

**RELATIONSHIP BETWEEN LIQUIDITY AND RETURN OF STOCK AT
THE NAIROBI SECURITIES EXCHANGE**

BY

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DECLARATION

This research project report is my original work and has not been presented for the award of a degree in this or any other university.

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DEDICATION

To my brother and sister who gave me all their support and encouragement during this entire period and to my parents who gave me financial support to pursue this programme. God bless you all.

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ABSTRACT

The objective of this study was to ascertain whether there exists a relationship between liquidity and return of listed firms at the Nairobi Securities Exchange. The research design was correlational and the population of the study consisted of all the 57 firms currently listed at the Nairobi Securities Exchange. The sample consisted of 41 firms which were listed between the years 2007-2011, secondary data for the period was collected from NSE data bank. Purposive sampling of companies quoted on the NSE during the period 2007-2011 was carried out with exclusion in the sample of firms that were listed in the course of the study period and those which were suspended. Turnover rate was used as a proxy for liquidity. It was computed as monthly trading volume divided by the number of outstanding shares issued then expressed as a percentage. Monthly return for each security was determined as sum of capital gains/losses and dividends expressed as a percentage of the beginning of period investment value. Simple regression model was used for the purpose of analysis to determine the nature of the relationship. Correlation coefficient 'r' value for Liquidity and return of stock was found to be small. This showed that there was a very weak correlation between Liquidity and return of listed firms at the Nairobi Securities Exchange. It was concluded that there is a non-linear relationship between Liquidity and the 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 Return of firms other than Liquidity.

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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 Earning Ratio
U.S	United States

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

The Stock Market is one of the most closely observed economic phenomenon in the world. One of the key roles of the stock market 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 quickly and cheaply when they need to access their savings or to alter their portfolios (Demirguc-Kunt and Levine, 1996). They further argue that 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.

Investment consultants and portfolio managers earn their living by tailoring portfolios to accommodate their clients' time horizons and liquidity preferences (Amihud, 2002). He noted that despite their evident importance, liquidity considerations have not received anything like the attention paid to risk in the finance literature. The classical Capital Asset Pricing Model pays no attention to the effects of asset liquidity and investor holding periods on expected returns.

Dalgaard (2009) describes Liquidity as the degree to which an asset or security can be bought or sold in the market without affecting the asset's price. He further explains that a liquid asset is characterized by a high level of trading activity and plays a vital role in the functioning of financial markets. Markets are liquid when those who have assets holdings can sell them at prices that do not involve considerable losses so as to gain the finance they need to fulfil other commitments (Amihud, 2002).

With the increasing popularity regarding the importance of investing, people are increasingly becoming more focused on ways to invest with stock markets being one of the most anticipated markets for all (Damoradan, 2005). As a result, the attention of researchers and stakeholder has increasingly focussed on liquidity as factors in facilitating investment in stock exchange. Attempts to address liquidity concerns has seen researchers in developed capital markets focus on studies addressing issues of liquidity and relationships that may arise between liquidity and such factors.

1.1.1 Stock Liquidity and Measures of Liquidity

Kyle (1985) describes market liquidity as a slippery and elusive concept especially because it encompasses a number of transactional properties including tightness, depth and resiliency. In a landmark paper, Amihud and Mendelson (1986) find evidence that asset returns include a significant premium for the quoted bid-ask spread. Since that study, several papers have elaborated upon the role of liquidity as a determinant of expected returns.

In analyzing transactional properties, Kyle (1985) defines tightness (the cost of turning around position over a short period of time) as a measure of the ability to transact quickly, while market depth (the size of an order flow innovation required to change prices by a given amount) is the ability to transact at the current market prices or the sensitivity of prices to order flow. Liquidity measures can be divided into two; those that are “cost based” and those that are “reflective” (Spiegel and Wang, 2007). Cost based measures attempt to quantify liquidity by examining the financial loss a trader incurs from a particular transaction like the bid-ask spread. Reflective

measures, such as volume, rely instead on the idea that liquidity should be associated with particular characteristics.

An important issue in studies that relate liquidity to asset prices is the measurement of liquidity. Other than direct empirical measurements of liquidity by the bid-ask spread, the approach taken in the literature has been to employ empirical arguments in order to measure liquidity. Amihud (2002) proposes the ratio of absolute return to dollar trading volume as a measure of liquidity. Brennan and Subrahmanyam (1996) suggest measuring liquidity by the relation between price changes and order flows. Datar, Naik, and Radcliffe (1998) suggest measuring liquidity by share turnover. Chordia, Huh and Subrahmanyam (2009) use an illiquidity measure which incorporates parameters such as return volatility and volume into the illiquidity measure.

Recent studies have focused on whether the second moment of liquidity is priced. The premise is that the variability of prospective future trading costs may command a premium in the stock market in addition to the level of such costs. Chordia and Shivakumar (2002) use share turnover as a measure of liquidity and find that the second moment of liquidity actually bears a negative relation to future returns, countering the pricing of liquidity risk. However, Pastor and Stambaugh (2003) measure illiquidity by the extent to which returns reverse upon high volume, an approach based on the notion that such a reversal captures inventory based price pressures. They do indeed find that stock sensitivities to aggregate liquidity risk are related to expected returns.

Ngugi (2003) analysed the response of trading activity and liquidity of the NSE to the implemented institutional and policy reforms during the revitalisation process. The study covered the period January 1990 to June 2002. The study took into consideration the microstructure theory for empirical analysis testing for market response to the following main changes: shifts in trading system, tightening of the regulatory system, reform of taxation policy, and relaxation 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

Basu (1977) showed that stocks with high earnings/price ratios (or low P/E ratios) earned significantly higher returns than stocks with low earnings/price ratios. His results indicated that differences in beta could not explain these return differences. In a follow-up study, Basu (1983) showed that this "E/P effect" is not just observed among small capitalization stocks. A later study by Jaffe, Keim and Westerfield (1989) confirmed this finding and also showed that the E/P effect does not just appear in the month of January, as had been claimed by some researchers. The E/P effect is a direct contradiction of the CAPM; beta should be all that matters.

Haugen and Baker (1996) report that the liquidity of stocks is one of several common factors in explaining stock returns across global markets. Their research indicates that the cross-sectional stock returns in developed markets have common determinants from period to period and from country to country, and that the liquidity of stocks is one of the important determinants of stock returns. Estrada (2000) shows that the semi-deviation with respect to the mean is a useful variable in explaining the cross section of industry returns in emerging markets. He further

indicates that the semi deviation might be a plausible variable to be used in a CAPM framework to compute the cost of equity in emerging markets.

1.1.3 Nairobi Securities Exchange

The NSE is a securities market that has been characterized by humble beginnings and it has grown considerably over time. Ngugi and Njiru (2005) in their study stated that the NSE came into being in the 1920s when Kenya was a British colony. In 1954, the NSE was comprised as a voluntary organization of stockbrokers enrolled under the Societies Act. Trading of shares was restricted only to the resident of European community and Africans and Asians were not permitted to deal in securities. In 1963, Kenya became independent and Africans and Asians were permitted to deal in securities.

