

**AN EMPIRICAL ANALYSIS OF THE RELATIONSHIP BETWEEN
BONUS ISSUES AND STOCK LIQUIDITY OF FIRMS LISTED AT
THE NAIROBI STOCK EXCHANGE**

BY

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DECLARATION

This research project report is my original work and has not been submitted for examination for the award of a degree in any other University.

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I am very much indebted to my mother and brothers who supported me and made it possible for me to pursue my education.

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DEDICATION

I dedicate this to my lovely wife, Victoria Ngina and our two beautiful daughters, Agnes and Beatrice.

ABSTRACT

The impact of bonus issues on stock liquidity has been a subject of study in various markets with varying results. This study examined the relationship between bonus issue and the stock liquidity of firms quoted at the Nairobi Stock Exchange for the period between 2003 and 2009. The study used the multi-dimensional measures of liquidity to avoid the shortcomings of the one-dimensional measures.

The study adopted a causal research design in establishing the relationship between stock liquidity and bonus issues on a sample size of 20 companies that had issued bonuses between 2003 and 2009. Secondary data from Nairobi Stock Exchange was used. The study collected the daily share prices, trading volumes and number of transactions from which weekly averages were used to compute the three liquidity measures-Liquidity ratio 1, Liquidity ratio 3 and Flow ratio. The study then used descriptive statistics (mean, standard deviations, minimum and maximum values), measures of association (correlations and ANOVA) and regression analysis in establishing the relationship between stock liquidity and bonus issues.

After conducting ANOVA on the regression model, the study established the regression model (using flow ratio) to be significant at ($p < 0.039$). A further Analysis of Variance by sector segments showed a significant relationship between bonus issue and stock liquidity (flow ratio) for Financial Sector ($p = 0.003$) and Industrial and Allied Sectors ($p = 0.004$) while for Commercial Sectors liquidity ratio 3 was the most significant measure of liquidity ($p = 0.023$). The study concludes that the stock liquidity reaction to the information content of the bonus issues in Kenya is positive, in line with evidence from semi strong efficient markets.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Bonus issues are give -a-ways of additional stocks to the existing shareholders. It is a “free” issue of shares, without a subscription price, made to existing shareholders in proportion to their current investment. The relationship between bonus issues, also referred to as stock dividends and share prices has been the subject of much empirical discussion within the finance literature. Empirical research has shown that the market generally reacts positively to the announcement of a bonus issue. The hypothesis that has received strongest support in explaining the positive market reaction to bonus issue announcements is the signaling hypothesis, which suggests that the announcement of a bonus issue conveys new information to the market in instances where managers have asymmetric information (Foster and Vickrey, 1978). Investors interpret such dividends as signals, which imply future cash dividends and earnings levels. Managers have superior information about the future earnings, because there may be asymmetric information between managers and investors.

The Stock Exchange is a market that deals in the exchange of securities issued by publicly quoted companies and the Government. The Nairobi Stock Exchange in Kenya was established in 1954 as a voluntary association of stockbrokers registered under the societies Act. This was after getting clearance from the London Stock Exchange to recognize it as an overseas Stock Exchange. Until the attainment of independence in 1963, Africans and Asians were not allowed to trade in securities hence business trading in securities was only restricted to European community. The Nairobi Stock Exchange is sub-saharan

Africa's fourth-largest bourse in terms of trading volumes. Over the years the bourse has gone through several reforms and modernization, which culminated with the commissioning of live trading on Monday 11 September, 2006. This eradicated the need for brokers to send their staff (dealers) to the trading floor to conduct business. Trading is now conducted from the brokers offices through the Wide Area Network platform. The major role that the stock exchange has played and continues to play is the allocation of resources through promotion of a culture of thrift or saving. It provides an avenue where savers can invest their money to earn a return. In Kenya, currently we have 47 listed companies in the bourse (Nairobi Stock Exchange, 2010).

Miller and Modigliani (1961) demonstrated theoretically that bonus issues, along with other types of dividends, do not alter shareholder wealth. If a company plans to finance a bonus issue from retained earnings, it makes a book entry to allocate retained earnings into paid-up capital in the shareholders' equity section of the company balance sheet. Alternatively, a company that decides to realize a bonus issue by using accumulated capital reserves adjusts the accumulated capital reserves into paid-up capital. The company does not receive any cash and its financial position remains the same. The modification triggered by the bonus issue is that the number of outstanding shares is adjusted by the bonus issue ratio; therefore, the price of the shares declines according to the same bonus issue ratio. The total market value of the shares or the values of the shares that are held by each investor remain unchanged.

In practice, however, there may be an increase in share price following the announcement of a bonus issue. Such an increase can occur because the announcement of a bonus issue may have beneficial informational content. Shareholders are aware that, after the bonus issue, companies usually increase total dividend payout. This, in turn, indicates the

confidence of management in the company's future. Consequently, the share price may increase in response to this information and affect shareholders' wealth (Balachandran et. al.,2001,p.13).

Liquidity is a fundamental concept in finance (Chordia et al., 2005,p.85). There is however lack of consensus as to what it means, how it should be measured, reported or predicted for meaningful comparisons. There are two general broad concepts of liquidity. These are monetary liquidity and capital market liquidity. Monetary liquidity is characterized by the availability of cash or near cash in relation to the general demand of goods and financial assets. The trends of monetary liquidity are generally linked to the general state of the economy, economic cycles and consumer confidence, usually represented in the short-term interest rates. The second concept of liquidity is related to the way the transfer of cash and goods or financial securities is performed in the market in relation to trading, price, return, volatility, market depth and inter dependencies between these factors. This second concept forms the focus of this study.

Market liquidity denotes the ability to trade large quantities of stock quickly, at low cost, and without moving the price. Kyle (1985,pp.1330), posit that market liquidity refers to several different elements of transaction costs, including tightness, depth and resiliency. The time dimension refers to resiliency, that is, the speed with which pricing tends to converge towards the underlying liquidation value of the commodity. Resiliency further measures the rate at which prices bounce back from an uninformative shock. Tightness refers to cost of turning over a position in a short period of time. In a perfect market, it is costless to turn over a position and very quickly so. Lastly, volume refers to depth, the ability of the market to absorb quantities without causing large price variations.

Liquidity is risky and has a commonality, it varies over time both for individual stocks

and for the market as a whole. Even after accounting for well-known individual determinants of liquidity such as trading volume, volatility and price, commonality retains a significant influence (Chordia et al., 2000,p.26). Hasbrouck and Seppi (2001,pp.396-397), on the other hand, document that commonality in returns can arise either from order flows or the return residuals and that order flow explains roughly two –thirds of the common variation in returns with the balance being associated with residual commonality. Investor’s fear that in the event of a financial crisis, they may not be able to exit the market fast enough to contain their losses. These considerations may lead them to shy away from illiquid securities, or require a liquidity-related premium to hold them.

The study investigated whether bonus issues affect stock liquidity of companies quoted at the Nairobi Stock Exchange. The stock market reaction to the information content of the bonus issues was found to be positive. This is in line with evidence from semi strong efficient markets like the Indian stock market, Mishra (2005,pp.26-39). There are several proxies of liquidity measurement but in order to avoid the pitfalls of one measure of liquidity, the study used three models to measure liquidity. This was important since each measure has it’s own shortcoming, hence using multi dimensional measures provided a richer picture of stock market liquidity.

1.2 Statement of the Problem

The impact of bonus issues on stock liquidity has been a subject of study in various markets with varying results. Eisemann and Moses (1978, pp.77-80), carried out a survey on management’s view on bonus issues by interviewing the chief financial officers of firms listed in the New York Stock Exchange. Officers of firms paying stock dividends argued that increasing the number of shareholders makes the stock more attractive in addition to easing selling of new equity. On the other hand officers of firms that do not pay stock

dividends rejected both arguments, and stated that cost was one of the most important factor that influence the issuance stock dividends. However both paying and non-paying officers felt that stock prices would not fully adjust to occasional stock dividends, even though the evidence on stock splits and large stock dividends suggest that full price adjustments does occur.

Miller and Modigliani (1961) demonstrated theoretically that bonus issues, along with other types of dividends, do not alter shareholder wealth. However if the foregoing is true, analysts might question why so many large firms still continue a policy of stock distributions.

Bonus issues can have serious implications on stocks because of their impact on stock market liquidity (Simbovo, 2006, p.45). A market is liquid if one can trade a large quantity shortly after the desire to trade arises that is, trade quickly, easily and without moving the price (Huberman and Halka, 2001, p.161). Investors are concerned about liquidity risk, since it affects their ability to trade the quantity of shares they want to buy or sell within their desired time-framework but most importantly, investors fear that in the event of a financial crisis, they may not be able to exit the market fast enough to contain their losses. These considerations may lead them to shy away from illiquid securities, or require a liquidity-related premium to hold them. This research study was therefore driven by the need to determine whether bonus issues have any effect on stock liquidity.

Mishra (2005, pp.26-39), examined the stock market reaction to the information content of the bonus issues in India and concludes that there are significant positive abnormal returns nine to eight days prior to bonus announcement in line with evidence from developed stock markets. This result provides strong evidence of semi strong market efficiency of the Indian stock market. This outcome motivated this research study to determine if

bonus issues have effect on stock market liquidity in an emerging market like Kenya.

Previous research done on bonus issues in Kenya includes Onyango (1999,pp.29-42), who studied on the factors managers consider before declaring bonus issues and if they presented any benefits to shareholders. Agutu (2000, p.38), researched on the characteristics of bonus issuing firms in Kenya and noted that firms that had hitherto never issued stock dividends had higher dividend pay out ratio, dividend yield, return on investments and a higher percentage of capital reserves while Simbovo (2006,pp.30-46), investigated the effect of stock splits and large stock dividend on liquidity and found that the sampled bonus issues gave mixed signals. The researcher used trading activity ratio as a proxy for liquidity and recommended that there was a need for further investigation on what effect stock splits and bonus issue have on liquidity using different measures of liquidity.

The research studies carried out on bonus issues present varying findings and conclusions, as noted Miller and Modigliani (1961) demonstrated theoretically that bonus issues, along with other types of dividends, do not alter shareholder wealth. However in practice it is still evident that so many large firms still continue a policy of stock distributions. Studies carried out in developed and emerging markets to examine the stock liquidity changes around bonus issue announcement provide evidence of mixed results. Foster and Vickrey (1978), McNichols and Dravid (1990), Balachandran et.al.(2001), Mishra(2005) find evidence of a positive reaction to bonus announcements. However the findings by Papaioannou et al. (2000), has found the reaction to be negative. In Kenya a study by Simbovo (2006), documents a reaction of mixed results with some of the sampled stocks indicating a change in liquidity after bonus issue but the change were not statistically significant. The study used trading activity ratio (one dimensional measure) as a proxy

for liquidity and recommended that there was a need for further study using different measures of liquidity. These deficiencies provided the primary impetus for this current study.

This study investigated the relationship between bonus issue and the stock liquidity of firms quoted at the Nairobi Stock Exchange for the period between 2003 and 2009. The study used the multi-dimensional measures of liquidity to avoid the shortcomings of the one-dimensional measures. The study sought to answer the following questions: Does a relationship exist between bonus issue and stock liquidity?

1.3 Objective of the Study

The objective of the study was to establish the relationship between bonus issues and the stock liquidity for companies quoted at the Nairobi Stock Exchange.

1.4 Significance of the Study

The findings of the study are of value to the following stakeholders.

Institutional and individual investors. Investors are able to make better informed investment decisions knowing the effect of bonus issues on the stock market liquidity and further assist them in predicting the direction of the company share performance after issuance of bonus shares.

Researchers and Academicians. The findings of this study assist researchers and academicians who want to carry out further research in the area of bonus issues and liquidity of the market.

Managers. Management of listed companies can find it useful in making sound financial

decisions particularly when formulating policies on issuance of bonus issues.

Financial advisors. On the other hand are in a better position to appreciate the relationship between bonus issues and stock market liquidity and therefore provide valuable advise to their clients in emerging markets especially those in Sub-Saharan Africa.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of the relevant literature. The chapter first presents a theoretical review of the nature and forms of dividends and the impact of bonus issues on shareholder wealth. The signaling hypothesis, efficient market hypothesis and the clientele effect were also reviewed as relevant theories to the study. Further, the measures of stock liquidity; both the one-dimensional and multi dimensional measures are expounded. Similarly, the researcher reviewed the relevant empirical studies that provide the basis of this study.

