THE RELATIONSHIP BETWEEN STOCK SPLITS AND LIQUIDITYOF COMPANIES LISTED AT THE NAIROBI SECURITIES EXCHANGE

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DECLARATION

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The research project is my original work and has not been submitted for any award in the University.

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This research project has been submitted for examination with my approval as the university supervisor

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DEDICATION

I dedicate this work to my parents Peter and Marcella Onyango. The rock solid upbringing that you have given me has made me strong enough to push away any boulder that comes in the path of my life. I thank you for all the sacrifices you have made for me.

ABSTRACT

Stock splits have attracted the attention of scholars and practitioners for a long period. A great deal of discussions have been done on this phenomena that has at times been called a cosmetic accounting change with no direct cost or benefits. Researchers and academicians have termed the prevalence of splits as paradoxical because they have clear costs such as listing fees, administrative costs and brokerage commissions yet no obvious economic benefits in terms of favorable impact on future cash flows. However various studies have shown that this corporate event exerts influence on various stock's characteristics like liquidity and rates of return as measured by different proxies. The prime concern of this study was to examine the effect of stock splits on liquidity of firms listed in the Nairobi Securities Exchange. The measurement for liquidity used is the Amihud's Illiquidity ratio. The ratio defined here as the average ratio of the daily absolute return to the (shilling) trading volume on that day. This ratio gives the absolute (percentage) price change per shilling of daily trading volume, or the daily price impact of the order flow. The trend analytical design which is a practice of collecting information and attempting to spot a pattern or trend in information was employed to determine the relationship between stock split and liquidity. To achieve the objective of the study, a census study was done, drawing from thirteen companies listed in the Nairobi Stock Exchange and which had undergone a stock split in the period 2004 to 2012. The data used was secondary data which was obtained from the Nairobi Securities Exchange. The study made use of stock prices and trading volume data for the event window of 61 days, consisting of 30 days before the stock split date and 30 days after the stock split date. The study found out that generally stock split resulted in a decrease of liquidity in the NSE as opposed to the liquidity and trading range hypotheses. Liquidity of stock was found to be generally higher in the days before the stock split than in the days after the stock split. The aggregate liquidity for the month before the stock split was found to be higher than the month after the stock split.

Table of Contents

LIST OF TABLES

LIST OF ABBREVIATIONS

AMEX: American Stock Exchange

BSE: Bombay Stock Exchange

CBK: Central Bank of Kenya

CMA: Capital Markets Authority

FSE: Frankfurt Stock Exchange

KCB: Kenya Commercial Bank

KENOL: Kenya Oil Limited

KPLC: Kenya Power and Lighting Corporation

MBA: Master of Business Administration

NASDAQ: National Association of Securities Dealers Automated Quotations

NSE: Nairobi securities exchange

NYSE: New York Securities Exchange

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

There are several hypotheses that have been advanced to articulate what motivates companies to split their stock. Key ones that have been mentioned are to achieve an optimal tick size, to positively signal a firm's future prospects and to achieve an optimal price range to boost liquidity (Aduda and Chemarum, 2010). Gitman (2006) contends that stock splits are often made prior to issuing additional stock to enhance stocks marketability and stimulate market activity.

Megginson, Smart and Gitman (2007) indicate that managers who implement stock splits do so to try and reduce the per share price of the firm's stock back within a standard trading range desired by individual investors. Grinblatt *et al*. (1984) argued that stock splits are no more than a cosmetic accounting change with no direct cost or benefits. From the above inferences it is worth noting that stock splits continue to generate interest geared to an understanding of why firms undertake such decisions. The prime concern of this study is to examine the effect of stock splits on liquidity of firms listed in the Nairobi securities exchange.

1.1.1 Stock Splits

Fama *et al*. (1969) defined stock splits as an exchange of shares in which at least five shares are distributed for every four formally outstanding. Gitman (2006) defined a stock split as a method commonly used to lower the market price of a firms stock by increasing the number of shares belonging to each shareholder. He further points out that stock can be split in any way and as such talked about reverse stock split; which he defined as a method used to raise the market price of a firm's stock by exchanging a certain number of outstanding shares for one new share. For example in a 1-for-3 split, one new share is exchanged for three old shares.

Dhar and Chhaochharia (2008) argued that stock splits simply involve a company altering the number of its shares outstanding and proportionately adjusting the share price to compensate. They pointed out that a split could occur at any ratio. For instance after a two for one (2:1) split, each shareholder has twice as many shares but each represents a claim on only half as much of

the corporations assets and earnings. They further noted that the balance sheet items remain the same except that the total number of outstanding shares of the company increases proportionately to the ratio of the split. Although stock splits are normally categorized as other forms of paying dividends it is different from stock dividends. Nkonge (2010) pointed out that the difference between stock splits and stock dividends presents itself in the accounting treatment. Stock dividends are distributed from the retained earnings however stock splits have no effect on distributable equity. Bechmann and Raaballe (2004) found that while stock dividends and stock splits are closely related to changes in a firm's payout policy, stock dividends imply an increase in nominal share capital and hence a decrease in retained earnings. On the other hand for stock splits, no separate announcement effect was found when a firms payout was controlled for and therefore just a mere cosmetic event.

1.1.2 Liquidity

Liquidity is generally defined as the degree to which an asset or security can be bought or sold in the market without affecting the assets price. In the context of securities, liquidity is a high level of trading activity allowing buying and selling with minimum price disturbance. Pettit *et al*. (2005) argued that from an investor's perspective, stock illiquidity makes it difficult to enter or exit a position without affecting price. Illiquidity thus creates practical limitations and inefficiencies for investors that can ultimately manifest in unusual ownership profiles and trading patterns, a high bid-ask spread, a higher cost of equity, a lower stock price and difficulties with market access.

Simbovo (2006) defined liquidity as the ability to buy or sell large quantities of an asset quickly and at the low cost. He stated that both investors and borrowers are typically concerned about liquidity. Investors desire liquidity because they are uncertain about when they will want to eliminate their holding of a financial asset. Borrowers on the other hand are concerned about liquidity because they are uncertain about their ability to raise funds needed unexpectedly or because they are uncertain about their ability to continue to retain funding in the future.

Wulff (2002) found that there are three measures of trading activity employed to examine liquidity changes and these are; volume which is the (split-) adjusted daily number of shares

traded, the volume turnover defined as raw (unadjusted) volume divided by shares outstanding and the percentage of days with trade.

Goyonke *et al*. (2006) argued that liquidity is a multi-dimensional concept. On one hand it is the average cost of trading as measured by the percent quoted (or effective) spread. Another dimension is that it is the quantity that can be traded at a given cost as measured by depth of the market. A third way to define liquidity is that it is the speed as measured by the time from order submission to order execution.

1.1.3 Stocks Splits and Liquidity

A number of hypotheses have been developed in literature to explain the stock split behavior. While some theories see stock splits as irrelevant in explaining liquidity, others show an inverse relation between stock splits and liquidity. Crawford *et al.* (2005) put forth the liquidity hypothesis which states that the splitting of stock increases its market liquidity and will thus attract more small investors. Copeland (1979) advanced the notion that a stock splits resulted in a more optimal price, which increased demand for the stock and in turn improved liquidity. Empirically, it has been found that stock splits and liquidity have some kind of interdependence. As a matter of fact, empirical evidence on the effect of stock splits on liquidity is mixed. Using trading volume as a proxy for liquidity, Murray (1985) found no change in volume while Lamoreux and Poon (1987) found a decrease in split- adjusted volume in the aftermath of a stock split. While using Trade activity ratio as a proxy for liquidity, Simbovo (2006) reported improved liquidity after the split compared to before the split.

1.1.4 Nairobi Securities Exchange

The Nairobi Securities exchange (NSE) was established in 1954. It is headquartered in Nairobi the capital city of Kenya. It serves as a market that deals in exchange of securities issued by publicly quoted companies. The stock exchange assists in transfer of savings to invest in productive enterprises as an alternative to avoid idle savings. The market is regulated by the Capital Markets Authority (CMA). The regulation authority was established to regulate and oversee the orderly development of Kenya's capital markets. The listed companies are divided into agricultural, commercial & services, telecommunications & technology, automobiles &

accessories, banking, insurance, investment, manufacturing and allied, construction and allied, energy and petroleum and growth market enterprise segments. (NSE handbook, 2012)

The first stock split that took place in the NSE was by the Kenya Oil Limited (KENOL) in the year 2004. To the period 2012**,** twelve other companies undertook stock splits namely, Nation Media Group, Kenya Commercial bank (KCB), CMC Holding limited, Sasini Limited, Centum Investments formerly I.C.D.C Limited, Barclays bank of Kenya Limited, East African Cables Limited, Kenya breweries Limited, Kenol Kobil Limited, Kenya Power and lighting Company (KPLC), Athi River Mining Limited and Equity Bank of Kenya.

Sarr and Lybek (2002) contend that one of key market specific factor affecting liquidity is the market trading system in terms of whether it is electronic or floor trading system. The Nairobi Securities Exchange marked the first day of automated trading in government bonds through the Automated Trading System (ATS) in November 2009. The automated trading in government bonds marked a significant step in the efforts by the NSE and CBK towards creating depth in the capital markets by providing the necessary liquidity. *(NSE Database)*

1.2 Research Problem

The effect of share splits on liquidity is of significance importance. The expected relationship between stock splits and liquidity is that stock splits improve the liquidity of stock. Since the seminal paper by Fama *et al.* (1969), several theories have been advanced to try and explain why stock splits are initiated by managers. Copeland (1979) advanced the notion that stock splits changed stock prices to an optimal price leading to an increase in demand and subsequently liquidity. Crawford et al (2005) put forth the liquidity hypothesis and argued that splitting of stocks increased their market liquidity and attracted more small investors. Brennan and Copeland (1988) proposed the signaling hypothesis which stated that stock price reduction resulting from stock split conveyed managers' conviction of rising future earnings.

Empirical studies on the impact of stock split on liquidity vary a lot. Wulff (2002) carried a research on the market reaction to stock splits in the German stock market and found that there was a significant increase in liquidity after the split. Dennis (2003) studied how stock splits affected liquidity for the nasdaq-100 index. He found that the frequency, share volume and dollar volume of small trades were all increased after the split, indicating that stock split improved

liquidity. Dash and Gouda (2009) in studying the liquidity effects of stock splits in the Indian market found strong evidence for an increase in liquidity of the stock after the split.

To the contrary however, Goyonke et al. (2006) noted that there was worsening liquidity of split firms, which was temporary and was experienced within the first nine to twelve months. Copeland (1979) while using trading volume as a proxy to liquidity found that there was a decrease in split adjusted volume following a stock split. Murray (1985) reported no change in volume. Rudnicki (2012) examined the behavior of share volume following stock splits in companies listed in the New York stock exchange (NYSE) and observed deterioration in liquidity as measured by trading volume following as stock split.

Stock splits in the Nairobi Securities Exchange can still be termed as a relatively new phenomena as to the period 2012 only thirteen stock splits have taken place. Few studies have been done to examine the effect of stock splits on liquidity in the NSE. Simbovo (2006) examined the effect of stock splits on liquidity at the NSE using the trading activity ratio as a proxy for liquidity and noted an increase in liquidity after splits. Aduda and Chemarum (2010) investigated market reaction to stock splits in the NSE and found that in general there was an increase in volume of shares traded around the stock split suggesting an increase in liquidity. Muasya (2010) studied the relationship between bonus issues and stock liquidity of firms listed in the NSE and found a positive liquidity reaction to the information content of bonus issues. Omenda (2011) investigated the effect of stock splits on liquidity in the NSE and found that generally the liquidity of stock as measured by the Amivest liquidity ratio is higher in the days before the split than in the days after the split. Generally the aggregate liquidity in the month before the split was found to be higher than in the month after the split.

The studies done in the Kenyan Stock market have however been too few to give conclusive results on the effect of stock splits on liquidity. Empirical studies carried out have also brought mixed results. In this study the illiquidity ratio by Amihud (2002) will be used to examine the relationship between stock splits and liquidity in the NSE. The ratio defined here as the average ratio of the daily absolute return to the (shilling) trading volume on that day. This ratio gives the absolute (percentage) price change per shilling of daily trading volume, or the daily price impact of the order flow. Unlike the Amivest liquidity ratio (the ratio of the sum of the daily volume to the sum of the absolute return), Amihud's measure has the intuitive interpretation of measuring

the average daily association between a unit of volume and the price change. Unlike the Trading activity ratio used to study liquidity at the NSE, Amihud's measure is a multi-dimensional measure of liquidity incorporating price and volume traded as variables.

1.3 Research Objective

The objective of this study is to establish the effect of stock split on liquidity in companies quoted at the NSE.

1.4 Value of the study

The study will be of great value to;

1.4.1 Management

The study offer managers a key insight regarding how their firm's stock liquidity may be affected by a decision to undertake a stock split. It may also provide managers with suggestions for confidence signaling and how to increase the shareholder base.

1.4.2 Government

For the government, the results of the study would be important as they will be incorporated in fiscal policies relating to stock splits.

1.4.3 Investors

Individual and institutional investors, current and potential need to understand the impact of stock splits on liquidity. This understanding will enable them to make rational decisions in an attempt to profit out of the stock split event.

