (1983), and Chen and Ross (1986) being among the pioneer researchers. Most of the studies in the developed economies; Haugen and Baker (1996) Chordia, Subrahmanyam, and Anshuman (2001), Marshall (2006) found a negative relationship between market liquidity and stock returns although few studies; Chen, Firth and Rui (2001), Fang et al. (2009) found a positive relationship despite using similar liquidity proxies. This negative relationship found in most studies is supported by theory on the relationship between liquidity and stock returns.

There have been fewer studies done in the Latin American, Asian and in the sub-Saharan Africa with contradictory findings. Most of studies focused on the depth aspects with turnover rate being the most popular liquidity proxy. Contrary to most developed markets, most studies in emerging economies; Guy and Birthwood (2008), Balasemi, Mehdi and Mohammadi (2015) being few of the examples showed a positive relationship was found between liquidity and stock returns. Jun et al (2008) tried to explain that the low and poor global integration in most emerging markets as the main reason for the contradictory findings from theory and most developed markets.

Similarly in the developing African markets, most studies focused on the depth dimension of liquidity and used trading volume and turnover rate as measure of liquidity however

found no consistent findings. Mpofu (2012) found that liquidity significantly affected price changes while Makau, Onyuma and Okumu (2015) found that liquidity was not statistically significant. On the other hand Chikore, Gachira and Nkomo (2014) found a negative relationship while Ehiedu (2014) found a positive relationship. Most of the findings are contrary to theory which states liquidity is significantly negatively correlated to returns.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The chapter expounds on the research methods applied which includes the research design, target population, data collection methods, variables included in the study, model and the data analysis methods.

3.2 Research Design

The study is an explanatory research that will adopt a quantitative research design. The quantitative research design was used as it allowed the researcher to study the change and development of the phenomenon over time (Saunders et al, 2007). This enabled the researcher to examine the causal relationship between the variables in the study.

3.3 Target Population

The study focused on the entire stock market and consisted of all listed firms in Kenya. The stock market was represented by the Nairobi All Share Index (NASI). The NASI was used to track the stock returns performance at the NSE.

3.4 Data Collection Methods

The study used secondary sources of data from the Nairobi Securities Exchange. The data to be collected will include monthly NASI return and the total volume of shares traded in a month. The data set will employ monthly data from January 2013 to December 2017.

3.5 Variables included in the Analysis

The table below shows the variables to be used in the study.

Variable	Category	Measure
Stock Market Liquidity	Independent	Total volume of all shares traded in the respective month.
Stock Returns	Dependent	NSE stock market return. Monthly NSE All Share Index (NASI) return published by NSE.

Interest Rate	Control Variable	Prevailing Commercial interest rate as per CBK.
GDP Growth Rate	Control Variable	Kenya GDP Growth Rate as per KNBS data.
Exchange Rate	Control Variable	Prevailing CBK Forex Rate between Kshs/USD.

3.5.1. Dependant Variable

Stock returns react to liquidity in a firm meaning that stock returns are the dependent variable while stock liquidity will be the independent variable. The stock market return was estimated by using the monthly Nairobi All Share Index (NASI) return.

3.5.2. Independent Variable

The total volume of shares traded at the Nairobi Securities Exchange was used as a measure of the stock market liquidity and the study will focus on monthly volumes for every month between January 2013 and December 2017.

3.5.3 Model

The following regression model was used in the study:

$$Y = \alpha + X_1 V_{i,t} + \beta_1 I_{i,t} + \beta_2 GDP_{i,t} + \beta_3 ER_{i,t} + \epsilon \dots\dots\dots (1)$$

Where;

- Y = The monthly Nairobi All Share Index return (NASI)
- α = Is the regression intercept
- $V_{i,t}$ = The monthly traded share volumes at the NSE
- X_1 = Constant for variation for volume of shares traded in a month.
- β_1 = Constant for variation for Interest Rate (I).
- β_2 = Constants for variation for GDP growth rate (GDP).