2.2 Nature and Forms of Dividends

Companies can either pay out dividends in form of cash dividend, stock dividend, stock splits, stock repurchases or reverse split. These various forms of dividends are discussed below:

Cash dividends: - This is the usual form of dividend payment. For a firm to adopt this type, it must have sufficient liquidity to pay-off the dividends once declared. The dividend dates remain similar over the years and investors expect dividend announcements at these times . Many companies pay cash dividends in two stages, interim that is paid semi annually and final dividend paid annually. In efficient markets, the announcement of a dividend should not have an effect on share prices. Upon payment of dividends, the market price per share should reduce by the amount of the dividend per share (Baker 1958,p.101).

Stock dividends/Bonus issues: - This is dividend paid in form of additional shares of

stock instead of cash. In this case, the shareholders proportional ownership remains the same. Stock dividend is stated as a percentage increase in number of shares outstanding. Additional shares are allocated based on a fixed proportion of shares owned by each investor prior to the declaration of the stock dividend . They divide the pie into smaller slices without affecting the fundamental position of the current stockholders. Therefore stock dividends requires the transfer of a portion of earned surplus to the capital account leaving unchanged the par or stated value of each share (Kent and Gallagher 1980,p.73).

Stock splits: - Similar to the bonus shares because they divide the pie into smaller slices without affecting the fundamental position of the current stockholders. Under stock splits the number of shares is increased through a proportional reduction in the par value of stock. Stock splits are issued when the firm intends to attract more buyers through reduction of the shares market price. A split involves no change in the total capital account or surplus account, the common stock account is merely apportioned among the increased shares outstanding after the share split. The signaling hypothesis by Fama, Fisher, Jensen and Roll (1969,p.20), argues that the market realises split information as a signal to re-evaluate expected income from substantial dividend increases. They concluded that company's tend to split their shares during "abnormally" good times, that is during periods of times when the prices of their shares have increased much more than would be implied by the normal relationships between their share prices and general market price behavior. The evidence obtained further suggested that in reacting to a split the market reacts only to its dividend implications. That is, the split causes price adjustments only to the extent that it is associated with changes in the anticipated level of future dividends. Recent papers also provide evidence for this hypothesis by reporting subsequent unanticipated increases in earnings per share and the positive correlation between price changes and the split factor (

Mc Nichols and Dravid, 1990,p.877).

Stock repurchases: - This occurs when a company buys back some of its outstanding shares instead of paying out cash dividends. In this case the shares that have been bought back are referred to as treasury stocks. The stocks that have been bought back are usually not deregistered and cancelled, but kept in the company's treasury and resold when the company needs the money. Shareholders are not required to authorize the resale of these treasury stock and they do not enjoy preemptive rights on such stock. Stock repurchases can be accomplished through a tender offer for the shares. In open market purchase, corporations buy its own stock in the secondary market just like any other investor except that firms must publicly announce their intention to repurchase shares. A tender offer is a formal offer to buy all shares tendered up to a given level and repurchase price is stated in the tender offer announcement and is usually above the current market price. Firms usually use the tender offer method when they are repurchasing a large number of shares. Companies repurchase a portion of their common stock for the following reasons: - In order to have at its disposal available stock options, retain dividends, have shares available for the acquisition of other companies and enable a company go private by purchasing the shares held externally (Mullins, 2006, p.27)

Reverse split: - Reverse split represents a proportional reduction in shares and leaves ownership interests and value unchanged. This signals unfavorable condition of the company e.g. financial difficulties. The company may not necessarily be experiencing financial difficulty but may want to move the stock price into higher trading range closer to trading and servicing costs (Mullins, 2006, p.28).

Baker (1958,p.99),noted that opinions of financial analysts on stock dividend impact on liquidity differ widely and strongly. Some believe that small stock dividends lead to

increases in market price by broadening the share ownership while some feel they bring about real value enhancement for shareowners without any such rise. Others emphasize that stock dividends offer tax benefits to higher income bracket investors because they are not generally treated as income for tax purposes. Still others feel that although stock dividends may not have any apparent effect on the market value of the investment they are useful in conserving corporate cash and are therefore an inexpensive way to raise capital for expansion. A final school of thought claims that stock dividends like stock splits merely cut the same loaf of bread into a larger number of necessarily thinner slices.

Generally bonus issues attract many benefits such as tax benefits, indicator of higher future profits and future dividends, psychological value, serves as security, increase shares without dilution, conserve cash and avail more attractive share prices. Cash dividends and stock dividends have been argued to be substitutes for one another. As discontinuing a dividend payment would likely produce a negative market reaction, firms usually issue stock dividends rather than paying out cash dividends that might lead to a cash shortage for internal use. Stock dividends can mitigate the negative market reaction due to reduction or omission of cash dividends, which provides evidence for the cash substitution hypothesis (Lakonishok and Lev (1987, p.923).

In conclusion therefore, it can be noted that most companies pay dividends in cash and it results in reduction of both the total assets and the net worth of the company. The market price of the share drops in most cases by the amount of the cash dividend distributed. A stock dividend on the other hand is the distribution of shares in addition to or in lieu of cash dividends, which the company pays its shareholders. These shares must be within the company's authorized share capital because the stock dividend will increase the existing number of ordinary shares.

2.3 Bonus Issues and Shareholder Wealth

The principal proponents of the dividend irrelevance theory are Miller and Modigliani (1961, p.411), who argued that dividend policy has no effect on a business's cost of equity, and hence on stock price. If this is true, then dividend policy would be irrelevant. The essence of dividend irrelevance is that a business's value is determined solely by its earning power and its business risk. In other words, MM argued that the value of a business depends only on the income produced by its assets, and not on how this income is split between dividends and retained earnings. Normally, the issue of bonus shares does not affect the wealth of shareholders. The earnings per share and market price per share will fall proportionately to the bonus issue.

Baker (1958,pp.100-114), carried out a study on New York Stock Exchange during the years 1951 to 1954 to enable him model the relationship between declaration of bonus issues and movement in share prices. He made the three categories: stock issues with no increase or with actual decline in cash dividends, stock issues with an increase in cash dividends, stock issues with no accompanying cash dividends. The findings in the investigation showed that, first that stock issues with no increase in cash dividends had the prices of the stocks held even with the general market through the ex-dividend date and then dropped with about a percentage of twelve below the general market in the following six months. Secondly that, stock issues with an increase in cash dividends had price gains averaging to nine percent over the six months preceding the ex-dividend date and of eight percent for six months after the ex dividend date.

Baker (1958, p.114), in conclusion noted that one incidental phenomenon is that there is often a strong but short lived price run up during the first few days after news of a stock dividend reaches the public particularly when the dividend is a special, non periodic

one, unexpected by the average investor. Thirdly that stock issues without an increase in cash dividends experienced a reduction in prices in the years that their bonus issues were offered. For companies paying stock dividends but no cash dividends the most difficult problem is obtaining or maintaining an established market for the stock, so that holders who do try to sell their stock dividend shares will not force the market price down below the dilution value or below a normal price earnings ratio. If management wants to maintain good relations with smaller and institutional stockholders, it may go to some lengths to solve this problem.

2.4 Bonus Issues and Signaling Hypothesis

Foster and Vickrey (1978, pp.363-369), were among the earliest to examine the signaling hypothesis. The research was based on 82 bonus dividend announcements made during 1972 to 1974 by industrial firms listed in the New York Stock Exchange. They analysed daily market model residuals around the declaration date working on the hypothesis that mean of the declaration day residual was greater than zero. Their results showed that the mean day residual of 0.02 was significantly greater than zero at 0.025 level of confidence i.e. have information content. The study concluded that stock dividend has informational content in that prices tended to rise with announcement of stock dividend, they further found that market efficiently react to stock dividend at the ex-dividend date. Foster and Vickrey's sample however included firms which paid cash dividends. They did not attempt to separate the effect of bonus issue from cash dividend announcements and other intervening factors.

Balachandran et. al. (2001, pp.2-15), examines share price reaction of the announcement of bonus share issues for a sample of Australian companies over the period 1992-2000. They found that bonus issue announcement leads to a statistically significant positive price

reaction. They provide evidence in support of signaling hypothesis consistent with the findings in the United States, Sweden, Canada and New Zealand. However, the study qualifies this result by suggesting that the signaling effect is stronger for industrial non-financial and mining companies than for financial companies.

McNichols and Dravid (1990, pp.859-861), provided further evidence to support the signaling hypothesis by examining the relationship between the size of a stock dividend (or split factor) and the degree of abnormal returns around the announcement dates. The sample comprised of stock dividends occurring from 1976-1983 by collecting data from The Wall Street Journal Index. Their findings suggested a positive relationship between stock dividend size and abnormal return; that is, the larger the stock dividend, the greater the signaling benefits.

However a study by Papaioannou et al. (2000, p.516), on the price reaction to stock dividend announcements by firms listed on the Athens Stock Exchange, found no statistically significant abnormal returns on and around the announcement date. This is contrary to research results in other capital markets like those in the USA and UK. This can be explained by the fact that the firms in Greece do not always initiate most stock dividend distributions, but rather act in accordance with legal requirements imposed upon the firms by the Government. This means that new information release by means of stock dividends is in most cases absent, depriving them of any signaling content. Stock dividend announcements in Greece are almost fully anticipated by the market and do not contain any new information, thus they have little signaling benefit.

The reaction of market to the information conveyed by the dividend action depends upon the established dividend policy of the company. It is argued that the announcement of changes in dividend policy influences shares prices and that managers use the dividend

changes to convey information about the future earnings of their companies. They may also influence the perceptions of the investors about the riskiness of the company by following a stable dividend policy where the actual riskiness of the company remains unchanged. This sort of argument is also known as the dividend-signaling hypothesis (Mullins ,2006,p.29). If the long established policy of the firm is to pay e.g. 50% of earnings to shareholders and has increased dividends in the past only when earnings increased to new levels on permanent basis, an increase in dividends will communicate a very convincing information that the earning of the firm have grown. As a result, the market price may be affected little because shareholders knew the information .

Lakonishok and Lev (1987,pp.916-919), carried out a study, which comprised of a sample of 1015 share split and 1257 bonus dividend events covering the twenty-year period between 1963 and 1982. They further constructed a control sample by matching every company in the test sample with a company which had more or less same asset size. They analyzed the performance of companies listed on the Chicago Stock Exchange, which issued bonus issues in terms of growth in earnings and in dividends. The examination was carried out for five years prior to and five years after the month in which bonus issue was announced. After measuring growth in earnings and dividends for the entire sample, a summary was made using simple average and median. The results show that there was a very modest above average earnings performance of bonus issuing firms in the pre announcement period. In fact the earnings difference between the test and control firms were found to be statistically insignificant. In terms of dividend growth the study documents that, there were hardly any differences in dividend growth between the test and the control sample. However the study found a statistically significant difference at 5% level (using the two-tailed t-test) of the average dividend yields that is, cash dividends divided by stock price. This may explain the motive behind stock dividend distributions

where managers may believe that stock dividends will be temporarily regarded by some investors as a substitute for cash dividends.

In markets like Kenya where managers have information about the current and future earnings, which is unavailable to investors, stock dividends may provide a low cost signaling device through which a manager can convey his or her assessment of firm's prospects to investors. It is presumed that managers convey their expectations to the market through financial signals such as dividend changes such as stock split, stock dividend and stock repurchases. Grinblatt et al. (1984, p.464), proposed an alternative form of the signaling hypothesis to justify positive market reaction to stock dividend announcements. They suggested that managers use stock dividends to attract attention from professional analysts and to trigger a revaluation of the firm's future cash flows, which they termed as the attention-getting hypothesis.

The attention-getting hypothesis however has a weakness in that, it does not explain why firms use stock dividends to convey information instead of outright press releases (Grinblatt et al. 1984,p.465). This can however be explained by the fact that stock dividends being more ambiguous announcements are less likely to reveal useful information to competitors and secondly, will not expose management to litigation from shareholders as opposed to if the information was to be directly communicated to the market and turns out to be incorrect.