1.4.4 Scholars and Academicians

The study may be important to scholars and academicians who may wish to use the findings of this study as a basis for further research. It will help in contributing to the intellectual knowledge and address gaps that could have been left by previous researchers. Additionally it will contribute to the already existing findings.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

A substantial number of studies have attempted to develop theoretical and empirical works to understand the relationship between stock splits and liquidity. This section reviews the theoretical framework of Stock splits, the empirical studies on the same and finally provides a summary of the literature review.

2.2 Theoretical Review

There exist different theories that attempt to explain the phenomenon of stock splits. The most common theories used to explain why companies split their stocks include signaling managements' confidence in future stock price, achieving an optimal tick size and an optimal range for liquidity.

2.2.1 Optimal Trading Range Hypothesis

The optimal trading range hypothesis states that investors, either consciously or subconsciously, seek out stocks that trade within a certain range. If a stock passes the upper limit of this range, most of the time the firm in question will declare a stock split to once again bring down the share price to the "optimal range". Copeland (1979) advanced the hypothesis that a stock split changed stock prices to a more optimal price, resulting to an increase in demand for stock. Carroll (2010) argued that the optimal trading range is largely psychological, as investors with a limited amount of funds to invest would prefer to receive more stock shares than fewer, even though the amount invested would be the same.

According to Amihud and Mendelson (1986), a positive relationship exists between equity value and liquidity. They argued that rational investors discount illiquid shares more heavily than liquid shares because of the higher transactions costs associated with illiquid shares. Conroy and Harris (1999) concurred with the optimal price range hypothesis and noted that when a stock became too expensive, a split moved it back to the optimal price range. Lamoreux and Poon (1987) agreed with the optimal price range hypothesis noting that the managers expected stocks

trading at lower prices to be generally more liquid and to attract a larger pool of investors. Since the lower stock prices were more attractive to minority shareholders, managers therefore made use of stock splits to extend their shareholder base.

2.2.2 Positive Signaling Hypothesis

Positive signaling hypothesis states that investors tend to view a stock split as a positive signal for a company's future prospects and will tend to purchase these shares, thereby creating a rise in stock price. Fama *et al.* (1969) found that the market uses the announcement of a split to re-evaluate the stream of expected income from the shares suggesting that a company could reduce any information asymmetries that might have existed between stockholders and management. Brennan and Copeland (1988) built on Fama *et al.* (1969) findings. They came up with the signaling model of splits and found that management is able to communicate its private information about the firm's prospects to investors by means of a stock split announcement because the cost of trading depends on the stock price.

Elfakhani and Lung (2003) demonstrated that company executives may use stock splits to signal private information to investors regarding a positive change in a firm's value. They found that the rationale is that executives will only proceed with a stock split if they believe that the firm will perform well in the future. If the companies' future prospects are not promising, their executives will not incur administration expense of a stock split and have the stock price decline. Carroll (2010) argued that according to the signaling theory, for content signal to be credible, there must be a penalty associated with sending a false signal. Previous "false signalers" tend to experience a less positive market response the next time a stock split is declared. Also, the market tends to use previous split experience to interpret the current split and that post-split stock price response depends on earnings realizations after previous splits.

Ikenberry *t al.* (1996) pointed out that pessimistic managers were less likely to undertake a stock split, fearing that the post-split stock price may fall below an acceptable level. Therefore there could be a self selection bias present in that managers optimistic about their companies' future performance will choose to split the stock. Benartzi *et al.* (2007) pointed that managers split their stocks only if it considered the current level of stock and earnings to be permanent. Easley *et al.*

(2001) observed that investors view stock splits as a tool that can reduce informational asymmetries.

2.2.3 The Optimal Tick Size Hypothesis

Angel (1997) came up with the market –maker hypothesis, which suggested that companies strived for an optimal tick size. The tick size was the minimum change in share prices. He argued that if there was a constant absolute tick size, the management could influence the relative tick size through a stock split. Aduda and Chemarum (2010) point out that most equity markets had rules on tick size; the minimum price variation. Therefore, the primary difference between equity markets was whether they used a single absolute tick size that applied to most stocks, or a tick size set that was a function of stock prices.

Angel (1997) noted that the minimum price variation rules determined the minimum bid-ask spread that could be quoted. No quoted spread could then be less than the minimum price variation. Larger tick sizes were found to make trading expensive, especially for small traders. Admati et al (1989) also noted that the relative tick size was influential on trading decisions and could even affect stock variation. They further noted that the optimal tick size is designed to minimize losses to noise traders. Schultz (2000) agreed with the optimal tick size hypothesis and suggested that if there was an absolute constant tick size on the stock exchange, a company's management could influence the relative tick size relative to the stock price through a split. The tick size was then important in that a high tick size was conducive for market making, and it made it more profitable.

2.2.4 Neglected Firm Hypothesis

This hypothesis suggests that a stock split is a way of drawing attention of the market by a firm which feels that they are undervalued in the market because of the negligence of the market participants. Omenda (2011) points out that neglected firms are usually the small firms that analysts tend to ignore. The smaller firms may have fewer announcements published in the financial press. Therefore split announcement is meant to create greater interest than it would in the case of larger firms. Arbel & Swanson (1993) came up with the hypothesis and it states that

if there is little known information about a firm, its shares will trade at a discount. Therefore many of the firms' managers use stock splits to attract attention to the stock in question.

2.2.5 Other Hypothesis

Many hypotheses have been advanced to explain stock splits. Apart from the four clearly explained above, we have the liquidity hypothesis. This was proposed by Crawford *et al.* and states that splitting of stock increases its market liquidity and will thus attract small investors. Ikenberry et al (1996) advance the self selection hypothesis. It states that if managers for some reason are motivated to undertake splits to maintain some trading range, yet also perceive it is costly for stock prices to trade below some level, the decision to split will be made conditional of management's assessment of the future performance. Those managers with optimistic expectation voluntarily self select and proceed with the split transaction while those managers who are less optimistic refrain from doing so. Lastly we have the retained earnings hypothesis which states that that since stock split reduces retained earnings per share, manages are seen as being confident that they would be able to replenish earnings per share in the future with increased earnings (Lyroudi *et al.* 2006).

2.3 Dimensions and Determinants of Liquidity

Von Wyss (2004) argued that the concept of liquidity can be explained in different dimensions. These include;

2.3.1 Trading Time

Trading time or immediacy, referring to the ability to execute a transaction immediately at the prevailing price. The measures of trading time are the number of trades per time unit or the waiting time between subsequent trades.

2.3.2 Tightness

Tightness, referring to the ability to buy and sell an asset at about the same price at the same time. This shows the costs associated with transacting or the costs of immediacy. Measures of tightness are the different versions of spread which seek to show by how far the bid ask prices diverge from the mid market prices.

2.3.3 Depth

Depth, which is the ability to buy or sell an amount of asset without influence on the quoted price. It denotes either the volume of trades possible without affecting prevailing market prices or the amount of orders on the order-books of market- makers at any given time. (Chabchitrchaidol et al., 2005)

2.3.4 Resilience

Resilience, referring to the ability to buy or sell a certain amount of an asset with little influence on the quoted price. Resiliency measures the speed with which price fluctuations resulting from trades reconverge. Chabchitrchaidol (2005) argued that resiliency referred to the speed with which price fluctuations resulting from trades are dissipated, or the speed with which imbalances in order flows are adjusted.

2.4 Determinants of Liquidity

Cheng (2007) showed that factors determining stock liquidity include firm size, ownership structure, trade margin utilization, market liquidity and absorption levels of investor perception. Firm size is positively related to liquidity. The liquidity of an individual stock is positively related to the liquidity of the entire market. Sarr *et al*. (2002) argued that the design of the trading systems can affect the degree of market liquidity; for example if a trading system favours electronic trading to floor trading, then trade tends to be less expensive, more transparent and operationally efficient leading to higher market liquidity. Investor perception influences liquidity in that, the more investors perceptions are absorbed, the higher the stock liquidity will be. The higher the margin trading utilization is, the higher the stock liquidity.

2.5 Empirical Literature

There has been considerable empirical research that attempt to explain the phenomenon of stock splits. In particular, some of these revolve around the impact on liquidity. Copeland (1979) investigated a random sample of 25 companies from the NYSE that had conducted stock splits between 1963 and 1974. Assessing the impact of adjustment in trading volumes to new information, the effect of stock splits on brokerage commission and taxes paid by small investors

and pre-split and post split bid- ask behavior of stocks, He found that there was a permanent decrease in relative liquidity following the split.

Lamoureux and Poon (1987), studied Market reaction to stock splits in the NYSE and American Stock Exchange (AMEX). They used a sample of 217 stocks covering the period between January 1962 and June 1985. Researching on the trading range hypothesis, where managers split their stock following a major increase in price with an aim of bringing it down to a tradable range, they realized that the managers' expectation was that stocks trading at lower prices were generally more liquid and attracted a larger pool of potential investors. Managers then made use of stock splits to extend their shareholder base since the lower stock prices were more attractive to minority shareholders.

Lakonishok and Lev (1987), investigated the reason why firms split their stock or distributed stock dividends in the NYSE. They used a sample of 1015 stock split events and 1257 stock dividend events covering 22 year period from 1963-1982. Rendering support to trading range hypothesis, they found that stock splits are mainly aimed at restoring prices which increased considerably during an unusual growth period, to a normal range, defined in terms of market and industry-wide price averages of firm specific prices.

Lamoureux and Poon (1987), studied Market reaction to stock splits in the NYSE and American Stock Exchange (AMEX). Using a sample of 217 stocks covering the period between January 1962 and June 1985. Examining stock split effect on liquidity as measured by the dollar trading volume, they found that liquidity is generally reduced by a split and increased by a reverse split, but there was no indication that the market attaches any value to this change in liquidity.

Brennan and Copeland (1988) studied stock splits, stock prices and transaction costs in the NYSE. They sampled 967 companies that split their stock from 1967-1976. They found that the number of shares outstanding after the split, and therefore the target price, provides important new information to investors and that the split factor itself is not important. Supporting their signal model, they find that stock splits are able to signal managerial information about the prospects of the firm precisely because of the influence of the stock price on the cost of trading.

Maloney and Mulherin (1992) examined 446 stock- splits events of companies listed on NASDAQ. They investigated the behavior of the stock split and liquidity around announcement

date as well as the execution date. They found that the absolute bid-ask spread narrow but the relative spread heads towards highs. They also observed that there was improved trading volume along with daily trading activity after the split. They concluded that the changes in various measures of liquidity are linked to ex-day price movements. In summary, they observed improved liquidity after the stock split.

Ikenberry et al. (1996) examined a sample of 1275 two for one splits by the NYSE Listed firms between 1975-1990. Evidence consistent with the trading range like motivation for splits was readily apparent as sampled firms typically had very high relative pre-split prices. After the split, relative share prices were more disperse, yet generally traded near or slightly below the median share price observed overall. These results rendered support to the trading range hypothesis.

Conroy and Harris (1999) examined stock splits in the NYSE between 1963 to 1996. Using a sample of 4000 splits, they found that market reactions to stock splits are based on the firm-specific price levels. It is not simply going to a low absolute price that matters, rather, departures from anticipated firm-specific prices matter. The interpretation of price level importance therefore was that there is an optimal price based on market microstructure factors. These findings supported the trading range hypothesis.

Confirming the signaling hypothesis theory, Conroy et al. (1999) found excess returns after stock splits were considerably higher when shareholders were surprised by a larger-than-expected split. Financial analysts were also found to increase their earnings forecast notably when the split factor was greater than expected. Excess returns earned by market participants tended to be significantly higher when a company's management decided on a split factor that the stock price would fall below the expected level.

Wulff (1999) investigated the market reaction to stock splits in the German stock market. He used a sample of 83 splits in the Frankfurt Stock Exchange (FSE) from 1994 to 1996. Using volume of daily traded shares, volume turnover and percentage of days with trades, he found a significant increase in liquidity after the split and mentions that improved liquidity seemed not to be valued by market participants in Germany. He also suggests that the theoretical explanation of the announcement effect is the neglected firm hypothesis in the German Stock market.

Dennis (2003) studied liquidity effects of stock splits for the NASDAQ-100 index tracking stock traded on AMEX with the effective date of the split as of the 20th of March 2000. In order to test the liquidity effects of the stock splits, he analyzes several measures of liquidity and compares them before and after the split. These are bid-ask spreads, frequency of trading, dollar volume, turnover and frequency of trading. He found that as a result of the split, the turnover was unchanged and the relative bid-ask spread increased. These quantities measured aggregate liquidity and did not distinguish between different classes of traders. When frequency of trading, share volume and dollar volume are decomposed by trade size and compared before and after the split, liquidity seemed to have improved for the smaller trades. He also observed that when number and volume of small buys are compared for Index Tracking Stock splits and those of a single-firm stock split there appeared to be a distinct signaling effect in the trading pattern of small trades following the single-firm stock split. In summary, he found liquidity of small-size trades to have improved after the stock split.

