AN INVESTIGATION INTO THE EXISTENCE OF FADS IN THE INITIAL PUBLIC OFFERING MARKET IN KENYA

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DECLARATION

This Research Report is my original work and has not been presented for the award of a degree in this or any other University.

Signed _____ Date 8 November 2011

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This Research Report has been submitted for examination with my approval as the University Supervisor.

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DEDICATION

This project is dedicated to my Daughter, Parthivi and Son, Yavan. It is meant to inspire them to continue acquiring knowledge always in Life.

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LIST OF ACRONYMS

DCF	Discounted Cash Flows
EMH	Efficient Market Hypothesis
GoK	Government of Kenya
IPO	Initial Public Offer
MML	McMillan Memorial Library
NMG	Nation Media Group
NSE	Nairobi Stock Exchange or Nairobi Securities Exchange
20NSE	20 share NSE index

ABSTRACT

The aim of the study was to test for the existence of fad explanation in the IPO market in Kenya. The study sought to examine the price behaviour of IPOs to test whether or not it was consistent with fad explanation. The research methodology was based on historical research design and relevant data was collected and evaluated of past IPOs. The data used in the study were offer prices, market prices and respective 20NSE indices which were historical and so secondary in nature and available at the NSE. The population included all companies that had been listed at the NSE since its inception in 1954 to ensure the selection of as large a sample. Judgment sampling was used where the sample had to conform to criteria and 25 IPOs were selected as the Sample. The data was analyzed by computing Price and Index Metrics to establish price behavior and determine market adjusted excess returns for both short and long term time. The study established that IPOs provided abnormal returns in the immediate aftermarket to investors who purchased at the initial offering. The mean rate of return earned over 1 day, 2 days, 20 days and 100 days respectively was 42.10 %, 41.71 %, 39.59 % and 23.87%. Under pricing of IPOs was observed with mean gain of 10.23% whereas median loss of -13.26 was consistent with fad behaviour and alternative explanations. Also there were no excess returns in the long run to investors who purchase the new issue in the aftermarket, supporting presence of fads and inefficient IPO market. Investors who purchased at the first aftermarket price underperformed the market index by mean of - 26.43% and median of – 27.72%. From the finding it can be concluded that fad explanations or mass psychology affected excess returns and exist in the IPO market. EMH was supported in the early aftermarket where full price adjustment occurred on the first day of trading. Recommendations for further research include the possibility to increase the sample size to cover all IPOs at the NSE since its inception and if possible, to examine cross sectional differences by issue size, offering price and underwriter class.

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CHAPTER ONE
INTRODUCTION

1.1 Background of the study

There exist at least some investors whose sentiment and expectations are driven by irrational investor behaviour such as fads, fashions, rumours and noise. Kortian (1995) mentions that this view first found influence with the contributions of Robert J. Shiller. In finance, the nature of behaviour associated with a fad is financial investment. The participation of such a group of investors can disrupt and destabilise speculative asset markets; they may generate excessive volatility in asset prices and contribute to the more severe episodes of financial market instability. Shiller, Fischer, and Friedman (1984) emphasised that mass psychology (social movements, fashions, or fads) may well be the dominant cause of speculative asset price movements and movements in the price of the aggregate stock market. Changing fashions, fads, and erratic shifts in investor sentiment, have been the chief causes of mispricing of assets. A fad is defined as any departure of asset prices from their fundamental values due to socially, or psychologically, induced changes in market sentiment and opinion. Shiller et al. (1984) uses contagion model to explain the dynamics of fads in the analysis of the spread of news and rumour. The model describes how a fad develops by specifying an infection rate (the rate at which interest in a fad spreads among a population) and a removal rate (the rate at which interest dissipates) in relation to the number of carriers and the size of the susceptible population. The contagion of the fad occurs through price and people are attracted by observed price increases. Observing past price increases means observing other people becoming wealthy who invested heavily in the asset, and this observation might excite other potential investors.

Shiller et al.(1984), Summers (1986), and Bollerslev and Hodrick (1992) define fads as the conjecture that market prices for securities take long swings away from their fundamental values and tend to return to them. In a time series of data, this suggests that 'the market price differs from the fundamental price by a highly serially correlated fad.' A fad is generally considered a fleeting behaviour whereas a trend is considered a behaviour that evolves into a relatively permanent change. Interest in fads among economists has been rekindled by the controversial research of excessive volatility in asset prices.

1.1.1 Initial Public Offerings (IPOs) in Kenya

In Kenya, the first three years after independence in 1963, saw steady economic growth when the Nairobi Stock Exchange (NSE) handled a number of highly oversubscribed public issues. In 1975, NSE lost its regional character following nationalizations, exchange controls and other inter-territorial restrictions introduced in neighbouring Tanzania and Uganda. In 1980, the Kenyan Government realized the need to design and implement policy reforms to foster sustainable economic development, supported by an efficient and stable financial system. It set out to enhance the role of the private sector in the economy, reduce the demands of public enterprises on the exchequer, rationalize the operations of the public enterprise sector, broaden the base of local ownership and enhance capital markets development. IPOs in Kenya have mainly been a partial privatisation by the Government of Kenya (GoK) through the NSE. Table 1 lists some of these IPOs. Through the privatization process, the Government has accomplished the policy objectives of facilitating the development of Kenya's private sector and raising revenues to fund its budget deficit (Nairobi Stock Exchange, 2008).

Table 1: Some Privatization IPOs undertaken by GoK

YEAR	COMPANY	STAKE SOLD
1988	Kenya Commercial Bank	20 %
1996	Kenya Airways Ltd.	51 %
2001	Mumias Sugar Company	59 %
May 2006	Kenya Electricity Generating Company Ltd. (KenGen)	30 %
June 2008	Safaricom Ltd.	25 %

Source: Nairobi Stock Exchange (2008)

All the IPOs listed at the NSE for the period 1990 to 2011 are shown as Appendix 1. The areas of research on IPOs in Kenya has mainly focused on the reasons of companies going public and investors demand for IPOs, approaches for valuing IPOs, performance of the IPOs and comparison of pricing of state owned privatization IPOs with private company IPOs.

1.1.2 Concept and context of Fads in Initial Public Offerings

Several factors explain the presence of fads in the IPO markets. Camerer (1989) states that, fads are more likely to occur if estimation of true intrinsic value is more difficult or if great uncertainty surrounds intrinsic value. Precisely for this reason, fads are likely to occur in newly issued securities. Intrinsic value is an amalgam of discounted dividend streams determined by exchange and is more slippery than it might appear. It depends on both the information set I_t and the discount rate (or expected return) r. When traders have different information sets (or have heterogeneous opinions based on the same information), and when discount rates vary over time, then the intrinsic value is poorly defined because each trader will have a different perceived intrinsic value. In practice, it may be difficult to disentangle observed prices from unobserved intrinsic value, but it can still be useful to speculate about deviations from intrinsic value. Trading opportunities permit speculation (buying in anticipation of selling to something with a higher perceived intrinsic value) and make market prices higher than the prices that would result if people could not resell.

Trueman (1988) states that, higher levels of noise trading are likely for riskier securities because the prices of riskier assets are more likely to change over time. He implied that the amount of noise trading by any fund manager will increase with the riskiness of the fund's investments. Black (1986) asserts that noise trading is the result of expectations such as over optimism that does not conform to standard rationality assumptions. People who trade on noise are willing to trade even though from a rational point of view they would be better off not trading. Perhaps they think the noise they are trading on is information.

IPO investors are expected by nature to be more speculative (less risk averse) investors than the conservative (more risk averse) investors. Ang and Schwarz (1985) investigate the differences in the behaviours between the two groups in two separate experimental markets. The market for speculators shows greater price volatility in both bid/ask spread within a trade as well as with intra period variances implying that speculators, cause stock prices to be more volatile. Since speculators thrive in a market with large fluctuations in prices, they are less concerned with the intrinsic value of the asset, and large deviations from intrinsic value are more probable.

Miller (1977) predicts that, fads will occur in IPOs because the marginal buyer in initial trading will be over optimistic. This is because in the typical IPO, there is wide divergence around estimates of true value, and the supply of the security is small relative to the number of investors evaluating the security. Frequently the company has not started operations, or there is uncertainty about the success of new products or the profitability of a major business expansion. Over time this uncertainty is reduced as the company acquires a history of earnings or lack of them and the market indicates how it will value these earnings. This would explain the poor performance of a group of new issues when compared to a group of stocks about which the uncertainty does not decrease over time.

1.1.3 IPO Price Behaviour and Fad Explanation

Empirical limitations have prevented conclusive evidence either supporting as in Shiller (1984), Summers (1986) and West (1988) or rejecting as in Kleidon (1986) the presence of fads in securities in general. Aggarwal and Rivoli (1990) mention that, it is not possible to test for fads in IPOs in particular but only possible to test whether or not IPO price behaviour is consistent with the fad explanation. Financial researchers have traditionally adhered to the explanation that IPOs are underpriced at the initial offering (under pricing) rather than the possibility that IPOs are not priced at intrinsic values in early aftermarket trading (aftermarket inefficiencies). The abnormal returns accruing to IPO investors may only be interpreted as evidence of under pricing by underwriters if it is assumed that the aftermarket for IPOs is efficient. DeBondt and Thaler (1989) argue that it is possible that the aftermarket is not immediately efficient in valuing newly issued securities and that the abnormal returns that accrue to IPO investors are the result of fads. Ritter (1991) also argues that the price behaviour of IPOs is consistent with the presence of fads. To evaluate this fad explanation against efficient market hypothesis (EMH), Aggarwal and Rivoli (1990) examined further the initial and the aftermarket price behaviour and returns following issuance. If an investor had purchased the IPO at the offering date and price and held the investments for one day, the rate of return earned would be some percentage points higher than from similarly timed investments in the market index. If the initial aftermarket for IPOs is efficient, then the results would also show that virtually all price adjustment takes place in the first trading day. If the market is immediately efficient in valuing new issues, then returns to investors purchasing the securities at the close on the first

day of trading will approximate the returns to the market index. Again, the implicit assumption is that the systematic risk of the IPOs is approximately the same as that of the market index. If IPOs are systematically overvalued (undervalued) in early trading, investors purchasing at the first aftermarket price will underperform (outperform) the market index.