2.5 Financial Markets and Efficient Market Hypothesis

Bonus issues are financial decisions within an organization and must take into account the external, economic, financial and social environments. A financial market can be defined as the total sums of all capital money and security market institutions operating in a

given economy. The purpose of a financial market is to allocate financial capital efficiently among alternative potential uses in the economy (Fama ,1970,p.383).

Based on the time of maturity of the financial transactions, there are two types of financial markets namely money market and capital market. Financial claims and obligations traded in money markets have maturities of less than one year while financial claims and obligations traded in capital markets have maturities of more than one year . Companies raise long term funds from the capital markets which perform two valuable functions, liquidity and pricing of securities. Capital markets make securities liquid, facilitate the buying and selling of securities by a large number of investors continuously and instantaneously without incurring significant costs while ensuring fair price of securities. The demand and supply forces help in determining the prices (Dimson and Massoud, 2000, p.960).

Efficient Market Hypothesis (EMH) states that all relevant information is fully and immediately reflected in a security's market price, thereby assuming that an investor will obtain an equilibrium rate of return. In other words, an investor should not expect to earn an abnormal return. The pre- requisite conditions to support this strong version of the hypothesis are that, there are no transaction costs in trading activities, all available information is costless and available to all market players and thirdly, the investors are capable of rapidly and without bias, able to interpret information according to correct assessments of the underlying economic process (Dimson and Massoud, 2000,p.961).

Fama (1970,p.414) identified three forms of market efficiency namely, the weak, semi-strong and strong form. The weak form of efficiency suggests that all historical price information is incorporated into current share prices. This means that price movements are random and are not controlled by past trends. Commonly referred to as the

'random walk' theory, this implies that technical analysis of past price movements cannot give investors a competitive advantage. The semi-strong form hypothesis argues that all published financial information is already included in the current share price, consequently detailed analysis of a company's published financial statements should not give a consistently superior return. The strong form states that current prices reflect all the available information which could be known, in other words, even insider and privileged information would not enable investors regularly to make a better than normal return.

In a subsequent study, Fama (1991, pp.1576-1577) changed the categories and coverage of market efficiency. According to him, the weak form tests, which are only concerned with the forecast power of past returns, now covers the more general area of test for return predictability, including work in forecasting returns with variables like dividend yields and interest rates. Further seasonality in returns and volatilities of security prices are to be considered under the theory of return predictability. For the second and third categories, he proposed only a change in title, not coverage by stating that, the semi-strong tests will now be called event studies and strong form tests will be called tests for private information. In event studies, it measured how rapidly security prices respond to different items of news, such as earnings or dividend announcement, news of a takeover, or macro-economic news. The study on stock price reaction for bonus issues is thus based on test of semi-strong form of market efficiency. Every time new information is released, the price adjusts towards a new value. It is therefore a matter of concern that firms announcing bonus issues experience rise in stock prices on an average supporting semi-strong form efficient market hypothesis, (Mishra, 2005,p.39).

The EMH of near perfect capital markets that renders only fleeting and non-systematic gain and lost opportunities to investors has been criticized in recent years by the behavioral

finance literature. According to the behavioral finance, stock transactions are often executed (in relation to known events such as stock issues, stock split, share buy-back) at price levels that imply predictably high or low risk adjusted return. If these findings are factually correct, they pose a challenge to the EMH, which predicts a lack of capital market profit or lost opportunities due to the ability of investors rapidly and unbiasedly to interpret information according to correct assessments of the underlying economic process (Satyajit, 2006,p.7).

Shiller (2003, pp.83-104), notes that the behavioral literature attributes its findings to various investors' biases. However the supporters of efficient market argue that risk adjustment methods in behavioral finance are imperfect since data mining may have occurred. According to them, all the behavioral anomalies taken together suggest an unbiased market at work and they ask for behavioral models that explain a broader range of evidence.

2.6 Clientele Effect

The dividend clientele hypothesis is premised on investor characteristics. The clientele may form based on for example income preference or age . On income preference , firms that pay lower (higher) dividends attract investors who dislike (like) dividend income, and this creates the potential for an optimal match between the dividend policy of a firm and the dividend preferences of its stockholders. On the other hand based on age, young wealth accumulators prefer low-payout shares and retired persons lean toward 'income' stocks" for consumption purposes (Graham and Kumar, 1999, p. 37).

Bajaj and Vijh (1990,pp.193-219) carried a study on the dividend-clientele hypothesis and documents that the existence of dividend clienteles may partially explain stock price

reactions to dividend change announcements. They argue that if marginal investors in different stocks value dividends differently, anticipated dividend yield should be associated with the stock price reactions to dividend change announcements. For an investor with a relatively high aversion to dividends, for example, the positive information in a dividend increase is accompanied by the negative effect of higher-than-anticipated yield. In contrast, the two effects act in the same direction for an investor with a preference for dividends. If investors with preference for dividends are marginal investors in high-yield stocks, the price reaction to dividend change should be larger, the higher the anticipated yield of the stock. The study use pre-announcement dividend yield as a proxy for anticipated yield and find that the magnitude of stock price reaction to a dividend change announcement is positively related to dividend yield.

The dividend-clientele hypothesis is also supported by a study by Denis and Sarin (1994,pp.567-587). They document that the stock price response to an unexpected dividend change announcement will be related to the dividend preference of the marginal investor in that firm. If high-yield firms attract investors with a preference for higher dividends, a dividend increase will be better news for high-yield firms than for low- yield firms. Similarly, dividend decrease will result in less severe stocks price drops for low-yield firms since investors in low- yield stocks prefer lower dividend payments. Their study focused on a sample of 5992 dividend increases and 785 decreases over a period 1962-1988. The data was drawn from the Wall street Journal index. In order to test the dividend clientele hypothesis, dividend yield was measured based on the most recent ordinary cash dividend preceding the sample announcement, divided by the market value of the firms equity as of two days prior to the sample announcement, is used as a proxy for anticipated yield. The results indicate that the absolute value of the average reaction to dividend changes are greater for firms with pre-announcement yields that are greater than the sample

medium, than for firms with lower than median yields, 2.46 percent versus 1.07 percent, respectively with a significant difference at 0.01 level. These results are consistent with the findings of Bajaj and Vijh (1990).

Graham and Kumar (1999, pp.15-37), carried out a study on stock holdings and trading behavior of more than 60,000 households in United States and find evidence consistent with dividend clienteles. Retail investor stock holdings indicate a preference for dividend yield that increases with age and decreases with income, consistent with age and tax clienteles, respectively. In addition trading patterns reinforce this evidence in that older, low-income investors dis-proportionally purchase stocks before the ex-dividend day. Furthermore, among small stocks, the ex-day price drop decreases with age and increases with income, consistent with clientele effects. They also document that, at an aggregate level, retail investors prefer both low and high dividend yield stocks. The excess normalized percentage weight is significantly positive for both low and high yield quintiles, though the magnitude is greater for high yield stocks (2.49% and 5.59%, respectively). In contrast, institutional investors exhibit a mild preference for lower dividend yield stocks and exhibit an aversion to higher dividend yield stocks. The excess normalized percent weights are 3.12% and -6.16% for low and high dividend yield, respectively. The preference for both low and high dividend yield stocks suggests that there could be heterogeneity in the dividend preferences of retail investors, with some retail investors preferring low dividend yield stocks while others preferring high dividend yield stocks. In other words, distinct dividend clienteles may exist within the class of retail investors.

In conclusion, Graham and Kumar (1999,p.37), notes that the clientele effect theory has relevance in the management of corporate firms given the need to consider the investors' preference for dividends and shareholder profile while designing the dividend policy.

2.7 Measures of Liquidity

Liquidity is an elusive concept which has many dimensions, as a result, it is hard to proxy it with a single measure. Many different measures of liquidity have been used in empirical studies. For example Pastor and Stambaugh (2003,p.644), estimated liquidity cost from signed volume related return reversals. Most of these liquidity measures require data that is not readily available.

Empirical proxies for liquidity can be categorized into one-dimensional and multi-dimensional measures. One-dimensional measures only look at one side or variable of liquidity while multi-dimensional measures try to aggregate different measures, find interdependencies between them and built one aggregate measure (Von Wyss, 2004,p.9).

The one-dimensional measures can be broadly classified as volume, time and spread related liquidity measures. If the volume related liquidity measures are high then this is an indicator of high liquidity. The volume related measures includes;

1. Trading volume: - Trading volume for time t-1 until time t (Von Wyss, 2004,p.16).

This is calculated as follows

$$Q_t = \sum_{i=1}^{n_t} q_i \quad 2.1$$

Where;

Q_t =Number of shares traded per given time interval.

n_t =Number of trades between t-1

Q_i = Number of shares of trade i

2. Turnover: -Like trading volume turnover is calculated for a specific time interval (Von Wyss, 2004,p.16). This is expressed as shown below

$$V_t = \sum_{i=1}^{n_t} p_i \cdot q_i \quad 2.2$$

Where;

V_t = The value of the shares traded within a given time interval in monetary terms.

p_i =Denotes the price of trade i

n_t = Number of trades between t-1 and t

Q_i =Number of shares of trade i

Turnover and number of shares traded are the simplest liquidity indicators widely used all over in the world. However the two indicators suffer from the shortcoming that they neither reflect the state of effective supply and demand nor trade orders which are not executed despite having been explicitly placed in the financial market.

3. Depth, D_t : - This refers to the sum of the bid and asks volume in time t (Von Wyss, 2004,p.17). Market depth in time t is represented by;

$$D_t = q_t^A + q_t^B \quad 2.3$$

Where ;

Q_t^A = Ask volume in time t, and

Q_t^B = Bid volume in time t.

The second classification of one-dimensional liquidity measure is the time related liquidity measures which captures how often transactions or orders take place. This means that high values of these measures indicate high liquidity. The measures includes: -

1. Number of transactions per unit time (N_t). This is also widely used as a measure of liquidity (Von Wyss, 2004,p.17). It counts the number of trades between t-1 and t

$$N_t = \sum_{i=1}^n \delta_{i,t} \quad 2.4$$

The inverse of this measure may be referred to as the waiting time between trades. The number of transactions and waiting time show the difference of trading that take place in a few large trades or in a huge number of small trades. The limitation of this measure however is that both the number of transactions and waiting time are unable to compare liquidity of stocks whose prices differ significantly from each other.

2. Number of orders per unit time (N_{ot}). There are similarities between this measure and that of number of transaction (Von Wyss, 2004,p.18). Counts the orders within the time interval from t-1 until t and in addition seeks to take into account the orders, which may not have been met.

$$N_{ot} = \sum_{i=1}^n \delta_{i,t} \quad 2.5$$

The last category of one-dimensional liquidity measure is the spread related liquidity measures. The smaller the measures are, the more liquid the market is, these include: -

1. Absolute spread (S_{abst}). The absolute spread is the difference between the lowest ask price, P_t^A and the highest bid price, P_t^B (Von Wyss, 2004,p.18).

The result is always positive and may be expressed as;

$$S_{abst}=P_t^A-P_t^B \quad 2.6$$

The bid-ask spread is a noisy measure given that large trades tend to occur outside the spread while small trades tend to occur inside.

2. Log absolute spread ($\text{Log } S_{abst}$). In order to improve its distribution properties, absolute spread may be logarithmized. Hamao and Hasbrouck (1995,p.869), use log absolute spread because its distribution is closer to a normal distribution compared to that of absolute spread. It is therefore mathematically easier to use and is expressed as shown below;

$$\text{Log}S_{abst}=\text{In}(S_{abst})=\text{In}(P_t^A-P_t^B) \quad 2.7$$

On the other hand, multi-dimensional liquidity measures combine more than one - dimensional measure. This is important in that no single measure unequivocally measures tightness, immediacy, depth, breadth and resiliency. This study will use three multi-dimensional measures to compare the liquidity of the bonus-issuing firms over the seven years period between January 2003 and December 2009. These are further expounded on, pp.35-37.