Goyonke et al. (2006) conducted a research on stock split and liquidity over an after-event window extending to six years. A sample consisting of 6,928 splits of NYSE/AMEX firms and 2,588 splits of NASDAQ firms. To determine the impact of stock splits on liquidity they used the matched sample approach and cross sectional framework as there methodology. They noted that there was worsening liquidity of split firms, which was temporary and was experienced within the first nine to twelve months. They also noted that there was a long run gain in liquidity for splits and this was often observed 24 months after the split.

Simbovo (2006) examined the effect of stock splits and large stock dividends on liquidity at the NSE. The sample size used was five companies two of which had conducted stock splits. The other three companies had a stock dividend distribution greater than 25% of the issued shares. Using trading activity ratio as proxy to liquidity the study was done over 90 days before and after the event. The study period was from 2004-2005. He found significant positive change in liquidity after the splits consistent with the trading hypothesis. However this was the negative for the case of stock dividends where managers split their stock when they felt they were not affordable.

Dhar and Chhaochharia (2008) studied market reaction around stock splits and Bonus issues in the stock market. They sampled 90 stock splits and 82 bonus issues announced by companies

listed in the BSE500 index during the period 2001-2007. Conducting an event study using an 81-day event window, they found that the Average Abnormal Return was very significant at 0.01% level. Their study therefore supported the signaling hypothesis, consistent with the findings in the developed stock markets.

Chemmanur *et al.* (2008) investigated a sample of 2017 splits that had taken place in the NYSE, AMEX and NASDAQ between 1999 to 2009. They found out that both commissions paid and trading volume increased after a stock split. Their finding agreed with the trading range hypothesis which they noted that it applied primarily to retail investors rather than institutional investors. This they found to be because unlike retail investors, institutional investors did not face wealth constraints.

Joshipura (2008) investigated the price and liquidity effects associated with stock splits surrounding its announcement and execution dates in the Indian stock market. He used a sample of 94 companies in the Indian Stock market. Using trading volume as a surrogate to liquidity he found that there was a significant improvement seen in liquidity surrounding announcement and execution dates of the stock split. He also found out that though there were some positive abnormal returns associated with announcement and execution dates of stock splits, these reversed in just a few days after the event dates and ultimately generated significant negative abnormal return in slightly longer post execution period.

Dash and Gouda (2008) investigated the liquidity effects of stock splits in the Indian stock market. The sample size was 24 splits covering the period January 2006 to august 2007. The study focused on share price volatility to study liquidity effects of stock splits. The results of the study indicated a strong evidence for an increase in the stock liquidity after the split. Also observed is that the sample stocks considered for the study were those of well known companies thus the Neglected Firm Hypothesis would not apply in general.

Aduda and Chemarum (2010) studied the market reaction to stock splits at the NSE. A census study was done, drawn from nine companies listed in the NSE and had undergone a stock split in the period 2002 to 2008. The period was selected because it was when there was improved growth in the Kenyan economy. The event window of 101 days consisting of 50 days before and 50 dates after the event date. The study found that generally, the Kenyan stock market reacted

positively to stock split announcements. There was an increase in volumes of shares traded after the stock split as compared to those before the stock split. This suggested improved liquidity. The study also showed that there were positive mean returns with respect to stock splits. The study was in agreement with the signaling hypothesis which stated that managers of companies split their stock to act as a means of passing information to stock holders and potential investors.

Omenda (2011) investigated the effect of stock splits on liquidity at the NSE .The sample size was 9 companies and the period of the study was from2005 to 2011. He used a multi dimension measure of liquidity referred to as Amivest liquidity ration. It incorporates two variables which are price and volume of shares traded. The event window considered was 61 days consisting of 30 days before and 30 days after the event date. He found that 6 out of 9 companies studied had a higher aggregate liquidity ration before the split date as compared to after the split date. In general there was a higher liquidity of stock in the days before the split as compared with the days after the split suggesting reduced liquidity after the split.

Rudnicki (2012) investigated the impact of stock splits on trading liquidity in the NYSE. He used a sample of 471 splits between 1st January 2000 and 31st May 2011. The event window included 81 session days, 40 days before and 40 days after execution day including the execution day itself. He found that contrary to the liquidity and trading range hypotheses, stock splits lead to liquidity deterioration.

2.6 Summary of the Literature Review

It is very clear from the empirical evidence that a lot of studies have been conducted with respect to the relationship between stock splits and liquidity. It is also clear that few studies have been done in the Kenyan stock market on the effect of stock splits on liquidity and the studies carried out have also brought mixed results. Some of the studies were done when only two stock splits had taken place in the NSE. The NSE is a very dynamic securities exchange counter and in the backdrop of more regulation from the capital market authority (CMA) and more firms being listed there is still need for research.

The empirical evidence shows that there are many proxies and measures for liquidity. A look into studies that have been conducted at the NSE, shows that few measures of liquidity namely the Amivest liquidity ratio and the Trading average ratio have been explored. This paper therefore intends to take a different approach using the Amihud's illiquidity ratio to examine the relationship between stock splits and liquidity in the NSE.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the research methodology by giving a description about the source, data, method of conducting the research, the population and sample, technique of collecting the data and technique of analyzing the data.

3.2 Research Design

The study will have a trend analytical design in an attempt to determine the relationship between the stock split event and the changes in stock liquidity position as given by the liquidity proxy used. Trend analysis is the practice of collecting information and attempting to spot a pattern or trend in the information. The method is deemed appropriate as the study attempts to gain insight into the reaction of stock liquidity to the stock split event.

3.3 Population and sample

A census study will be done, drawing from thirteen companies listed in the Nairobi Stock Exchange and which had undergone a stock split in the period 2004 to 2012. A list of companies that had split their stock between the years 2004 to 2012 is shown in *appendix 1*.

3.4 Data Collection

The study will be based on secondary data. The data will be composed of the closing and opening daily Prices of chosen stock 30 days before the split and 30 days after the stock split. The daily volume of shares traded will also be obtained for the 60 day period. The data will be obtained from the Nairobi Stock exchange. It will make use of the NSE handbooks for the period under study to establish the stock splits that have occurred and the split dates.

3.5 Data Analysis

The research will cover a period of 30 days before the split and 30 days after the stock split so as to examine the changes in liquidity over this period. Therefore the time (t) will be given as t= -30

to +30. To measure the impact of stocks on liquidity, the Amihud's Illiquidity ratio (Amihud 2002) will be used. The ratio has been selected for this particular study because it is simple to calculate and more importantly it is a multi-dimensional liquidity measure capturing more than one variable. It incorporates two important variables that directly relate to liquidity namely stock price and volume traded. Unlike other measures of liquidity which require for their calculation microstructure data on transactions and quote that are unavailable in most markets, Amihud's measure is calculated from daily data on returns and volume that are readily available over long periods of time for most markets.

The Amihud's illiquidity ratio will be calculated as below;

a) Calculate the volume of shares traded on each day (over the period), call it vol $_{(d)}$ for day (d)
b) Pick the price for the day, Call it $p_{(d)}$ which will be the closing price for day (d)
c) Calculate the absolute percentage changes in daily stock prices $R_{(d)}$. This will be given by;

$$R_{(d)} = \frac{P2-P1}{p1}$$

Where: P_1 is the closing price for day d-1

P_2 is the closing price for day d

d) Next, Calculate the Turnover, which is the shilling volume for each day. This is calculated as Vols $_{(d)}= V_{(d)}P_{(d)}$
e) Calculate the daily Amihud's illiquidity ratio given by the formulae;

$$\frac{R(d)}{Vols(d)}$$

The Amihud's monthly illiquidity ratio for the two months in consideration will be calculated as follows:

a) Calculate the absolute percentage changes in daily stock prices for the market days of the month.

$R_{(m)} = R_{(1)} + R_{(2)} \ldots\ldots + R_{(n)}$

b) Calculate the total shilling volume for the month

$Vols\ (m) = V_{(1)} P_{(1)} + V_{(2)} P_{(2)} \ldots.. + V_{(n)} P_{(n)}$

Since the Amihud's illiquidity ratio represents the average ratio of the daily absolute return to the (shilling) trading volume on that day, then the aggregate illiquidity ratio will be calculated as

$$\frac{1}{N}\sum_{t=1}^{N}\frac{R(m)}{Vols\ (m)}$$

Where N represents the number of days for which data is available.

The data analysis package that will be used will the Microsoft Excel spreadsheet. It will be used to analyze the data from each of the companies and summarize the findings of the research and also prepare a presentation in form of tables and figures.

3.6 Hypothesis of the study

We take the hypothesis that stock splits do not result in any change in liquidity

H0: $\mu\ Illiq_1 = \mu\, Illiq_0$

H1: $\mu\ Illiq_1 \neq \mu\, Illiq_0$

Where; $\mu\ Illiq_0$ is the Average illiquidity ratio before the stock split event

$\mu\ Illiq_1$ is the average illiquidity ration after the stock split event

This hypothesis will be tested by comparing the average illiquidity ratio before and after the stock split event. Using t-statistics, the hypothesis will be tested. The tests will be performed at 5% level of significance.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 Introduction

This chapter is aimed at conveying the results obtained from the research. It will use the layout in chapter three in an attempt to address the objective of the study.

4.2 Data Analysis and Findings

In order to undertake this analysis, MS excel was used to generate the table and graphs below for individual companies. For purposes of presentation the Amihud's illiquidity ratios have been multiplied by 10^6.

From the results presented on the volumes of shares traded and the percentage change in share price observed thirty days before and thirty days after the stock splits by, the Amihud's daily illiquidity ratios were calculated and presented in tables. The aggregate illiquidity ratios were also calculated for both 30 days before and 30 days after the stock split date.

Table 1 shows how illiquidity changed on days before and after the stock split. The table shows that illiquidity ratio of stocks of KENOL was relatively higher in the days after the stock split as compared to the days before the stock split. This therefore means that liquidity as measured by the proxy chosen, was generally higher before the split as compared to after the split.

Table 2 shows that the illiquidity ratio of stocks of East African Breweries was relatively higher in the days after the stock split as compared to the days before the stock split. This suggests therefore that the liquidity as measured by the proxy chosen, reduced in the month after the stock split as compared to the month before.

Table 3 shows the illiquidity ratio of stocks of East African cables was relatively lower in the days after the stock split as compared to the days before the stock split. The interpretation in this case therefore is that liquidity as measured by the proxy chosen, increased in the month after the stock split as compared to the month after the stock split.

Table 4 shows that illiquidity ratio of stocks of ICDC was relatively higher in the days after the stock split as compared to the days before the stock split. This therefore means that liquidity as measured by the proxy chosen, decreased in the days after the stock split. This can also be confirmed by the fact that the aggregate Amihud's illiquidity ratio was lower 30 days before the split as compared to 30 days after the split.

Table 5 and 6 show the liquidity behavior of Barclays Bank stocks in 2006 and 2011 respectively when the bank undertook stock splits. In both cases, the illiquidity ratio is generally higher 30 days after the stock split as compared to 30 days before the stock split. The interpretation therefore is that the liquidity of this stocks decreased in the month after the stock split as compared to the month before the stock split.

Table 7 presents the Amihud's Illiquidity ratio before and after the stock split for Sasini LTD. The illiquidity ratio 30 days after the stock split is higher than 30 days before the stock split. This means that the liquidity as measured by the proxy chosen, decreases 30 days after the stock split as compared to 30 days before the stock split.

Table 8 show the illiquidity ratio before and after the stock splits for CMC Holdings. The illiquidity ratio 30 days after the stock split is higher than 30 days before the stock split. This means that the liquidity as measured by the proxy chosen, decreases 30 days after the stock split as compared to 30 days before the stock split.

Table 9 shows that illiquidity ratio of stocks of KCB was relatively equal 30 days before and after the stock split. Observed is also the fact towards the split date and immediately after, high liquidity is recorded compared to the rest of the trading days studied. This therefore means that liquidity as measured by the proxy chosen, did not change after the stock split as compared to the month before the split.

Table 10 shows how illiquidity changed on days before and after the stock split. The graph shows that illiquidity ratio of stocks of Nation Media Group was higher in the days after the stock split as compared to the days before the stock split. This therefore means that liquidity as measured by the proxy chosen, was generally higher before the split as compared to after the split.

Table 11 presents the illiquidity ratio of stocks of Equity Bank was relatively higher in the days after the stock split as compared to the days before the stock split. This suggests therefore that the liquidity as measured by the proxy chosen, reduced in the month after the stock split as compared to the month before.

Table 12 shows the illiquidity ratio of stocks of Kenol Kobil was relatively lower in the days after the stock split as compared to the days before the stock split. The interpretation in this case therefore is that liquidity as measured by the proxy chosen, increased in the month after the stock split as compared to the month after the stock split.

Table 13 shows that illiquidity ratio of stocks of KPLC was relatively higher in the days after the stock split as compared to the days before the stock split. This therefore means that liquidity as measured by the proxy chosen, decreased in the days after the stock split.

Table 14 presents the Amihud's Illiquidity ratio before and after the stock split for Arthi River Mining. The illiquidity ratio 30 days after the stock split is lower than 30 days before the stock split. This means that the liquidity as measured by the proxy chosen, increases 30 days after the stock split as compared to 30 days before the stock split.