- β_3 = Constants for variation for the Exchange Rate(ER).
- I = Control variable for interest rates.
- GDP = Control variable for GDP growth rate.
- ER = Control variable for exchange rate
- ϵ = Error term

3.6 Diagnostic Tests

3.6.1 Testing for Serial Correlation

Time-series data shows autocorrelation or serial correlation of the disturbances across periods (Green, 2012). Serial correlation is problematic to linear panel data models because its presence will render the standard errors biased as well as make the estimated regression coefficients consistent but inefficient (Baltagi, 2005; Drukker, 2003). Therefore, to detect the presence of autocorrelation, the Durbin-Watson Test will be conducted using Stata. The test will help determine whether the errors in different observations are correlated with each other (Brookes, 2008). If the computed DW value is equal to two ($d = 2$), this will indicate no autocorrelation. However, if the computed DW value is greater than two ($d > 2$), this will indicate the presence of a positive serial correlation (Durbin & Watson, 1971).

3.6.2 Testing for Multicollinearity

Multicollinearity can be the source of a major forecasting error and may make it hard to evaluate the relative significance of individual variables in the model. This study will perform the Pairwise correlations among regressors in the models to measure the degree of

multicollinearity. If the pairwise correlation coefficient between two regressors will be high, that is in excess of 0.80 then, multicollinearity will be a problem (Kumari, 2008).

3.6.3 Test of Significance

The study used t-test to test for joint significance of all coefficients. The significance of the variables in the regression model will be measured or determined by the p value; whereby, if the p value of the variable is 0.05 (5%) and below, then the variable will be deemed significant while where the p value co-efficient of the variable is above 0.05, then the relationship of the variables will be deemed to be insignificant. The beta will explain whether the relationship between the dependent and the independent variable is high or low, positive or negative; this will be revealed by the value of the beta coefficient.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter presents the outcome of data analysis and the interpretation of the results. The chapters also discuss the findings of the study and relate the findings to the outcome from similar previous studies.

4.2 Descriptive Statistics

Table 1 shows descriptive statistics for the data obtained on the study variables. The descriptive statistics include mean and standard deviation.

Table 1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Stock Return	60	4379.71	5030.91	4670.2255	209.52757
Liquidity	60	1.00	3.25	1.4576	.64490
Interest Rate	60	10.90	13.45	12.1250	.63349
GDP Growth Rate	60	4.20	5.15	4.7917	.21904
Exchange Rate	60	26.40	100.30	96.3483	9.32575
Valid N (listwise)	60				

Source: Research Findings

The study findings in Table 1 indicate that the average stock returns was 4670.2255 and the corresponding standard deviation was 209.5275. The mean and standard deviation for the dependent variables were stock market liquidity ($M=1.4575$, $SD=0.6449$), interest rate ($M=12.125$, $SD=0.6334$), GDP growth rate ($M=4.7916$, $SD=0.219$) and exchange rate ($M=96.3483$, $SD=9.3257$).

4.3 Multicollinearity Test

The study used variance inflation factor to examine multicollinearity among the independent variables as one of the assumptions of regression analysis. Table 2 shows the findings of the study.

Table 2: Collinearity Statistics

Model	Collinearity Statistics	
	Tolerance	VIF
(Constant)		
1 Liquidity	.958	1.044
Interest Rate	.874	1.144
GDP Growth Rate	.924	1.082
Exchange Rate	.895	1.117
a. Dependent Variable: Stock Returns		

Source: Research Findings

The results in Table 2 shows that variance inflation factor for stock market liquidity (VIF=1.044) was less than 10, indicating that multicollinearity was not a reason for concern. Similarly, variance inflation factor for interest rate (VIF=1.144), GDP growth rate (VIF=1.082) and exchange rate (VIF=1.117) were less than 10 indicating that multicollinearity was not a problem.

Therefore, the study further analyzed multicollinearity using collinearity diagnostics in Table 3.

Table 3: Collinearity Diagnostics

Model	Dimension	Eigenvalue	Condition Index	(Constant)	Liquidity	Interest	GDP	Exchange
					ratio	Rate	Growth	Rate
							Rate	
	1	5.722	1.000	.00	.00	.00	.00	.00
	2	.615	3.049	.00	.00	.00	.11	.00
1	3	.482	3.445	.00	.00	.00	.01	.00
	4	.120	6.908	.00	.00	.00	.01	.95
	5	.044	11.439	.01	.02	.01	.09	.00
a. Dependent Variable: Stock Returns								

Source: Research Findings

Condition indices greater than 15 indicate that multicollinearity is a concern while indices greater than 30 indicate that multicollinearity is a very serious concern. From the study findings in Table 3 the conditional indices were less than 15 indicating that multicollinearity was not a concern.