2.7 Review of Empirical Studies

Only a few papers have explored the issue, stock split and bonus issue when examining the announcement effect. One of the few studies making this distinction is that of Rankine and Stice (1997,p.162), who document that, bonus issues are generally associated with a higher announcement effect than stock split. They studied firms listed at the New York Stock Exchange. They demonstrated that a 2 to 1 distribution accounted for as stock dividends resulted in a 2.7% abnormal return in the five-day announcement period while a 2 to 1 distribution accounted for as stock splits had a less significant return of 0.93%. This significant announcement return difference still held after controlling for pre-distribution returns, target share price, firm size and contemporaneous cash dividends increases. Their explanation for these findings is that bonus issue are a stronger signal since “ by voluntary reducing the existing pool of distributable funds, managers of undervalued firms can signal their confidence that such a reduction will not negatively impact the firm’s ability to make future cash distributions”, which is the rationale behind the retained earnings hypothesis.

Although bonus issue unlike most cash dividend and capital structure changes do not directly affect the corporate cash flows, a large number of studies in finance give evidence on positive stock price reactions in response to such announcements (Mohanty, 1999,p.40).

Grinbalatt, Masulis and Titman (1984,pp.465-468), studied data from the wall street journal index for the period 1967-1976.The focus was on bonus issues announcements of ten percent or more of shares listed on the American or New York Stock Exchange at the announcement date. They document that stock prices, on average, react positively to bonus issues announcements .In addition to posting a significant positive excess return on and around the ex-dates of bonus issues. The mean two-day return around the announcement

was 5.87% compared with 0.14% mean two-day return for the forty trading days subsequent to the announcement.

Mohanty (1999,p.35) carried out a study of dividend paying behaviour of more than 200 Indian companies over 15 years (1982-1996). He examined whether the companies offering bonus issue have been able to generate greater returns for their shareholders than those that have not offered any bonus issue but have maintained a steadily increasing dividend rate. It is found that most of the companies either maintained the dividend rate after the bonus issue at the pre-bonus level or decreased it (but not proportionately) thereby increasing the dividend payments to the shareholder. In fact, a few companies increased the dividend rate after a bonus issue. The study documents that, during 1982-1991, the bonus issuing companies yielded greater returns as opposed to those that did not make any bonus issue but maintained a steadily increasing dividend rate. Thus, there is evidence of positive reaction to bonus issue.

A second study in India by Mishra (2005,pp.26-39), document a positive reaction to bonus issue announcement. He studied the market reaction on the bonus announcement for 46 stocks listed on the National Stock Exchange of India covering 1998-2004. It was found that on average, the stocks start showing a positive abnormal return 9 to 8 days before the announcement date, which may be attributed to leakage of information. The returns on the announcement day were in excess of 0.1% while statistically significant returns were recorded on the fourth day. The finding is a clear indication that the Indian stock market is a semi-strong efficient market.

Ball, Brown and Finn (1977,pp.107-111), investigated stock price reaction around the announcements of 'stock capitalization changes' (bonus stock issues, stock splits and rights issues) in Australia for the period between 1960 and 1969 using monthly data. They

found 20.2% abnormal returns for the 13 months up to and including the month of bonus issue announcements.

Barnes, Michelle and Shiguang (2002,pp.5-27), investigated the stock price reaction to the announcement of bonus issues in China's emerging stock market. They constructed in total eleven portfolios according to the size of the bonus ratio. The study found that issues with a high bonus ratio (number of bonus shares in the issue/number of existing shares) attracted positive returns. The cumulative average returns of the high bonus stocks were noted to begin positively (11.56%) and grow rapidly until the announcement date, and then thereafter remaining relatively steady (11%). The hypothesis of semi-strong form market efficiency was also confirmed by this investigation.

However contrary, to the above positive market reaction findings, Papaioannou et al. (2000,pp.516-524), found the market reaction to bonus share issues in Greece to be negative, with a general lack of signaling value. This can be explained by the fact that in Greece it is a legal requirement to declare bonus shares. The study covered the period 1981-1994. The sample included all bonus issue cases undertaken by firms traded in the Athens Stock Exchange, but excluded those that were announced concurrently with equity increases through cash.

Karanja (1987,pp.94-102), examined the dividend decision in relation to the firm's liquidity and cash flow position. He collected data through a questionnaire on the kind of dividend policies managers of quoted companies pursued and the major determinants of a dividend policy in Kenya. He found that three factors to be most critical, the cash and liquidity position, the current and prospective profitability and the company's level of distributable reserves in that order. He also observed that the foreign controlled companies

have more liberal dividend policies than the locally controlled companies.

Onyango (1999,pp.43-45), did a study to establish the factors managers consider before declaring bonus issues in Kenya and the estimation of benefits to shareholders. She found out that managers believed that stock dividends (bonus issues) benefit the firm and help in conserving cash. The study further noted that shareholders tend to receive higher cash dividend after bonus issue. There was an increase in cash dividend of 10.23% after the issue of bonus issues, which was statistically significant.

Agutu (2000,pp.27-37), carried out an empirical study on the characteristics of bonus issuing firms in Kenya and concluded that on average those firms that had never issued bonus issues had higher dividend payout ratios, dividend yield, return on the investments and a higher percentage of capital reserves in the total reserves. Those firms that had made the issues more than twice had the highest changes in cash from the operations, earnings, growth in earnings, shareholders funds and total reserves but also had the lowest return in investments. The study proved that only two variables (total reserves and dividend reserve) are significant in predication purposes. That meant that managers might be using non-quantitative considerations in deciding whether or not to issue bonus shares and thus indicating that there exists a gap between finance theory and practice in the issue of bonus issues in Kenya.

Njinu (2007,pp.36-37) conducted a study to assess the changes in liquidity at the Nairobi Stock Exchange during the period January 2000 and December 2005. He reports that there was significant change in liquidity as proxied by two of the three multi-dimensional liquidity measures used in the study. These were liquidity ratio 2 and flow ratio measure.

Simbovo (2006,pp.30-46) carried out a study to find out the effect of stock splits

and large bonus issue on liquidity, as evidence from the Nairobi Stock Exchange. He documents that in the case of splits, there is a positive effect on liquidity after the split, this is consistent with the optimal trading range hypothesis (Copeland, 1979,p.138). However in the case of bonus issue, the results were mixed. Some of the sample stocks showed that there was a change in liquidity after the bonus issue but the change were not statistically significant.

2.8 Summary

The literature review has examined three relevant theories to this study .The efficient market hypothesis, which identified three forms of market efficiency namely, the weak, semi-strong and strong form. Under the strong form the current prices reflect all the available information which could be known, hence even insider and privileged information would not enable investors regularly to make an abnormal return (Fama, 1970) .A review on clientele effect hypothesis provide evidence of dividend clientele effect on stock price reactions to dividend change announcements (Bajaj and Vijh (1990), Denis and Sarin (1994), Graham and Kumar (1999). Reviews of studies examining the stock liquidity changes around bonus issue announcement provide evidence of mixed results. Foster and Vickrey (1978), McNichols and Dravid (1990), Balachandran et.al.(2001), Mishra(2005), Njinu(2007) find evidence of a positive reaction to bonus announcements. However the study findings by Papaioannou et al. (2000), has found the reaction to be negative

In the review of literature the researcher concludes that not much attempt has been made to examine the effect of bonus issue on stock liquidity in emerging markets and the existing literature does not provide clear evidence of the effect. In addition most of the studies that have been carried out are either in the developed countries mostly United Kingdom and United States of America (Rankine and Stice (1997),McNichols and Dravid (1990),

Grinbalatt, Masulis and Titman (1984), Foster and Vickrey (1978), Baker (1958), or in emerging markets outside Kenya, (Mishra (2005), Balachandran et.al.(2001), Papaioannou et al.(2000), Ball Brown and Finn (1977). The few local studies that have been done specifically to investigate the relationship between bonus issues and stock market liquidity of issuing firms quoted on Nairobi stock provide evidence of mixed results. Simbovo (2006), found that some of the sampled stocks showed a change in liquidity after bonus issue but the change were not statistically significant. The study used trading activity ratio (one dimensional measure) as a proxy for liquidity and recommended that there was a need for further study using different measures of liquidity. These deficiencies provided the primary impetus for this current study.

Evidently, a knowledge gap exists in the emerging markets, hence the issue of bonus shares being a popular and frequently used mechanism to signal performance of the companies, it is pertinent to understand the impact of such bonus issues on the stock market in terms of change in stock liquidity in an emerging market. This study therefore, sort to add it's voice on the growing debate by investigating the relationship between bonus issues and stock liquidity of quoted companies in Nairobi Stock Exchange. The study used multidimensional measures to build on the study by Simbovo (2006), which used one measure of liquidity and found mixed results. This mitigated the shortfall inherent in using one dimensional measure of liquidity.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter sets out the research methodology that was adopted to meet the objective of the study. It is sub divided into the research design, population of the study, sample size and sampling techniques, measurement of variables and definition of the variables and data collection and data analysis techniques.

3.2 Research Design

This was a causal study. A causal study is a research study designed to determine whether one or more variables causes or affects one or more outcome variables. A causal study was deemed the most appropriate for this research given the cause effect relationship of bonus issues (causes) and change (outcome) in stock liquidity of firms quoted at Nairobi Stock Exchange. A similar research design was adopted by Simbovo (2006) in a study on the effect of stock splits and large stock dividend on liquidity, evidence from Nairobi Stock Exchange.

3.3 Population of the Study

The population of the study comprised of all the 47 firms listed at the Nairobi Stock Exchange between January 2003 and December 2009. The selection of the Nairobi Stock Exchange was because the required data for the companies was readily available.

3.4 Sampling and Sample Size

The sample size consisted of all the firms, which issued bonus shares over the period

under study. The sample size consisted of 20 firms in the Agriculture, Commercial and Services, Finance and Investments and Industrial and Allied sectors. The sample period was January 2003 and December 2009. The 7 year period was considered adequate to enable the research to establish a worthwhile relationship between bonus issue and stock liquidity. Mishra (2005), carried out a similar study based on an empirical analysis of market reaction around the bonus issue in India and used as well a period of 7 years, from 1998 to 2004.

The sampling technique used was non probability sampling where the selection of firms to be studied was based on the sub population of interest, in this case only firms which issued bonus shares were selected from the target population to form the sample size. This technique was best suited and most cost effective since it ensured focus and detailed variable analysis was only carried out on the relevant sub population (firms that issued bonus shares).

3.5 Data Collection

The study was facilitated by use of secondary data. The variables (data) as summarized under section 3.6, table 3.1, were obtained from the Nairobi Stock Exchange library for the period January 2003 and December 2009. The study used daily trading data for the individual stocks 3 months before and 3 months after the bonus issue.

3.6 Measurement of Variables

The study used the following main variables described and summarized under table 3.1. The variables were measured using the indicated proxy measures. The variables were then used in the computation of the average stock liquidity measures. The study assumed number of

trading days per month to be 20 days.

Table 3.1

Variable	Proxy Measure
Number of shares traded in each week (Q),	Sum of the daily actual shares traded in a given week “ t”
Actual share prices during each week (P)	It is the daily actual share prices in a given week “ t”
Actual share prices during each week (P0),	It is the daily actual share prices in a given week “t-1”
Number of transactions in each week (N),	Sum of the daily share transactions in a given week “ t”
Turnover in Kenya Shillings for each week (V),	Sum of the of the daily share turnover (actual price x actual volume sold) in a given week

Source: Von Wyss (2004, pp. 16-20).

This study used weekly data in computing the average liquidity measures. The weekly averages were computed from daily data. The study used multi-dimensional measures of liquidity, which helped remove the bottlenecks inherent in use of one measure of liquidity.

The three liquidity measures tested in this study were;

-Liquidity Ratio 1(LR 1)

-Liquidity Ratio 3(LR 3)

-Flow Ratio (OR)

These Liquidity measures have been adopted from the works of Von Wyss (2004), in a study on measuring and predicting liquidity in the stock market in which he defines the ratios as follows.