Table 15 shows the aggregate illiquidity ratios for companies under study. They show the aggregate illiquidity positions month before and after the stock split date. From the table, we note that 9 out of 13 companies under study have a higher aggregate illiquidity ratio after the split date as compared to before the split date. 3 out of the thirteen companies under study have a lower illiquidity ratio after the split date as compared to before the split date. However 1 out of the 13 companies under study had equal aggregate illiquidity ratio before and after the stock split.

Table 16, 17 and 18 show the results of hypothesis test below;

We take the hypothesis that stock splits do not result in any change in liquidity

H0: μ Illiq1 = μ Illiq0

H1: μ Illiq1 $\neq$ μ Illiq0

Where; μ Illiq0 is the Aggregate illiquidity ratio before the stock split event

μ Illiq1 is the aggregate illiquidity ration after the stock split event

This hypothesis was be tested by comparing the average illiquidity ratio before and after the stock split event. Using t-statistics, the hypothesis will be tested. The tests will be performed at 5% level of significance.

Table 16 gives the descriptive statistics for each of the two groups (as defined by the pair of variables.) In this case, there are 14 companies (N), and they have before stock split on average of .02, with a standard deviation of .04. These same 14 have after stock split on average of 0.2, with a standard deviation of 0.63. The last column gives the standard error of the mean for each of the two variables.

Table 17 gives the correlation between the two variables is given in the third column. In this case r = -.083. The last column give the p value for the correlation coefficient. If the p value is less than or equal to the alpha level, then you can reject the null hypothesis that the population correlation coefficient (ρ) is equal to 0. In this case, p = .778, so we fail to reject the null hypothesis.

Table 18 gives the inferential statistics. If $p \leq \alpha$, then reject H0. In this case, .306 is not less than or equal to .05, so we fail to reject H0. That implies that there is insufficient evidence to conclude the Average illiquidity ratio before the stock split event and the average illiquidity ratio after the stock split event is different.

A paired samples t test failed to reveal a statistically reliable difference between the Aggregate illiquidity ratio before the split (M = 0.02, s = 0.04) and aggregate illiquidity ratio after the split (M = 0.20, s = 0.63) that the companies have, t(13df) = 1.066, p = .306, α = .05.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary

Various arguments have been advanced on why companies undertake stock splits. Some arguments have been that stock splits are no more than a cosmetic accounting change with no direct costs or benefits. However despite this stock splits still remain a common occurrence implying that that there must be some benefit either real or perceived, that result from a firm splitting its stock. While some researchers have found that a stock split is usually followed by increased stock liquidity, others such as Goyonke et al. (2006) and Rudnicki (2012) noted worsening liquidity after stock splits. The Objective of this study is to establish the effect of stock split on liquidity in companies quoted at the NSE.

The study adopted a trend analytical design in an attempt to determine the relationship between the stock split event and the changes in stock liquidity position as given by the liquidity proxy used. The measure of liquidity employed in this study is the Amihud's Illiquidity ratio. The ratio of a stock absolute daily return to its daily shilling volume, averaged over some period. This measure is interpreted as the daily stock price reaction to a dollar of trading volume. The population consisted thirteen companies listed in the Nairobi Stock Exchange and which had undergone a stock split in the period 2004 to 2012. The data used was secondary data which was obtained from the Nairobi Securities Exchange.

The results obtained from the study found that generally the liquidity of stock, as measured by the Amihud's Illiquidity ratio, is higher in the days before the stock split as compared to the days after the stock split. Generally the aggregate liquidity in the month before the stock split was found to be higher than in the month after the stock split. The t-test results from the study show that however that there is insufficient evidence to conclude the Aggregate illiquidity ratio before the stock split event and the aggregate illiquidity ratio after the stock split event is different.

5.2 Conclusion

The liquidity proxy used in this research was the Amihud's illiquidity ratio, which measured the absolute (percentage) price change per shilling of daily trading volume, or the daily price impact of the order flow. The results indicated that generally there was a higher liquidity of stock in the days before the stock split as compared to the days after the stock split. A majority of the companies under study experienced a higher liquidity before the stock split, with the exception of East African cables, Kenol Kobil and Arthi River Mining.

The researcher also calculated the aggregate Amihud's Illiquidity ratio for both 30 trading days before and after the stock split. The results indicated that generally the aggregate liquidity in the month before the stock split was higher than in the month after the stock split. This was with the exception of East African cables, Kenol Kobil and Arthi River Mining and Kenya commercial bank. However a paired samples t test failed to reveal a statistically reliable difference between the Average illiquidity ratio before the split and average illiquidity ratio after the split.

The research was designed to meet the research objective which was to determine the impact of stock split on stock liquidity. The study found that generally, there is a higher liquidity recorded before a stock split than after a stock split. This is inconsistent with several studies done by scholars such as Lamoureux and Poon (1987), Wulff (1999) and Dennis (2003) just to mention a few, whose findings were that there was increase in stock liquidity after a stock split. However this difference can be attributed to the fact that the liquidity proxies used in their studies differ from the one used in this study.

5.3 Limitation of the Study

The study did not consider the effect of other announcements made around the stock split date. Announcements like dividend declarations or rights issue that might have been made around the stock split date might have had an impact on the volume of shares traded or stock price. This could have affected the validity of results obtained from this study.

The study did not also consider the effect of the split factor. Some scholars have argued that the split factor has an effect on variables such as price and volume of shares traded. In this particular study, the companies considered used different split factors and this could have contributed to some of the results obtained.

There was a difference in time when companies' studied split their stocks. Since different economic and market conditions prevailed in these times, it then makes it difficult to compare the results received from one company with that of another company. For valid comparison to have taken place, the market conditions needed to have been similar for all companies at the time they were splitting their stock.

5.4 Suggestion for Further Study

This study has analyzed liquidity using the Amihud's Illiquidity ratio. However there is need to investigate the effect of stock splits on liquidity using other measures, in particular, the spread, to ascertain if indeed liquidity improves after the stock split. The spread is the difference between the ask-bid prices and its related measures gives an approximation of the cost incurred while trading.

This particular study assumed that all other market conditions other than volume traded and price remained constant. However this may not be the case. There would be need therefore, to undertake a study that incorporates the different variables and events such as rights issue and dividend declarations while studying the impact of stock splits on liquidity.

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Table 1

Illiquidity Ratio against Days around Stock Split for Kenol

Day	Amihud's illiquidity 30 days before the split	Amihud's illiquidity ratio 30 days after the split
1	-	0.029532757
2	-	0.004551924
3	-	0.01500188
4	0.557161876	0.062038301
5	0.145152488	0.082875846
6	0.036176832	0.065227818
7	0.022813923	0.002218194
8	0.017965136	0.05278398
9	0.054435689	0.4461745
10	-	-
11	-	-
12	-	-
13	-	-
14	0.475996192	0.001929096
15	-	0.003311921
16	-	0.132244423
17	0.410886598	1.320616288
18	-	0.365487534
19	-	0.003830763
20	-	0.02393333
21	0.005867425	0.036217712
22	0.016573929	0.030786282
23	-	0.035487423
24	-	0.016515468
25	-	0.040460276
26	-	1.057361882
27	0.014105168	-
28	0.009403445	0.069534985
29	-	0.795070563
30	-	-

Table 2

Illiquidity Ratio against Days around Stock Split for East African Breweries Limited.

Day	Amihud's illiquidity ratio30 days before split	Amihud's illiquidity ratio 30 days after split
1	6.78582E-05	0.00065276
2	0.00018835	0.002473923
3	0.000387558	0.004483059
4	0.005894079	0.004628021
5	0.000455367	0.000308447
6	5.69109E-05	5.22561E-05
7	3.15579E-05	0.000561106
8	0.000610855	0.000120963
9	2.22121E-05	5.76741E-05
10	0.021950926	0.001304649
11	0.005605143	0.000140614
12	0.001191904	0.001663503
13	0.001854976	0.000292592
14	5.298E-05	0.000179858
15	0.000845479	0.000420593
16	0.023638902	0.002177144
17	0.001611667	5.74068E-05
18	0.0004818	0.000351385
19	0.001007926	0.339826459
20	5.7574E-05	0.113799365
21	0.000435116	0.009399343
22	0.000117207	0.002333649
23	0.000155758	0.00034139
24	0.000183803	4.03415E-05
25	0.001606634	1.52107E-05
26	0.000317374	0.000122454
27	0.000960031	1.97072E-05
28	4.63456E-05	0.000101627
29	0.000958096	0.000907035
30	0.001054565	0.000117013

Table 3

Illiquidity Ratio against Days around Stock Split for East African Cables Limited.

Day	Amihud's Illiquidity ratio30 days before the split	Amihud's illiquidity ratio30 days after the split
1	0.000268423	0.004872967
2	0.000138189	0.01717181
3	1.67001E-05	0.001098881
4	0.046909955	4.53452E-05
5	0.004282326	0.000776161
6	3.77468E-05	0.002856901
7	0.002045059	0.007345856
8	0.000626278	0.00646752
9	0.000132779	0.001428251
10	0.017230433	0.001777481
11	0.007468193	0.00041079
12	0.000342652	0.000724891
13	0.003199394	0.001537265
14	0.040527105	0.000720926
15	0.002327082	0.00143018
16	0.000366466	0.000715124
17	0.00055806	6.50969E-05
18	0.000565592	0.000713517
19	0.010782613	0.001419443
20	0.003074639	0.000135664
21	0.001390051	0.000292602
22	0.000147101	0.000615207
23	0.003712381	0.000164764
24	0.001187356	0.001129684
25	0.000436641	0.00072659
26	1.42497E-05	0.00072596
27	0.000116053	0.000999241
28	0.000144227	0.00480448
29	0.000193032	0.001753637
30	0.000732555	0.000687641

Table 4

Illiquidity Ratio against Days around Stock Split for ICDC.

Day	Amihud's illiquidity Ratio 30 days before the split	Amihud's illiquidity ratio 30 days after the split
1	0.002382855	0.008075258
2	0.001953352	0.005488328
3	0.000446511	0.001753914
4	0.000774161	0.002017283
5	0.00042839	7.04902E-05
6	0.000372163	0.003874668
7	0.000268655	0.00198601
8	0.000811643	0.000109254
9	0.000707183	0.0017085
10	0.000412819	0.006439745
11	0.000216238	0.012993589
12	0.000249021	0.001221685
13	0.000563458	0.002643276
14	0.001043552	0.000797329
15	0.000229825	0.000702292
16	0.000389089	0.000494799
17	0.001472644	0.001067753
18	0.001063437	0.000844962
19	0.000533902	0.000183943
20	3.01721E-05	0.001155115
21	7.84788E-05	0.000768704
22	0.000353801	0.000182118
23	0.000169912	0.004608164
24	0.000480126	0.001002318
25	0.002496631	0.000330372
26	0.00169719	0.000252543
27	0.000324845	0.000972011
28	0.000105609	0.001287057
29	0.007448224	0.001617088
30	0.000427187	3.95687E-05

Table 5

Illiquidity Ratio against Days around Stock Split for Barclays Bank (2006)

Day	Amihud's illiquidity ratio 30 days before split	Amihud's illiquidity ratio 30 days after split
1	0.000585417	0.024231345
2	0.000336457	0.000349766
3	0.000727702	0.002133049
4	0.002867273	0.003974484
5	0.015981231	0.000152328
6	0.003977467	0.000747138
7	0.000390028	0.000964174
8	0.000525528	0.00034332
9	6.27896E-05	0.000173863
10	0.000365341	0.000559636
11	0.003734377	0.003280068
12	0.000490188	0.001077077
13	0.000389614	0.0001072
14	0.000155209	0.000221885
15	0.000179873	8.77515E-05
16	0.003324302	7.44195E-05
17	0.000473771	0.000930884
18	0.000269519	0.003364122
19	0.000657958	0.002626266
20	0.000157846	0.00087568
21	0.000223519	3.28521E-06
22	0.000559706	0.000459651
23	0.000398029	0.000253341
24	5.11362E-05	0.000479425
25	8.87605E-05	0.000216428
26	0.000220243	0.000370845
27	1.47482E-05	0.000563486
28	0.000111631	0.000432129
29	0.000173952	0.00033953
30	0.000145466	4.57404E-05

Table 6

Illiquidity Ratio Against Days around Stock Split for Barclays Bank (2011)

Day	Amihud's illiquidity ratio 30 days before split	Amihud's illiquidity ratio 30 days after split
1	0.001558103	0.00267094
2	0.000503243	0.001364578
3	0.000538171	0.000239851
4	7.18512E-05	0.002039279
5	0.000503918	0.001255004
6	0.000858898	0.001839819
7	0.001037179	9.37438E-05
8	0.001356514	0.003511751
9	0.000686201	9.52933E-05
10	0.000552711	0.000219831
11	0.000413016	0.001233005
12	1.37439E-05	0.000440521
13	8.00919E-05	0.001209305
14	0.000277566	0.000403066
15	0.000323415	0.000147204
16	0.000130027	0.000355173
17	6.12395E-05	2.96772E-05
18	0.000138225	8.72364E-05
19	0.000132092	2.05084E-05
20	0.000576792	0.000190835
21	0.00020686	0.000110528
22	7.5561E-05	0.000681109
23	3.99007E-05	0.001929824
24	1.42224E-05	5.89429E-05
25	0.000317798	0.001476007
26	0.000773505	9.65785E-05
27	0.000858771	0.000157933
28	2.11431E-05	0.000621698
29	7.56271E-05	0.001541465
30	0.000730817	0.000114215

Table 7

Illiquidity Ratio against Days around Stock Split for Sasini Limited.