1.2 Statement of the problem

The ideal assumption is that the aftermarket of IPOs is efficient. EMH states that over short and long run, prices are predictable and rational arbitrage ensures that prices adjust to their fundamental values wiping any abnormal returns. For instance, Miller and Reilly (1987) support EMH and conclude that investors, who purchase the new issue in the aftermarket, do not experience excess returns. On the contrary, for instance, West (1988) found that in 'fads' interpretations of the volatility tests, noise trading by naive investors plays a significant role in stock price determination. Actual studies show that psychological and sociological evidence is consistent with individuals following 'irrational' trading rules, overreacting to news, and thus generating wide variations in expected returns.

Cheluget (2008) studied the initial returns of IPOs of sample of companies listed at the NSE during the period 1984 to 2008. The findings showed an average initial return of 40.28% on the first day of trading. Leshore (2008) studied the under pricing of IPOs in the short run using a sample of 18 companies at the NSE between 1994 and 2007.The findings revealed a first day return ranging from -30.27% to a high of 140.39%. Ndatimana (2008) studied anomalies in the pricing of IPOs at the NSE. The study found evidence supporting the short run under pricing in relation to the first day trading price of the IPO. For the long run, IPOs underperform the market on their third anniversary. Simiyu (2008) researched to find out if there were differences in the under pricing and long run performance of privatization IPOs and private IPOs at the NSE. The results reveal a tendency for privatizations to be underpriced to a greater degree than the private company IPOs does. The average under pricing of privatization and private company IPOs was at 62.15% and 25.42% respectively. Over the long run, both the privatization and private IPOs underperformed the market. None of the reviewed local research articles directly addresses fads and thus the need for this study. The research gap here is the non accruing abnormal return explanation

of EMH on one end to the excess return accruing explanation of 'fads' on the other. This study proposed to fill this gap by testing whether or not IPO price behaviour is consistent with the fad explanation.

In view of the above scenario, this research attempted to address the following research questions: Is there a tendency of IPOs to provide abnormal returns in the immediate aftermarket to IPO investors who purchased at the initial offering? ; Are there excess returns to IPO investors who purchase at the initial offering over long run period of one year? ; And are there excess returns to investors who purchase the new issues in the aftermarket, after initial offering over long run period of one year?

1.3 Objectives of the study

The objectives of the research were:

1. To establish the initial aftermarket price behaviour over one, two, twenty and hundred days following issuance.
2. To establish the long-term price behaviour for a purchase at the initial offering over one year following issuance.
3. To establish the long-term aftermarket price behaviour, for a purchase on the first day of aftermarket trading over one year following issuance.

1.4 Value of the study

Findings of this study could be useful to various interested groups as described below. Financial Scholars and Academicians could use the findings regarding first day returns and long run performance of IPOs for future research. Practitioners and Stock Analysts could use the results to explain how IPOs perform over short and long - run periods. The results could be used to explain to Financial Managers that the abnormal returns accruing to initial investors are not be interpreted as 'money left on the table' in the form of under pricing by investment bank. Thus, to Investment Bankers, the results could provide defence against the charge of systematic under pricing. To the Investors, the results could show that IPOs are a profitable investment in the short term, but perform quite poorly over longer periods. The Investors could study the returns that IPOs yield during the first five months to decide whether it is more beneficial to buy and hold shares during the initial issuance or wait and buy the same in the secondary market. The Regulators of Capital Markets and Government could

use the findings to make rules and regulations on IPOs in order to optimize the Capital Markets for mutual benefit of issuers and investors. The Government could also use the findings to strategize privatization of State Corporations through IPOs. Finally, the Private Companies could use the findings to strategize when going public through IPOs.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter reviewed theoretical and empirical literature, on relevant topics related to this research. Theoretical review discussed the origin of IPOs; types of investors; definition of fad; efficient market hypothesis; evidence of fads and fads as informational cascades. Empirical review discussed evidence that supports fads and objects EMH. Critical review closed the chapter by identifying gaps in recent studies in relation to the proposed study.

2.1 Theoretical Review

2.1.1 Origin of Initial Public Offerings

An initial public offering (IPO) occurs when shares are sold to the public for the first time, with the expectation that a liquid market will develop. The shares offered in an IPO are usually a new issue, but they may also be shares held by major shareholders, or a mixture of both. If a company prospers and needs additional equity capital, at some point the firm generally finds it desirable to 'go public' by selling stock to a large number of diversified investors (Ritter, 1998).

In 1602, the Dutch East India Company was the first company in the world to issue stocks and bonds in an initial public offering .It was a chartered company established in 1602, when the States General of the Netherlands granted it a 21-year monopoly to carry out colonial activities in Asia. The Dutch had reached a stage where they needed to reorganise their economy and they did so with a revolutionary idea of public issuance. The Amsterdam bourse founded in September 1602 within six months of the company's formation was an integral component to its success. The Dutch East India Company grew to an organisation of 50,000 civilian employees, with a private army of 40 warships, 20,000 sailors and 10,000 soldiers to become the most powerful business in the history of the world. The key to its success was opening up to the public the ownership that enabled the vast sum of 6.5 million guilders to be raised. The history of the Dutch East India Company is also a kind of pattern of what was to happen to companies on stock markets over the years to come. The company's IPO

saw a 'pop' of 15% to its issue price, the first opportunity for investors to stag an IPO in history. Long-term holders were on to a good investment too, and twenty years later the share price had risen 300% and the average dividend from the company was a fat 18%. By the late 18th century, after nearly 200 years of operation, the company began to fail and the share price crashed. With 110 million guilders of debt, the Dutch East India Company burst. While the story of this individual company was over, the history of stock markets and IPOs was only just beginning (Chambers, 2008).

2.1.2 Definition of Fad

Camerer (1989) defines a fad F_t as a deviation between prices P_t and fundamental or intrinsic value P_t^*, that slowly reverts to its mean of zero. That is, $F_t = P_t - P_t^*$. Making P_t the subject of this definition, gives P_t (price) = P_t^* (intrinsic value) + F_t (fad element). Applying the discounted dividend model of stock prices for P_t^* (intrinsic value), then $P_t = \sum_{i=1}^{\infty} \frac{E(D_{t+i})}{(1+r)^i} + F_t$ (1)

with $F_t = CF_{t-1} + e_t$ or $F_{t+1} = CF_t + e_t$.

In this model, D_t is dividend paid by the asset in period t, r is all investors identical discount rate per period, C is a parameter measuring the rate of decay of the fad, e_t is a zero mean independent error term and i is the time from 1 to ∞. In this approach, the asset price is modelled as the sum of the fundamental component (the discounted sum of the expected dividend) and a fad component which, while it is assumed to persist, is not assumed to diverge indefinitely (i.e. $0 \leq C < 1$). If C = 0, any fads disappear immediately. If $C = 1 + r$, the fad is a rational growing bubble. Fads are not rational because equation (1) does not satisfy the equilibrium condition if $C < 1$. Here, the expected return on the faddish part of the price will be less than r and investors should sell assets, making the fad disappear. However, if C approaches one, the fad may be so slow to decay that investors cannot easily profit by betting on it to disappear.

2.1.3 Evidence of Fads

Debate about fads is purely empirical since fads are not well understood theoretically. Using variance bounds tests, Shiller (1981) supports the hypothesis that stock prices are heavily influenced by fads or waves of optimistic or pessimistic market psychology. Tests of the volatility of stock prices generally show that stock prices are not rational forecasts of perfect foresight prices. These tests are sophisticated,

voluminous, and subtle (Leroy, 1984), (Shiller, 1984) and (Kleidon, 1986). The idea of a variance inequality or bounds test is derived below.

Kleidon (1986) considers stock prices with a new variable, the perfect foresight price of stock (p_t^*), defined as that price which would prevail if future dividends d_{t+1} were known. In the dividend valuation model p_t^* is defined thus, $p_t^* = \sum_{i=1}^{\infty} \beta^i d_{t+i}$ (2)

with $\beta = \frac{1}{(1+r)^i}$ and r is the constant discount rate.

LeRoy (1984) states that actual stock prices are assumed to be identical to the summed discounted value of expected dividends. The expectation is conditional on I_t, the information investors have at date t. Thus, $p_t = E_t (p_t^*) \equiv E (p_t^* | I_t)$ (3)

Camerer (1989) supposes that today's asset price p_t is an unbiased forecast of the perfect foresight price p_t^*. Then $p_t^* = p_t + e_t$ (4)

where e_t is an error term. A lack of bias implies that $E (p_t^* | p_t)$ is simply p_t, or by implication of (4), $E(e_t | p_t) = 0$. That is, we expect forecast errors to be unrelated to price levels. Thus, e_t and p_t should be uncorrelated. If they were positively correlated, for example, then when prices were high, e_t would be high, so we would know prices were higher than the perfect foresight price and we could profit by selling assets. If p_t and e_t are uncorrelated in (4), then by taking variances of all variables, we see that $V (p_t) + V (e_t) = V (p_t^*)$ (5)

Since variances must be positive, this equation implies the variance bound or inequality, $V (p_t) \leq (p_t^*)$ (6)

The basis for this inequality is that, since the price rationally forecasts p_t^* by (3), the variance of the forecast (the price) should be less than that of the variable being forecast. It implies that the actual prices should vary less than the perfect foresight prices do, because a good forecast should be less volatile compared to the variable being forecasted.

2.1.4 Theory of Investor Choice and Types of Investors

The Theory of Rational Decision Making under uncertainty (also known as Utility Theory under uncertainty) is concerned about the choice between timeless risky alternatives. The assumptions made about an individual's behaviour when confronted with the task of ranking risky alternatives given non satiation are that all individuals are always assumed to make completely rational decisions, that individuals are

assumed to make these rational choices amongst thousands of alternatives and that these individuals always prefer more wealth to less wealth i.e. the marginal utility of wealth is always positive (Copeland, Weston and Shastri, 2005).