Liquidity Ratio 1

This ratio combines turnover and return (Von Wyss, 2004, p.16). It compares the traded volumes to the absolute price change during a certain period. The ratio is expressed as;

$$LR1_t = v_t / |r_t|$$

3.2

OR

$$LR1_t = \sum_{t=1}^n P.Q / (P - P_0 / P_0)$$

Where;

r_t = The return from period t-1 to t (that is the change in price over the defined time interval dividend by the price at time t-1) for a stock traded in the stock market OR $r_t = P - P_0 / P_0$

V_t = The Turnover. The turnover V_t is given by; $v_t = \sum P.Q$

It was conceptualized that, the higher the turnover, the more price movement can be absorbed by the market. Therefore a higher liquidity ratio denotes higher liquidity. If the return in a certain time is zero, the liquidity ratio (LR1) is set to zero. This measure is also useful if no intra day data is available because turnover and return can easily be calculated on a daily basis (Von Wyss, 2004).

In this study, weekly time interval was used due to the ease of availability of the weekly data at the NSE. The weekly liquidity ratios (LR1) were then computed based on each stocks turnover and the absolute change in price over the specific week. The aggregate LR1 for the NSE for each week was then computed as the average for all the bonus issuing listed stocks LR1.

Liquidity Ratio 3

Liquidity ratio 3 (LR3) indicates the average price change of a transaction and is computed as shown below (Von Wyss, 2004, p.17).

$$LR3_t = \frac{\sum_{t=1}^N (P_t - P_0) / P_0}{n_t} \quad 3.3$$

Where;

n_t = the number of transactions in time t, and

$r_t = (P_t - P_0) / P_0$ = the return from period t-1 to t for a stock traded in the stock market.

While LR 1 depends on the absolute price of the stocks, the liquidity ratio3 overcomes this problem by only using the number of trades in the denominator. In contrast to the LR 1, a high liquidity ratio in this case indicated low liquidity. If the number of trades for certain time space is zero, the liquidity ratio 3 is set to zero.

In this study the LR3 was computed for each week as the ratio of the sum of all individual stocks absolute returns for each week and the total number of transactions for the same period (Von Wyss, 2004).

Flow Ratio(FR)

The flow ratio is the product of turnover and number of transaction executed in a particular time period. Since liquidity rises with the number of trades and turnover, a high flow ratio is a sign for high liquidity (Von Wyss, P.19, 2004).

$$FR_t = V_t \cdot N_t \quad 3.4$$

V_t is turnover while N_t is number of transactions.

In summary, for each of the three liquidity measures described above, stock liquidity for three months before and three months after the bonus issue was estimated based on the weeks variables.

3.7 Data Analysis

The data analysis was based on the estimated liquidity ratios of the sampled firms stocks before and after the bonus issue. This was then used to calculate for each measure the mean and variance. In order to establish whether a relationship between bonus issue and stock liquidity exists, the study used a simple linear regression model described below,

$$LIQ_i = \beta_0 + \beta_1 X + \varepsilon_i$$

Where:

LIQ_i represents the means for the measured liquidity ratio's separately (i ranges from 2003 to 2009). This is the dependent variable as computed (LR1, LR3, FR).

β_0 is the constant term or the Y intercept

β_1 represents the slope of the population it measures the sensitivity (impact) of bonus issues on stock liquidity.

X represents the independent variable that is the bonus issues. This was based on the ratio of the issued bonus shares compared to the firms total issued shares.

ε_i represents the error term or noise, which represents a failure to include all factors in the model.

The model is adopted from the works of Von Wyss (2004), in a study on measuring and predicting liquidity in the stock market. In order to test the explanatory power of the regression analysis, R^2 (coefficient of determination) was used, while t-values were used to test the significance of the predictor variable (at 95% significance level). The data analysis used the Statistical Package for Social Science (SPSS version 17).

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the information processed from the data obtained by the study on relationship between bonus issues and stock liquidity of firms listed at the NSE. The data was collected on 20 companies that had traded for the period ranging from 2003 to 2009. The study used daily data, 90 days before and after bonus issue and averaged the same to compute the weekly liquidity ratios (liquidity 1, liquidity 3 and Flow ratio).

The study conducted a descriptive statistics on the dataset obtained so as to generally present the reaction of stocks to bonus issue with regards to pre and post bonus announcement dates. The study further used measures of associations (correlations and Analysis of Variance (ANOVA)) to bring out the relationship between bonus issue and stock liquidity (liquidity 1, liquidity 3 and Flow ratio). Cross-sector comparison was also done to ascertain whether such associations are sector specific. Besides that, regression analysis was used to measures this relationship.

4.2 Pre and Post Bonus Issue Stock Liquidity

Table 1: Liquidity Ratio 1

Company	Pre-Event (Mean Value)	Announce ment Week (Event)	Post-Event (Mean Value)	Max	Min
BBK	336,687,971	-149,996,288	225,324,027	1,898,554,249	-484,902,814
DTB	17,891,851	-1,996,568	17,711,150	180,105,827	-8,460,027
CMC	1,321,555,301	158,555,991	18,659,234,355	354,268,531,939	-239,366,035
CFC	16,628,096,703	117,553,739	-218,377,195	283,593,692,402	-2,260,916,871
SCBK	5,416690,910,847	-551,917,281	-70,913,748	86,674,427,725,989	-4,309,170,972
CBERG	-49,889,981	3,228,786	-12,949,708	161,972,194	-564,092,645
EABL	-4,421,967,771	883,259,120	66,430,272,644,193	1,328,591,842,002,810	-71,438,128,819
DTB	-43,094,162	225,877,954	43,019,646	225,877,954	-389,449,346
NMG	53,761,371	300,452,847	-3,240,250,765	3,881,692,069	-54917854886
SGL	99,383,339,832	16,838,115	-25,596,137	1,689,704,255,664	-166,408,933
EQTY	553,609,858	928,563,171	730,885,831	5,291,389,070	-1,599,532,037
SERENA	-72,140,989	-27,549,726	520,729,475,019	9,898,821,102,226	-2,229,494,357
EABL	1,059,379,761,776	834,764,307	1,944,310,600	18,008,716,765,294	-47,875,830,900
MSC	7,871,268	352,883,472	-208,120,400	2,472,517,552	-4,654,529,531
BBK	740,867,146	1,175,085,707	644,578,875	5,233,176,798	-3,347,640,410
JUB	498,133,356,206	75,651,663	120,335,956,782	8,467,798,521,904	-540,359,673
NIC	-234,147,190	63,434,966	34,122,473	1,890,285,980	-3,455,679,675
CMC	-48,339,976	182,389,245	417,763,642	2,663,879,473	-1,874,037,524
UNGA	8,541,404	3,407,866	-1,172,065	143,209,065	-20,597,258
SASINI	-106,335,890	202,818,168	6,012,665,297	121,308,570,374	-8,929,599,786
Average	354,414,016,779	239,665,263	3,354,814,515,594		

Table 1 presents the average liquidity of the stock of companies incidental to bonus issue.

The liquidity 1 was calculated as a ratio of the daily turnover to stock returns. The table indicates that 9 out of the 20 companies had an increase in liquidity ratio in post-bonus issue window. The companies that had positive liquidity were: CMC Holdings (1st and 2nd issue), Crown Berger, East African Breweries, Equity Bank Limited, TPS Serena, Sasini Tea, NIC Bank and Diamond Trust Bank. Out of the 11 that had an overall decrease in liquidity in their post-issue period, 3 (Nation Media Group, Mumias Sugar and Barclays Bank of Kenya, 2nd issue) of them had an increase in liquidity during the announcement week. However, the overall stock performance indicates a general increase in liquidity, from 354,414,016,779 to 3,354,814,515,594, following bonus issue as measured by the ratio of turnover to price returns.

Table 2: Liquidity (Liquidity Ratio 1) Across Event Period

Week	Mean	Standard Deviation (STDEV)
wk0 to wk-15	410,578,915,118	1,273,751,538,722
wk0 to wk-12	113,130,485,433	269,929,182,878
wk0 to wk-9	145,572,233,452	303,417,835,308
wk0 to wk-6	141,291,507,601	336,533,309,361
wk0 to wk-3	21,904,783,253	42,729,124,468
wk0	239,665,263	0
wk0 to wk3	16,611,157,046,398	33,223,588,690,675
wk0 to wk6	9,562,935,606,758	25,083,990,277,442
wk0 to wk9	6,694,038,543,255	20,995,465,254,345
wk0 to wk12	5,149,351,077,476	18,418,020,970,284
wk0 to wk15	4,191,766,896,830	16,601,745,075,118

To augment the findings above, the study segmented the liquidity ratio1 across different event period (pre and post bonus issue) with bonus issue announcement week as the base week. Table 2 illustrates an erratic increase in liquidity within the first three weeks following bonus issue, which gradually decreased with time as the market absorbed the

bonus issue-contained-information. This is further depicted by the high constant variance of 33,223,588,690,675 in the first 3 weeks, which decreased to 25,083,990,277,442, 20,995,465,254,345, and 18,418,020,970,284 with the equal-interval of weeks.

Table 3: Liquidity Ratio 3

Company	Event Date	Pre-Event (Mean)	Announcement Week	Post-Event (Mean)	Max	Min
BBK	20-Feb-03	0.00170	-0.00066	0.00060	0.00737	-0.00569
DTB	25-Feb-03	0.02012	-0.00704	-0.04538	0.07745	-1.14583
CMC	12-Jan-04	0.00256	0.00046	-0.00471	0.05459	-0.06373
CFC	26-Feb-04	0.01493	0.00320	-0.00514	0.08261	-0.03633
SCBK	26-Feb-04	0.00176	-0.00087	-0.00216	0.01810	-0.01990
CBERG	15-Apr-04	-0.00058	0.02952	-0.00567	0.02952	-0.07576
EABL	27-Aug-04	0.00042	0.00107	-0.00119	0.00993	-0.02014
DTB	25-Feb-05	-0.00234	0.00203	0.00162	0.05697	-0.02857
NMG	3-Mar-05	0.00268	0.00320	0.00017	0.02015	-0.02867
SGL	31-Oct-06	0.00738	0.00427	0.00127	0.12982	-0.02001
EQTY	13-Feb-07	0.00042	0.00045	-0.00002	0.00356	-0.00471
SERENA	23-Mar-07	-0.00014	-0.00295	0.00008	0.01429	-0.00889
EABL	31-Aug-07	0.00014	0.00043	0.00004	0.00126	-0.00279
MSC	31-Aug-07	0.00003	0.00060	-0.00002	0.00060	-0.00121
BBK	8-Nov-06	0.00044	0.00076	-0.00032	0.00157	-0.00494
JUB	26-Apr-07	-0.00162	0.00524	-0.00044	0.01000	-0.01752
NIC	26-Jul-07	0.00070	0.00201	0.00027	0.00449	-0.00404
CMC	10-Jan-08	0.00000	0.00047	-0.00004	0.00096	-0.00289
UNGA	25-Sep-08	-0.00167	0.01244	-0.00254	0.01421	-0.02493
SASINI	18-Dec-06	0.00237	0.00190	-0.00111	0.01098	-0.01028
Average		0.00247	0.00283	-0.00323		

Table 3 above indicates the liquidity following bonus issue as indicated by the ratio of price returns to number of transactions. In contrast to Liquidity ratio 1, high value in Liquidity ratio 3, is an indicator of low liquidity. The data presented in table 4.3, indicates that 16 companies had an overall decrease in liquidity ratio 3 following bonus issues while only 4 out of the 20 companies had an increase in liquidity ratio 3. These were; Jubilee

Insurance Company, TPS Serena, Crown Berger and Diamond Trust Bank (2nd issue). This indicates an increase in liquidity, which is further supported by overall decrease in liquidity ratio 3 from pre-issue ratio of 0.00247 to post-issue ratio of -0.00323.

Table 4: Liquidity (Liquidity Ratio 3) Across Event Window

Week	Mean	Standard Deviation
wk0 to wk-15	0.00227	0.00256
wk0 to wk-12	0.00209	0.00265
wk0 to wk-9	0.00221	0.00240
wk0 to wk-6	0.00223	0.00293
wk0 to wk-3	0.00069	0.00192
wk0	0.00283	0
wk0 to wk3	0.00376	0.00416
wk0 to wk6	0.00135	0.00455
wk0 to wk9	0.00098	0.00402
wk0 to wk12	0.00047	0.00371
wk0 to wk15	(0.00411)	0.01673

Table 4 above indicates that the liquidity of the overall stock liquidity decreases (from 0.0283 in the announcement week to 0.00376 within the first three weeks following bonus issue) with the announcement of bonus issues and increases with time as indicated by the ratio of price returns to the number of transactions.