Day	Amihud's illiquidity ratio 30 days before stock split	Amihud's illiquidity ratio 30 days after stock split
1	0.001274929	62.4781478
2	0.001142935	4.461388709
3	0.000704641	1.402524544
4	0.000565183	1.683501684
5	0.000541386	0.02141032
6	0.005129402	0.001052913
7	0.000237869	0.003726738
8	0.002725154	0.01386901
9	0.000335662	0.017695037
10	0.001270319	0.016548544
11	0.001658873	0.027774559
12	0.000522439	0.078452182
13	0.004095959	0.027540763
14	0.001907301	0.015132427
15	0.000684618	0.02402379
16	0.005156874	0.062830854
17	0.001615426	0.006609876
18	0.002095866	0.017332543
19	0.002962401	0.011813323
20	0.006575467	0.002952482
21	0.008771938	0.016600848
22	0.007168797	0.04069656
23	0.03383395	0.01817558
24	0.011062193	0.132451005
25	0.001842976	0.024732575
26	0.001337179	0.073672424
27	0.000289877	0.08314938
28	0.000792822	0.058616843
29	2.95322E-05	0.07526642
30	0.003277954	0.034623169

Table 8

Illiquidity Ratio against Days around Stock Split for CMC Holdings

Day	Amihud's illiquidity ratio 30 days before the split	Amihud's illiquidity ratio 30 days after the stock split
1	0.001452972	0.020270028
2	0.000473712	0.004565288
3	0.000583269	0.004659229
4	0.00164226	0.006746954
5	0.003592106	0.012352237
6	0.000133547	0.024366182
7	0.000703891	0.005549192
8	0.001279033	0.000590715
9	0.003021523	0.014439488
10	0.002315184	0.003013524
11	0.000911751	0.008452633
12	4.82654E-05	0.015366648
13	0.005641305	0.04280196
14	0.005499324	0.024159639
15	0.004076364	0.006566332
16	0.000888805	0.001724374
17	0.004542883	0.004761145
18	0.011392213	0.005240601
19	0.000380591	0.011347216
20	0.004812277	0.010206227
21	0.002595831	0.060624462
22	0.005320622	0.001993992
23	0.003666604	0.003639283
24	0.00054678	0.000237824
25	0.000754134	0.004303947
26	0.000775368	0.002944141
27	1.18407E-05	0.002507845
28	0.000355917	0.00125365
29	0.00010466	0.003307946
30	0.000185501	0.002030852

Table 9

Illiquidity Ratio against Days around Stock Split for Kenya Commercial Bank Limited

Day	Amihud's illiquidity ratio 30 Days before the split	Amihud's illiquidity ratio 30 days after the split
1	0.000792238	0.002104979
2	0.000243765	0.000488253
3	0.000710315	0.000481737
4	0.000397095	3.60503E-05
5	0.000762784	7.93755E-05
6	0.000190188	0.000151152
7	0.001254954	0.000486944
8	4.16042E-05	0.000297554
9	0.000316241	0.001591025
10	0.00036922	0.002417744
11	0.000550304	0.006459029
12	7.25042E-05	0.000456878
13	0.000165338	0.000365046
14	0.000265165	0.001654549
15	0.000244257	0.001135663
16	1.1963E-05	0.000755733
17	0.000140776	0.001319816
18	0.000123568	9.76839E-05
19	5.27378E-05	0.000635074
20	0.000310457	0.000225544
21	0.000467289	0.001993394
22	0.003412482	0.002812861
23	0.002818796	0.000716231
24	0.004546209	0.002394571
25	0.000366424	0.001708333
26	0.00021664	0.001083218
27	0.006349146	0.001754466
28	0.008173957	0.001070624
29	0.000649399	0.000307202
30	0.001517461	0.000168004

Table 10

Illiquidity Ratio against Days around Stock Split for Nation Media Group Limited.

Day	Amihud's illiquidity ratio 30 days before the split	Amihud's illiquidity ratio 30 days after the split
1	0.001620726	0.107364104
2	0.000129117	0.50387546
3	0.000411106	0.381832067
4	0.00035985	2.707960879
5	0.000358786	0.009355933
6	0.001302177	0.050610828
7	0.001098093	0.000342195
8	0.001705895	0.034168129
9	5.13963E-05	0.044959164
10	0.001055722	0.00013004
11	0.004435837	0.000239408
12	0.000199534	0.005596209
13	0.00282011	0.001134983
14	0.005829299	0.013617983
15	0.005330294	0.00274645
16	0.006928673	0.002980124
17	0.005406224	0.000385402
18	0.005378392	0.001307541
19	0.006278824	8.1606E-05
20	0.003550715	0
21	0.000319872	0.00039037
22	0.002961687	0.005404213
23	0.003055779	0.005028441
24	0.002157698	0.001270973
25	0.002277286	0.0006398
26	0.003558656	0.005640167
27	0.000412443	0.002779164
28	0.002014973	0.002349994
29	0.001079504	0.006742705
30	0.000777832	0.02230794

Table 11

Illiquidity Ratio against Days around Stock Split for Equity Bank Limited.

Day	Amihud's illiquidity ratio 30 Days before the split	Amihud's illiquidity ratio 30 days after the split
1	0.000287694	0.003163613
2	5.18637E-05	0.002128413
3	0.002552456	0.000155411
4	0.003920477	0.000645895
5	9.99756E-05	0.004881894
6	0.001337001	0.008536852
7	2.3325E-05	0.034934583
8	0.000111381	0.011233051
9	0.001059976	0.003500443
10	0.004608824	0.000640077
11	0.001175291	0.001730354
12	0.001693743	1.98546E-05
13	0.00058064	0.002419366
14	0.00054776	0.001672228
15	0.000862815	0.00021792
16	0.00378031	0.000867638
17	0.004322913	0.173561702
18	0.000490254	0.014860573
19	0.001461183	0.061674891
20	0.00052352	0.004780314
21	0.001217716	0.001152657
22	0.002949464	6.42939E-05
23	0.006578792	2.61404E-05
24	0.012841871	0.000551003
25	0.003033676	0.002225963
26	0.001748876	0.003383775
27	0.002558903	0.009324587
28	0.014102675	0.034593483
29	0.014693825	0.021232715
30	0.007148265	0.005769559

Table 12

Illiquidity Ratio against Days around Stock Split for Kenol Kobil

Day	Amihud's illiquidity ratio 30 days before the split	Amihud's illiquidity ratio 30 days after the split
1	0.057701642	0.000689469
2	0.014301407	0.00048362
3	0.0177182	0.000341628
4	0.022792626	0.000328013
5	0.013114065	0.001550939
6	0.012338536	0.000792216
7	0.00353021	0.001007756
8	0.001355857	0.002345865
9	0.002404358	0.00084397
10	0.001301894	0.000434527
11	0.028035054	0.00068006
12	0.004875263	0.001203947
13	0.016526949	0.001127183
14	0.001467579	0.000239975
15	0.006515988	0.00047044
16	0.003403712	0.003313396
17	0.003303967	0.00115325
18	0.011979634	0.003034506
19	0.004604707	0.001346026
20	0.001212309	0.001231915
21	0.001586851	0.017755159
22	0.003294188	0.00011385
23	3.50823E-05	6.97413E-05
24	0.002100827	0.001418484
25	0.002452666	0.000902425
26	0.000484259	0.005590389
27	0.009181399	0.002324399
28	0.001122594	0.000169125
29	0.001443837	0.00032928
30	0.000113898	0

Table 13

Illiquidity Ratio against Days around Stock Split for Kenya Power and Lighting Company

Day	Amihud's illiquidity ratio 30 days before split	Amihud's illiquidity ratio 30 days after split
1	0.001116873	0.00275238
2	0.000592858	0.000331485
3	0.000154711	0.001914401
4	0.000815176	0.020452584
5	0.000394497	0.019049489
6	0.000161756	0.004350887
7	0.000376886	0.082276403
8	8.49592E-05	0.004286213
9	0.000199819	0.00321858
10	0.000241403	0.056427864
11	0.000287063	0.010958639
12	0.001376273	0.000505576
13	0.002627331	0.009104426
14	0.00043692	0.00726359
15	0.000282745	0.009405103
16	0.000262654	0.004344189
17	0.000446029	0.805785899
18	0.000381941	9.12239E-05
19	0.000300644	0.000685151
20	0.000257924	0.00103438
21	0.001754199	0.00035932
22	0.000817651	0.001058643
23	0.000650409	0.00074186
24	0.002350388	0
25	0.002078444	9.44436E-05
26	0.003084887	0.010351478
27	0.000378198	0.00034383
28	0.002302063	0.035083821
29	0.02089924	0.017415256
30	0.00050686	0.004593303

Table 14

Illiquidity Ratio against Days around Stock Split for Arthi River Mining Limited

Day	Amihud's illiquidity ratio 30 days before split	Amihud's illiquidity 30 days after split
1	0.004220703	0.078163728
2	0.093054762	0.001461802
3	0.52949947	0.00229581
4	0.070113927	0.000560553
5	0.188286236	0.001331498
6	0.001374231	0.003879892
7	0.086124402	0.001308211
8	0.000580337	0.001203982
9	0.001306225	0.002280851
10	0.01471969	0.006012887
11	0.025212939	0.006322893
12	0.000169709	0.010765995
13	0.201118482	0.007033389
14	0.029876612	0.007589129
15	0.000867418	0.001996946
16	0.003228049	9.17352E-05
17	0.000163704	0.001359942
18	0.000482369	0.000182545
19	0.066986503	0.000118479
20	0.000433796	0.000336153
21	1.208963288	0.012095202
22	0.020647877	0.017273489
23	0.011817604	0.004991597
24	0.004158492	6.25091E-05
25	0.181045174	0.000145067
26	0.000506495	0.000940863
27	0.001251855	0.00028338
28	0.015706145	0.000920162
29	0.001778739	0.00102997
30	1.383683834	0.00047041

Table 15

The Aggregate Illiquidity Ratio

Company	Month Before split	Month after split
KENOL	0.058884623	0.156439771
EABL	0.002394965	0.016231652
East African Cables	0.004965778	0.002120463
I.C.D.C	0.000931036	0.002156271
Barclays Bank (2006)	0.001254636	0.001647944
Barclays Bank (2011)	0.000430907	0.000807831
Sasini Limited	0.003653664	2.36441043
CMC Holdings	0.002256951	0.010334118
KCB	0.001184443	0.001174958
NMG	0.002428883	0.130708076
Equity bank	0.002973907	0.013472656
Kenol Kobil	0.008343319	0.001709719
KPLC	0.001503798	0.03698957
Arthi River Mining LTD	0.138245969	0.005750302

Table 16

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	month before split	.01638949136	14	.038188010797	.010206175192
	month after split	.19599669721	14	.626108782340	.167334610740

Table 17

Paired Samples Correlations

	N	Correlation	Sig.
month before split & month after split	14	-.083	.778

Table 18

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	month before split - month after split	-1.796072058571E-1	6.304307286722E-1	1.684896994847E-1	-5.436070715607E-1	1.843926598464E-1	-1.066	13	.306

Appendices

Appendix 1: Companies Listed in the Nairobi Securities exchange that have undergone stock Splits

No:	Company	Split announcement date	Split ratio
1	Kenya Oil Limited	June 23, 2004	10:1
2	East African Breweries Limited	August 27, 2004	5:1
3	East African Cables Limited	August 10, 2006	10:1
4	I.C.D.C	October 19, 2006	10:1
5	Barclays Bank of Kenya	November 8, 2006	5:1
6	Sasini Limited	December 18, 2006	5:1
7	CMC Holdings	January 11, 2007	10:1
8	Kenya commercial Bank Limited	March 5, 2007	10:1
9	Nation Media group Limited	March 18, 2008	2:1
10	Equity Bank Limited	February 12, 2009	10:1
11	Kenol Kobil	May 20, 2010	10:1
12	Kenya Power and Lighting	October 7, 2010	8:1
13	Barclays Bank of Kenya	February 22, 2011	4:1
14	Arthi River Mining	May 14, 2012	5:1