In 1980, The Kenyan Government saw the need to design and implement policy transformation to promote the sustainability of economic growth with an efficient and steady financial system. In 1984, A Central Bank of Kenya study, Development of Money and Capital Markets in Kenya, which was known as a blueprint for structural reforms in the financial markets helped the creation of a regulatory body (Ngugi, Murinde and Green, 2003). Ngugi and Njiru (2005) also recorded that in July 2000, the CDS Act was passed by Parliament and sanctioned by the President. The Capital Markets Authority Act was amended and known as the Capital Markets Act. In August 2000, CFC Financial Services, the first licensed dealer on the NSE, started its operations. Because of the critical role in Kenyan economy and at large the East African Community, NSE becomes an important reference for this study owing to variety of stocks traded in the market.

1.2 Research problem

If investors are to hold stocks that cannot easily be sold without changing the price or incurring other costs, they should demand compensation. This compensation is expected to come with higher returns. Thus, investors are expected to require higher returns for less liquid stocks. In addition to this, stocks with returns that are sensitive to changes in liquidity should yield higher returns to compensate the investors for this additional risk (Archarya and Pedersen, 2005). However, earlier studies done have shown mixed results on the relationship between liquidity and stock returns.

A rational investor would be expected to demand a return premium in compensation for holding assets that are less than perfectly liquid. Thus, intuitively, there should be a positive relationship between illiquidity and stock returns. Conversely, the relationship between liquidity and stock returns should be negative (Chan and Faff, 2005). The theoretical models show that this relationship should hold in equilibrium. The study by Archarya (2005) found unanswered quest on the relationship between corporate liquidity and stock returns recommending a further examination on the question. A study by Jun, Marathe and Shawky (2003) found a positive link between liquidity and stock 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.

In a survey by Chuhan (1992) poor liquidity was mentioned as one of the main reasons that prevented foreign institutional investors from investing in emerging markets. Many emerging markets including NSE underwent a structural break during the study sample period that likely

affected liquidity, namely equity market liberalization. These liberalizations give foreign investors the opportunity to invest in domestic equity securities and domestic investors the right to transact in foreign equity securities.

Ngugi (2003) did a study on what defines liquidity of the Stock 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 markedly different development especially in legal and institutional changes which are in line with international standards. Moreover, NSE underwent structural break during the sample period that are likely to affect liquidity, namely automation of the NSE and changes in legislation that have attracted foreign investors to invest in the market.

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 small, underdeveloped and illiquid. They tend to operate in isolation from other markets, have low trading volumes, are sheltered from competition by national regulations and face barriers to capital mobility because of high costs of travel and communications. Pastor and Stambaugh (2003) find that expected stock returns are cross sectional related to liquidity risk.

If investors are to hold stocks that cannot easily be sold without changing the price or incurring other costs, they should demand compensation. This compensation is expected to come with higher returns. Thus, investors are expected to demand higher returns for less liquid stocks. In addition to this, stocks with returns that are sensitive to changes in liquidity should yield higher returns to compensate the investors for this additional risk. The study sought to answer the question: What is the relationship between liquidity and stock return of firms quoted in the NSE?

1.3 Objective of the study

To investigate whether there is a relationship between liquidity and stock return of firms listed in the Nairobi Securities Exchange.

1.4 Value of the study

The study offers valuable contribution to theory and practice. First the study will add value to the financial management field especially in the demanding concerns of liquidity. It will also form the basis of further research by identifying the knowledge gap that arises from this study. Further, the study will create forum for further discussions and debate on liquidity among financial consultants and investors thus making significant contribution by adding to the body of knowledge and theory that already exist.

To practice, the findings of this study will be of interest to investors of publicly quoted companies as is expected to give an insight to the implications of liquidity on their stock returns. This could help them make investment decisions based on the knowledge attained. The CMA which is charged with the role of regulating the stock market will benefit from findings of this

study as they try to enhance liquidity in the securities exchange. The study will also sharpen the consultants in the area of liquidity and hence enable them to offer quality services to their clients accordingly especially those who need to invest in securities for short term.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter provides the theoretical foundation of the model in order to identify and analyze the main theory in use and its applicability to the study. 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.

2.2 Theoretical review

One of the central issues in finance is understanding the cross-section of equity market returns. Why one stock's expected return might vary from that of another has preoccupied scholars for decades. There are different theories advanced to explain return.

2.2.1 Trading Volume Theory

Lee and Rui (2002) explain that stock prices change when new information arrives. Therefore, if trading volume is linked to the information flow entering a market, it also implies the existence of a significant relationship between volume and stock prices. The sequential information arrival models of Copeland (1976) suggest a positive contemporaneous relation between volume and the absolute value of a price change, and a positive causal relationship in either direction. In these asymmetric information models, new information that reaches the market is not disseminated to all participants simultaneously, but to one trader at a time (Chen, Firth and Rui, 2001). The sequential information hypothesis supports several intermediate equilibria, such that only when all traders have received the new information is final market equilibrium established. Therefore, due to the sequential information flow, lagged trading volume provides information on current

absolute stock returns, and lagged absolute returns contain information on current trading volume.

In Clark (1973) model, the interpretation of volume as a proxy for the speed of information, which is regarded as a latent common factor, explains the observed positive correlation between the variance of price changes and volume. In the model, there is no causal relationship from volume to returns. Conversely, Epps and Epps (1976) use volume to measure disagreement among traders, because traders revise their reservation prices when the new information flows. The level of trading volume is therefore expected to increase as a result of greater disagreement among investors. A positive causality from volume to absolute stock returns is predicted in their model.

Chen et al. (2001) examined the dynamic relation between returns, volume, and volatility of stock indices for nine countries and found mixed results. They demonstrate that returns do cause volume to change in some countries but it doesn't affect in other countries. Lee and Rui (2002) also demonstrate that returns cause trading volume in the U.S. and Japanese markets, but not in UK markets. They, however, show that trading volume does not cause stock market returns in the stock exchanges of the United States, Japan, and the United Kingdom.

Milgrom and Stokey (1982) note that an offer to trade indicates to potential counter parties that the trader might have private information. Rational traders refuse to trade under such conditions and trading volume is zero. Foster and Viswanathan (1990) use liquidity traders to get out of the no-trading trap. Subrahmanyam (1991) shows that rational liquidity traders trade only baskets of

securities, avoiding trades in individual securities. Statman, Theorley and Vorkink (2004) study found that market wide trading volume in the US is related to past market returns. They found that market wide-trading activity in NYSE shares is positively correlated to past shocks in market return.