The Utility Theory models individual decisions and aims at incorporating the decision makers (investors) preference explicitly in the decision process. The assumption is that the rational decision maker maximizes his utility and therefore will accept projects which yield maximum utility to him. Generally, there are three types of investors. A risk averter individual avoids risk as much as possible. He will receive more utility from the actuarial value of the gamble (i.e., its expected or average outcome) obtained with certainty than from taking the gamble itself. Therefore the marginal utility of wealth is positive but decreasing and hence a strictly concave utility function. His utility of expected wealth is greater than the expected utility of wealth. The person who prefers the gamble is a risk lover. Risk lovers take risks in anticipation of high returns such that their marginal utility of wealth is positive and increasing and hence a convex utility function. His utility of expected wealth is lesser than the expected utility of wealth. Risk neutral individuals are indifferent or not influenced by risk in making their decisions. Therefore their marginal utility of wealth is positive and constant and hence a linear utility function. His utility of expected wealth is equal to the expected utility of wealth (Copeland et al., 2005).

2.1.5 Fads as Informational Cascades

One of the striking regularity of human society is localized conformity i.e. Kenyans act Kenyan, or Americans act American. Informational cascades explain the localized conformity of behaviour and the fragility of mass behaviours. An informational cascade occurs when it is optimal for an individual, having observed the actions of those ahead of him, to follow the behaviour of the preceding individual without regard to his own information. Four theories that suggest uniform social behaviour are stated here. Sanctions on deviants' theory (such as stigmatising of persons those outside the norm of the social unit) can enforce a malevolent dictatorship. Peer pressure or coercion is the explanation for conformity here. Conformity preference by individuals' theory, mentions the direct preference of individuals for conforming to the behaviour of others. Conformity here is interpreted as information based rather than coercive where individuals, especially those with little information or experience.

obtain information from the decisions of others. The communication theory implies convergence toward the correct outcome if communication is credible and costless. Conformity can be achieved if early individuals explain the benefits of alternatives to later ones. Finally, positive payoff externalities of conformity for instance can drive a better technology to extinction (Bikhchandani, Hirshleifer and Welch, 1992).

Informational cascades models the dynamics of imitative decision processes. In a general setting with sequential choices, at some stage a decision maker will ignore his private information and act only on the information obtained from previous decisions. Once this stage is reached, his decision is uninformative to others. Therefore, the next individual draws the same inference from the history of past decisions. Thus if his signal is drawn independently from the same distribution as previous individuals', this individual also ignores his own information and takes the same action as the previous individual. In the absence of external disturbances, so do all later individuals. Cascades can be either positive (all individuals adopt) or negative (all individuals reject). Although the outcome may or may not be socially desirable, a reasoning process that takes into account the decisions of others is entirely rational even if individuals place no value on conformity for its own sake. Imitation is an important social phenomenon in sociology, and social psychology (Bikhchandani et al., 1992).

Informational cascades explain not only conformity but also rapid and short lived fluctuations such as fads and fashions. Fads and conventions often change without apparent reason. Cascades can cause individuals to converge on the wrong decision. Seemingly whimsical shifts in behaviour occur because an initial cascade may aggregate very little information. If there is a small probability that the underlying value changes at a particular stage, then cascades can switch, not just because the right action has changed, but because people are not sure whether it has changed. The possibility that value changes can cause random signal outcomes to deceive, so that sometimes behaviour changes even when value does not. Thus behaviour may change frequently even if value seldom changes. In conjecture other types of noise or shocks, such as imperfect observation of actions or ignorance of preferences, can also shift cascades and cause fads. It has frequently been argued that stock market price movements are caused by waves of investor sentiment. Cascades can be viewed in the decision of investors to subscribe to an initial public offering where if sufficiently

many (few) individuals sign up early to receive shares, all (no) subsequent individuals follow their lead. Underwriters to an IPO may consider the optimal pricing of shares to induce cascades of subscription (Bikhchandani et al., 1992).

2.1.6 Efficient Markets Hypothesis

Fama's general definition of asset market efficiency is that the asset prices arising from efficient capital markets fully reflect all of the information in some relevant information set (Kortian, 1995). He distinguished three versions of market efficiency depending on the particular specification of the information set. These are weak form efficiency, semi strong form efficiency and strong form efficiency corresponding to information sets which contain respectively only past prices and returns, all publicly available information, all information, both publicly available as well as insider or private information. Efficient Market Hypothesis (EMH) postulates that all information relevant to determining the intrinsic value of an asset will, by virtue of the actions of rational, profit maximising traders, be embodied in the actual market price. As a consequence, asset prices will fully reflect all relevant information, and will move only upon the receipt of new information. If asset markets do not act as efficient aggregators and processors of relevant information, the resulting disparity between market prices and intrinsic values would present traders with easily identifiable and riskless profit opportunities. In exploiting such opportunities (i.e. purchasing underpriced assets and selling overpriced ones), rational speculators would quickly drive asset prices back towards their intrinsic values, thereby having a stabilising influence on asset markets. Speculators (i.e. investors whose conduct may be characterised as irrational and destabilising who did not behave in this manner) would make losses and be forced to exit the market (Kortian, 1995).

The two troubling characteristics of the EMH are the implication that future prices are not influenced by past movements in the asset price, and that speculation can have only a stabilising influence upon asset markets. It is clear that past prices do influence the behaviour of investors and traders. There are several features of trading in real world asset markets which are contrary to the sort of behaviour implied by the EMH. For example, the widespread use of chartism and technical analysis assumes that publicly available information, such as past asset price movements, can be profitably exploited to predict future movements in an asset price. If the EMH fully explained

behaviour in asset markets, chartism should die out, yet its importance seems to have increased. Also contrary to the EMH is the extensive use of stop loss orders, i.e. selling orders which are activated once the asset price has fallen by a certain pre determined amount. This means that, rather than buying an asset as its price falls, investors trigger additional selling and so push the asset price down further. Contrary to EMH is the growth of dynamic hedging strategies such as portfolio insurance, which involve investors selling into a falling market and buying into a rising one. Their presence is also consistent with the view that investors in asset markets can often behave in a destabilising manner (Kortian, 1995).

Besides the mechanical influences of chartism, stop loss orders and portfolio insurance, there are more fundamental ones based on human behaviour such as mass psychology, herd behaviour and other seemingly irrational behaviour in influencing asset price movements. Typically, many investors do not enter a market as buyers until after they have heard of the fortunes being made there, i.e., until after it has already risen. Greed and sometimes fear has been the motivation. The concept of a market price that returns to its intrinsic value as the result of the activities of speculators (or arbitrageurs) also has its difficulties. The major one is that in some asset markets there is no satisfactory model of what the underlying price should be. If the experts cannot tell what the equilibrium value should be, or even what variables should determine it, how are market participants able to move the price toward the equilibrium value? Also, how are economists to know, after the event, whether any movement initiated by speculators was in the direction of the intrinsic value, or away from it? There are several appealing features of this new view of asset markets, apart from the fact that they permit the possibility that observed asset prices will not always be at their equilibrium. Some of these models incorporate the behaviour only of investors who behave rationally, while others incorporate different groups of investors some of which behave rationally and others in an irrational way (Kortian, 1995).

2.2 Empirical Review

Using US data for 1926–89, Schaller and Norden, (2002), find evidence which is consistent with the fads model even when allowing for variation in expected dividend growth rates and expected discount rates. Events of the five years from 1998 to 2001, and particularly the terrific rise and fall in the value of 'dot-com' shares, had

challenged the view that most stock price movements are justified by news about the fundamental value of the underlying firms. Previous authors have shown that the fads model implies that apparent deviations from fundamental price will help to predict stock market returns. Schaller et al., (2002), estimates of the relevant coefficient generally support this implication.

Shiller (1990) attempted surveys in 1987 and 1989 to understand why the IPO markets show very high initial returns. Prices of IPO's have shown a striking tendency to jump up dramatically as soon as the aftermarket trading begins. He found that investor psychology is very much on the minds of respondents. Investors themselves think there are fads in these markets, contrary to the assumption of the rational expectations models in the literature. Thus, waves of enthusiasm for IPO's appear to be related to interpretations of what other investors are thinking and to evidence on this from observed price movements. Shiller's impresario hypothesis explains the psychology for under pricing of issues. Impresarios who manage entertainers know that the public interprets empty seats in an auditorium as reflecting badly on the performer, and a packed auditorium, that the performer is very much in the public favour. Impresarios know that they should not always price tickets to an event as to maximize profits on that single event. To do so runs the risk that the event will be undersubscribed. It is better to create an excess demand for the tickets, with scenes of people queuing for tickets, or trading among themselves at higher prices. This impression will tend to produce greater demand for subsequent events (Shiller, 1990).

Similarly, under pricing IPOs will create the high initial returns that leave the impression that the underwriter is giving good investment advice. By this theory, 'hot markets' appear when some marketer for IPOs discovers that some segment of the public is ripe for a 'fad' for IPOs. Underwriters then let the high initial returns run for a while to generate publicity and good will for the IPOs. In Shiller's survey, a substantial fraction of both wealthy individuals and institutional investors admit that they interpret initial returns in accordance with the impresario theory (Shiller, 1990).

In a world with fads, Cutler, Poterba and Summers, (1991) show that a measure of the deviation of actual price from fundamental price will predict returns. They present evidence that deviations of asset values from proxies for fundamental value have

predictive power for returns. That is there is a tendency toward 'fundamental reversion" in asset prices. Miller and Reilly (1987) mention that many studies have been done that conclude that consistent with the EMH, prices adjust rapidly to the under pricing, and investors who purchase the new issues in the aftermarket (a day, week or a month after initial offering) do not experience excess returns. Hence, aftermarket efficiency has been supported since there are typically no abnormal returns for investors purchasing in the aftermarket.