4.4 Autocorrelation

The study examined autocorrelation of the data as one of the assumptions of regression analysis. Table 4 shows the findings of the study.

Table 4: Durbin-Watson Test

Durbin-Watson test statistic (<i>d</i>)	Sample Size	Regressors	Critical Value ($\alpha = 0.05$)	
			Lower (d_L)	Upper(d_u)
0.727	60	4	1.44	1.73

Source: Research Findings

The results in Table 4 indicate that the test statistic for Durbin-Watson test was $d=0.727$ and it was less than the lower critical value ($d_L=1.44$) read from Durbin-Watson table for critical values for a sample size of 60 and 4 regressors ($d=0.727 < d_L=1.44$). This indicated that there was no autocorrelation among study variables.

4.5 Significance of the Regression Coefficients

The study carried out multiple linear regression analysis to determine the significance of the relationship between the variables. Table 5, 6 and 7 show the findings of the study.

Table 5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.853 ^a	.728	.709	113.09473

a. Dependent Variable: Stock Returns
b. Predictors: (Constant), Stock Market Liquidity, Interest Rate, GDP Growth Rate, Exchange Rate

Source: Research Findings

From the study findings in Table 5 the coefficient of determination (R square) was 0.853 indicating that 85.3% of the variation in stock returns was attributed to liquidity ratio, interest rate, GDP growth rate and exchange rate. The results in the model summary indicate that the regression equation adopted by the study was fit for making predictions.

Table 6: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1886733.209	4	471683.302	36.878	.000 ^b
	Residual	703473.040	55	12790.419		
	Total	2590206.249	59			
a. Dependent Variable: Stock Return						
b. Predictors: (Constant), Exchange Rate, Liquidity, GDP Growth Rate, Interest Rate						

Source: Research Findings

The value of F statistic $F(6) = 36.878$ was significant as indicated by a probability value $p=0.000$ less than $\alpha=0.05$ (95 percent level of confidence). This showed that the regression model adopted by the study was fit for prediction of the relationships among variables.

Table 7: Coefficients of Regression

Model	Unstandardized		Standardized	t	Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
(Constant)	2078.158	596.858		3.482	.001
Liquidity	71.499	30.799	.167	2.321	.024
Interest Rate	255.901	24.864	.774	10.292	.000
GDP Growth	350.818	69.925	.367	5.017	.000
Rate					
Exchange Rate	-11.172	4.862	-.171	-2.298	.025

a. Dependent Variable: Stock Return

Source: Research Findings

From the study findings in Table 7, the probability (p) values indicate that significant predictors of stock returns were stock market liquidity ($p=0.024$), interest rate ($p=0.000$), GDP growth rate ($p=0.000$) and exchange rate ($p=0.025$).

The coefficients in the regression Table 7 indicate the magnitude of the variation in the dependent variable caused by a unit change in the independent variable. Therefore, the greatest magnitude of change in the dependent variable was caused by GDP Growth Rate (coefficient 350.818) followed by interest rate (coefficient 255.901), liquidity (coefficient 71.499) and exchange rate (coefficient 11.172) respectively.

The positive nature of regression coefficients on GDP Growth Rate (coefficient 350.818), interest rate (coefficient 255.901) and liquidity (coefficient 71.499) indicated a direct

relationship between the variables and the stock returns of companies listed at the Nairobi Securities Exchange. Therefore, the stock returns of companies listed at the Nairobi Securities Exchange increase with the increase in market liquidity, GDP growth rate and interest rate. The negative signs on the regression coefficients for exchange rate (coefficient -11.172) indicated that there was an inverse proportionality between exchange rate and the stock returns of firms listed. Therefore, stock returns of listed firms at the NSE increased with the decrease in exchange rate.

4.6 Discussions of the Findings

The study established that stock market liquidity had a statistically significant influence on the stock returns of listed firms. The control variables i.e interest rate, GDP growth rate and exchange rate influenced the relationship between stock market liquidity and the stock returns of companies listed at the Nairobi Securities Exchange. The study findings indicated that increased liquidity at the stock exchange enables the listed companies to sell assets at the prevailing prices in the market which influences the levels of stock return. Optimum liquidity levels enable the firms listed to create investments portfolios that attract higher returns.