2.2.2 The Capital Asset Pricing Theory (CAPM)

Building on the Markowitz (1952) framework, Sharpe (1964), Lintner (1965) and Mossin (1966) independently developed the Capital Asset Pricing Model (CAPM). This model assumes that investors use the logic of Markowitz (1952) in forming portfolios. It further assumes that the market is perfect and there is the risk free asset that has a certain return.

$$R_i = R_F + (R_M - R_F) \beta_i$$

Where

R_i = The return on asset i ,

R_F = the return on the risk free asset,

β = systematic risk measured by beta

This linear relationship is called the Security Market Line, a framework in which returns are explained by the sensitivity towards market risk. The relevant risk measure is defined as the market risk that is, the exposure of the returns of a stock towards changes in the market portfolio return in excess of the risk free rate of return.

This risk is denominated by beta and is given by

$$\beta_i = \frac{\sigma_{iM}}{\sigma_M^2}$$

Where,

σ_{iM} = the covariance between the return on the market portfolio and the return on stock i ,

σ^2_M = the variance of the return on the market portfolio

Basu (1977) study was among the early ones to contradict the predictions of the CAPM. He showed that stocks with high earnings/price ratios (or low P/E ratios) earned significantly higher returns than stocks with low earnings/price ratios. His results indicated that differences in beta could not explain these return differences. In a follow-up study, Basu (1983) showed that this "E/P effect" is not just observed among small capitalization stocks. A later study by Jaffe, Keim and Westerfield (1989) confirmed this finding and also showed that the E/P effect does not just appear in the month of January, as had been claimed by some researchers. The E/P effect is a direct contradiction of the CAPM; beta should be all that matters.

2.2.3 Efficient Market Hypothesis

Fama (1970) explains an efficient capital market as one in which security prices adjust rapidly to the arrival of new information and, therefore the current prices of securities reflect all information about the security. An informational efficient market is one in which information is rapidly disseminated and reflected in prices. Fama (1970) presented the efficient market theory in terms of a fair game model, contending that investors can be confident that a current market price fully reflects all available information about a security and the reflected return based upon this price is consistent with risk. According to Efficient Market Hypothesis (EMH), any two securities or portfolios with the same state contingent payoff vectors must be priced identically. Fama (1991) notes that market efficiency are a continuum; the lower the transaction cost in a market, including the cost of obtaining information and trading, the more efficient the market. Reilly (2006) argues that for a capital market to be termed as efficient several assumptions are made. An initial and important premise of an efficient market requires that a large number of

profit maximization participants analyze and value securities independently. A second assumption is that new information regarding securities comes to the market in a random fashion, and the timing of one announcement is generally independent of others. The third assumption is profit maximizing investors adjust security prices rapidly to reflect the effect of new information. Although the price adjustments may be imperfect, it is unbiased. Meaning that sometimes the market will over-adjust and other times it will under-adjust, but it cannot be predicted which one will occur at any given time. Therefore there will be no arbitrage profits.

Amihud, Mendelson and Pedersen (2005) call the higher return a “rent” for supplying “patient capital”, which is a scarce resource in the financial markets. The idea that less liquid stocks will be allocated to investors with long investment horizons is called the clientele theory. It states that the illiquidity premium is mainly due to a compensation for being patient. For more liquid securities, the primary source of the liquidity premium is the amortised illiquidity costs. This is, again, due to the clientele effect – the liquid assets will be held by investors with very short trading horizons, and thus the cost of trading takes up a large fraction of the realised return.

2.2.4 The Classical Stock Pricing Theory

The basic idea behind the dividend based stock valuation is that the value of a stock is the present value of all future dividends (Williams, 1938). In the financial market therefore, the maximum price that investor are willing to pay for a financial asset is actually the current value of future cash payments that are discounted at a higher rate to compensate for the uncertainty in the cash flow projections.

$$P_{i0} = \sum_{t=1}^{t=\infty} \frac{d_{it}}{(1+R_i)^t}$$

The above formula is a realization of the fact that a security should be priced at the present value of its future cash flows. In a perfect capital market, the price of a stock with a dividend payout of 100% will be exactly equal to the present value of the expected future dividends. The main assumption of the theory is that markets are perfect. Elton, Gruber, Brown and Goetzmann (2007) explain that theoretical capital market models assume that perfect capital market exists.

2.3 Empirical Review

The empirical evidence to the relationship between liquidity and stock returns is mixed. There is a large body of research that supports the view that the liquidity of securities affects their expected returns. The influence of trading costs on required returns examined by Jacoby, Fowler and Gottesman (2000) implies a direct link between liquidity and corporate cost of capital. This study presents a model showing that liquidity, marketability or transactions costs influence investors' portfolio decisions. Since rational investors require a higher risk premium for holding illiquid securities, cross-sectional risk-adjusted returns are lower for liquid stocks. This proposition has been empirically supported in various studies on mature capital markets.

Amihud and Mendelson (1989) conduct cross-sectional analyses of US stock returns and show that risk-adjusted returns are decreasing with respect to liquidity, as measured by the bid-ask spread. Brennan et al. (1998) investigate the relation between expected returns and several firm characteristics including market liquidity, as measured by trading volume. They find a significant

negative relation between returns and trading volume for both NYSE and NASDAQ stocks, thus linking expected returns and liquidity.

Eleswarapu and Reinganum (1993) empirically examine the seasonal behaviour of the liquidity premium in asset pricing and document a strong seasonal component in the association between liquidity and stock returns. Baker and Stein (2004) build a model that helps to explain why increases in liquidity predict lower subsequent returns in both firm level and aggregate data. The model features a class of irrational investors, who under react to the information contained in order flow, thereby boosting liquidity. In the presence of short sales constraints, high liquidity is a symptom of the fact that the market is dominated by these irrational investors, and hence is overvalued.

The traditional explanation for why liquidity might affect expected returns is that investors holding stocks recognize that they will face transaction costs when they sell their stocks at some time in the future. Therefore, investors will discount stocks with higher transaction costs (Vayanos 1998). Another explanation proposed by Baker and Stein (2004) is that high liquidity is a sign that irrational investors' positive and expected returns are abnormally low.

Theoretical model developed by Easley and O'Hara (2004) indicate that private information affects the process by which prices become informational efficient and this affects the risk of holding stocks. Therefore, stocks with higher probability of information based trading will have higher expected returns. In addition, Glosten and Harris (1988) report that adverse selection costs

are the primary cause of illiquidity in financial markets. Hence, there should be a negative return between liquidity and returns.

The inconclusive evidence on the return–spread relationship leads to the development of turnover rate as a liquidity proxy. Turnover rate is defined as the total currency value of trading in a stock over a given period divided by market capitalization. Haugen and Baker (1996) report a statistically significant negative return–turnover rate relationship. In other words, less liquid stocks are found to have higher returns. Using volume traded to proxy for liquidity, Brennan et al. (1998) find a negative relationship for both NYSE and NASDAQ stocks. On the other side, a number of authors report a positive link between liquidity and stock returns in emerging markets (Jun et al. 2003).

A potential explanation for the positive correlation between liquidity and emerging stock market returns can be made from the perspective of lower level of global market integration. While Longin and Solnik (1995) report an overall increase in the correlation structure among developed markets, Bekaert and Harvey (1997) find evidence for varying degrees of integration of emerging equity markets with the world economy. If emerging markets are not fully integrated with the global economy, lack of liquidity will not function as a risk factor, and thus cross-sectional returns will not necessarily be lower for liquid markets. In this sense, our findings are supportive of the view that emerging equity markets have a lower degree of integration with the global economy.