Recently the Efficient Markets Hypothesis and the notions connected with it have provided the basis for a great deal of research in macroeconomics. This research has typically assumed that asset prices are in some sense rationally related to economic realities. Summer (1986) examines the power of statistical tests commonly used to evaluate the efficiency of speculative markets. His analysis suggests that certain types of inefficiency in market valuations are not likely to be detected using standard methods. This means the evidence found in many studies that the hypothesis of efficiency cannot be rejected should not imply that market prices represent rational assessments of fundamentals valuations. The fact implies that most of the tests have relatively little power against certain types of market inefficiency. In particular, the hypothesis that market valuations include large persistent errors is as consistent with the available empirical evidence as is the hypothesis of market efficiency. These are exactly the sort of errors in valuation one would expect to see if market valuations involved inflation illusion or were moved by fads. The weakness of the empirical evidence verifying the hypothesis that securities markets are efficient in assessing fundamental values would not be a problem if the hypothesis rested on firm theoretical foundations, and if there were no contrary empirical evidence. Unfortunately, neither of these conditions is satisfied in practice.

2.3 Critical Review

The results obtained in the study by Adams, Thornton and Hall (2008) indicate that the price adjustment to under pricing in IPOs takes place within one day after the offering. The rapid adjustment of the initial under pricing appears to support the semi strong form of the EMH. However, they do not state that this could be due to behavioural finance that blends investor psychology and normative financial theory to explain the aftermarket. This gap needs to be filled, as the rationality implied in the

EMH is too strict for the IPO market due to the limited information about IPO firms in the aftermarket.

The results of Saro and Chenine (2007) suggest that the market correctly prices IPOs in the long- run thus upholding the Market Efficiency Hypothesis. However, this contradicts the Behavioural Hypothesis and leaves a gap that needs to be determined in the study. Zouari, Boudriga and Taktak (2009) find that the average market adjusted initial return for the first three trading days is about 17.8 percent. Their paper examined the initial under pricing for a sample of 34 Tunisian IPO's from the period 1992-2008.However, they highlighted varying level under pricing across the years. The average under pricing for the sample IPOs is comparable to other international studies but very different from those of the Chinese market. However, the high initial returns and under pricing leave a gap that needs to be determined by this study.

2.4 Summary of Literature Review

While there are alternative models of stock price determination, there is little consensus on which of these alternatives gives the most realistic description of the ongoing behaviour we observe in financial markets. This in turn reflects the limited work which has been done comparing the performance of such alternative models.

CHAPTER THREE
METHODOLOGY

3.1 Field Research Design

Historical research design was used to study the problem. Moore (as cited in Mugenda, 2005) defines historical research as the study of a problem that requires collecting information from the past. Compton & Hall (as cited in Mugenda, 2005) states historical research consists of locating, integrating and evaluating evidence from historical written records or documents in order to establish facts or generalizations regarding past events. The purpose of historical research is to arrive at conclusions concerning causes, effects or trends of past occurrences that may help explain present events and anticipate future events. Historical research is employed by researchers who are interested in reporting past events in an attempt to establish facts in order to arrive at conclusions concerning past events (Mugenda, 2005). Using NSE data, this event study measured the impact of past IPOs on the prices of issued securities to examine their short and long term IPO returns. It involved the collection and evaluation of quantitative data, in this case, the offer prices, market prices and respective NSE indices related to past events, the IPOs. Its purpose was to synthesize evidence to establish facts that defended or refuted the research problem in this case, whether or not excess returns accrue to IPO investors consistent with the fad explanation. Historical research uses secondary data from official archived sources that must be both authentic and valid. The prices and indices used in the study were historical and so secondary in nature, and were available from official NSE archives or Daily Newspaper Stock Market Update, making them both authentic and valid.

3.2 Target population

The target population of the study included all companies that have been listed at the NSE since its inception in 1954 including all firms that have been delisted, or suspended. This ensured the selection of as large a sample as possible of companies that have raised equity through IPOs.

3.3 Sample and sampling techniques

The sample for this study was 25 IPOs selected by judgment sampling. Judgment sampling occurs when a researcher selects sample members to conform to some

criterion. Judgment sampling is suitable when a limited number of members possess the trait of interest. It is the only viable sampling technique in obtaining information from a very specific group of members (Schindler & Cooper, 2006). For a firm to be included in the sample, it must (i) have had equity stock listed at the NSE (ii) have made the initial offer to the public (iii) have information relating to offer price (iv) have after market closing prices up to one year (v) have information relating to any stock splits and dividends. Data collection revealed only 25 IPOs, during 1990 to 2011 met the above criteria for which data is available at the NSE, NMG and MML.

3.4 Data collection techniques

The required data for the study was secondary in nature already in databases of NSE, NMG and MML. Their relevant staffs were approached to avail the required data in hard and soft form. The relevant data included (i) the offer price, date and NSE- 20 share index, (ii) the first trading market price, date and NSE-20 share index and (iii) the aftermarket prices and NSE - 20 share indices up to a year after initial offer.

3.5 Data analysis techniques

Data was analysed by computing the mean, median and standard deviation of the metrics employed in the study. These metrics as modelled by Aggarwal and Rivoli (1990) measured the percent difference between the closing day bid price (P_t) in the aftermarket and the initial offer price (P_0). To adjust for systematic risk, an equivalent benchmark return, which is the $20NSE_t$ share index metric, was subtracted from the price metric. The implicit assumption is that the systematic risk of the IPOs is the same as that of the index – that is, that the betas of the IPOs average to 1. The metrics that were analysed are explained below.

3.5.1 The Initial Aftermarket Price Behaviour

This metric tested for the abnormal return for each IPO and is defined as X_t where

$$X_t = \left[\frac{P_t - P_0}{P_0} - \frac{20NSE_t - 20NSE_0}{20NSE_0}\right] 100 \quad \ldots\ldots(1)$$

where P_t = the closing price of the security t trading days after initial offering; P_0 = the initial offering price of the security; $20NSE_0$ = the value of the NSE index on the date of the offering; and $20NSE_t$ = the value of the 20NSE index t trading days after the offering. Abnormal returns for time t are the amount (in percentage points) by which

the price appreciation of the IPOs exceeds that of the 20NSE index for a purchase at the offering date and sale t days following the offering. The aftermarket for IPOs would said to be quite efficient when abnormal returns (plus or minus) show that virtually all price adjustment (up or down) takes in the first trading day.

3.5.2 Under Pricing Metric

This metric tested the possibility that underwriters do not systematically price IPOs below their intrinsic values. If offering prices are set by underwriters at true values, the returns to investors purchasing the IPOs at the offering prices and holding the security for one year should be approximately equal to the returns on the $20NSE_{250}$ share index. That is,

$$X_{250} = \left[\frac{P_{250} - P_0}{P_0} - \frac{20NSE_{250} - 20NSE_0}{20NSE_0}\right] 100 \quad \ldots\ldots (2)$$

should be equal to zero. X_{250} , represents the amount (in percentage points) by which the price appreciation of IPOs exceeds that of the $20NSE_{250}$ index for a purchase at the offering price and sale 250 days following the offering. If X_{250} , is systematically positive, it may be concluded that the early abnormal returns that accrue to investors in IPOs are due to under pricing. If X_{250} , is systematically negative other factors such as institutional practices, aftermarket undervaluation and risk measurement explain this.

3.5.3 The Market Adjusted Metric

In order to evaluate whether IPOs purchased in the initial aftermarket underperform the market, the value for abnormal appreciation Y_{250} was computed where

$$Y_{250} = \left[\frac{P_{250} - P_1}{P_1} - \frac{20NSE_{250} - 20NSE_1}{20NSE_1}\right] 100 \quad \ldots\ldots (3)$$

Y_{250} represents the amount by which the price appreciation of the IPOs exceeds that of the NSE index for a purchase on the first day of aftermarket trading and sale 250 days following the offering (in percentage) points . If the market is immediately efficient in valuing new issues, then returns to investors purchasing the securities at the close on the first day of trading will approximate the returns to the market index and then values for Y should approximate zero.

3.5.4 Mean, median and standard deviation for entire sample

For total sample the mean, median and standard deviation were also computed using data for all the IPO metrics computed above. The mean is the typical or average return

for the entire sample of companies for each test day. Median symbolized M is the middle value of abnormal returns. when the returns are sorted from lowest to highest value, for the entire sample of companies for each test day. Unlike mean, median is the most important locator of centre and has resistance to extreme scores, thereby making it a preferred measure of ratio data such as percentages of abnormal returns (Schindler & Cooper, 2006).

Total mean for the metrics above was calculated by the formula below.

$$\bar{X}i = \frac{\sum_{i=1}^{n} Xi}{n} \quad \text{.....(4)}$$

The standard deviation (denoted s.d.) is the dispersion or spread around the mean of the returns for the entire sample of companies for each test day. Standard deviation is the square root of the measure of return dispersion about the mean return .The greater the dispersion of returns, the greater the standard deviation. It is the most common measure of spread since it expresses the deviations in their original units (Schindler & Cooper, 2006). S.d. for the metrics above was calculated by the formula below.

$$sd = \sqrt{\frac{\sum_{i=1}^{n}(Xi-\bar{X})^2}{n-1}} \quad \text{.....(5)}$$

To establish for fad or trend of returns, a linear regression of the form $X_t = mt + c$ was determined. A line graph was plotted, of mean return X_t against each test day t for the entire sample of Companies to depict both direction and shape of any observable relationship between these variables.

CHAPTER FOUR

DATA ANALYSIS AND FINDINGS

4.1 Initial Aftermarket Price Behaviour

The objective of this analysis was to establish the initial aftermarket price behaviour over one, two, twenty and hundred days (short term) following issuance.