The study findings implied that the stock market liquidity contributes to the fluctuations in the levels of stock returns for the firms listed at the NSE. The findings are in tandem with Capital Market Authority (2015) report which stated that the low level of securities market liquidity is still considered a huge challenge facing the Kenyan securities market with decreased level of liquidity specifically experienced in the equity and bonds secondary markets.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes the conclusions of the study on the effect of stock market liquidity on the stock returns of listed firms. Conclusions drawn from the study findings are also presented in the chapter as well as recommendations for policy development and for further research.

5.2 Summary of the Findings

The study analyzed the relationship between stock market liquidity and the stock returns of firms listed at the NSE. The mean of the stock returns was 4670.2255 and the mean of control variables were the stock liquidity, interest rate, GDP growth rate and exchange rate were 1.4575, 12.125, 4.7916 and 96.3483 respectively.

In regard to the assumptions of regression analysis, the multicollinearity test using variance inflation factor indicated that multicollinearity was not a reason for concern. Besides, the collinearity diagnostics indicated that the conditional indices were less than 15 therefore multicollinearity was not a concern. The Durbin-Watson test ($d=0.727$) indicated that there was no autocorrelation among study variables.

The study established that stock market liquidity had a statistically significant influence on the stock returns of companies listed at the Nairobi Securities Exchange ($p=0.024$). The relationship between stock market liquidity and the stock returns was by influenced interest rate ($p=0.000$), GDP growth rate ($p=0.000$) and exchange rate ($p=0.025$). The study established that increased stock market liquidity at the Nairobi Securities Exchange enables the listed companies to sell assets at the prevailing prices in the market and do not incur

losses in doing so which influences the levels of stock return. The study findings implied that the stock market liquidity contributes to the fluctuations in the levels of stock returns.

5.3 Conclusion

The study concludes that stock market liquidity is a determinant of stock market returns in Kenya. A liquid stock market enables portfolio managers to design investment portfolios that will maximize return to the shareholders. A liquid market enables investors to sell assets whenever prices are favorable for higher returns. Therefore, market liquidity determines the volumes of stock traded and the level of stock return.

The study concludes that liquidity risks faced by the companies listed at the Nairobi Securities Exchange should be considered in determination of factors contributing to changes in stock return. In the event that short sales are restricted at the securities market, high levels of market liquidity show that stocks have been overvalued. The over-valuation of stocks lowers the returns. Besides, the effect of liquidity on the stock return is dependents on other factors such as interest rate, GDP growth rate and exchange rate.

A similar study by Jun, Marathe and Shawky (2003) found a positive relationship between liquidity and stock returns in emerging markets. The study findings also agree with Florackis, Kontonikas and Kostakis (2013) who argued that market participants recognize that evaporation of liquidity can lead to considerable price decline of asset that cannot be explained by the asset's fundamentals. Market liquidity has a direct effect on the performance of a firm which translates on the stock returns.

Some studies also done in developed markets like Archarya and Pedersen (2005) also showed a strong positive relationship between stock market liquidity and stock returns.

This study contradicts some of the past studies done on the Kenyan stock market. Koech (2012), Ayako (2005) and Odongo (2008) found liquidity was not significant while Okanga (2014) found a positive relationship between liquidity and stock returns. Reasons for the contradiction may vary and can be associated to the different levels of effectiveness of each liquidity measure, methodology used in analyzing the data and the level of efficiency in the market. The period of analysis may also be a source of difference in findings.

5.4 Recommendations

The study recommends that firms and individuals investing on the stock markets should consider liquidity in evaluation of stock returns. The study recommends that for markets to maintain optimal levels of liquidity that attract high returns on stocks, the interest rates and the exchange rates should be attractive to investors. In addition, the country's GDP plays a role in attracting investments in the stock market.

This study recommends that fund and investment managers take into consideration the findings in this study as a starting point to further understand liquidity as a factor that influences return of firms. Existence of liquidity in the stock market enables the fund managers to easily meet capital commitments, incur lower trading costs, improved price formation and facilitate portfolio-rebalancing transactions. But as concluded in this study, liquidity does not explain major variations in returns of firms listed at the NSE hence managers should take into consideration liquidity as well as other factors that might influence return of firms to a greater extent when undertaking key financial decisions that might affect firm return.