Taking departure in the Fama and French (1993) three-factor model, Chan and Faff (2005) investigated the role of liquidity in stock pricing by adding the return on a mimicking liquidity portfolio to the model. Liquidity is proxied by the share turnover rate. They tested the four-factor model for over identifying restrictions and reject; hence, they find support for adding a liquidity factor to the Fama and French (1993) three-factor model.

In terms of using country data of mature markets, Marshall (2006) investigated the effect of liquidity on stock returns using Australian data and reported a negative relationship indicating the existence of a positive liquidity premium. Fang et al. (2009) argue that liquidity can positively affect corporate governance and firm performance, and in turns, affect the stock returns. Improved liquidity also stimulate trade by informed investors thereby improving investment decisions through more informative share prices (Khanna and Sonti 2004).

Haugen and Baker (1996) report indicates that the cross-sectional stock returns in developed markets have common determinants from period to period and from country to country, and that the liquidity of stocks is one of the important determinants of stock returns. Kyle (1985) proposed that because market makers cannot distinguish between order flow that is generated by informed traders and by liquidity (noise) traders, they set prices that are an increasing function of the imbalance in the order flow which may indicate informed trading. This creates a positive relationship between the order flow or transaction volume and price change, commonly called the price impact.

Amihud (2002) document the presence of a time-series relation between market liquidity and expected market returns. Chordia, Subrahmanyam, and Anshuman (2001) found a significant cross-sectional relation between stock returns and the variability of liquidity, where liquidity is proxied by measures of trading activity such as volume and turnover. They further report that stocks with more volatile liquidity have lower expected returns.

Munga (1974) did a study on history, organisation and role of NSE in Kenyan Economy. He found out that NSE is characterized by illiquidity and low turnover. Five decades later, there have been improvements. Mwangi (1997) analyzed price movement at the NSE. He sought to determine factors that affect share price movement in addition to developing a model that could be used to predict price movements. He found out that it was not always possible to develop model that accurately predict prices at the NSE because the parameters used in forecasting vary over time due to changes in the underlying earnings generating process.

Iminza (1997) analyzed the share prices at the NSE, focusing on their relationship with dividends payments. She used correlation analysis to establish whether there is a relationship between changes in prices with changes in dividends payout. She concluded that dividends have significant impact on share price. She used chi-square distribution to test for independence of two variables and constructed share prices five days before and after dividend announcement. Muriithi (2001) sought to establish whether interim dividend could be used to predict final earnings. He analyzed his data using regression analysis and found out that there was no relationship between interim dividends and eventual year-end earnings.

Ayako (2005) sought to investigate the role of trading volume/activity in terms of information it contains about future prices. He was interested in the power of trading volume in predicting the direction of future stock prices. His research was for firms listed at NSE for a period of 5 years between 1998 and 2002. He found out that there was no relationship between trading volume and stock return of firms 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. Aduda (2010) did a study on market reaction to stock split in the NSE. He found out that there was an increase in the volumes of shares traded when stock splits were announced. This was especially so in the days around the stock splits. He further observed that trading activity generally increase after the stock split as compared to that before the split.

With increasing automation at NSE evidenced by operationalization of CDS, the recent introduction of electronic trading to replace the open cry system, the increase in the number of listed companies and the accompanying rise in NSE turnover during the recent past, the study intends to dwell on the liquidity concept by proxying turnover rate as a measure of liquidity.

2.4 Critical Review

The results obtained by Ngugi (2003) who analysed the response of trading activity and liquidity of the NSE to the implemented institutional and policy reforms during the revitalisation process showed mixed results. Her study covered the period January 1990 to June 2002. She noted that NSE has witnessed taxation reforms aimed at reducing transaction costs and relaxed capital controls to allow foreign investors participation. However, the question of interest to policy makers and researchers is whether these efforts bear the expected outcome of increasing liquidity

of stock which in turn affects return. Furthermore NSE automated its operation in September 2006 which is expected to have increased liquidity tremendously.

Taylor et al. (2000) advocated for automation and they observed that the execution process of trades becomes faster and less costly under computerized trading systems. Automated systems therefore, should attract more investors, improve trading volume and liquidity, and improve the price discovery process. Green et al. (2002) provide evidence from stock markets that shows that markets with advanced trading technology have greater efficiency. Critics of automation argue that electronic trading could lead to less efficient prices precisely because the judgmental aspects of trade execution are removed with automation, which could be particularly important in times of rapid market price movements (Pagano 2000). According to this view, liquidity and efficiency of a stock market depend on the rules governing the handling and execution of trades. In other words, if these rules do not change, efficiency is not expected to change.

2.5 Summary of literature review

The study by Archarya (2005) found unanswered quest on the relationship between corporate liquidity and stock returns recommending a further examination on the question. 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.

Zavala (2005) indicated that many Africa's stock exchanges are small, underdeveloped and illiquid. He further explained that most markets tend to operate in isolation from other markets,

have low trading volumes, are sheltered from competition by national regulations and face barriers to capital mobility because of high costs of travel and communications. Ayako (2005) did a study on effects of liquidity on stock return on NSE. He found no relationship between liquidity and return.

Demirguc-Kunt and Levine (1996) explain that savers are able to acquire assets and sell them quickly and cheaply when they need to access their savings or to alter their portfolios. They further argue that 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. Ayako (2005) did a study on effects of liquidity on stock return on NSE. He found out that liquidity had no effects on return. However, considering the changes that have taken place in the NSE including the automation of trading, it is worth to undertake a study to test the relationship between liquidity and stock return.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the research design, the population, the sample, the type of data needed, the sources of the data and the data capture methods. This chapter also explains how the data was analyzed and conclusions arrived at.

3.2 Research Design

This was a correlation study that relied on quantitative data techniques. The study collected data on the variables and determined whether relationship exist between liquidity and return. Consistent with studies by Archarya (2005) and Marshall (2006) data for both variables was collected objectively from records, analysis method (regression) which is scientific and objective used to test the model. The capital gains yield and dividend yield was combined to calculate the total stock return (Drake, 2007). This is consistent with the measure of return used by Ongore (2010) in his study of firm performance.

3.3 Target Population

The study population consisted of all the 57 firms listed at the NSE as at December 2011. Listed firms were suitable for this study due to the availability and credibility of such data and also CMA institute strong regulation on them.

3.4 Sample and Sampling Technique

The study used non-probability/purposive sampling. This sampling technique is one where the items for the sample are selected deliberately by the researcher and the researcher's choice

concerning the items remain supreme (Cooper and Schindler, 2003; Kothari, 2004). The exact sample size consisted of 41 continuously listed and actively trading firms on the NSE between January 1, 2007 and December 31, 2011. The sample of 41 companies is based on the fact that some companies such as Uchumi Ltd, Carbacid Ltd, BOC Ltd etc had been suspended while Uniliver Tea (K) Ltd was delisted in the stock market.