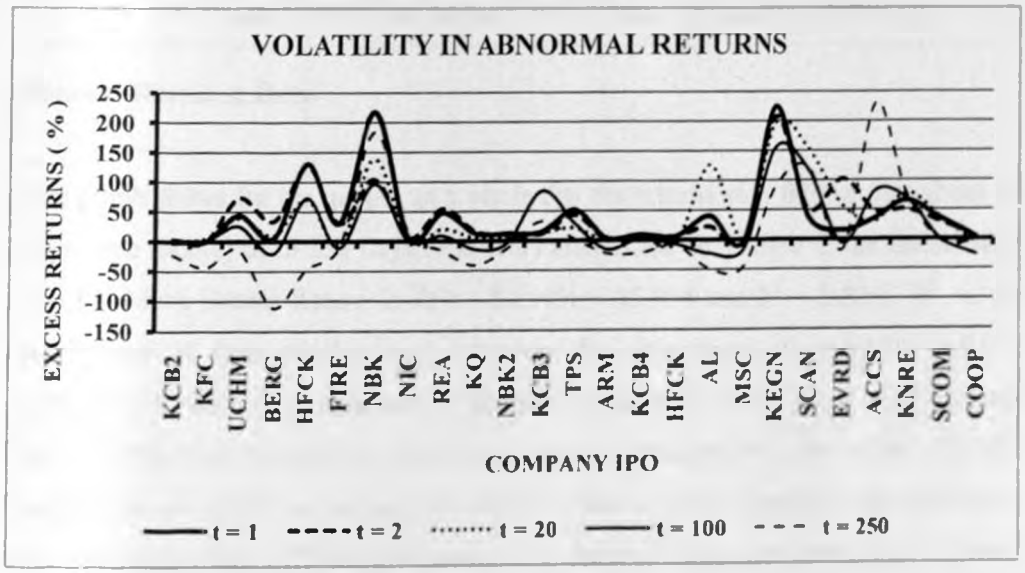
Table 2 : Abnormal Returns from Offering Day to Five Month Following

CODE	IPO COMPANY	X t = 1	X t = 2	X t = 20	X t =
KCB2	Kenya Commercial Bank Ltd - 2nd IPO	3.19	2.29	2.31	
KFC	Kenya Finance Corporation	-0.20	-0.70	4.83	
UCHM	Uchumi Supermarket Ltd	43.85	73.14	39.31	
BERG	Crown Berger Ltd	6.05	34.16	9.82	-2
HFCK	Housing Finance Co Ltd	130.65	127.07	70.58	
FIRE	Firestone	30.46	29.91	-6.95	-1
NBK	National Bank of Kenya Ltd	216.87	103.97	138.28	9
NIC	NIC Bank Ltd	6.00	5.85	-2.02	
REA	Rea Vipingo Plantations Ltd	47.29	54.22	20.16	
KQ	Kenya Airways Ltd	13.29	16.72	4.86	-1
NBK2	National Bank of Kenya Ltd - 2nd IPO	12.61	10.54	6.22	
KCB3	Kenya Commercial Bank Ltd - 3rd IPO	15.00	12.17	12.62	8
TPS	TPS (Serena) Ltd	51.63	43.08	21.13	2
ARM	Athi River Mining	4.34	2.44	-1.02	-1
KCB4	Kenya Commercial Bank Ltd - 4th IPO	9.69	9.69	6.67	
HFCK	Housing Finance Co Ltd	6.94	6.61	-6.90	-
AL	African Lakes	40.25	22.15	126.08	-2
MSC	Mumias Sugar Co. Ltd	-3.31	-3.43	1.57	-1
KEGN	KenGen Ltd	224.18	207.54	196.39	15
SCAN	Scangroup Ltd	38.43	50.94	152.46	11
EVRD	Eveready East Africa Ltd	15.49	102.22	57.01	-
ACCS	Access Kenya Group Ltd	35.46	48.05	29.43	8
KNRE	Kenya Re-Insurance Corporation Ltd	65.47	50.42	78.61	6
SCOM	Safaricom Ltd	34.84	29.13	36.35	-
COOP	The Co-operative Bank of Kenya Ltd	3.96	4.56	-8.09	-2
	N (Sample size)	25	25	25	
	Mean ($\bar{X}i$)	42.10	41.71	39.59	2
	Standard Deviation (sd)	60.80	49.47	56.72	5
	Median (M)	15.49	29.13	12.62	

Source: Research Data

In Table 2, National Bank of Kenya Ltd IPO has a positive abnormal return of 216.87% on first day of trading and 96.31% after 100 days (five months) of trading. Similar positive abnormal returns have been observed for IPOs of companies such as Ken Gen Ltd (224.18% to 155.15%), Kenya Re-Insurance Corporation Ltd (65.47% to 68.90%) among others. On the other hand very low and even negative abnormal returns can be observed for IPOs of companies such as Kenya Commercial bank Ltd - 2nd IPO (from 3.19% to -3.08%) , Kenya Finance Corporation (-0.20% to 1.36%) , Mumias Sugar Co Ltd (-3.31% to – 15.92%) , The Cooperative Bank of Kenya Ltd (3.96% to -26.30%) among others. These excess returns by Company IPO for the entire sample have been shown in Exhibit 1 below indicating great volatility and variability in excess returns of company IPOs over time and across companies.

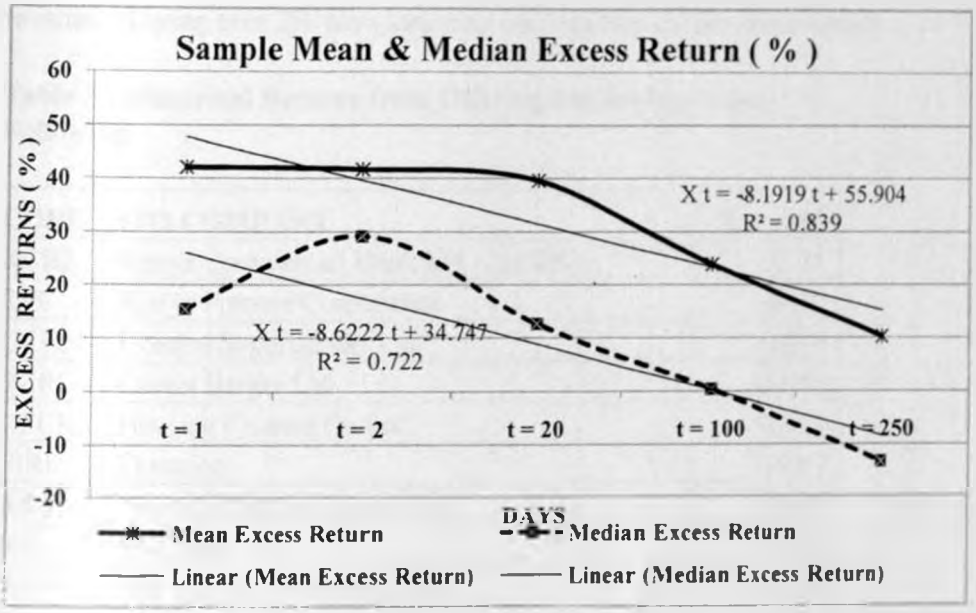
Exhibit 1. Excess Returns - Purchase at offering and hold for t days



Source: Research Data

The Mean and Median Excess Returns of Table 2 are graphed in Exhibit 2.

Exhibit 2. Mean Excess Returns for the entire sample for each t day



Source: Research Data

The graph shows for the sample as a whole that the returns start falling after about 20 days (one month) in to 250 days (one year) after issue. In Exhibit 2, the linear trend line for Mean Excess Return is $\overline{X}t = -8.1919t + 55.904$ and $R^2 = 0.839$. R^2, is the coefficient of determination and measures the proportion of variability of the Abnormal Returns (Xt) explained by the lapse of time (t days). R^2 of 0.839 implies that 83.90% of the variability in excess returns is explained by lapse of time (t). The coefficient of -8.1919 of the time variable implies that mean positive excess returns are decreasing from 55.904% (the constant in the trend equation) over time. Similar interpretation holds for the linear trend line for Median Excess Return $\overline{X} = -8.6222t + 34.747$ and $R^2 = 0.722$. Exhibit 2 further shows that the abnormal return distribution is positively skewed, such that median returns are less than mean returns, although the medians are still positive except after one year.

4.2 Under Pricing Metric

The objective of this analysis was to establish the price behaviour for a purchase at the initial offering over 250 days (one year i.e. long term) following issuance.

Table 3 : Abnormal Returns from Offering Day to One Year Following

CODE	IPO COMPANY	X t = 250
KCB2	Kenya Commercial Bank Ltd - 2nd IPO	-23.11
KFC	Kenya Finance Corporation	-44.70
UCHM	Uchumi Supermarket Ltd	-14.19
BERG	Crown Berger Ltd	-111.66
HFCK	Housing Finance Co Ltd	-47.58
FIRE	Firestone	-10.67
NBK	National Bank of Kenya Ltd	183.65
NIC	NIC Bank Ltd	14.22
REA	Rea Vipingo Plantations Ltd	-16.08
KQ	Kenya Airways Ltd	-41.44
NBK2	National Bank of Kenya Ltd - 2nd IPO	-13.26
KCB3	Kenya Commercial Bank Ltd - 3rd IPO	32.72
TPS	TPS (Serena) Ltd	2.79
ARM	Athi River Mining	-21.99
KCB4	Kenya Commercial Bank Ltd - 4th IPO	-21.70
HFCK	Housing Finance Co Ltd	-8.91
AL	African Lakes	-49.45
MSC	Mumias Sugar Co. Ltd	-45.98
KEGN	KenGen Ltd	88.38
SCAN	Scangroup Ltd	121.47
EVRD	Eveready East Africa Ltd	-17.37
ACCS	Access Kenya Group Ltd	229.96
KNRE	Kenya Re-Insurance Corporation Ltd	77.79
SCOM	Safaricom Ltd	-2.98
COOP	The Co-operative Bank of Kenya Ltd	-4.19
	N (Sample size)	25
	Mean ($\bar{X}i$)	10.23
	Standard Deviation (sd)	76.25
	Median (M)	-13.26

Source: Research Data

The sample as a whole significantly outperforms the market as shown by the mean return of 10.23% in Table 3. It can be observed Access Kenya Group Ltd (229.96%), National Bank of Kenya Ltd 1st IPO (183.65%), Scangroup Ltd (121.47%), KenGen Ltd (88.38%) and Kenya Commercial Bank 3rd IPO (32.72%) have significant abnormal returns even after one year. 8 out of 25 sample IPOs have positive returns and in the long run outperform the market. On the other hand, the median return of -13.26% shows that the sample as a whole significantly underperforms the market. This is because the 17 out of 25 sample IPOs have negative returns and in the long run underperform the market. In fact, for most Company IPOs returns are generally negative, and in several cases the negative values are significant.