Source: *NSE Database*

Appendix II: Data Table

East African Breweries

Date	Previous deal	Weighted Average price	Total Share Traded
14/10/2004	456.63	456.13	35,238.00
15/10/2004	456.13	454.78	34,239.00
18/10/2004	454.78	454.40	4,679.00
19/10/2004	454.40	458.33	3,193.00
21/10/2004	458.33	456.88	15,199.00
22/10/2004	456.88	457.14	22,400.00
25/10/2004	457.14	456.80	51,648.00
26/10/2004	456.80	460.69	30,079.00
27/10/2004	460.69	461.00	66,388.00
28/10/2004	461.00	476.90	3,319.00
29/10/2004	476.90	490.75	10,534.00
1/11/2004	490.75	497.43	22,861.00
2/11/2004	497.43	500.40	6,439.00
3/11/2004	500.40	499.58	62,204.00
4/11/2004	499.58	497.19	11,444.00
5/11/2004	497.19	492.80	758.00
8/11/2004	492.80	494.08	3,272.00
9/11/2004	494.08	493.54	4,639.00
10/11/2004	493.54	488.78	19,445.00
11/11/2004	488.78	489.06	20,656.00
12/11/2004	489.06	485.06	38,751.00
16/11/2004	485.06	485.50	15,837.00
17/11/2004	485.50	488.68	85,984.00
18/11/2004	488.68	489.89	27,271.00
19/11/2004	489.89	497.53	19,492.00
22/11/2004	497.53	500.73	40,531.00
23/11/2004	500.73	507.61	28,106.00
24/11/2004	507.61	509.12	126,203.00
25/11/2004	509.12	508.06	4,266.00
26/11/2004	508.06	520.36	44,083.00

29/11/2004	520.36	113.83	26,846.00
30/11/2004	113.83	116.96	361,078.00
1/12/2004	116.96	114.10	86,577.00
2/12/2004	114.10	109.48	82,188.00
3/12/2004	109.48	103.32	117,499.00
6/12/2004	103.32	104.79	439,909.00
7/12/2004	104.79	105.14	604,893.00
8/12/2004	105.14	104.53	98,737.00
9/12/2004	104.53	104.58	34,477.00
10/12/2004	104.58	104.53	72,194.00
14/12/2004	104.53	104.07	32,332.00
15/12/2004	104.07	104.13	35,149.00
16/12/2004	104.13	103.57	31,273.00
17/12/2004	103.57	100.53	1,001,975.00
20/12/2004	100.53	99.73	446,871.00
21/12/2004	99.73	99.29	106,495.00
22/12/2004	99.29	97.50	84,770.00
23/12/2004	97.50	97.70	366,751.00
24/12/2004	97.70	97.08	185,175.00
28/12/2004	97.08	101.00	1,187.00
29/12/2004	101.00	97.17	3,432.00
30/12/2004	97.17	98.83	18,344.00
31/12/2004	98.83	100.56	74,932.00
3/1/2005	100.56	100.00	163,846.00
4/1/2005	100.00	100.06	137,696.00
5/1/2005	100.06	100.00	365,038.00
6/1/2005	100.00	100.27	222,710.00
7/1/2005	100.27	100.46	968,768.00
10/1/2005	100.46	100.57	103,240.00
11/1/2005	100.57	105.66	522,189.00
12/1/2005	105.66	106.70	783,506.00

East African Cables

DATE	PREVIOUS DEAL	AVG PRICE	VOLUME
25/7/2006	331.69	331.00	23,405.00
26/7/2006	331.00	331.52	34,280.00
27/7/2006	331.52	331.50	10,850.00
28/7/2006	331.50	328.33	618.00
31/7/2006	328.33	332.57	9,061.00
1/8/2006	332.57	332.00	136,770.00
2/8/2006	332.00	348.58	69,160.00
3/8/2006	348.58	362.87	179,940.00
4/8/2006	362.87	364.11	70,700.00
7/8/2006	364.11	377.80	5,800.00
8/8/2006	377.80	399.57	19,302.00
9/8/2006	399.57	398.47	20,130.00
10/8/2006	398.47	481.56	136,636.00
11/8/2006	481.56	524.00	4,150.00
14/8/2006	524.00	566.21	60,548.00
15/8/2006	566.21	592.57	217,077.00
16/8/2006	592.57	584.90	39,529.00
17/8/2006	584.90	577.63	38,009.00
18/8/2006	577.63	526.38	15,649.00
21/8/2006	526.38	497.75	35,299.00
22/8/2006	497.75	478.96	56,728.00
23/8/2006	478.96	481.33	70,068.00
24/8/2006	481.33	524.44	45,773.00
25/8/2006	524.44	578.25	151,510.00
28/8/2006	578.25	587.75	64,043.00
29/8/2006	587.75	588.17	84,594.00
30/8/2006	588.17	592.36	103,643.00
31/8/2006	592.36	595.51	61,920.00
1/9/2006	595.51	602.40	99,545.00
4/9/2006	602.40	647.55	158,563.00
5/9/2006	647.55	79.56	35,000.00
6/9/2006	79.56	84.97	164,298.00
7/9/2006	84.97	92.29	54,336.00

8/9/2006	92.29	101.54	901,840.00
11/9/2006	101.54	101.76	471,636.00
12/9/2006	101.76	104.62	345,226.00
13/9/2006	104.62	94.56	356,142.00
14/9/2006	94.56	85.50	152,550.00
15/9/2006	85.50	77.03	198,915.00
18/9/2006	77.03	69.86	937,585.00
19/9/2006	69.86	63.00	876,900.00
20/9/2006	63.00	60.08	1,874,488.00
21/9/2006	60.08	64.07	1,430,336.00
22/9/2006	64.07	67.59	527,449.00
25/9/2006	67.59	71.64	1,173,002.00
26/9/2006	71.64	76.37	605,700.00
27/9/2006	76.37	79.29	675,354.00
28/9/2006	79.29	78.92	908,135.00
29/9/2006	78.92	76.71	512,560.00
2/10/2006	76.71	73.14	452,092.00
3/10/2006	73.14	73.28	192,400.00
4/10/2006	73.28	72.39	589,270.00
5/10/2006	72.39	70.78	515,660.00
6/10/2006	70.78	70.11	821,100.00
9/10/2006	70.11	68.69	263,100.00
11/10/2006	68.69	69.40	205,766.00
12/10/2006	69.40	70.15	213,780.00
13/10/2006	70.15	68.59	328,940.00
16/10/2006	68.59	65.70	133,271.00
17/10/2006	65.70	68.33	337,290.00
18/10/2006	68.33	67.23	354,881.00

KENOL

Date	**Previous deal**	**Weighted Average Price**	**Total Share Traded**
21/5/2004	346.67	0	0
24/5/2004	0.00	0	0
25/5/2004	0.00	340.33	4,000.00

26/5/2004	340.33	334.00	100.00
27/5/2004	334.00	340.00	364.00
28/5/2004	340.00	350.33	2,400.00
31/5/2004	350.33	356.00	2,000.00
2/6/2004	356.00	357.80	790.00
3/6/2004	357.80	360.75	420.00
4/6/2004	360.75	0.00	0.00
7/6/2004	0.00	0.00	0.00
8/6/2004	0.00	0.00	0.00
9/6/2004	0.00	380.00	100.00
10/6/2004	380.00	387.00	100.00
11/6/2004	387.00	0.00	0.00
14/6/2004	0.00	394.50	200.00
15/6/2004	394.50	401.00	100.00
16/6/2004	401.00	0.00	0.00
17/6/2004	0.00	0.00	0.00
18/6/2004	0.00	412.33	401.00
21/6/2004	412.33	413.25	916.00
22/6/2004	413.25	420.00	2,346.00
23/6/2004	420.00	0.00	0.00
24/6/2004	0.00	420.00	4,769.00
25/6/2004	420.00	420.00	1,280.00
28/6/2004	420.00	420.00	500.00
29/6/2004	420.00	422.00	800.00
30/6/2004	422.00	420.00	1,200.00
1/7/2004	420.00	0.00	0.00
2/7/2004	0.00	423.00	210.00
6/7/2004	423.00	55.00	31,334.00
7/7/2004	55.00	58.64	38,174.00
8/7/2004	58.64	59.13	30,732.00
9/7/2004	59.13	58.75	7,260.00
12/7/2004	58.75	56.45	11,323.00
13/7/2004	56.45	52.13	17,832.00
14/7/2004	52.13	50.00	12,500.00
15/7/2004	50.00	49.89	19,403.00
16/7/2004	49.89	49.21	5,300.00

19/7/2004	49.21	47.33	1,800.00
20/7/2004	47.33	0.00	0.00
21/7/2004	0.00	46.25	2,800.00
22/7/2004	46.25	0.00	0.00
23/7/2004	0.00	45.00	3,650.00
26/7/2004	45.00	44.95	12,800.00
27/7/2004	44.95	44.75	30,187.00
28/7/2004	44.75	45.31	2,100.00
29/7/2004	45.31	47.00	600.00
30/7/2004	47.00	50.50	4,000.00
2/8/2004	50.50	50.38	12,920.00
3/8/2004	50.38	49.43	15,800.00
4/8/2004	49.43	49.67	2,700.00
5/8/2004	49.67	49.75	1,100.00
6/8/2004	49.75	49.04	8,230.00
9/8/2004	49.04	49.00	900.00
10/8/2004	49.00	48.50	5,200.00
11/8/2004	48.50	48.75	100.00
12/8/2004	48.75	48.75	5,785.00
13/8/2004	48.75	48.38	2,300.00
16/8/2004	48.38	48.75	200.00

ICDC

Date	**Previous Deal**	**Weighted Average Price**	**Total traded share**
17/11/2006	359.18	366.87	24171
20/11/2006	366.87	400.24	114240
21/11/2006	400.24	392.41	112042
22/11/2006	392.41	386.96	46458
23/11/2006	386.96	388.95	30820
24/11/2006	388.95	386.28	47026
27/11/2006	386.28	389.15	70970
28/11/2006	389.15	382.46	55662
29/11/2006	382.46	377.02	53979
30/11/2006	377.02	362.88	252911

1/12/2006	362.88	363.8	32213
4/12/2006	363.8	361.77	62000
5/12/2006	361.77	358.03	51408
6/12/2006	358.03	354.76	24642
7/12/2006	354.76	353.1	57810
8/12/2006	353.1	351.97	23376
11/12/2006	351.97	349.1	15850
13/12/2006	349.1	345.54	27630
14/12/2006	345.54	350.2	72560
15/12/2006	350.2	349.81	105866
18/12/2006	349.81	349.51	31245
19/12/2006	349.51	346.4	72650
20/12/2006	346.4	346.82	20581
21/12/2006	346.82	343.91	50861
22/12/2006	343.91	335.54	29074
27/12/2006	335.54	327.51	43200
28/12/2006	327.51	323.79	108198
29/12/2006	323.79	321.68	190500
3/1/2007	321.68	371.82	56559
4/1/2007	371.82	357.95	244200
5/1/2007	357.95	36.46	107055
8/1/2007	36.46	38.92	213000
9/1/2007	38.92	42.98	442025
10/1/2007	42.98	45.63	785121
11/1/2007	45.63	42.55	805300
12/1/2007	42.55	42.66	897200
15/1/2007	42.66	40.58	311306
16/1/2007	40.58	39.79	246950
17/1/2007	39.79	39.76	174531
18/1/2007	39.76	39.17	225044
19/1/2007	39.17	36.9	247177
22/1/2007	36.9	32.01	320457
23/1/2007	32.01	30.35	1368700
24/1/2007	30.35	33.3	1098862
25/1/2007	33.3	32	1544916
26/1/2007	32	32.4	553650

29/1/2007	32.4	32.71	600079
30/1/2007	32.71	31.48	1120599
31/1/2007	31.48	30.9	708570
1/2/2007	30.9	30.82	457600
2/2/2007	30.82	30.29	492795
5/2/2007	30.29	30	411680
6/2/2007	30	29.88	727700
7/2/2007	29.88	31.28	325440
8/2/2007	31.28	30.73	571160
9/2/2007	30.73	31.15	1330340
12/2/2007	31.15	31.26	453480
13/2/2007	31.26	30.91	373098
14/2/2007	30.91	30.3	509335
15/2/2007	30.3	29.73	394519
16/2/2007	29.73	29.79	1684220

Barclays Bank (2006)

Date	**Previous Deal**	**Weighted Average Price**	**Total Shares Traded**
17/10/2006	338.95	343	58735
18/10/2006	343	346.01	74141
19/10/2006	346.01	352.97	77776
23/10/2006	352.97	371.36	47595
25/10/2006	371.36	417.95	18455
26/10/2006	417.95	468.03	64351
27/10/2006	468.03	504.07	390858
30/10/2006	504.07	463.34	335091
31/10/2006	463.34	460.8	188461
1/11/2006	460.8	449.03	155959
2/11/2006	449.03	428.07	29146
3/11/2006	428.07	415.87	140265
6/11/2006	415.87	428.69	183211
7/11/2006	428.69	439.77	379196
8/11/2006	439.77	465.85	687942
9/11/2006	465.85	623.19	162347
10/11/2006	623.19	576.92	272066