3.5 Data Collection Technique

The study used secondary sources of data from published audited annual reports of respective firms and from the NSE databank. The data set included all listed firms from January 2007 to December 2011. This is an extended time period to capture the activities after NSE automated its trading activities. The study employed monthly data for analysis. NSE employs the order system while transacting, therefore, the study used turnover rate as a proxy for its liquidity. Batten (2011) define the turnover rate of a stock as the number of shares traded divided by the number of shares outstanding in that stock and explain that it is an intuitive metric of the liquidity of the stock.

3.6 Data Analysis Technique

Stock returns react to liquidity in a firm meaning that stock returns are the dependent variable while stock liquidity will be the independent variable. Dependent variable of the study was represented by $R = \text{dividend yield} + \text{capital gains}$.

$$\text{Dividend yield} = \frac{D}{P}$$

D= Dividends for the period

P= Initial Price for the period

The dividends paid by a company were found on the financial statement, which was then used to calculate dividend yield (Pandey, 2008).

$$\text{Capital Gains Yield} = \frac{P_1 - P_0}{P_0}$$

P_0

P_0 = Initial Stock Price

P_1 = Stock Price after 1st period

Monthly dividends was estimated by dividing annual dividends (interim and final) of shares by total number of months in a year, while assuming dividends accrue evenly during the year. It was measured as the change in the value plus any cash distributions during the period, expressed as a percentage of the beginning of period investment value. Total monthly return for each security was determined as sum of capital gains/losses and dividends. Monthly return for security in the study was calculated as;

$$R_t = \frac{P_1 - P_0 + D}{P_0}$$

Where R_t – Is the actual stock return for period t

P_0 – Is the monthly opening share price

P_1 – Is the monthly closing price

D – Is the monthly dividend per share

The study used the turnover rate as a proxy for liquidity. For each stock, average monthly trading volume was obtained then divided by the number of outstanding shares. This ratio was then expressed as a percentage to obtain the turnover rate variable. Datar, Naik and Radcliffe (1998), explains that the turnover rate has strong theoretical appeal. Amihud and Mendelson (1986) prove that in equilibrium, liquidity is correlated with trading frequency. So, if one cannot

observe liquidity directly but can observe the turnover rate, then one can use the latter as a proxy for liquidity. NSE trades using the order system and the data on turnover rate can be obtained. This enables the study to capture month by month variation in the liquidity of stock and allows the examination of liquidity effects across a large number of stocks over a long period of time.

The regression model used was:

$$P_i = A + B \times g_i + e$$

Where P_i is the monthly return of the stocks of firm i , g_i is the turnover rate of firm i , A is the regression intercept and B the constant of variation. The term e represents regression residuals. The correlation coefficient was computed to reveal the magnitude and direction of relationship between return (dependent variable) and turnover rate (independent variable). The study used interval scale as a scale of measurement. Interval scale provides more powerful measurement because it incorporates the concept of equality of interval (Kothari, 2004).

CHAPTER FOUR: DATA ANALYSIS

4.1 Introduction

This chapter analysed the data collected based on the research objective. The objective of the study was to determine whether there exist a relationship between liquidity and return of stock of listed firms at the NSE. The analysis was based on secondary data obtained from the NSE Data bank between 2007 and 2011. The total population of the study was the 57 listed firms as at December 2011.

4.2. Preliminary analysis

4.2.1 Liquidity and Return

Information collected comprised of number of shares traded, total shares issued, dividend yield, beginning and end of week stock prices for all the companies selected as sample for the study. Data analysis was based on the simple linear regression method. The turnover rate which proxied liquidity was calculated by dividing the number of shares traded divided by shares issued multiplied by one hundred so as to change it into percentage. Return of the firm was computed as sum of capital gains/losses and dividends. It was measured as the change in the value plus any cash distributions during the period, expressed as a percentage of the beginning of period investment value. The calculated values were tabulated and scatter diagram plotted on a graph to show the relationship. The interpretation was done with results from the outputs summarized in tables. The study managed to collect information from 41 companies.

4.2.2 Regression analysis

The monthly data of each firm relating to liquidity and return of stock for all the years 2007 to 2011 was analysed. Simple regression method was used to analyse and establish the nature of the relationship and test whether the relationship was significant or not. The following were the inputs of the simple linear regression analysis.

Table 1: Variables Entered in the Simple Regression Analysis

	2007		2008		2009	
	Return(y)	Liquidity(x)	Return(y)	Liquidity(x)	Return(y)	Liquidity(x)
January	4.01%	50.68%	0.76%	16.55%	1.87%	7.67%
February	0.44%	30.36%	2.19%	20.84%	-1.24%	5.30%
March	4.25%	22.35%	1.86%	22.35%	5.32%	7.97%
April	2.12%	17.00%	4.98%	16.57%	4.99%	5.60%
May	2.89%	18.88%	2.40%	16.91%	4.27%	8.44%
June	3.70%	24.32%	3.08%	19.58%	6.07%	9.66%
July	3.14%	24.31%	1.39%	13.11%	3.87%	8.22%
August	2.42%	27.60%	1.18%	16.02%	2.45%	6.96%
September	2.51%	26.07%	1.65%	11.12%	2.91%	10.38%
October	4.38%	22.41%	-0.34%	7.03%	3.50%	13.68%
November	3.33%	21.54%	3.69%	8.08%	4.08%	12.72%
December	3.29%	27.44%	3.20%	3.78%	4.43%	8.04%

	2010		2011	
	Return(y)	Liquidity(x)	Return(y)	Liquidity(x)
January	5.22%	12.38%	3.69%	17.01%
February	3.14%	14.08%	2.64%	14.43%
March	6.53%	28.99%	1.25%	15.54%
April	4.01%	26.18%	3.87%	12.83%
May	2.69%	17.77%	2.49%	13.64%
June	3.29%	13.12%	2.56%	10.33%
July	3.21%	14.00%	2.25%	12.90%
August	4.44%	18.13%	3.53%	9.94%
September	2.79%	16.99%	3.00%	10.39%
October	2.96%	35.18%	4.25%	10.15%
November	1.52%	19.58%	2.87%	8.50%
December	2.31%	12.63%	3.59%	11.17%

The above liquidity and return variables above were the inputs to the regression equation. Immediately after automation of trading the liquidity was very high in January 2007. This can be attributed to the efficiency of the new system and the backlog of purchase orders as investors use the new automated system. The data also show a massive fall in the shares traded in 2009 due to the effects of the post election violence. The average number of traded shares shows a significant increase in 2010 and 2011 attributed to improved growth in the economy and as investors gained more confidence in the NSE.

The data relating to liquidity and return for all the years from 2007 to 2011 was analysed and the following outputs were generated after conducting simple linear regression analysis.

Table 2: Regression Output*Regression Statistics*

Multiple R	0.055725256
R Square	0.003105304
Adjusted R Square	0.00301038
Standard Error	0.267784449
Observations	10504

Table 2 shows the regression output from the data analysed. Multiple R was 0.056 which when squared gives R squared of 0.0031. The coefficient of correlation of 0.056 shows very weak relationship between liquidity and return. The standard error was 0.268 from all the observation.