4.3 Market Adjusted Performance Metric

The objective here was to establish the aftermarket price behaviour. for a purchase on the first day of aftermarket trading over one year (long term) following issuance.

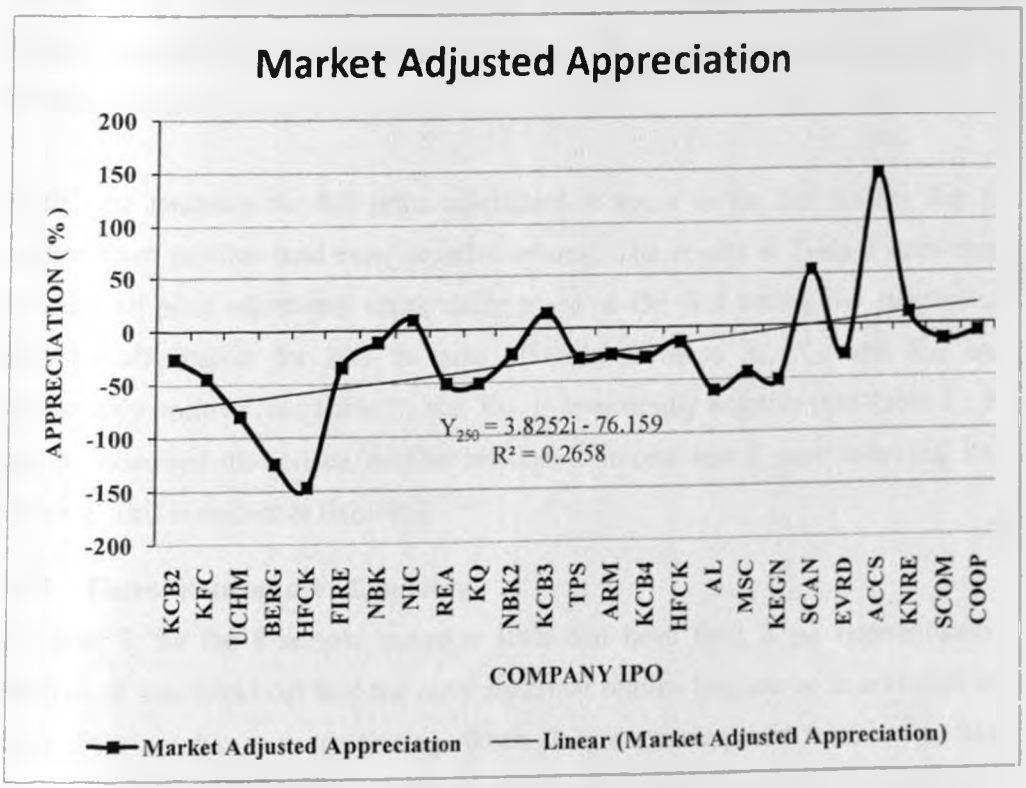
Table 4 : Abnormal Appreciation from First Day of Aftermarket Trading to One Year Following

CODE	IPO COMPANY	Y t = 250
KCB2	Kenya Commercial Bank Ltd - 2nd IPO	-25.72
KFC	Kenya Finance Corporation	-44.43
UCHM	Uchumi Supermarket Ltd	-80.27
BERG	Crown Berger Ltd	-124.79
HFCK	Housing Finance Co Ltd	-147.14
FIRE	Firestone	-34.46
NBK	National Bank of Kenya Ltd	-11.26
NIC	NIC Bank Ltd	9.72
REA	Rea Vipingo Plantations Ltd	-50.58
KQ	Kenya Airways Ltd	-50.85
NBK2	National Bank of Kenya Ltd - 2nd IPO	-23.83
KCB3	Kenya Commercial Bank Ltd - 3rd IPO	14.43
TPS	TPS (Serena) Ltd	-28.35
ARM	Athi River Mining	-25.13
KCB4	Kenya Commercial Bank Ltd - 4th IPO	-28.44
HFCK	Housing Finance Co Ltd	-14.26
AL	African Lakes	-60.10
MSC	Mumias Sugar Co. Ltd	-43.23
KEGN	KenGen Ltd	-51.22
SCAN	Scangroup Ltd	53.40
EVRD	Eveready East Africa Ltd	-27.72
ACCS	Access Kenya Group Ltd	144.34
KNRE	Kenya Re-Insurance Corporation Ltd	10.97
SCOM	Safaricom Ltd	-14.70
COOP	The Co-operative Bank of Kenya Ltd	-7.20
	N (Sample size)	25.00
	Mean ($\bar{X}$i)	-26.43
	Standard Deviation (sd)	54.60
	Median (M)	-27.72

Source: Research Data

As seen in Table 4, only 5 IPOs (20% of sample IPOs) have a positive appreciation ranging between 9.72 % of NIC Bank Ltd and 144.34% for Access Kenya Group Ltd. All other 20 IPOs (80% of sample IPOs) have negative depreciation ranging between -7.2% of Co- operative Bank of Kenya Ltd and -147.14% of Housing Finance Co Ltd. Both the mean and median depreciation for the entire sample is – 26.43% and -27.72% respectively. Thus investors purchasing all IPOs in the open market at the close of the first trading day and holding each for a period of one year (250 days) would have underperformed the market average by 26.43%. The underperformance is highly significant. Furthermore, this is a conservative estimate of the negative return due to two reasons. First the median return is also significantly negative and because IPO betas exceed one on a risk adjusted (rather than market adjusted) basis. In Exhibit 3. The Market Adjusted Returns (Y_{250}) by Company IPO (i) are graphed.

Exhibit 3. Market Adjusted Appreciation Purchase on first trading day and hold for 250 days



Source: Research Data

CHAPTER FIVE
SUMMARY OF FINDINGS AND CONCLUSIONS

5.1 Summary of findings

5.1.1 Abnormal Returns in the Immediate Aftermarket

Table 2 shows that there is substantial variation in the degree of abnormal returns over time. The highest 1st day abnormal returns are 224.18% for KenGen Ltd, 216.87% for National Bank of Kenya Ltd, and 130.65% for Housing Finance Co Ltd among 23 other IPOs (out of sample of 25 IPOs) with positive Abnormal Returns. X_2, X_{20}, and X_{100} have 23, 20 and 17 IPOs with positive Abnormal Returns respectively (out of sample of 25 IPOs). The results in Table 2 also indicate that if an investor had purchased each IPO at the offering day and held the investments for 1 day, 2 days, 20 days and 100 days, the mean rate of return earned would respectively be 42.10 %, 41.71 %, 39.59 % and 23.87% higher than from similarly timed investments in the $20NSE_t$ index. This is clear evidence that there is a tendency of IPOs to provide abnormal returns in the immediate aftermarket to IPO investors who purchased at the initial offering.

Again, the tendency for full price adjustment to occur in the first trading day is evident from positive (and even negative returns). The results in Table 2 show that virtually all price adjustment starts taking place on the first trading day suggesting that the aftermarket for IPO is quite efficient. Because X_1, X_2, and X_{20} are consistently positive (see Table 2) and X_{250} is consistently negative (see Table 3), it can be observed that prices decline between 1 month and 1 year following the offering. This is evident in Exhibit 2.

5.1.2 Excess Returns over Long Run

In Table 3, for the 8 sample company IPOs that have their X_{250} systematically positive, it was found out that the early abnormal returns that accrue to investors in these IPOs are due to under pricing. When IPOs are underpriced there are excess returns to IPO investors who purchase at the initial offering over long run period of one year.

Mean return (10.23%) shows positive excess returns to IPO investors who purchase at the initial offering over long run period of one year where as the Median return (-13.26%) negative excess returns to IPO investors. The results of median returns are inconsistent with systematic under pricing by underwriters and are consistent with the fad explanation in the IPOs in Kenya market. Other alternative explanations for these results include institutional practices, aftermarket undervaluation and risk measurement. Under institutional practices, underwriters devise strategies to ensure strong-hands among buyers. The supply of IPOs may be restricted in early trading because a strong-hands buyer commits to retain the new security for some time period while a weak-hands buyer is likely to take profits shortly after the issue. Under aftermarket undervaluation, market participants in aggregate would underestimate intrinsic values in a systematic manner during the period 1 month to 1 year following the offer as in Exhibit 2. Finally, with risk adjusted returns (as opposed to only market adjusted returns), it is possible that the returns are not abnormally low. With these explanations, IPOs tend to become overpriced reducing the excess returns to IPO investors who purchase at the initial offering over long run period of one year.

5.1.3 Market Adjusted Returns over Long Run

In 80% of sample Company IPOs, the value of Y_{250} is significantly negative. This implies that these IPOs were systematically overvalued in the early trading, and investors purchasing at the first aftermarket price underperformed the market index (by average of 26.43%) . In Exhibit 3, the value of $R^2 = 0.2658$ implies a weak prediction of Y_{250} by Company IPO (i). However, the justification of the linear trend line of $Y_{250} = 3.8252i - 76.159$, is to emphasize the constant of significant – 76.159 % (depreciation in returns) explaining the overvaluation in early trading and long run underperformance of the IPO. Although early abnormal returns are significantly positive, prices decline substantially in the year following the initial offering. There are no excess returns to investors who purchase the new issues in the aftermarket, over long run of one year. These observed negative values of Y_{250} imply that the Kenyan IPO market is not efficient in valuing new issues and the results provide support for the presence of fads.