Due to the significant relationship that exists between stock returns and market liquidity on the NSE, the study recommends and prompts policy makers to implement policies that will enhance market liquidity and promote growth. Such policies may involve focusing on ways to attract a diverse investor base both local and international investors, increasing the pool of securities and improvement of trading technology such as the use of co-location and algorithmic trading. If stock market liquidity is extremely low, it may result in a situation where the stocks and other financial instruments would not be purchased or sold without incurring significant concessions in price. The Nairobi Securities Exchange would not efficiently accommodate trading sizes and large orders and the market may dry up completely resulting in a total inability to trade shares. The situation would be even worse if the investors are interested in liquidating their stocks and when such liquidation is motivated by the need to reduce exposures in the wake of large losses. All these emphasizes the need for policy makers to pay attention to stock market liquidity.

5.5 Limitations of the Study

The study used the NSE All Share Index (NASI) as a proxy for stock market returns. The use of an index as a proxy for stock market liquidity could be affected by the biases in how the components of stock indices are weighted such as the price weighting, market capitalization weighting and equal weighting. Also there are biases on index marketing and how the index components are chosen and constructed. Some companies that had been used in the computation of NSE All Share Index (NASI) had either been suspended or de-listed in the period under study and were therefore not featured in the index. The use of the index could have survivorship bias which may cause the stock returns being measured to be biased upwards.

This study reviewed the stock market liquidity and stock returns from January 2013 to December 2017 and therefore do not factor in the NSE share data that existed before that period. The limited time and resources was partially the reason for limiting the period of the study to five years between 2013 and 2017.

In some sectors, information on the stock volumes traded was unavailable resulting in some sectors not giving a complete analysis. Also, companies had been suspended or not quoted were left out though an inclusion would have provided a more conclusive result.

5.6 Suggestions for Further Research

This study generalized the findings from the NSE stock market and it raises the question of whether this findings could hold for each NSE sector and therefore a study need to be carried out to specifically find out the nature of the relationship for each sector and not a stock market as a whole as addressed in this study.

A study of similar nature should be carried out using different methodology to find out if the findings of this study hold and to acquire more reliable results. It would be interesting if the same study is done using different proxies of stock market liquidity such as bid-ask spread. The same study can be done from other sectors listed on the Nairobi Securities Exchange so as to verify if similar findings can be achieved.

The study recommends further studies on other factors that affect the stock returns such as the hedging strategies employed, level of debt/gearing, board structure and working capital adequacy in order to understand how such factors affect the stock returns. This will complement the findings of this study.

REFERENCES

- Acharya, V. V. & Pedersen L. H. (2005). Asset pricing with liquidity risk. *Journal of Financial Economics*, 77, 375-410.
- Amihud, Y. (2002). Illiquidity and stock returns: cross section and time series effects. *Journal of Financial Markets* 5, 31-56.
- Amihud, Y. & Mendelson H. (1986). Asset pricing and the bid-ask spread. *Journal of Financial Economics* 17, 223-49.
- Amihud, Y., Mendelson H. & Pedersen L. H. (2005). Liquidity and asset prices. *Foundations and Trends in Finance* 1, 269-364.
- Baker, M. & Stein, J. (2004). Market liquidity as a sentiment indicator. *Journal of Financial Markets*, 7, 271-299.
- Bank, W. (2004). Financial Sector Learning Program; proceedings from World Bank and brooking institution. *Conference on future of domestic Capital markets in developing countries* (pp. 56-58). Washington D.C: World Bank.
- Basu, S. (1977). Investment performance of common stocks in relation to their price-earnings ratios. A test of market efficiency. *Journal of Finance*, 32, 663-682.
- Basu, S. (1983). The Relationship between earnings yield, market value and return for NYSE common stocks: further evidence. *Journal of Financial Economics*, 12, 129-156.
- Bekaert, G. & Harvey, C. R. (2000). Foreign speculators and emerging equity markets. *Journal of Finance*, 55, 565-614.