Table 3: Analysis of Variance

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	2.345835601	2.345835601	32.71348909	1.09712E-08
Residual	10502	753.0827854	0.071708511		
Total	10503	755.428621			

Table 3 shows the Analysis of Variance. The F ratio with a value of 32.71348909 is low. This implies that the explanatory power of the regression model is very low i.e most of the changes in return are not explained by changes in liquidity.

Table 4: Coefficients

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	0.034577718	0.002711663	12.75148209	5.74665E-37
X Variable 1	0.022728339	0.003973784	5.719570708	1.09712E-08

The linear regression equation was:

Monthly return of firm i = regression intercept + constant of variation x turnover rate of firm i + e

Therefore from table 4 above the regression equation was:

Monthly return of firm i = 0.035 + 0.023 x turnover rate of firm i + 0.267784449

The t value of 5.7196 for the variable is low which indicates that liquidity is not a predictor of return. The p-value is 1.09712E-08 which is less than 0.05. This indicates that liquidity is not a predictor of Return. A p-value of greater than 0.05 indicates that liquidity was not a predictor of Return.

4.3 Correlation between Liquidity and stock return

The Pearson correlation coefficient ‘r’ measures the nature and strength of the relationship between two variables. A value close to +1 indicates a strong positive relationship whereas a value close to 0 (zero) implies a weak relationship. A value close to -1 indicates a strong negative relationship.

Table 5: Correlations between liquidity and return

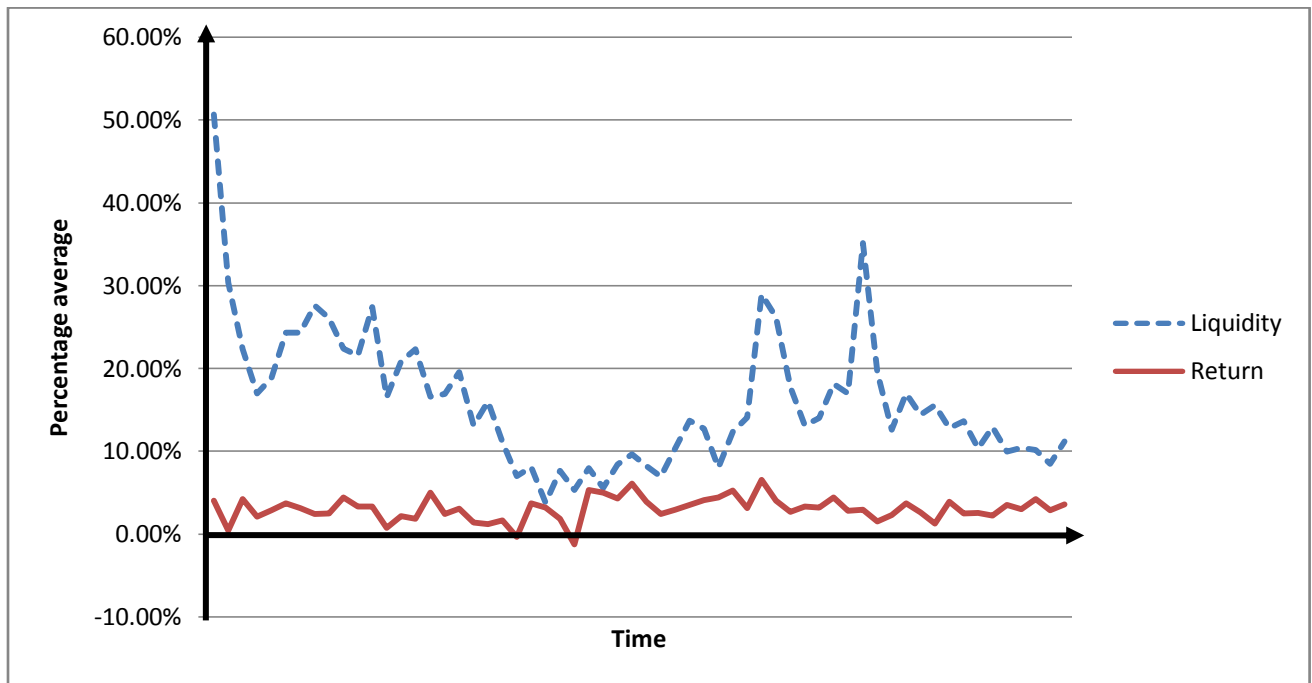
		liquidity	return
liquidity	Pearson Correlation	1	.056**
	Sig. (2-tailed)		.000
	N	10503	10503
return	Pearson Correlation	.056**	1
	Sig. (2-tailed)	.000	
	N	10503	10503

** . Correlation is significant at the 0.01 level (2-tailed).

From the two tail test of the relationship between liquidity and return, the average Pearson correlation is 0.056. The correlation coefficients were all below 0.1 for the five years of the study. The measured 'r' value indicates a very weak relationship exists between liquidity and return of stock. The interpretation drawn from this is that there is a spurious correlation between liquidity and return of stock at the NSE and that liquidity has little impact on return of stock meaning that there are other factors that influence Return of stock at the NSE other than Liquidity. The test of significance was at the 0.01 level.

The diagram showing correlation between the two variables i.e. Liquidity and return for the period of study was:

Diagram 1: Graphical representation of the relationship between Liquidity and Return



From the above graph it is evident that there is very weak correlation between liquidity and return. This is because they don't depict the same pattern overtime. Liquidity is very erratic while return is less erratic overtime and they don't intersect at all.

CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter gives summary of findings, conclusions, and it also discusses limitations that may be in this study and areas that require further research.

5.2 Summary of findings

The objective of the study was to ascertain the relationship between Liquidity and Return of stock at the NSE after the automation of the trading system in 2006. The study revealed that liquidity had no influence on the return of stock in all the five years. The p-value of 1.09712E-08 was less than 0.05 indicating that Liquidity was not a predictor of the Return of stock at the NSE. The Pearson correlation coefficient 'r' value for Liquidity and return of stock was 0.056. This value showed that there was a very weak correlation between Liquidity and return in all of the years. This indicated that the nature of the relationship between Liquidity and Return of firms is non-linear as depicted in the graph.

The t value of 5.7196 for the variable is low which further indicates that liquidity is not a predictor of return of stock. This means that the predictor has to be dropped and replaced by another significant predictor of return of stock if the regression model is to be more useful in forecasting and explaining changes in return of stock. The coefficient of determination was also below 0.1 which was very weak and as a result, more than 90% of variations in Return of firms were explained by other variables other than Liquidity. Given the very low coefficient of

determination, the F ratio was also low with a value of 32.71348909. This implies that Liquidity was not a predictor of stock return.

The relationship between liquidity and return of stock was found to be very weak and by extension the explanatory power of the regression was very low as indicated by the coefficient of determination which was 0.00301038. Forecasts made based on the regression model hence suffered high error term as observed from the significant residuals which was 753.0827854.