5.2 Implications of the Study

For investors, the results show that IPOs are profitable investment in the short term, but underperform over longer periods. IPOs thus present profitable short selling opportunities. For merchant bankers, the results defend them against the charge of systematic under pricing. Finally, for Stock Analysts, the results suggest that abnormal returns accruing to initial investors should not be interpreted as money left on the table in the form of under pricing by merchant bankers.

5.3 Conclusions

The test for initial aftermarket price behaviour over one to hundred days following issuance revealed high, low and even negative returns for the IPO Companies. Variability and volatility in returns was observed across companies and returns start falling about 20 days after issue. There was a tendency for full price adjustment occurring on the first day of trading suggesting efficient immediate aftermarket for Kenyan IPOs. The evidence supported that the IPOs provided abnormal returns in the immediate aftermarket to IPO investors who purchased at the offering. The test for under pricing gave a mean return gain of 10.23% whereas the median return showed a loss of -13.26%. About 32% of sample IPOs showed abnormal gains and other the 68% showed losses on returns. The results implied that when IPOs were underpriced, excess returns accrued to IPO investors over long term, to those who purchased at the initial offering. The results were inconsistent with under pricing of IPOs but consistent with the fad explanation of IPOs. Alternative explanations mentioned included institutional practices, aftermarket undervaluation and risk measurement. Finally, the test for aftermarket returns over long term showed that 80% of the sample IPOs saw significant negative returns meaning that there are no excess returns to investors to who purchase the new issue in the aftermarket over long run. This implies that Kenyan IPO market is not efficient in valuing new issues and provides support for the presence of fads.

The research reports evidence to show both the existence of fads and limitations of the EMH in the Kenyan IPO Market by analysis of the short and long term excess returns. Results presented suggest that IPO markets are subject to overvaluation or fads in early aftermarket trading. It became clear from the study that even though arbitrage and EMH postulate a zero return situation in asset markets, excess returns are

inevitable. This is so, not because investor rationality does not exist or failure of market mechanisms, but because of the presence of human behaviour. Mass psychology and fads do have a significant role in pricing assets thus generating excess returns to investors when these would not be expected.

5.4 Limitations of the Study

During data collection at the NSE, it became evident that data prior to 2001 was not available with them since their operations had not been computerized by then. Their staff advised that the missing data could be available at NMG. For years prior to 2001, the Library of NMG was used to retrieve newspaper clips of previous days Stock Market Reports for the data point dates. Here also all the Newspaper clips were not available. With further searching, MML was used where the actual Newspapers were available in bound form to search the Stock Market Reports.

5.5 Suggestions for further Research

The study made use of a small sample size (without affecting the results) as it concentrated only on the period from 1990 to 2011. This research report is based on 25 IPOs being 43 % of the latest 58 listed companies on the NSE. A similar study to cover all IPOs issued since the inception of the NSE in 1954 could be carried out thus forming a large sample to allow for more comprehensive evidence. However this remains a challenge to any researcher since successful data collection for those years remains doubtful.

The analysis in this report was performed on the aggregate sample and time series of IPOs and therefore masking cross sectional variations. Sub section 1.1.2 mentioned that fads are likely to occur in securities where estimating the intrinsic value is more difficult, in riskier securities, and in markets dominated by more speculative investors. It may therefore be that the IPOs conforming to these patterns drive the results which may not be descriptive of the IPO market as a whole. Instead, the fad type behaviour may only be present in smaller, riskier issues with little following among investors. To examine cross sectional differences, the analysis can be examined by issue size, offering price and underwriter class.

Future research should search for satisfactory explanation for early aftermarket overvaluation. Though the results of this study are somewhat consistent with the

existence of fads. alternative explanations need to be explored. The obvious explanation among finance researchers is that underwriters systematically price IPOs below their intrinsic value is not enough. Finally. future research should examine whether the documented price behaviour may be exploited for profit through short sales.

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Appendix 1: Initial Public Offerings (IPOs) at NSE 1990-2011

IPO NO.	YEAR	COMPANY	DATE OF FIRST TRADING ON NSE
1	1990	Kenya Commercial Bank Ltd - 2nd IPO	Dec-90
2	1991	Kenya Finance Corporation	Jan-92
3	1992	Uchumi Supermarket Ltd	Jan-93
4	1992	Crown Berger Ltd	Jan-93
5	1992	Housing Finance Co Ltd	Jan-93
6	1993	East African Oxygen	Mar-93
7	1993	CMC Holdings Ltd	Apr-93
8	1994	Firestone	Dec-94
9	1994	National Bank of Kenya Ltd	Dec-94
10	1994	NIC Bank Ltd	Dec-94
11	1995	Rea Vipingo Plantations Ltd *	
12	1996	Rea Vipingo Plantations Ltd	May-96
13	1996	Kenya Airways Ltd	Jun-96
14	1996	National Bank of Kenya Ltd - 2nd IPO	Jun-96
15	1996	Kenya Commercial Bank Ltd - 3rd IPO	Nov-96
16	1997	TPS (Serena) Ltd	Jul-97
17	1997	Athi River Mining	Dec-97
18	1998	Kenya Commercial Bank Ltd - 4th IPO	Jun-98
19	1999	Housing Finance Co Ltd	Apr-98
20	2000	African Lakes	Mar-01
21	2001	Mumias Sugar Co. Ltd	Nov-01
22	2001	I C D C Investments *	
23	2006	KenGen Ltd	11-May-06
24	2006	Scangroup Ltd	29-Aug-06
25	2006	Equity Bank Ltd **	07-Aug-06
26	2006	Eveready East Africa Ltd	18-Dec-06
27	2007	Access Kenya Group Ltd	04-Jun-06
28	2007	Kenya Re-Insurance Corporation Ltd	27-Aug-07
29	2008	Safaricom Ltd	09-Jun-08
30	2008	The Co-operative Bank of Kenya Ltd	22-Dec-08
31	2011	CFC Insurance Holdings **	21-Apr-11
32	2011	Trans Century Ltd **	14-Jul-11
33	2011	British American Insurance Kenya Ltd	08-Sep-11
		* Listing by Private Placement	
		** Listing by Introduction	

Source : Nairobi Stock Exchange Marketing

Appendix 2: Offer or Issue Day of IPO Data

IPO NO.	COMPANY	Opening of IPO		
		Date	Price P_O	20NSE $t-o$
1	Kenya Commercial Bank Ltd - 2nd IPO	10-Sep-90	33.00	897.20
2	Kenya Finance Corporation	18-Oct-91	12.50	954.80
3	Uchumi Supermarket Ltd	17-Nov-92	14.50	1261.70
4	Crown Berger Ltd	09-Nov-92	16.00	1240.35
5	Housing Finance Co Ltd	07-Oct-92	7.00	1235.09
6	Firestone	19-Sep-94	33.50	3839.16
7	National Bank of Kenya Ltd	04-Oct-94	10.00	3723.13
8	NIC Bank Ltd	15-Aug-94	52.00	4084.34
9	Rea Vipingo Plantations Ltd	04-Mar-96	10.50	3207.57
10	Kenya Airways Ltd	25-Mar-96	11.25	3075.24
11	National Bank of Kenya Ltd - 2nd IPO	20-May-96	15.00	3025.68
12	Kenya Commercial Bank Ltd - 3rd IPO	01-Oct-96	50.00	3089.83
13	TPS (Serena) Ltd	10-May-97	13.00	3379.54
14	Athi River Mining	10-Jul-97	12.25	3505.72
15	Kenya Commercial Bank Ltd - 4th IPO	24-Apr-98	65.00	3036.90
16	Housing Finance Co Ltd	01-Mar-99	14.00	2988.88
17	African Lakes	16-Feb-00	94.50	2244.39
18	Mumias Sugar Co. Ltd	24-Sep-01	6.25	1419.84
19	KenGen Ltd	20-Mar-06	11.90	3973.11
20	Scangroup Ltd	17-Jul-06	10.45	4271.37
21	Eveready East Africa Ltd	13-Nov-06	9.50	5608.25
22	Access Kenya Group Ltd	19-Apr-07	10.00	5092.07
23	Kenya Re-Insurance Corporation Ltd	18-Jul-07	9.50	5123.23
24	Safaricom Ltd	28-Mar-08	5.00	4855.36
25	The Co-operative Bank of Kenya Ltd	30-Oct-08	9.50	3175.49

Sources :
McMillan Memorial Library and Nation Media Group (1990 - 2000)
Nairobi Stock Exchange (2001 - 2011)

Appendix 3: First Day of Trading Data

IPO NO.	COMPANY	1st Trading day at NSE		
		Date	Price P t=1	20NSE t=1
1	Kenya Commercial Bank Ltd - 2nd IPO	03-Oct-90	34.00	895.76
2	Kenya Finance Corporation	19-Nov-91	12.50	956.73
3	Uchumi Supermarket Ltd	04-Jan-93	19.75	1165.31
4	Crown Berger Ltd	04-Jan-93	16.00	1165.31
5	Housing Finance Co Ltd	04-Jan-93	15.75	1165.31
6	Firestone	22-Nov-94	40.50	3471.98
7	National Bank of Kenya Ltd	28-Nov-94	31.00	3467.37
8	NIC Bank Ltd	16-Sep-94	52.00	3839.16
9	Rea Vipingo Plantations Ltd	17-Apr-96	14.45	2897.43
10	Kenya Airways Ltd	03-Jun-96	12.55	3021.80
11	National Bank of Kenya Ltd - 2nd IPO	18-Jun-96	17.20	3088.04
12	Kenya Commercial Bank Ltd - 3rd IPO	16-Oct-96	56.50	3028.15
13	TPS (Serena) Ltd	12-May-97	19.65	3363.39
14	Athi River Mining	15-Aug-97	12.50	3425.22
15	Kenya Commercial Bank Ltd - 4th IPO	18-May-98	70.00	2976.12
16	Housing Finance Co Ltd	12-Apr-99	14.15	2813.47
17	African Lakes	21-Mar-00	131.00	2207.90
18	Mumias Sugar Co. Ltd	14-Nov-01	6.25	1466.83
19	KenGen Ltd	17-May-06	40.00	4447.99
20	Scangroup Ltd	29-Aug-06	15.00	4489.60
21	Eveready East Africa Ltd	18-Dec-06	11.00	5624.84
22	Access Kenya Group Ltd	04-Jun-07	13.45	5043.35
23	Kenya Re-Insurance Corporation Ltd	27-Aug-07	16.00	5274.53
24	Safaricom Ltd	09-Jun-08	7.35	5445.67
25	The Co-operative Bank of Kenya Ltd	22-Dec-08	10.45	3367.24