13/11/2006	576.92	547.71	345556
14/11/2006	547.71	508.64	213946
15/11/2006	508.64	515.92	173331
16/11/2006	515.92	526.31	170505
17/11/2006	526.31	549.89	142490
20/11/2006	549.89	595.51	347660
21/11/2006	595.51	599.48	217636
22/11/2006	599.48	595.96	111154
23/11/2006	595.96	589.89	78655
24/11/2006	589.89	589.31	111688
27/11/2006	589.31	593.05	95507
28/11/2006	593.05	583.41	159274
29/11/2006	583.41	574.97	173457
30/11/2006	574.97	97.16	48024
1/12/2006	97.16	85.81	55498
4/12/2006	85.81	85.43	147669
5/12/2006	85.43	83.31	140245
6/12/2006	83.31	79.13	159612
7/12/2006	79.13	78.86	283885
8/12/2006	78.86	78.07	172552
11/12/2006	78.07	76.64	246933
13/12/2006	76.64	77.01	181279
14/12/2006	77.01	76.8	204260
15/12/2006	76.8	75.91	272871
18/12/2006	75.91	71.11	270057
19/12/2006	71.11	69.15	370253
20/12/2006	69.15	69.01	274083
21/12/2006	69.01	68.56	429020
22/12/2006	68.56	68.39	412629
27/12/2006	68.39	68.27	346093
28/12/2006	68.27	70.66	527430
29/12/2006	70.66	76.31	310879
2/1/2007	76.31	82.99	398528
3/1/2007	82.99	90.05	1085180
4/1/2007	90.05	90.07	752530
5/1/2007	90.07	93.6	911935

8/1/2007	93.6	90.88	1264365
9/1/2007	90.88	88.25	685873
10/1/2007	88.25	87	754640
11/1/2007	87	84.65	864033
12/1/2007	84.65	82.35	585700
15/1/2007	82.35	83.66	446520
16/1/2007	83.66	81.81	799315
17/1/2007	81.81	81.6	689301

Barclays Bank (2011)

Date	**Previous Deal**	**Weighted Average Price**	**Total Shares Traded**
14/4/2011	64.02	62.69	211865
15/4/2011	62.69	63.3	306150
18/4/2011	63.3	63.42	55500
19/4/2011	63.42	63.4	69236
20/4/2011	63.4	63.88	235045
21/4/2011	63.88	64.48	168980
26/4/2011	64.48	64.88	92100
27/4/2011	64.88	65.3	73100
28/4/2011	65.3	65.74	149003
29/4/2011	65.74	66.15	169885
3/5/2011	66.15	65.94	116465
4/5/2011	65.94	65.85	1504785
5/5/2011	65.85	66.05	571839
6/5/2011	66.05	65.91	115106
9/5/2011	65.91	66.2	204845
10/5/2011	66.2	65.9	527770
11/5/2011	65.9	65.6	1131980
12/5/2011	65.6	65.92	534608
13/5/2011	65.92	66.04	208487
16/5/2011	66.04	66.38	134623
17/5/2011	66.38	66.16	242462
18/5/2011	66.16	66.21	150928
19/5/2011	66.21	66.27	342150

20/5/2011	66.27	66.3	480745
23/5/2011	66.3	66.82	368900
24/5/2011	66.82	67.72	257335
25/5/2011	67.72	69.71	489370
26/5/2011	69.71	69.56	1454829
27/5/2011	69.56	69.39	465745
30/5/2011	69.39	68.29	318270
31/5/2011	68.29	17.62	251020
2/6/2011	17.62	17.79	203099
3/6/2011	17.79	17.68	256710
6/6/2011	17.68	17.63	671780
7/6/2011	17.63	17.41	351625
8/6/2011	17.41	17.15	692540
9/6/2011	17.15	16.91	450200
10/6/2011	16.91	16.9	373345
13/6/2011	16.9	16.33	587190
14/6/2011	16.33	16.36	1177045
15/6/2011	16.36	16.41	846110
16/6/2011	16.41	16.78	1085150
17/6/2011	16.78	16.91	1039730
20/6/2011	16.91	17.25	962370
21/6/2011	17.25	17.41	1321039
22/6/2011	17.41	17.36	1122540
23/6/2011	17.36	17.46	929064
24/6/2011	17.46	17.47	1106050
27/6/2011	17.47	17.45	752628
28/6/2011	17.45	17.42	4806185
29/6/2011	17.42	17.24	3119321
30/6/2011	17.24	17.21	914750
1/7/2011	17.21	17.12	448316
4/7/2011	17.12	16.91	375613
5/7/2011	16.91	16.94	1776200
6/7/2011	16.94	16.82	285540
7/7/2011	16.82	16.79	1096940
8/7/2011	16.79	16.78	224920
11/7/2011	16.78	16.71	403300

12/7/2011	16.71	16.5	494240
13/7/2011	16.5	16.51	321650

Sasini Limited

Date	Previous deal	Weighted average Price	Total Shares traded
4/1/2007	137.25	139.58	92955
5/1/2007	139.58	137.85	77800
8/1/2007	137.85	139.28	108155
9/1/2007	139.28	138.04	115200
10/1/2007	138.04	139.89	172100
11/1/2007	139.89	144.88	47600
12/1/2007	144.88	143.29	313200
15/1/2007	143.29	150.05	114000
16/1/2007	150.05	147.77	320500
17/1/2007	147.77	147.05	26400
18/1/2007	147.05	143.81	91400
19/1/2007	143.81	145.12	119594
22/1/2007	145.12	144.27	9900
23/1/2007	144.27	144.63	9050
24/1/2007	144.63	144.73	6979
25/1/2007	144.73	144.08	6050
26/1/2007	144.08	143.18	27000
29/1/2007	143.18	142.17	23600
30/1/2007	142.17	144.23	33900
31/1/2007	144.23	142.3	14275
1/2/2007	142.3	137.85	26100
2/2/2007	137.85	134.27	27464
5/2/2007	134.27	138.44	6643
6/2/2007	138.44	133.87	22300
7/2/2007	133.87	132.93	28400
8/2/2007	132.93	131.92	43100
9/2/2007	131.92	131.47	89280
12/2/2007	131.47	131.9	31300

13/2/2007	131.9	131.92	38800
14/2/2007	131.92	130.93	17500
15/2/2007	130.93	62.63	15100
16/2/2007	62.63	16.75	700
19/2/2007	16.75	18.4	1200
20/2/2007	18.4	20	3100
21/2/2007	20	22	2700
22/2/2007	22	23.96	173396
23/2/2007	23.96	24.19	375100
26/2/2007	24.19	24.52	148999
27/2/2007	24.52	23.89	77430
28/2/2007	23.89	22.72	122955
1/3/2007	22.72	22.29	50956
2/3/2007	22.29	21.62	49600
5/3/2007	21.62	18.3	106900
6/3/2007	18.3	17.32	114000
7/3/2007	17.32	16.89	97500
8/3/2007	16.89	16.59	44600
9/3/2007	16.59	17.54	52600
12/3/2007	17.54	17.68	69500
13/3/2007	17.68	17.94	47500
14/3/2007	17.94	18.12	46297
15/3/2007	18.12	18.22	102800
16/3/2007	18.22	17.51	134100
19/3/2007	17.51	16.96	44800
20/3/2007	16.96	16.6	70920
21/3/2007	16.6	16.04	15750
22/3/2007	16.04	15.57	77034
23/3/2007	15.57	14.52	65518
26/3/2007	14.52	15.23	38400
27/3/2007	15.23	15.75	36600
28/3/2007	15.75	16.45	35500
29/3/2007	16.45	17.66	120300

CMC Holdings

Date	Previous deal	weighted average Price	Total share traded
16/1/2007	211.40	205.26	97900
17/1/2007	205.26	201.35	200715
18/1/2007	201.35	200.09	53398
19/1/2007	200.09	195.22	75166
22/1/2007	195.22	189.33	44424
23/1/2007	189.33	189.67	70989
24/1/2007	189.67	191.46	70087
25/1/2007	191.46	188.38	67165
26/1/2007	188.38	184.42	37700
29/1/2007	184.42	187.84	42600
30/1/2007	187.84	184.38	109500
31/1/2007	184.38	184.11	165900
1/2/2007	184.11	176.58	41400
2/2/2007	176.58	173.97	15407
5/2/2007	173.97	168.74	44390
6/2/2007	168.74	165.97	112500
7/2/2007	165.97	169.61	28300
8/2/2007	169.61	177.28	22200
9/2/2007	177.28	178.94	136995
12/2/2007	178.94	172.64	42248
13/2/2007	172.64	169.59	40421
14/2/2007	169.59	164.85	31890
15/2/2007	164.85	167.11	22400
16/2/2007	167.11	165.46	111617
19/2/2007	165.46	161.36	205300
20/2/2007	161.36	161.76	19700
21/2/2007	161.76	161.68	260072
22/2/2007	161.68	159.95	188300
23/2/2007	159.95	159.51	164500
26/2/2007	159.51	158.73	166676
27/2/2007	158.73	17.90	453500
28/2/2007	17.90	16.69	203439

1/3/2007	16.69	16.53	127500
2/3/2007	16.53	16.64	85900
5/3/2007	16.64	16.90	137200
6/3/2007	16.90	16.59	90900
7/3/2007	16.59	16.25	51900
8/3/2007	16.25	16.45	136300
9/3/2007	16.45	16.50	316900
12/3/2007	16.50	16.05	118900
13/3/2007	16.05	16.18	165500
14/3/2007	16.18	15.84	155535
15/3/2007	15.84	15.93	23250
16/3/2007	15.93	15.03	87935
19/3/2007	15.03	14.05	189658
20/3/2007	14.05	13.48	458900
21/3/2007	13.48	13.26	725800
22/3/2007	13.26	12.72	672800
23/3/2007	12.72	11.96	966600
26/3/2007	11.96	11.60	228990
27/3/2007	11.60	11.92	225400
28/3/2007	11.92	13.04	118400
29/3/2007	13.04	14.03	2672500
30/3/2007	14.03	15.11	1409800
2/4/2007	15.11	15.14	547100
3/4/2007	15.14	15.74	589700
4/4/2007	15.74	15.35	551304
5/4/2007	15.35	14.80	978200
10/4/2007	14.80	14.94	503600
11/4/2007	14.94	14.79	206000
12/4/2007	14.79	14.91	268300

KCB

Date	Previous Deal	Weighted Average Price	Total Shares Traded
20/2/2007	248.67	242.72	122239
21/2/2007	242.72	244.95	153404
22/2/2007	244.95	237.89	168847
23/2/2007	237.89	233.18	211538
26/2/2007	233.18	225.58	186120
27/2/2007	225.58	223.57	207777
28/2/2007	223.57	215.32	137462
1/3/2007	215.32	215.88	281265
2/3/2007	215.88	233.04	1061616
5/3/2007	233.04	228.39	232326
6/3/2007	228.39	222.80	196746
7/3/2007	222.80	221.81	274879
8/3/2007	221.81	216.91	612418
9/3/2007	216.91	220.06	245880
12/3/2007	220.06	218.73	112426
13/3/2007	218.73	218.60	225797
14/3/2007	218.60	219.00	59088
15/3/2007	219.00	217.16	311364
16/3/2007	217.16	218.56	553970
19/3/2007	218.56	215.82	183284
20/3/2007	215.82	218.42	117306
21/3/2007	218.42	208.62	63499
22/3/2007	208.62	188.41	173665
23/3/2007	188.41	173.83	97775
26/3/2007	173.83	170.84	270061
27/3/2007	170.84	174.26	524348
28/3/2007	174.26	188.66	67795
29/3/2007	188.66	212.86	73241
30/3/2007	212.86	226.85	445333
2/4/2007	226.85	212.27	199224
3/4/2007	212.27	22.71	749632
4/4/2007	22.71	24.80	1758000

5/4/2007	24.80	25.23	1411414
10/4/2007	25.23	24.96	888891
11/4/2007	24.96	24.94	892133
12/4/2007	24.94	24.98	809600
13/4/2007	24.98	25.06	843866
16/4/2007	25.06	25.13	225912
17/4/2007	25.13	25.25	637189
18/4/2007	25.25	24.92	329789
19/4/2007	24.92	24.26	453400
20/4/2007	24.26	24.93	170324
23/4/2007	24.93	24.71	793734
24/4/2007	24.71	25.07	1596450
25/4/2007	25.07	24.63	429914
26/4/2007	24.63	24.42	310200
27/4/2007	24.42	24.73	685533
30/4/2007	24.73	25.19	556535
2/5/2007	25.19	25.31	1942690
3/5/2007	25.31	25.11	496452
4/5/2007	25.11	25.07	281571
7/5/2007	25.07	25.32	197562
8/5/2007	25.32	25.69	205900
9/5/2007	25.69	25.88	397500
10/5/2007	25.88	25.65	143314
11/5/2007	25.65	25.95	263566
14/5/2007	25.95	25.26	975400
15/5/2007	25.26	24.88	344131
16/5/2007	24.88	24.60	424949
17/5/2007	24.60	24.70	536100
18/5/2007	24.70	24.73	292243