- Brennan, M. J., & Subrahmanyam, A. (1996). Market microstructure and asset pricing: on the compensation for illiquidity in stock returns. *Journal of Financial Economics* 41, 441-64.
- Brennan, M. J., Chordia, T. & Subrahmanyam, A. (1998). Alternative factor specifications, security characteristics, and the cross-section of expected stock returns. *Journal of Financial Economics*, 49, 3, 345-373.
- Brennan, M., X. Cheng, & F. Li. (2009). Agency, asset pricing, and institutional investment, *Journal of Financial Economics, Working Paper* (University of California, Los Angeles).
- Chan, H. W. & Faff R. W. (2005). Asset pricing and the illiquidity premium. *The Financial Review*, 40, 429-458.
- Chen, G., Firth, M. & Rui O. M. (2001). The dynamic relations between stock returns, trading volume and volatility. *Financial Review*, 38: 153-174.
- Chen, G.; M. Firth; & O.M. Rui. (2001). The dynamic relation between stock returns, trading volume, and volatility. *Financial Review* 38, 3, 153-174.
- Chordia, T. & Shivakumar, L. (2002). Momentum, business cycle, and time-varying expected returns, *Journal of Finance*, 57, 985–1019.
- Chordia, T., Huh, S. & Subrahmanyam, A. (2009). Theory-based illiquidity and asset pricing, *Review of Financial Studies*, 22, 3629–68.
- Chuhan, P. (1992). *Are Institutional Investors an Important Source of Portfolio Investment in Emerging Markets?* World Bank working paper, 1243.

- Clark, P.K. (1973). A subordinated stochastic process model with finite variance for speculative prices. *Econometrica* 41, 1, 135-155.
- Cooper, D. R & Schindler, P. S. (2003). *Business research Methods*. New Delhi: Tata McGraw Hill
- Dalgaard, R. (2009). Liquidity and stock returns: Evidence from Denmark. *Journal of Financial Economics* 41, 441-64
- Damoradan, A. (2005). *Marketability and value: Measuring the illiquidity discount*. Working paper, Stern school of business.
- Datar, V., Naik, N. & Radcliffe, R. (1998). Liquidity and stock returns: an alternative test, *Journal of Financial Markets*, 1, 203–19.
- Datar, V.T., Y. Naik, N. & Radcliffe, R. (1998). Liquidity and stock returns: An alternative test, *Journal of Financial Markets*, 1, 2, 203-219.
- Demirguc-Kunt, A. & Levine, R. (1996). Stock market development and financial intermediaries: Stylised facts. *World Bank Economic Review* 10(2), 341-69.
- Easley, D. & O'Hara, M. (2004). Information and the cost of capital. *Journal of Finance*, 59, 1553-1583.
- Easley, D., & M. O'Hara. (1987). Price, trade size, and information in securities markets. *Journal of Financial Economics* 19:69-90.
- Easley, D., Hvidkjaer, S. & O'Hara, M. (2002). Is information-based risk a determinant of asset returns? *Journal of Finance*, 57, 2185–2221.
- Eleswarapu, V.R. & Reinganum, M.R. (1993). The seasonal behavior of the liquidity premium in asset pricing. *Journal of Financial Economics*, 34, 373-386.

- Essvale Corporations Limited. (2008). *Business Knowledge for IT in Trading and Exchanges*. London: Essvale Corporations Limited.
- Fama, E. (1970). Efficient capital markets: A review of theory and empirical work. *Journal of Finance*, 25, (2).
- Fama, E. (1991). Efficient capital markets: A review of theory and empirical work. *The Journal of Finance*, 46, 1575-1617.
- Fang, V.W., Noe, T.H. & Tice, S. (2009). Stock market liquidity and firm value. *Journal of Financial Economics*, 94, 1, 150-169.
- Foster, Douglas F., & Viswanathan S., (1990). A theory of the interday variations in volume, variance, and trading costs in securities markets. *Review of Financial Studies* 3, 593-624.
- Freund, W.C., & M.S. Pagano. (2000). Market efficiency in specialist markets before and after automation. *Financial Review* 35, 3, 79-91.
- Glosten, L. & Harris, L. (1988). Estimating the components of the bid/ask spread. *Journal of Financial Economics*, 21, 123-142.
- Green, W.H. (2003). *Econometric Analysis*, 5th ed. Upper Saddle River, NJ: Prentice Hall.
- Haugen, R.A. & Baker, N.L. (1996). Commonality in the determinants of expected stock returns. *Journal of Financial Economics*, 41, 3, 401-439.
- Kothari, C. R. (2004). *Research methodology: Methods & Technology*. New Delhi: New Age International (P) Ltd.