Table 5: Liquidity (Flow Ratio)

Firm	Pre-Event (Mean)	Announcement Week (Event)	Post-Event (Mean)	Max	Min
BBK	72,135,969	35,560,617	131,186,011	364,504,025	2,696,924
DTB	464,720	56,241	4,781,056	30,827,692	520
CMC	1,394,911	4,629,372	13,809,345	91,917,712	4,500
CFC	5,306,172	27,840,610	6,048,793	49,566,113	60,086
SCBK	129,668,325	91,215,072	68,050,413	285,062,458	1,326,151
CBERG	4,545,133	291,936	3,205,745	31,740,846	85,351
EABL	153,109,524	184,859,889	296,998,536	837,859,322	11,106,026
DTB	1,955,682	5,305,596	12,170,255	46,666,289	84,256
NMG	15,999,716	9,850,913	57,609,843	124,826,910	4,174
SGL	15,679,338	145,549,805	26,121,399	145,549,805	91,264
EQTY	1,153,961,825	9,730,833,232	5,709,522,772	12,541,107,836	79,803,821
SERENA	117,577,532	19,778,236	110,487,790	455,095,244	9,804,513
EABL	972,650,317	632,527,594	1,873,851,083	4,390,680,790	99,712,562
MSC	2,406,261,739	17,098,495,239	24,315,000,000	102,075,000,000	1,381,721,448
BBK	1,614,316,657	32,642,331,140	20,428,000,000	59,878,846,209	179,273,445
JUB	52,499,660	62,907,220	33,127,772	250,207,650	2,031,401
NIC	65,381,804	449,077,032	776,040,165	1,818,536,209	25,654,105
CMC	1,321,706,386	4,210,656,035	2,476,524,455	9,909,996,542	49,663,893
UNGA	1,337,079	3,135,072	1,983,431	15,173,323	57,364
SASINI	1,136,554,395	1,482,934,461	367,781,793	8,246,068,634	2,622,242
Average	462,125,344.27	3,341,891,765	2,835,607,078		

Table 5 above presents the relationship between stock liquidity, as indicated by the

flow ratio, and bonus issues. Flow ratio was measured as the number of transactions multiplied by turnover in Kenya shillings, therefore, high values of flow ratio indicates high liquidity. In the dataset analyzed, 15 out of 20 companies had an increase in flow ratios in the post issue period indicating a positive reaction to bonus issue. The companies that had a decrease in post-issue period were Jubilee Insurance Company, Standard Chartered Bank, Crown Berger, TPS Serena and Sasini Tea Ltd. The average stocks reaction to bonus issue indicates an erratic increase in flow ratio from 462,125,344.27 to 3,341,891,765 in the announcement week, which decreased to 2,835,607,078 in the post-announcement period but was still above the flow ratio in the pre-issue period. Table 6 below confirms this by indicating an overall increase in flow ratio in post issue period.

Table 6: Liquidity (Flow Ratio) Across Event Window

Week	Mean	STDEV
wk0 to wk-15	677,667,819.20	739,625,284.33
wk0 to wk-12	744,214,591.98	807,715,510.44
wk0 to wk-9	837,553,907.15	908,448,056.66
wk0 to wk-6	988,829,141.26	1,064,341,803.84
wk0 to wk-3	1,379,156,560.85	1,329,571,600.91
wk0	3,341,891,765.62	0
wk0 to wk3	2,735,686,182.46	672,811,500.07
wk0 to wk6	2,095,692,831.91	939,267,133.16
wk0 to wk9	3,034,548,834.44	2,172,805,269.86
wk0 to wk12	2,865,641,921.57	1,917,270,134.79
wk0 to wk15	2,611,785,930.39	1,800,234,039.05

4.3 Measures of Association between Bonus Issues and Liquidity

To assess the relationship between bonus issue and liquidity, the study conducted correlation test and Analysis of Variance (ANOVA)

4.3.1 Correlation between Bonus Ratio and Liquidity

Table 7: Correlation Test Results

	N	Bonus Ratio	R Square	Adjusted R Square	Std. Error of the Estimate	Sig. (1-tailed)	Durbin-Watson
Bonus	20	1					
Liquidity1	20	.111	0.012	-.043	1.5159597E+13	.321	2.171
Liquidity3	20	.118	.014	-.041	.0103358	.310	1.984
Flow Ratio	20	.465*	.216	.173	6.2270191E+09	.019	1.190

*. Correlation is significant at the 0.05 level (1-tailed).

Table 7 above presents the Pearson Moment Correlation test between bonus ratios and the stock liquidity. The correlation coefficients obtained points at a low association between bonus ratio and liquidity (Stock Liquidity ratio 1 and 3) but a moderate association when liquidity is measured by flow ratio; 0.465 which is significant at 95% confidence level. However, the coefficient of determination (R-squared) indicates a weak relationship between the liquidity and bonus ratios as the liquidity ratios (Flow ratios, Liquidity ratio 3 and 1) explain only 21.6%, 1.4% and 1.2%, respectively, of observations/variances in bonus ratio.

4.3.2 ANOVA - Bonus Issue and Liquidity Across Market Sectors

The study sought to establish the relationship between bonus issue and stock liquidity with regards to inter-sectoral comparison using Analysis of Variance (ANOVA) which establishes the differences in means of two or more variables. The one-way ANOVA

was conducted at 95% confidence level and the results presented in table 8.

Table 8: ANOVA across Market Sectors

Sector	Ratios		Sum of Squares	df	Mean Square	F	Sig.
Commercial	Liquidity1	Between Groups	7.858E+22	3	2.619E+22	.194	.892
		Within Groups	1.354E+23	1	1.354E+23		
		Total	2.139E+23	4			
	Liquidity3	Between Groups	.000	3	.000	1035.673	.023*
		Within Groups	7.000E-09	1	7.000E-09		
		Total	.000	4			
	Flow Ratio	Between Groups	1.909E+18	3	6.364E+17	.227	.873
		Within Groups	2.799E+18	1	2.799E+18		
		Total	4.708E+18	4			
Financial	Liquidity1	Between Groups	3.186E+21	4	7.964E+20	.330	.846
		Within Groups	9.649E+21	4	2.412E+21		
		Total	1.284E+22	8			
	Liquidity3	Between Groups	.000	4	.000	.276	.880
		Within Groups	.001	4	.000		
		Total	.002	8			
	Flow Ratio	Between Groups	3.563E+20	4	8.908E+19	29.274	.003*
		Within Groups	1.217E+19	4	3.043E+18		
		Total	3.685E+20	8			
Industrial	Liquidity1	Between Groups	5.884E+26	2	2.942E+26	.200	.833
		Within Groups	2.942E+27	2	1.471E+27		
		Total	3.530E+27	4			
	Liquidity3	Between Groups	.000	2	.000	5.717	.149
		Within Groups	.000	2	.000		
		Total	.000	4			
	Flow Ratio	Between Groups	4.524E+20	2	2.262E+20	223.343	.004*
		Within Groups	2.026E+18	2	1.013E+18		
		Total	4.545E+20	4			

*. Results significant at the 0.05 level (1-tailed).

From the ANOVA results it is evident that there is a significant relationship between bonus issues and stock liquidity when measured using liquidity ratio 3 for commercial sector at 0.023 significance interval while significant relationship exists for financial sector ($p =$

0.003) and industrial and allied sector (p=0.004) when liquidity was measured using flow ratio.

4.4 Regression Analysis

The study also conducted a regression analysis in order to measure the relationship between bonus issue and stock liquidity (liquidity ratio 1 and 3 and flow ratio). In the linear regression, liquidity was the dependent variable and the bonus issue was the independent variable. The regression equation was of the form:

$$LIQ_i = \beta_0 + \beta_1 X + \epsilon_i$$

Whereby LIQ_i is the stock liquidity, X is the bonus ratio, β_0 is the regression constant while β_1 is the coefficient of the regression (bonus issue), ϵ_i is the error term which is proxied by the significance of the model.

4.4.1 Model 1 (Liquidity Ratio 1 and Bonus Issue)

The first regression model involved establishing the relationship between bonus issue and liquidity ratio1 (ratio of turnover to stock return).

Table 9: Analysis of Variance (Liquidity 1 and Bonus Issue)

	Sum of Squares	df	Mean Square	F	Sig.
Regression	.104	1	.104	.224	.642
Residual	8.386	18	.466		
Total	8.491	19			

The study further conducted ANOVA test to determine the significance of the regression model 1. Table 9 shows that the first regression model to be insignificant at 0.642 ($p>0.05$).

Table 10: Regression Coefficients for Model 1

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
Constant	4.62E+12	4.31141E+12		1.0707	0.2984	-4.4E+12	1.37E+13
Bonus Ratio	-2.5E+12	5.20253E+12	-0.11093	-0.4735	0.6415	-1.3E+13	8.47E+12

From the regression results in table 10 above, the following regression equation was established:

$$LIQ = 4.62E+12 - 2.5E+12 X$$

From the results, when the bonus ratio is zero (no bonus issue), the stock liquidity becomes 4.62E+12 while a unit increase in bonus ratio leads to a 2.5E+12 decrease in liquidity as measured by liquidity ratio 1. Based on the regression results, stock liquidity has a negative reaction to bonus issue.

4.4.2 Model 2 (Liquidity 3 and Bonus Issue)

Table 11: ANOVA - Liquidity 3 and Bonus Issue

	Sum of Squares	df	Mean Square	F	Sig.
Regression	2.73E-05	1	2.73E-05	0.255541	.619
Residual	0.001923	18	0.000107		
Total	0.00195	19			

The study further conducted ANOVA test to determine the significance of the regression model 2. Table 11 shows that the second regression model to be insignificant at 0.619 ($p>0.05$).

Table 12: Regression Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
Constant	-0.00415	0.0029		-1.4124	0.1749	-0.01033	0.0020
Bonus Ratio	0.001793	0.0035	0.1183	0.5055	0.6193	-0.00566	0.0092

From the regression results in table 12, the following regression equation was established:

$$LIQ = -0.00415 - 0.001793X$$

From the results, when the bonus ratio is zero, the stock liquidity becomes -0.00415 while a unit increase in bonus ratio leads to a 0.001793 increase in liquidity as measured by liquidity ratio 3. Based on the regression results, stock liquidity has a positive reaction to bonus issue.

4.4.3 Model 3 (Flow Ratio and Bonus Issue)

Table 13: Analysis of Variance (Flow Ratio and Bonus Ratio)

	Sum of Squares	df	Mean Square	F	Sig.
Regression	1.928E+20	1	1.928E+20	4.973	.039*
Residual	6.980E+20	18	3.878E+19		
Total	8.908E+20	19			

*. Correlation is significant at the 0.05 level (1-tailed).

The study further conducted ANOVA test to determine the significance of the regression model 3. Table 13 shows that the third regression model to be significant at 0.039 ($p < 0.05$). This indicates that the regression model can only be 3.9% wrong in its prediction of the relationship between bonus issue and stock liquidity when measured using flow ratio.

Table 14: Regression Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
Constant	395122883.1	1770972125		0.2231	0.826	-3.3E+09	4.12E+09
Bonus Ratio	4765795011	2137011710	0.4653	2.2301	0.038	2.76E+08	9.26E+09

From the regression results in table 14, the following regression equation was established:

$$LIQ = 395122883.1 + 4765795011X$$

From the results, when the bonus ratio is zero, the stock liquidity becomes 395122883.1 while a unit increase in bonus ratio leads to a 4765795011 increase in liquidity as measured by flow ratio. Based on the regression results, stock liquidity as measured has a positive reaction to bonus issue.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary on the findings presented in the previous chapter, conclusions there-to and recommendations. The chapter also indicates the limitations of the study and further suggests on the areas for further research.

5.2 Summary

The results presented in the previous chapter generally shows an increase in liquidity as measured by the ratio of turnover to stock returns (liquidity ratio 1) with bonus issues although the liquidity reduces within the announcement week followed by an erratic increase with the first three post-issue weeks. While this is also indicated by the flow ratio, the announcement week had the highest liquidity which reduces gradually with time. However, the finding of the two ratios were contracted by the liquidity ratio 3 which indicated the stocks exhibiting low liquidity with the announcement period but improved after the first three post announcement weeks.