5.3 Conclusions

The study sought to ascertain the relationship between Liquidity and Return of listed firms at the NSE. As the study found out, the Pearson correlation coefficient 'r' value for Liquidity and return of stock was 0.056, which showed that there was a very weak correlation between Liquidity and return in all of the years. The nature of the relationship between Liquidity and Return of firms is non-linear. The coefficient of determination was also below 0.1 which was very weak. This implies that Liquidity was not a predictor of stock return. It has raised a number of issues that could be addressed in future research. It contradicts prior studies carried out in other parts of the world, for instance a study by Archarya and Pedersen (2005) showed a strong positive relationship. Literature by Amihud and Mendelson (1986) found out that investors demand a premium for less liquid stock, so that expected returns should be negatively related to the level of liquidity. At the level of individual security, Brennan and Subrahmanyam (1996) found negative relationship between security's liquidity and its average return which is not the case in the study.

5.4 Recommendations

The study recommends that the finance managers of various listed firms on the NSE take cognizance of the findings in this study as a starting point to understand factors that influence Return of firms. As concluded in this study, there is a non-linear relationship and Liquidity does not explain major variations in Return of firms listed at the NSE. As a result finance managers should look at other factors that might influence Return of firms other than Liquidity when undertaking key financial decisions that might affect firm Return. The study also recommends to the investors not to concentrate on monitoring Liquidity of firms while making investment decisions at the NSE as this does not significantly influence the firm Return.

5.5 Limitations of the study

The study only concentrated on quoted firms in the NSE. The study managed to collect information for 41 out of the 57 listed firms (72%). Some had either been suspended or de-listed over the period under study. In some sectors, information on the liquidity was missing from the NSE handbook resulting in some sectors not giving a complete analysis. The companies that are not quoted were left out though an inclusion would have provided a more conclusive result. The limited time and resources was partially the reason for non inclusion of the unquoted companies.

5.6 Suggestion for further research

A study of similar nature should be carried out using different methodology to find out if the findings of this hold. Further, this study generalized the findings from all the market findings and it raises the question of whether this findings could hold for each segment and therefore a study

need to be carried out to specifically find out the nature of the relationship for each segment and not a market as a whole as addressed in this study.

Other than Liquidity, there are various factors that could affect the Return of listed firms. A study needs to be carried out to determine if there exist a relationship between firm Return and factors like Gearing, Board structure and working capital as all this factors has not been addressed by this study.

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APPENDIX

LIST OF 58 COMPANIES ON THE NSE

AGRICULTURAL

1. Eaagads Ltd
2. Kapchorua Tea Co. Ltd
3. Kakuzi
4. Limuru Tea Co.Ltd
5. Rea Vipingo Plantations Ltd
6. Sasini Ltd
7. Williamson Tea Kenya Ltd

COMMERCIAL AND SERVICES

8. Express Ltd
9. Kenya Airways Ltd
10. Nation Media Group
11. Standard Group Ltd
12. TPS Eastern Africa (Serena) Ltd
13. Scangroup Ltd
14. Uchumi Supermarket Ltd
15. Hutchings Biemer Ltd

TELECOMMUNICATIONS AND TECHNOLOGY

16. Access Kenya Group Ltd
17. Safaricom Ltd

AUTOMOBILES AND ACCESSORIES

18. Car and General (K) Ltd
19. CMC Holdings Ltd
20. Sameer Africa Ltd
21. Marshalls (E.A.)Ltd

BANKING

22. Barclays Bank Ltd

23. CFC Stanbic Holdings Ltd
24. Diamond Trust Bank Kenya Ltd
25. Housing Finance Co Ltd
26. Kenya Commercial Bank Ltd
27. National Bank of Kenya Ltd
28. NIC Bank Ltd
29. Standard Chartered Bank Ltd
30. Equity Bank Ltd
31. The Co-operative Bank of Kenya Ltd

INSURANCE

32. Jubilee Holdings Ltd
33. Pan Africa Insurance Holdings Ltd
34. Kenya Re- Insurance Corporation Ltd
35. CFC Insurance Holdings
36. British-American Investment Company (Kenya) Ltd

INVESTMENT

37. City Trust Ltd
38. Olympia Capital Holdings Ltd
39. Centum Investment Co Ltd
40. Trans-Century Ltd

MANUFACTURING

41. B.O.C Kenya Ltd
42. British American Tobacco Kenya Ltd
43. Carbacid Investments Ltd
44. East African Breweries Ltd
45. Mumias Sugar Co.Ltd
46. Unga Group Ltd
47. Eveready East Africa Ltd
48. Kenya Orchads Ltd
49. A.Baumann Co Ltd

CONSTRUCTION AND ALLIED

- 50. Athi River Mining
- 51. Bamburi Cement Ltd
- 52. Crown Berger Ltd
- 53. E.A. Cables Ltd
- 54. E.A. Portland Cement Ltd

ENERGY AND PETROLEUM

- 55. Kenol Kobil Ltd
- 56. Total Kenya Ltd
- 57. Ken Gen Ltd
- 58. Kenya Power & Lightning Co.Ltd