- Kyle, A. S. (1985). Continuous auctions and insider trading. *Econometrica*, 53, 1315-1335.
- Lee, B. S., & O.M. Rui. (2002). The dynamic relationship between stock returns and trading volume: domestic and cross-country evidence. *Journal of Banking and Finance* 26, 51-78.
- Markowitz, H. (1952). Portfolio selection. *Journal of Finance*, 7, 77-91.
- Marshall, B.R. (2006) Liquidity and stock returns: Evidence from a pure order-driven market using a new liquidity proxy. *International Review of Financial Analysis*, 15, 21-38.
- Munga, D. M. (1974). The NSE: Its history, organisation and role in the Kenyan economy. Unpublished MBA thesis, University of Nairobi.
- Ngugi, R. V., Murinde & Green, C. (2003). How have the emerging stock exchange in Africa responded to market reforms. *Journal of African Business* 4, 2, 89-97.
- Ngugi, R. W. (2003). What defines liquidity of stock Market: KIPPRA Discussion Paper No. 29. Nairobi: Kenya Institute for Public Policy Research and Analysis.
- Pastor, L. & Stambaugh, R. F. (2003). Liquidity risk and expected stock returns. *Journal of Political Economy* 111:642-85.
- Subrahmanyam, A. (2001). Feedback from Stock Prices to Cash Flows. *Journal of Finance*, 56, 2389-2413.

APPENDICES

Appendix I: Data Collected

No.	Month - Year	Stock Return	Stock Liquidity	Interest Rate (%)	GDP Growth Rate (%)	Exchange Rate(Kshs per USD)
1	Jan-13	4471.21	1.0124	12.4	5.15	95.1
2	Feb-13	4461.32	1.0188	12.4	5.1	95.6
3	Mar-13	4417.17	1.0182	12.15	5	95.6
4	Apr-13	4385.00	1.0429	12.45	4.95	95
5	May-13	4379.71	1.0525	12.05	5	95
6	Jun-13	4403.38	1	12	5.05	95.1
7	Jul-13	4402.75	2.1545	12	5.05	95.5
8	Aug-13	4412.61	1.257	12	5.05	95.6
9	Sep-13	4416.6	1.07124	11.95	5.05	95.9
10	Oct-13	4420.79	2.0188	11.9	5	96
11	Nov-13	4450.78	1.0182	11.55	5	96.4
12	Dec-13	4483.62	1.4429	11.6	5	96.4
13	Jan-14	4522.53	1.1525	11.85	4.95	96.1
14	Feb-14	4561.16	2.247	11.85	5	96
15	Mar-14	4588.42	2.1545	11.6	5	96.4
16	Apr-14	4611.03	1.285	11.85	4.95	96.4
17	May-14	4633.48	3.25	11.8	4.95	96.1
18	Jun-14	4648.09	1.0525	11.95	4.95	97
19	Jul-14	4637.54	1	12.1	4.95	96.8
20	Aug-14	4614.75	2.1545	12	5	96.6
21	Sep-14	4573.88	1.257	11.8	4.95	96.3
22	Oct-14	4551.06	1.07124	11.95	4.95	96.5
23	Nov-14	4502.75	2.0188	11.6	4.8	96.5
24	Dec-14	4505.59	1.0182	11.55	4.75	96.5
25	Jan-15	4477.89	1.4429	11.25	4.65	96.5
26	Feb-15	4463.65	1.0188	11.15	4.75	96.5
27	Mar-15	4469.19	1.0182	10.9	4.7	26.4
28	Apr-15	4513.55	1.0429	10.95	4.85	96.7
29	May-15	4518.59	1.0525	11	4.2	96.8
30	Jun-15	4510.47	1	11.2	4.2	97
31	Jul-15	4533.82	2.1545	11.2	4.55	96.9
32	Aug-15	4546.83	1.285	11.45	4.45	97
33	Sep-15	4585.07	3.25	11.95	4.5	97
34	Oct-15	4658.64	1.0525	12.05	4.8	97