The study also established a moderate association between flow ratio as a measurement of stock liquidity and bonus issue at $R = 0.465$ ($p < 0.05$). Further, Analysis of Variance showed a significant relationship between bonus issue and stock liquidity (flow ratio) for Financial Sector ($p = 0.003$) and Industrial and Allied Sectors ($p = 0.004$) while for Commercial Sectors liquidity ratio 3 was the most significant measure of liquidity ($p = 0.023$). Besides these, conducting a regression analysis, the study established the following

regression model (using Flow ratio) to be significant at ($p < 0.039$).

$$\text{LIQ} = 395122883.1 + 4765795011X$$

This indicates that a unit increase in bonus issue (bonus ratio) results in 4765795011 increase in liquidity as measured by flow ratio. This concurs with Njiru (2007, pp.36-37) findings that liquidity as measured by flow ratio recorded a significant change, on his study carried out to assess the changes in liquidity at the Nairobi Stock Exchange during the period January 2000 and December 2005. The study's findings also support Balachandran et.al. (2001) and Mishra (2005) studies that found evidence of positive reaction (liquidity) to bonus announcements.

5.3 Conclusions

Based on the discussions presented above, the study concludes that the stock liquidity increased with the bonus issues. This is indicated by the variances in turnover, number of transactions and prices returns after the bonus issue announcement. However, of the three measurement of liquidity (liquidity ratio1, flow ratio and liquidity ratio3), flow ratio was the most significant liquidity measure that related well with bonus issues. This brings out the challenges faced in selecting an appropriate proxy measure of stock liquidity hence the need to use several measures in the stock liquidity measurement and evaluations.

5.4 Recommendations

From the discussions above, the study recommends that the relevant stakeholders, in their evaluation of the stock market reaction to bonus issue, should consider more than one multi-dimensional measure of liquidity since not all of them would have a significant relationship with bonus issue. In this regards the study recommends flow ratio as one of

the multi-dimensional measures, which could be used to assess stock liquidity in relation to bonus issue . Njinu (2007,pp.36-37) also found the Flow ratio to have a significant correlation with bonus issues.

5.5 Limitations of the Study

The study relied entirely on secondary data obtained from NSE and is, thus, limited to the integrity of the data obtained on stock prices, trade volumes and daily number of transactions. However, NSE being the stock market upon which trading are done and reports on the same filed, the study assumes that the data so obtained is of credible and reliable.

While the study findings showed that stocks liquidity reacted to bonus issues, such increases in liquidity could have been partly caused by other information released in the market that this study did not attempt to isolate, for instance company release of annual results. This could affect the conclusions with regards to stock liquidity being influenced by bonus issues.

5.6 Areas for Further Studies

This study focused on the relationship between bonus issues and stock liquidity of firms quoted at the Nairobi Stock Exchange. While building on this study, the researcher suggests that further studies could be done on this area but in addition, attempt to isolate any other information released in the market subsequent to bonus issues to help confirm that the liquidity reaction is solely due to bonus issues related information.

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APPENDICES

Appendix A: Firms That Issued Bonus (2003 to 2009)

Company	ABBR.	Announcement Date
Barclays Bank Ltd	BBK	20-Feb-03
Diamond Trust Bank	DTB	25-Feb-03
CMC Holding Ltd	CMC	12-Jan-04
CFC Bank Ltd.	CFC	26-Feb-04
Standard Chartered Bank Ltd	SCBK	26-Feb-04
Crown Berger Ltd	CBERG	15-Apr-04
East African Breweries Ltd	EABL	27-Aug-04
Diamond Trust Bank	DTB	25-Feb-05
Nation Media Group	NMG	3-Mar-05
Standard Group Limited	SGL	31-Oct-06
Equity Bank Ltd	EQTY	13-Feb-07
TPS Serena	SERENA	23-Mar-07
East African Breweries Ltd	EABL	31-Aug-07
Mumias Sugar Company	MSC	31-Aug-07
Barclays Bank of Kenya	BBK	8-Nov-06
Jubilee Insurance Company	JUB	26-Apr-07
NIC Bank Ltd	NIC	26-Jul-07
CMC Holdings	CMC	10-Jan-08
Unga Limited	UNGA	25-Sep-08
Sasini Limited	SASINI	18-Dec-06

Appendix B: Dataset Used in the Study

	BBK 2003			DTB 2003			CMC 2004		
	Price	Volume	Transaction	Price	Volume	Transaction	Price	Volume	Transaction
week -18	83.01	16499	24	15.97	16644	1	60.83	5496	4
week -17	84.78	17600	15	16.00	16643	1	62.60	31269	2
week -16	86.54	45301	27	16.45	16642	2	65.60	13746	4
week -15	88.31	61291	30	16.93	16640	2	72.63	19072	3
week -14	90.07	30367	20	17.46	16639	2	78.00	8533	4
week -13	91.84	45301	15	18.61	16638	1	77.50	16768	3
week -12	93.60	61291	14	18.61	16636	2	76.13	6196	2
week -11	95.37	30367	18	16.45	16635	1	74.60	5436	1
week -10	97.14	25307	19	16.93	16634	2	73.50	885	1
week -9	98.90	26408	16	17.46	16632	1	69.30	1197	2
week -8	98.00	6954	18	18.61	16631	1	68.10	2581	2
week -7	101.63	3317	8	10.00	1000	2	68.70	2254	2
week -6	117.50	47339	21	11.19	41366	2	79.20	7356	3
week -5	102.80	77244	22	12.75	42171	2	84.38	581	3
week -4	106.60	13078	14	12.94	40	1	82.00	2847	2
week -3	107.60	83365	15	12.88	3046	2	81.00	167	0
week -2	107.80	23420	14	12.76	1600	1	81.00	3443	2
week -1	112.20	8506	18	12.78	13518	2	82.20	4136	4
week 0	110.80	16892	19	12.60	2232	2	82.50	7014	8
week 1	114.40	31858	16	13.70	2240	1	109.00	21753	10
week 2	118.60	48560	18	14.57	77482	2	109.00	29818	11
week 3	126.80	36868	16	15.97	6583	3	128.80	62601	11
week 4	125.00	41600	24	16.00	21146	4	137.20	27660	6
week 5	119.20	33172	15	16.45	7755	3	72.50	30691	7
week 6	122.80	24647	16	16.93	12518	2	68.75	20865	7
week 7	130.80	96552	18	17.46	32257	5	71.30	26337	5
week 8	134.50	55813	16	18.61	21262	2	72.30	9331	4
week 9	135.25	14448	15	20.34	32632	5	70.40	9654	5
week 10	136.25	63487	17	21.81	93157	4	60.70	11503	3
week 11	142.40	34604	16	24.45	83497	5	55.50	4435	3
week 12	143.40	45301	16	30.65	66344	12	53.50	1926	5
week 13	139.60	61291	27	26.80	24472	7	48.75	2732	8
week 14	143.80	30367	30	28.80	107041	10	47.55	41118	10
week 15	145.20	19216	20	22.20	303	0	54.60	19468	6
week 16	146.60	124868	18	22.75	2850	1	54.80	18950	5
week 17	140.80	136253	19	24.35	18065	2	54.50	24044	3
week 18	130.40	51274	25	21.65	8276	3	53.00	6015	2

	CFC 2004			SCBK04			CrownBerger04		
	Price	Volume	Transaction	Price	Volume	Transaction	Price	Volume	Transaction
week -18	27.50	3550	2	150.50	26332	15	33.66	8507	4
week -17	26.15	12324	3	151.20	28967	17	36.80	6487	4
week -16	25.20	4315	1	149.60	30500	12	35.58	17142	6
week -15	25.90	11037	2	149.40	38560	16	35.50	2525	1
week -14	28.15	18649	2	149.40	38832	18	38.10	17666	4
week -13	28.45	2112	1	172.20	30480	13	38.70	9880	6
week -12	28.80	25932	4	191.00	62596	24	38.15	9360	5
week -11	28.75	3180	3	183.00	49335	18	43.65	47726	8
week -10	28.75	3431	2	175.60	71830	23	43.80	12460	5
week -9	30.33	3000	1	181.00	25907	19	43.50	7553	3
week -8	32.88	1633	2	188.00	13160	8	44.10	33143	7
week -7	33.75	11721	3	191.40	35301	22	43.90	31390	5
week -6	35.45	4751	3	196.40	33111	19	43.70	25200	5
week -5	39.70	21369	3	192.00	37812	19	42.65	9740	3
week -4	55.70	83951	11	201.00	36758	15	38.50	29020	7
week -3	57.80	17063	5	200.40	46291	20	38.45	19053	5
week -2	57.70	37068	6	212.20	32044	19	38.65	21798	6
week -1	58.10	27969	7	233.80	30672	20	37.50	3693	2
week 0	59.70	54226	9	231.00	28614	14	39.44	4230	2
week 1	63.10	58926	8	217.60	32760	15	41.65	9864	5
week 2	63.00	46965	8	203.00	31440	19	35.80	90471	10
week 3	62.10	13317	5	199.60	18298	13	36.75	8157	6
week 4	59.30	8150	5	189.60	69422	13	37.05	7365	5
week 5	57.90	753	1	173.00	19985	4	36.20	12979	4
week 6	57.25	4232	2	128.25	40561	18	35.95	22230	7
week 7	57.13	86416	4	159.00	38613	13	36.50	17515	5
week 8	56.50	4039	1	147.00	22746	16	36.30	21060	4
week 9	55.50	4352	3	163.00	7039	10	33.55	2544	1
week 10	53.91	8832	4	157.80	1910	4	33.00	9000	3
week 11	55.00	3185	3	152.40	37889	9	32.05	59522	2
week 12	56.60	3320	1	155.40	26492	9	30.60	5885	2
week 13	52.70	4520	2	158.20	78302	12	28.75	7584	3
week 14	51.63	13317	2	156.75	8635	9	29.95	6955	4
week 15	49.10	7316	3	150.60	22678	15	27.90	3229	3
week 16	47.90	4858	4	148.80	30881	10	28.60	39681	2
week 17	46.55	6993	2	142.60	15663	17	30.95	4265	3
week 18	45.85	3441	3	133.00	37743	24	29.65	2480	2

	EABL 2004			DTB 2004			NMG 2005		
	Price	Volume	Transaction	Price	Volume	Transaction	Price	Volume	Transaction
week -18	452.85	21802	9	29.33	30277	5	181.39	33256	4
week -17	480.00	26346	8	29.70	25911	7	176.00	22338	3
week -16	456.00	3690	7	29.30	29659	4	178.40	41672	4
week -15	424.00	30615	9	29.20	28364	4	177.40	47945	6
week -14	423.00	5954	6	28.60	8084	4	185.60	6082	4
week -13	414.80	36304	13	27.40	10240	2	190.00	8801	5
week -12	413.75	72774	11	27.30	36106	6	189.80	11875	5
week -11	411.80	24436	7	29.75	17014	5	189.00	8160	3
week -10	438.80	28477	7	28.80	8640	5	180.00	15735	4
week -9	445.20	7399	6	28.25	6281	3	168.75	22004	4
week -8	444.80	10029	7	27.75	1878	2	179.80	15129	4
week -7	444.60	72248	8	28.25	2374	2	197.40	44276	7
week -6	445.80	87702	9	31.85	15247	6	187.80	5325	5
week -5	449.00	53937	9	31.70	14837	3	186.00	3441	2
week -4	459.40	24953	9	30.65	1527	2	186.00	112	0
week -3	477.00	17225	7	29.70	9460	3	189.00	458	1
week -2	482.60	24623	9	30.00	18618	4	190.40	2093	1
week -1	495.00	90697	11	28.95	39165	5	195.20	48951	4
week 0	502.40	26282	14	29.15	53532	3	197.20	15611	3
week 1	510.20	32182	13	33.80	10525	3	218.60	11758	7
week 2	510.20	51040	20	36.40	19029	8	224.80	14726	9
week 3	509.60	7299	14	34.00	10123	6	224.75	54349	10
week 4	510.00	30891	15	33.10	14977	6	230.75	7468	8
week 5	518.40	16730	13	33.55	71750	9	230.40	12441	11
week 6	527.25	16664	16	34.55	68796	10	228.60	9602	9
week 7	458.00	14913	10	34.10	148751	9	227.40	17535	10
week 8	459.25	11368	8	34.20	14995	6	233.20	18964	7
week 9	468.80	26366	9	34.35	20660	9	240.00	27786	17
week 10	496.20	20741	13	35.50	41626	12	241.40	28085	18
week 11	490.60	14391	13	35.95	37277	15	188.80	13004	8
week 12	489.80	29649	14	37.65	45299	15	194.60	49343	13
week 13	509.80	48938	30	32.20	71434	13	202.25	35965	11
week 14	111.40	134729	39	27.60	11170	5	201.80	52729	8
week 15	104.60	244211	33	27.40	14062	4	200.60	49666	12
week 16	103.00	220158	20	27.55	39678	9	198.20	27666	9
week 17	97.70	238132	23	28.95	13076	7	199.00	8318	6
week 18	99.00	24472	9	28.60	27023	6	196.80	37760	8