Nation Media Group

Date	Previous Deal	Weighted average price	Total Shares Traded
16/6/2008	351.25	353.40	10700
17/6/2008	353.40	353.62	13600
18/6/2008	353.62	351.62	39300
19/6/2008	351.62	351.00	14000
20/6/2008	351.00	347.59	77656
23/6/2008	347.59	348.50	5800
24/6/2008	348.50	345.93	19300
25/6/2008	345.93	349.72	18281
26/6/2008	349.72	349.82	15900
27/6/2008	349.82	350.57	5800
30/6/2008	350.57	347.60	5449
1/7/2008	347.60	347.40	8290
2/7/2008	347.40	346.56	2500
3/7/2008	346.56	346.00	800
4/7/2008	346.00	341.75	6641
7/7/2008	341.75	344.94	3900
8/7/2008	344.94	343.71	1909
9/7/2008	343.71	345.82	3300
10/7/2008	345.82	342.38	4599
11/7/2008	342.38	340.33	4934
14/7/2008	340.33	338.60	46775
15/7/2008	338.60	334.45	12365
16/7/2008	334.45	336.67	6500
17/7/2008	336.67	332.05	19054
18/7/2008	332.05	334.12	8199
21/7/2008	334.12	336.45	5800
22/7/2008	336.45	335.94	10890
23/7/2008	335.94	339.00	13366
24/7/2008	339.00	340.27	10138
25/7/2008	340.27	338.08	24395
28/7/2008	338.08	235.80	1400
29/7/2008	235.80	237.00	200

30/7/2008	237.00	214.00	900
1/8/2008	214.00	205.60	500
4/8/2008	205.60	185.00	200
5/8/2008	185.00	169.46	52968
6/8/2008	169.46	161.36	5880
7/8/2008	161.36	161.07	32793
8/8/2008	161.07	166.00	5400
11/8/2008	166.00	161.00	4121
12/8/2008	161.00	161.25	72680
13/8/2008	161.25	160.83	67768
14/8/2008	160.83	159.42	9800
15/8/2008	159.42	158.84	20100
18/8/2008	158.84	160.75	5500
19/8/2008	160.75	163.91	43554
20/8/2008	163.91	165.91	24800
21/8/2008	165.91	166.50	55300
22/8/2008	166.50	165.07	39794
25/8/2008	165.07	165.13	26974
26/8/2008	165.13	165.13	59700
27/8/2008	165.13	164.41	68100
28/8/2008	164.41	162.24	15100
29/8/2008	162.24	160.94	9900
1/9/2008	160.94	160.29	20000
2/9/2008	160.29	158.79	92300
3/9/2008	158.79	155.74	21734
4/9/2008	155.74	155.23	7600
5/9/2008	155.23	149.95	96500
8/9/2008	149.95	149.00	6300
9/9/2008	149.00	145.94	6266

Equity Bank Limited

Date	Previous deal	Weighted Average Price	Total Shares traded
1/20/2009	166.79	165.77	127400
1/21/2009	165.77	165.60	119900
1/22/2009	165.60	161.14	65650
1/23/2009	161.14	159.27	18552
1/26/2009	159.27	159.95	266950
1/27/2009	159.95	159.18	22600
1/28/2009	159.18	159.21	50700
1/29/2009	159.21	159.06	53200
1/30/2009	159.06	157.32	65900
2/2/2009	157.32	153.03	38650
2/3/2009	153.03	142.91	394900
2/4/2009	142.91	141.98	27080
2/5/2009	141.98	147.26	430487
2/6/2009	147.26	148.02	63500
2/9/2009	148.02	147.20	43500
2/10/2009	147.20	145.46	21500
2/11/2009	145.46	143.15	25700
2/12/2009	143.15	144.92	173700
2/13/2009	144.92	152.28	228300
2/16/2009	152.28	151.02	104900
2/17/2009	151.02	147.86	116500
2/18/2009	147.86	141.85	98700
2/19/2009	141.85	135.14	53200
2/20/2009	135.14	125.38	45100
2/23/2009	125.38	124.41	20500
2/24/2009	124.41	126.11	62100
2/25/2009	126.11	122.80	84100
2/26/2009	122.80	118.74	19730
2/27/2009	118.74	112.93	29400
3/2/2009	112.93	105.38	88900
3/3/2009	105.38	99.88	404123
3/4/2009	99.88	95.83	134500

3/5/2009	95.83	94.68	59700
3/6/2009	94.68	94.23	327040
3/9/2009	94.23	95.74	260434
3/10/2009	95.74	99.35	77700
3/11/2009	99.35	104.54	59121
3/12/2009	104.54	113.00	20500
3/13/2009	113.00	123.66	67900
3/16/2009	123.66	132.07	148790
3/17/2009	132.07	130.16	171400
3/18/2009	130.16	132.28	71100
3/19/2009	132.28	132.40	349000
3/20/2009	132.40	128.81	86950
3/23/2009	128.81	124.27	170000
3/24/2009	124.27	123.89	113200
3/25/2009	123.89	125.27	102600
3/26/2009	125.27	13.69	374400
3/27/2009	13.69	14.48	267800
3/30/2009	14.48	15.95	103200
3/31/2009	15.95	17.39	1084200
4/1/2009	17.39	17.92	1489000
4/2/2009	17.92	17.95	1455700
4/3/2009	17.95	17.94	1194400
4/6/2009	17.94	18.13	1058800
4/7/2009	18.13	18.46	443000
4/8/2009	18.46	17.95	454700
4/9/2009	17.95	16.20	645400
4/14/2009	16.20	14.60	195550
4/15/2009	14.60	13.15	355700
4/16/2009	13.15	11.85	1445800

Kenol Kobil

Date	Previous deal	Weighted average Price	Total Shares traded
19/4/2010	78.60	77.58	2900
20/4/2010	77.58	78.73	13200
22/4/2010	78.73	79.88	10300
23/4/2010	79.88	82.27	15900
26/4/2010	82.27	84.67	26250
27/4/2010	84.67	82.90	20487
28/4/2010	82.90	84.30	56900
29/4/2010	84.30	84.15	15600
30/4/2010	84.15	84.07	4700
3/5/2010	84.07	84.61	58400
4/5/2010	84.61	90.00	25100
5/5/2010	90.00	95.05	123100
6/5/2010	95.05	101.84	42400
7/5/2010	101.84	103.52	108720
10/5/2010	103.52	93.65	156100
11/5/2010	93.65	91.93	59100
12/5/2010	91.93	94.22	78960
13/5/2010	94.22	100.48	55200
14/5/2010	100.48	106.10	113800
17/5/2010	106.10	105.22	65070
18/5/2010	105.22	106.52	73200
19/5/2010	106.52	104.65	50800
20/5/2010	104.65	104.54	287800
21/5/2010	104.54	107.50	124900
24/5/2010	107.50	102.50	185300
25/5/2010	102.50	100.57	388500
26/5/2010	100.57	99.18	15100
27/5/2010	99.18	97.89	118200
28/5/2010	97.89	99.87	140200
31/5/2010	99.87	99.99	105500
2/6/2010	99.99	10.05	935900
3/6/2010	10.05	10.01	577100

4/6/2010	10.01	10.03	413900
7/6/2010	10.03	9.99	1168800
8/6/2010	9.99	9.96	924000
9/6/2010	9.96	10.00	259000
10/6/2010	10.00	9.93	892836
11/6/2010	9.93	9.81	1251500
14/6/2010	9.81	9.92	485100
15/6/2010	9.92	9.97	598200
16/6/2010	9.97	9.94	698700
17/6/2010	9.94	9.85	1363200
18/6/2010	9.85	9.80	430100
21/6/2010	9.80	9.72	755300
22/6/2010	9.72	9.74	882000
23/6/2010	9.74	9.70	913660
24/6/2010	9.70	9.78	255500
25/6/2010	9.78	9.76	183400
28/6/2010	9.76	9.86	341500
29/6/2010	9.86	9.76	783200
30/6/2010	9.76	9.63	1181300
1/7/2010	9.63	9.87	142000
2/7/2010	9.87	9.88	900100
5/7/2010	9.88	9.89	1466300
6/7/2010	9.89	9.94	358800
7/7/2010	9.94	10.04	1111300
8/7/2010	10.04	10.43	665400
9/7/2010	10.43	10.69	1003200
12/7/2010	10.69	10.87	9242200
13/7/2010	10.87	10.94	1786600
14/7/2010	10.94	10.94	653400

KPLC

Date	Previous deal	Weighted Average Price	Total Shares traded
8/10/2010	241.79	234.28	118700
11/10/2010	234.28	236.26	60250
12/10/2010	236.26	234.75	176352
13/10/2010	234.75	232.85	42700
14/10/2010	232.85	230.98	88031
15/10/2010	230.98	231.91	107300
18/10/2010	231.91	232.17	12813
19/10/2010	232.17	232.45	61000
21/10/2010	232.45	231.80	60400
22/10/2010	231.80	231.59	16225
25/10/2010	231.59	230.81	51600
26/10/2010	230.81	228.97	25250
27/10/2010	228.97	228.14	6040
28/10/2010	228.14	228.43	12748
29/10/2010	228.43	225.75	184400
1/11/2010	225.75	223.75	150800
2/11/2010	223.75	224.41	29500
3/11/2010	224.41	223.80	31777
4/11/2010	223.80	223.06	49505
5/11/2010	223.06	221.70	107225
8/11/2010	221.70	224.36	30500
9/11/2010	224.36	219.31	125700
10/11/2010	219.31	218.64	21500
11/11/2010	218.64	216.05	23500
12/11/2010	216.05	213.31	28700
15/11/2010	213.31	211.79	10900
16/11/2010	211.79	209.84	115002
17/11/2010	209.84	213.48	35080
18/11/2010	213.48	217.88	4500
19/11/2010	217.88	224.29	257955
22/11/2010	224.29	28.94	47700
23/11/2010	28.94	29.71	325300

24/11/2010	29.71	29.89	611800
25/11/2010	29.89	27.76	1334500
26/11/2010	27.76	24.23	258800
29/11/2010	24.23	23.13	103900
30/11/2010	23.13	22.63	219900
1/12/2010	22.63	16.00	161800
2/12/2010	16.00	15.42	1621337
3/12/2010	15.42	14.91	1187437
6/12/2010	14.91	8.00	1221097
7/12/2010	8.00	9.12	1593960
8/12/2010	9.12	8.94	3100295
9/12/2010	8.94	10.32	1447027
10/12/2010	10.32	8.46	5337210
14/12/2010	8.46	4.58	22672376
15/12/2010	4.58	2.16	138112512
16/12/2010	2.16	22.53	520600
17/12/2010	22.53	22.49	867487
20/12/2010	22.49	22.30	555000
21/12/2010	22.30	22.05	494000
22/12/2010	22.05	21.92	754400
23/12/2010	21.92	22.14	427948
24/12/2010	22.14	22.25	301000
27/12/2010	22.25	22.25	90300
28/12/2010	22.25	22.24	213600
29/12/2010	22.24	22.87	119700
30/12/2010	22.87	22.80	390900
31/12/2010	22.80	24.06	65000
3/1/2011	24.06	25.73	154200
4/1/2011	25.73	24.7	353950

Arthi River Mining

Date	**Previous Deal**	**Weighted Average Price**	**Total Shares Traded**
6/11/2012	227	220.71	28929
7/11/2012	220.71	223	500

8/11/2012	223	227.67	175
12/11/2012	227.67	222	1600
13/11/2012	222	218.33	400
14/11/2012	218.33	220	25300
16/11/2012	220	215.5	1100
19/11/2012	215.5	215.4	3700
20/11/2012	215.4	216.17	12700
21/11/2012	216.17	219.33	4500
22/11/2012	219.33	216.33	2500
23/11/2012	216.33	217.47	140808
26/11/2012	217.47	212.33	540
28/11/2012	212.33	218	4100
30/11/2012	218	219.08	26035
3/12/2012	219.08	215.13	25605
4/12/2012	215.13	216.4	163936
5/12/2012	216.4	219.62	140218
6/12/2012	219.62	220	121
7/12/2012	220	216.85	150500
10/12/2012	216.85	202	278
11/12/2012	202	203.86	2150
13/12/2012	203.86	210.8	13500
14/12/2012	210.8	209.56	6570
17/12/2012	209.56	217	900
18/12/2012	217	218.25	52400
19/12/2012	218.25	222.13	63966
20/12/2012	222.13	224	2400
21/12/2012	224	230.1	66500
27/12/2012	230.1	223	100
4/1/2013	223	49.93	95600
7/1/2013	49.93	52	10200
8/1/2013	52	51.62	96200
9/1/2013	51.62	55.28	566550
10/1/2013	55.28	55.89	356500
11/1/2013	55.89	57.09	286930
14/1/2013	57.09	59.02	147000
15/1/2013	59.02	59.43	89500

16/1/2013	59.43	60.05	144500
17/1/2013	60.05	59.32	89585
18/1/2013	59.32	58	64400
21/1/2013	58	57.78	10400
22/1/2013	57.78	57	22000
23/1/2013	57	55.26	79650
24/1/2013	55.26	52.9	106592
25/1/2013	52.9	52.82	14300
28/1/2013	52.82	52.57	982576
29/1/2013	52.57	52.08	131800
30/1/2013	52.08	51.93	309300
31/1/2013	51.93	52.15	684248
1/2/2013	52.15	51.86	320600
4/2/2013	51.86	52.85	29800
5/2/2013	52.85	54.92	40617
6/2/2013	54.92	56.5	101210
7/2/2013	56.5	59.58	14447360
8/2/2013	59.58	59.76	347275
11/2/2013	59.76	58.61	346920
12/2/2013	58.61	59.07	469400
13/2/2013	59.07	59.67	183950
14/2/2013	59.67	59.88	57200
15/2/2013	59.88	60.11	135600