35	Nov-15	4796.33	1	12.4	4.8	97.5
36	Dec-15	4985.91	1.0188	13.35	4.75	98
37	Jan-16	4911.45	1.0182	13	4.7	98.2
38	Feb-16	4831.85	1.0429	12.55	4.6	98
39	Mar-16	4774.12	1.0525	12.9	4.65	98.2
40	Apr-16	4727.04	1	12.45	4.6	98.3
41	May-16	4721.23	2.1545	12.45	4.6	98.2
42	Jun-16	4719.05	1.285	12.1	4.6	98.6
43	Jul-16	4708.56	3.25	11.95	4.55	99
44	Aug-16	4713.6	1.0525	11.85	4.5	99.1
45	Sep-16	4732.79	1.07124	12.2	4.5	99.1
46	Oct-16	4758.22	2.0188	11.6	4.55	99.2
47	Nov-16	4830.44	1.0182	12.1	4.5	99.3
48	Dec-16	4860.83	1.4429	11.95	4.5	99.3
49	Jan-17	5030.91	1.1525	12.4	4.7	99.4
50	Feb-17	5019.73	2.247	12.4	4.7	99.4
51	Mar-17	4975.77	2.1545	12.65	4.7	99.5
52	Apr-17	4985.68	1.285	13.05	4.7	99.7
53	May-17	4980.84	3.25	12.7	4.85	99.8
54	Jun-17	4990.04	1.0525	12.6	5	99.9
55	Jul-17	5027.90	1	12.95	5	100
56	Aug-17	5020.50	2.1545	13.1	4.95	100
57	Sep-17	4994.94	1.257	13.4	4.9	100.2
58	Oct-17	4947.51	1.07124	13.45	4.8	100.2
59	Nov-17	4932.77	1.0188	13.45	4.8	100.3
60	Dec-17	4902.60	1.3	13.05	4.75	100.3

Appendix II: List of Firms factored in the NSE All Share Index (NASI)

S/No.	Firm	Sector
1	ARM Cement	Construction & Allied
2	Bamburi Cement	Construction & Allied
3	Barclays Bank Kenya	Banking
4	BOC Kenya	Manufacturing & Allied
5	British American Tobacco Kenya	Manufacturing & Allied
6	Car And General	Automobiles & Accessories
7	Carbacid Invest	Manufacturing & Allied
8	Centum Invest	Investment
9	CfC Stanbic	Banking
10	Co-operative Bank	Banking
11	Crown Berger	Construction & Allied
12	Diamond Trust Bank	Banking
13	Eaagads	Agricultural
14	East Africa Cables	Construction & Allied
15	East African Breweries	Manufacturing & Allied
16	East African Portland Cement	Construction & Allied
17	Equity Group	Banking
18	Eveready East Africa A	Manufacturing & Allied
19	Express Kenya	Commercial And Services
20	HF Group	Banking
21	Jubilee	Insurance
22	Kakuzi	Agricultural
23	Kapchorua Tea	Agricultural
24	KCB Group	Banking
25	Kenol Kobil	Energy & Petroleum
26	Kenya Airways	Commercial And Services
27	Kenya Electricity Generating	Energy & Petroleum
28	Kenya Orchards	Manufacturing & Allied
29	Kenya Power Lighting	Energy & Petroleum
30	Kenya Reinsurance	Insurance
31	Limuru Tea	Agricultural
32	Mumias Sugar	Manufacturing & Allied
33	Nation Media	Commercial And Services
34	National Bank Kenya	Banking

35	NIC Bank	Banking
36	Olympia Capital	Investment
37	Pan Africa Insurance	Insurance
38	Safaricom	Telecommunication & Technology
39	Sameer Africa	Automobiles & Accessories
40	Sasini	Agricultural
41	Standard Chartered Bank	Banking
42	Standard Group	Commercial And Services
43	Total Kenya	Energy & Petroleum
44	TPS Eastern Africa	Commercial And Services
45	Uchumi Supermarkets	Commercial And Services
46	Unga Group	Manufacturing & Allied
47	Williamson Tea	Agricultural
48	WPP-Scangroup	Commercial And Services

Source: Nairobi Securities Exchange, 2017