	Standard 06			Equity 07			Serena 07		
	Price	Volume	Transaction	Price	Volume	Transaction	Price	Volume	Transaction
week -18	36.00	6000	4	132.67	32183	34	86.75	19684	25
week -17	35.65	1600	2	127.50	49815	38	61.6	226623	33
week -16	34.75	4350	4	129.20	105531	41	86.6	65465	28
week -15	35.20	5830	3	141.00	201019	74	85.3	17287	19
week -14	35.50	3686	3	139.00	82400	49	88.75	69775	24
week -13	35.90	9523	5	140.40	99368	41	86	21448	18
week -12	62.00	33733	6	135.20	34066	24	87	7193	16
week -11	42.15	35318	16	136.20	56914	31	86.75	49308	23
week -10	41.85	28301	15	134.20	71851	28	87.4	44454	34
week -9	42.15	13239	7	133.00	107540	33	96.3	76859	59
week -8	43.10	6457	4	136.40	28680	20	93	38246	32
week -7	49.25	14440	12	136.67	75694	24	89.5	48493	26
week -6	58.20	53299	45	151.50	25639	31	88.5	16601	27
week -5	53.60	12076	23	207.40	147000	114	91	46077	23
week -4	52.60	21984	20	198.00	117906	100	88.2	26808	23
week -3	52.25	17375	15	208.20	144195	92	81.5	19704	13
week -2	52.25	6189	6	210.20	112226	76	83.4	10778	15
week -1	53.10	7774	8	219.00	173980	97	80.4	36892	16
week 0	63.30	51097	45	234.00	271796	153	76.7	16530	16
week 1	59.90	36376	27	201.20	126441	114	83.4	41024	22
week 2	58.60	6158	11	216.40	79462	79	83.25	48167	21
week 3	57.40	10896	11	230.20	51740	70	81.375	69716	19
week 4	55.80	12340	11	237.80	65891	83	85.5	40080	24
week 5	53.20	18100	11	226.20	79331	126	85.5001	135410	21
week 6	57.75	7230	7	238.40	129460	175	86.875	41744	22
week 7	60.30	11193	10	271.00	168741	274	86	16711	17
week 8	66.50	6020	8	87.13	120650	144	85.8	51554	25
week 9	64.88	19600	27	78.90	193510	103	85.1	108553	36
week 10	69.80	27120	29	89.30	436343	193	84.75	67430	43
week 11	68.70	18959	29	90.13	383916	153	86.4	69175	63
week 12	68.30	10674	18	91.90	386541	127	73.9	18828	24
week 13	67.60	11322	15	96.90	393150	125	73.7	26060	21
week 14	64.10	8580	15	108.40	416852	175	73.8	31296	14
week 15	68.50	2928	51	110.75	297288	170	74.8	27530	16
week 16	71.66	10891	33	127.80	518902	184	76.5	25882	21
week 17	72.85	10634	35	132.20	410169	198	77.1	20981	14
week 18	74.05	10377	37	137.33	406947	188	84.2	51222	29

	EABL 07			Mumias 2007			BBK 2006		
	Price	Volume	Transaction	Price	Volume	Transaction	Price	Volume	Transaction
week -18	144.5	107705	24	27.25	311833	184	271.00	90345	27
week -17	144.75	100756	41	25.94	321609	177	271.60	32706	31
week -16	144.6	343100	31	24.85	389050	197	272.80	33111	34
week -15	144	646623	37	26.45	637008	166	273.60	21274	31
week -14	143	115695	30	26.75	306636	171	275.80	26607	25
week -13	143.5	732461	31	26.44	502082	161	284.40	67028	30
week -12	144.2	82728	31	26.20	304138	173	292.20	24701	39
week -11	145.2	84490	36	26.90	425569	176	300.00	94965	54
week -10	147.4	29412	23	26.60	512648	175	304.60	37406	34
week -9	151.6	120319	30	26.95	726716	240	302.20	87282	57
week -8	152.2	62960	36	28.85	414728	230	315.00	42097	41
week -7	150.6	110482	33	31.25	576970	265	330.00	50098	73
week -6	150.60	79402	22	30.30	365422	213	325.60	70487	50
week -5	153.6	49818	27	31.35	339387	171	330.60	30232	60
week -4	152.6	94806	19	31.85	344722	151	337.25	61494	48
week -3	152.8	129584	29	30.75	420811	160	348.00	54798	73
week -2	154.6	247998	37	30.95	407066	239	431.60	104252	153
week -1	155.2	311163	45	30.75	356892	206	442.80	169784	125
week 0	158	95318	42	36.00	1673567	284	507.20	336952	191
week 1	171.2	215170	72	42.20	1097660	533	531.80	209166	196
week 2	177.4	124323	71	41.60	910623	654	594.20	173359	210
week 3	177.8	91452	62	43.50	739275	602	384.20	106352	160
week 4	173.8	108363	60	39.35	803022	570	79.20	156528	161
week 5	171.8	72512	50	35.53	638767	469	76.13	235080	179
week 6	174.5	153303	92	37.69	660146	435	68.50	351208	326
week 7	143.8	168153	63	42.25	1362989	581	72.17	394801	286
week 8	139	215389	40	41.85	1052964	741	88.50	787043	646
week 9	145.4	445628	37	43.20	1846265	1280	84.90	830922	849
week 10	149.6	343452	58	13.94	1264415	558	79.80	640871	639
week 11	150	228372	53	13.33	764527	438	77.30	627626	535
week 12	157	426313	66	13.71	1566514	384	78.90	626017	502
week 13	139.7	429718	52	14.37	1521630	614	77.60	446836	645
week 14	136.3	466886	51	11.08	1603765	616	78.40	420008	455
week 15	133.0	504054	50	13.94	1685900	617	76.10	508327	528
week 16	129.6	541222	49	13.33	1768035	619	66.00	391894	349
week 17	126.2	578390	48	13.71	1850170	620	66.50	550416	444
week 18	122.8	615558	47	14.37	1932305	622	67.10	703676	274

	Jubilee 07			NIC 07			CMC 2008		
	Price	Volume	Transaction	Price	Volume	Transaction	Price	Volume	Transaction
week -18	292.50	2300	7	79.00	12400	19	15.88	868754	209
week -17	316.00	4974	12	86.50	23211	31	15.93	841951	201
week -16	330.25	8138	17	96.50	35920	26	15.97	815148	194
week -15	344.40	22809	22	94.63	14693	27	16.01	788345	187
week -14	318.60	11931	13	92.30	27263	23	16.06	761542	179
week -13	305.20	8102	12	91.80	17250	16	16.68	505580	129
week -12	287.40	8940	8	92.00	17643	20	16.94	756060	212
week -11	298.20	6667	12	91.90	40872	16	17.36	1160760	222
week -10	311.80	5640	6	97.10	92760	19	16.44	1042980	229
week -9	311.80	8710	12	97.90	27196	18	15.90	347040	90
week -8	275.80	9730	8	96.00	32651	17	14.39	283600	99
week -7	260.20	7794	10	98.90	25896	21	15.86	797798	107
week -6	229.20	4800	7	103.80	32036	24	15.68	386380	97
week -5	205.20	48960	10	111.20	33506	44	15.47	295320	63
week -4	214.20	27464	7	104.80	13470	22	15.99	274260	68
week -3	241.50	10925	13	109.00	17934	18	17.14	585205	98
week -2	261.00	91300	11	108.80	20398	22	16.65	256360	68
week -1	243.20	4911	7	107.40	23291	27	16.62	124533	24
week 0	259.25	19258	13	120.20	62897	59	18.34	1031396	223
week 1	260.25	5919	9	151.60	107888	105	18.52	937100	286
week 2	253.00	8006	9	156.60	95729	92	18.34	993140	260
week 3	248.20	3011	9	159.00	78450	103	17.19	1017980	248
week 4	248.60	11356	13	158.00	102582	112	14.05	213940	63
week 5	247.75	5235	8	159.40	105078	90	14.33	473378	111
week 6	250.00	8412	16	170.40	46826	93	14.22	545411	110
week 7	265.20	3938	14	186.80	60912	118	14.32	679920	101
week 8	276.00	11620	20	188.40	32688	85	15.37	1378244	192
week 9	265.40	21907	28	185.00	60986	72	14.76	745020	145
week 10	230.80	18336	13	178.40	61778	107	14.18	322165	123
week 11	231.00	5500	9	146.50	29203	44	14.20	264594	65
week 12	231.20	7640	11	158.60	43506	36	14.26	639501	69
week 13	234.20	6490	9	172.20	20129	58	14.33	345840	61
week 14	234.20	4160	6	163.75	22044	68	14.78	364164	80
week 15	234.00	1973	4	171.80	25986	37	15.09	537718	79
week 16	219.00	14740	10	168.20	12672	20	16.73	1143754	148
week 17	217.20	16141	11	164.40	17562	41	18.07	2007403	273
week 18	224.00	21250	16	160.70	11002	20	18.81	1154792	222

	Unga 2008			Sasini 2006		
	Price	Volume	Transaction	Price	Volume	Transaction
week -18	14.13	17150	6	29.75	21016	8
week -17	13.71	8830	8	30.20	12769	7
week -16	13.96	8800	4	30.90	21861	9
week -15	14.17	8724	5	34.80	259698	21
week -14	13.70	14047	9	45.35	44369	28
week -13	13.74	4420	6	50.20	216325	60
week -12	13.60	3520	5	46.80	75768	39
week -11	12.80	12960	8	53.80	198302	43
week -10	12.56	7744	6	59.88	106038	44
week -9	12.57	9071	5	57.13	100120	54
week -8	12.22	4004	4	69.50	117174	50
week -7	11.70	18528	8	104.90	413749	106
week -6	11.60	6298	7	130.20	413406	153
week -5	11.95	53244	8	116.80	132451	59
week -4	11.67	21970	11	127.00	78732	27
week -3	11.47	13724	9	126.00	123484	26
week -2	12.22	27600	5	123.20	121824	40
week -1	10.40	27009	9	135.25	251966	52
week 0	11.51	31665	9	151.20	158190	62
week 1	13.98	45990	24	139.67	30933	26
week 2	13.59	14554	15	139.50	76386	50
week 3	13.00	16060	9	143.00	151251	75
week 4	12.11	10825	6	145.80	134379	60
week 5	12.05	8820	7	142.60	11796	29
week 6	12.73	23160	11	139.20	25068	38
week 7	13.02	14241	9	132.80	37945	51
week 8	13.15	13580	13	84.80	20680	45
week 9	13.07	6251	9	21.68	111099	72
week 10	12.99	1380	3	22.50	89988	111
week 11	12.64	3610	6	17.02	83120	94
week 12	12.47	6700	6	17.52	80039	99
week 13	13.33	7478	7	15.83	54804	66
week 14	13.60	8880	9	17.24	86740	53
week 15	12.20	6092	7	20.28	84153	76
week 16	10.65	8911	7	20.94	144150	168
week 17	9.11	7557	6	19.24	49812	82
week 18	8.94	14250	7	19.24	32770	41