Source: NSE, 2012

MONTHLY ANALYSIS OF LIQUIDITY AND RETURN

2007	January		February		March		April		May		June	
	Return	Liquidity	Return	Liquidity	Return	Liquidity	Return	Liquidity	Return	Liquidity	Return	Liquidity
week 1	3.74%	28.06%	1.87%	27.66%	2.61%	20.74%	3.33%	17.85%	1.22%	11.52%	5.74%	21.93%
week 2	7.11%	74.14%	2.80%	30.29%	2.61%	20.74%	0.65%	18.19%	4.20%	20.02%	4.07%	22.74%
week 3	-1.14%	63.94%	-2.61%	33.90%	-3.64%	27.52%	-1.93%	14.78%	4.20%	20.52%	1.98%	23.03%
week 4	6.32%	36.60%	-0.31%	29.58%	2.51%	18.70%	6.42%	17.19%	2.00%	21.27%	3.00%	29.56%
week 5					17.16%	24.05%			2.81%	21.05%		
2008	January		February		March		April		May		June	
	Return	Liquidity	Return	Liquidity	Return	Liquidity	Return	Liquidity	Return	Liquidity	Return	Liquidity
week 1	-3.73%	3.52%	-0.87%	20.83%	6.26%	37.13%	4.82%	18.55%	4.25%	14.14%	8.93%	23.12%
week 2	7.76%	25.43%	0.50%	15.73%	-4.34%	24.89%	4.66%	12.12%	2.45%	25.59%	-0.30%	23.26%
week 3	-1.18%	18.69%	2.72%	25.59%	2.88%	13.24%	6.30%	17.97%	-0.13%	16.24%	2.41%	15.65%
week 4	0.13%	18.65%	2.32%	16.65%	2.62%	14.15%	4.15%	17.62%	1.48%	12.93%	1.26%	16.30%
week 5			6.36%	25.41%					3.94%	15.63%		
2009	January		February		March		April		May		June	
	Return	Liquidity	Return	Liquidity	Return	Liquidity	Return	Liquidity	Return	Liquidity	Return	Liquidity
week 1	5.36%	15.90%	-2.91%	5.57%	0.83%	9.35%	7.54%	7.32%	4.90%	10.44%	5.47%	4.52%
week 2	2.22%	5.79%	0.81%	6.36%	8.55%	9.19%	4.98%	6.16%	4.54%	5.58%	5.05%	8.65%
week 3	1.09%	5.77%	-1.92%	4.17%	6.20%	8.45%	3.29%	4.01%	4.27%	7.23%	10.28%	13.82%
week 4	-0.59%	6.21%	-0.93%	5.11%	5.70%	4.88%	5.58%	6.40%	3.36%	10.50%	3.48%	11.66%
week 5	1.29%	4.67%					3.56%	4.08%				
2010	January		February		March		April		May		June	
	Return	Liquidity	Return	Liquidity	Return	Liquidity	Return	Liquidity	Return	Liquidity	Return	Liquidity
week 1	4.21%	5.64%	3.75%	13.58%	7.56%	29.65%	4.75%	45.84%	4.89%	16.52%	3.84%	7.59%
week 2	6.29%	12.51%	3.29%	15.47%	13.48%	31.48%	2.23%	32.41%	2.62%	15.17%	3.90%	11.05%
week 3	7.81%	20.26%	2.29%	7.33%	1.98%	28.99%	3.87%	17.89%	2.89%	15.17%	2.27%	15.66%
week 4	2.58%	11.09%	3.23%	19.94%	3.09%	25.85%	4.52%	14.31%	0.37%	24.23%	3.15%	18.17%
week 5							4.68%	20.47%				

2011	January		February		March		April		May		June	
	Return	Liquidity	Return	Liquidity	Return	Liquidity	Return	Liquidity	Return	Liquidity	Return	Liquidity
week 1	7.37%	15.17%	2.06%	9.99%	0.75%	21.85%	3.98%	18.78%	3.10%	13.41%	0.48%	9.49%
week 2	2.81%	18.66%	3.26%	12.65%	-1.73%	13.62%	4.06%	13.91%	1.56%	13.02%	3.69%	10.80%
week 3	1.89%	15.16%	2.96%	19.67%	5.18%	18.13%	3.87%	13.19%	2.43%	16.40%	2.58%	10.80%
week 4	2.71%	19.05%	2.27%	15.43%	0.80%	8.58%	3.20%	7.04%	2.87%	11.73%	3.50%	10.23%
week 5							4.23%	11.40%				

2007	July		August		September		October		November		December	
	Return	Liquidity	Return	Liquidity	Return	Liquidity	Return	Liquidity	Return	Liquidity	Return	Liquidity
week 1	4.22%	27.81%	2.34%	19.80%	4.04%	21.29%	2.56%	27.01%	2.16%	18.77%	2.64%	28.24%
week 2	2.10%	29.59%	0.27%	22.22%	6.18%	26.23%	7.47%	16.38%	4.13%	18.79%	4.25%	28.91%
week 3	3.49%	20.19%	2.26%	37.19%	2.13%	22.93%	7.47%	26.12%	3.29%	18.90%	2.97%	25.18%
week 4	2.75%	19.65%	3.52%	29.92%	-2.42%	33.85%	0.03%	20.12%	4.51%	23.99%		
week 5			3.73%	28.86%					2.57%	27.25%		
2008	July		August		September		October		November		December	
	Return	Liquidity	Return	Liquidity	Return	Liquidity	Return	Liquidity	Return	Liquidity	Return	Liquidity
week 1	0.98%	17.44%	-0.48%	14.22%	1.40%	8.13%	1.76%	6.53%	15.54%	12.23%	-0.69%	5.76%
week 2	1.61%	12.24%	-0.07%	10.54%	0.49%	12.31%	-1.01%	6.22%	0.19%	8.08%	4.78%	3.43%
week 3	1.48%	12.57%	2.77%	13.73%	0.89%	12.11%	-1.52%	7.72%	0.51%	6.03%	4.66%	3.74%
week 4	1.50%	10.19%	4.17%	20.73%	3.80%	11.92%	-3.66%	6.28%	-1.46%	5.99%	4.04%	2.18%
week 5			-0.50%	20.87%			2.72%	8.42%				
2009	July		August		September		October		November		December	
	Return	Liquidity	Return	Liquidity	Return	Liquidity	Return	Liquidity	Return	Liquidity	Return	Liquidity
week 1	4.97%	10.14%	3.10%	9.53%	5.24%	18.99%	3.32%	7.34%	3.48%	10.90%	6.17%	7.49%
week 2	4.32%	6.74%	3.95%	6.48%	1.26%	5.77%	3.45%	4.60%	4.37%	27.35%	3.63%	7.78%
week 3	2.24%	8.08%	1.44%	7.02%	2.29%	7.12%	3.70%	6.20%	3.26%	6.29%	3.70%	8.46%
week 4	4.15%	6.63%	1.29%	4.81%	2.84%	9.63%	3.82%	35.77%	5.21%	6.35%	4.22%	8.45%
week 5	3.69%	9.55%					3.21%	14.51%				

2010	July		August		September		October		November		December	
	Return	Liquidity	Return	Liquidity	Return	Liquidity	Return	Liquidity	Return	Liquidity	Return	Liquidity
week 1	2.99%	18.23%	7.36%	22.77%	1.27%	12.47%	3.59%	25.27%	3.22%	23.76%	1.53%	16.52%
week 2	3.05%	10.99%	0.70%	15.58%	3.05%	17.30%	2.43%	24.38%	1.10%	20.35%	1.53%	16.52%
week 3	3.12%	13.69%	7.12%	21.98%	3.10%	18.06%	2.98%	51.71%	1.03%	17.32%	2.45%	8.37%
week 4	1.79%	9.67%	2.60%	12.18%	3.73%	20.14%	3.43%	48.88%	0.72%	16.88%	3.73%	9.12%
week 5	5.09%	17.41%					2.37%	25.66%				
2011	July		August		September		October		November		December	
	Return	Liquidity	Return	Liquidity	Return	Liquidity	Return	Liquidity	Return	Liquidity	Return	Liquidity
week 1	3.20%	13.48%	3.23%	7.52%	1.72%	4.57%	4.20%	10.04%	5.78%	10.53%	1.12%	9.88%
week 2	1.04%	8.52%	3.80%	0.00%	3.37%	10.73%	3.87%	10.98%	2.97%	8.84%	3.80%	12.41%
week 3	1.45%	14.17%	4.84%	22.93%	5.43%	9.38%	4.87%	9.79%	1.50%	7.17%	4.58%	8.56%
week 4	2.98%	18.64%	2.25%	9.32%	2.93%	15.44%	4.08%	9.79%	1.24%	7.48%	4.87%	13.84%
week 5	2.57%	9.69%			1.52%	11.71%						