Sources :
McMillan Memorial Library and Nation Media Group (1990 - 2000)
Nairobi Stock Exchange (2001 - 2011)

Appendix 4: Second Day of Trading Data

IPO NO.	COMPANY	2 nd Trading day at NSE		
		Date	Price P $_{t=2}$	20NSE $_{t=2}$
1	Kenya Commercial Bank Ltd - 2nd IPO	04-Oct-90	34.00	903.83
2	Kenya Finance Corporation	20-Nov-91	12.50	961.45
3	Uchumi Supermarket Ltd	05-Jan-93	24.00	1165.47
4	Crown Berger Ltd	05-Jan-93	20.50	1165.47
5	Housing Finance Co Ltd	05-Jan-93	15.50	1165.47
6	Firestone	23-Nov-94	40.35	3475.73
7	National Bank of Kenya Ltd	29-Nov-94	20.00	3575.24
8	NIC Bank Ltd	19-Sep-94	51.75	3825.58
9	Rea Vipingo Plantations Ltd	18-Apr-96	15.20	2904.22
10	Kenya Airways Ltd	04-Jun-96	13.00	3039.28
11	National Bank of Kenya Ltd - 2nd IPO	19-Jun-96	17.00	3110.14
12	Kenya Commercial Bank Ltd - 3rd IPO	17-Oct-96	55.00	3022.87
13	TPS (Serena) Ltd	13-May-97	18.60	3379.31
14	Athi River Mining	18-Aug-97	12.25	3420.02
15	Kenya Commercial Bank Ltd - 4th IPO	19-May-98	70.00	2976.12
16	Housing Finance Co Ltd	13-Apr-99	14.05	2802.11
17	African Lakes	22-Mar-00	114.00	2210.38
18	Mumias Sugar Co. Ltd	15-Nov-01	6.25	1468.47
19	KenGen Ltd	18-May-06	38.00	4441.54
20	Scangroup Ltd	30-Aug-06	16.35	4507.15
21	Eveready East Africa Ltd	19-Dec-06	19.15	5572.10
22	Access Kenya Group Ltd	05-Jun-07	14.75	5063.98
23	Kenya Re-Insurance Corporation Ltd	28-Aug-07	14.60	5290.38
24	Safaricom Ltd	10-Jun-08	6.95	5334.50
25	The Co-operative Bank of Kenya Ltd	23-Dec-08	10.55	3381.69

Sources :
McMillan Memorial Library and Nation Media Group (1990 - 2000)
Nairobi Stock Exchange (2001 – 2011)

Appendix 5: First Month of Trading Data

IPO NO.	COMPANY	20 th Trading day at NSE		
		Date	Price P t= 20	20NSE t= 20
1	Kenya Commercial Bank Ltd - 2nd IPO	31-Oct-90	34.00	903.62
2	Kenya Finance Corporation	13-Dec-91	13.15	958.29
3	Uchumi Supermarket Ltd	29-Jan-93	19.00	1157.33
4	Crown Berger Ltd	29-Jan-93	16.50	1157.33
5	Housing Finance Co Ltd	29-Jan-93	11.50	1157.33
6	Firestone	20-Dec-94	35.15	4295.15
7	National Bank of Kenya Ltd	29-Dec-94	26.00	4531.84
8	NIC Bank Ltd	14-Oct-94	43.50	3499.10
9	Rea Vipingo Plantations Ltd	16-May-96	12.00	3019.05
10	Kenya Airways Ltd	28-Jun-96	12.05	3144.33
11	National Bank of Kenya Ltd - 2nd IPO	15-Jul-96	16.50	3139.99
12	Kenya Commercial Bank Ltd - 3rd IPO	13-Nov-96	55.50	3039.80
13	TPS (Serena) Ltd	09-Jun-97	16.00	3445.50
14	Athi River Mining	11-Sep-97	12.00	3469.82
15	Kenya Commercial Bank Ltd - 4th IPO	15-Jun-98	68.50	2997.81
16	Housing Finance Co Ltd	07-May-99	12.00	2768.16
17	African Lakes	17-Apr-00	128.00	210.24
18	Mumias Sugar Co. Ltd	11-Dec-01	6.30	1408.90
19	KenGen Ltd	14-Jun-06	36.00	4216.79
20	Scangroup Ltd	25-Sep-06	27.50	4728.12
21	Eveready East Africa Ltd	17-Jan-07	15.65	6041.42
22	Access Kenya Group Ltd	29-Jun-07	13.05	5146.73
23	Kenya Re-Insurance Corporation Ltd	21-Sep-07	17.65	5491.27
24	Safaricom Ltd	04-Jul-08	7.10	5129.73
25	The Co-operative Bank of Kenya Ltd	21-Jan-09	9.05	3282.00

Sources :
McMillan Memorial Library and Nation Media Group (1990 - 2000)
Nairobi Stock Exchange (2001 - 2011)

Appendix 6: Fifth Month of Trading Data

IPO NO.	COMPANY	100 th Trading day at NSE		
		Date	Price $P_{t=100}$	20NSE $_{t=100}$
1	Kenya Commercial Bank Ltd - 2nd IPO	26-Feb-91	33.50	938.45
2	Kenya Finance Corporation	10-Apr-92	14.00	1056.38
3	Uchumi Supermarket Ltd	26-May-93	19.75	1394.77
4	Crown Berger Ltd	26-May-93	14.75	1394.77
5	Housing Finance Co Ltd	26-May-93	13.00	1394.77
6	Firestone	19-Apr-95	27.00	3538.63
7	National Bank of Kenya Ltd	26-Apr-95	19.10	3525.50
8	NIC Bank Ltd	10-Feb-95	50.00	3910.26
9	Rea Vipingo Plantations Ltd	05-Sep-96	11.05	3073.44
10	Kenya Airways Ltd	22-Oct-96	9.50	3038.75
11	National Bank of Kenya Ltd - 2nd IPO	06-Nov-96	14.60	3058.52
12	Kenya Commercial Bank Ltd - 3rd IPO	12-Mar-97	97.00	3415.40
13	TPS (Serena) Ltd	29-Sep-97	17.05	3435.12
14	Athi River Mining	09-Jan-98	9.60	3273.16
15	Kenya Commercial Bank Ltd - 4th IPO	05-Oct-98	61.00	2779.36
16	Housing Finance Co Ltd	30-Aug-99	11.00	2557.29
17	African Lakes	11-Aug-00	61.00	1964.78
18	Mumias Sugar Co. Ltd	10-Apr-02	4.15	1168.86
19	KenGen Ltd	04-Oct-06	33.25	4937.20
20 .	Scangroup Ltd	22-Jan-07	27.00	6027.17
21	Eveready East Africa Ltd	14-May-07	8.15	5181.77
22	Access Kenya Group Ltd	22-Oct-07	18.30	5164.78
23	Kenya Re-Insurance Corporation Ltd	18-Jan-08	16.00	5098.48
24	Safaricom Ltd	28-Oct-08	3.25	3183.69
25	The Co-operative Bank of Kenya Ltd	18-May-09	6.00	2840.86

Sources :
McMillan Memorial Library and Nation Media Group (1990 - 2000)
Nairobi Stock Exchange (2001 - 2011)

Appendix 7: One Year of Trading Data

IPO NO.	COMPANY	250 th Trading day at NSE		
		Date	Price $P_{t=250}$	20NSE $_{t=250}$
1	Kenya Commercial Bank Ltd - 2nd IPO	26-Sep-91	27.35	950.95
2	Kenya Finance Corporation	16-Nov-92	11.00	1267.01
3	Uchumi Supermarket Ltd	28-Dec-93	27.00	2528.46
4	Crown Berger Ltd	28-Dec-93	14.75	2528.46
5	Housing Finance Co Ltd	28-Dec-93	11.00	2528.46
6	Firestone	22-Nov-95	27.25	3532.38
7	National Bank of Kenya Ltd	28-Nov-95	27.75	3494.23
8	NIC Bank Ltd	18-Sep-95	44.00	2875.17
9	Rea Vipingo Plantations Ltd	16-Apr-97	9.05	3280.31
10	Kenya Airways Ltd	03-Jun-97	8.05	3474.93
11	National Bank of Kenya Ltd - 2nd IPO	17-Jun-97	15.10	3447.04
12	Kenya Commercial Bank Ltd - 3rd IPO	16-Oct-97	70.00	3314.74
13	TPS (Serena) Ltd	12-May-98	11.80	2973.19
14	Athi River Mining	15-Aug-98	7.40	2888.61
15	Kenya Commercial Bank Ltd - 4th IPO	13-May-99	44.50	2738.26
16	Housing Finance Co Ltd	04-Apr-00	9.20	2230.39
17	African Lakes	21-Mar-01	31.50	1857.94
18	Mumias Sugar Co. Ltd	11-Nov-02	2.50	1220.79
19	KenGen Ltd	15-May-07	26.00	5169.28
20	Scangroup Ltd	24-Aug-07	25.50	5234.70
21	Eveready East Africa Ltd	13-Dec-07	7.40	5342.96
22	Access Kenya Group Ltd	27-May-08	33.00	5094.21
23	Kenya Re-Insurance Corporation Ltd	21-Aug-08	16.25	4778.15
24	Safaricom Ltd	05-Jun-09	2.85	2912.10
25	The Co-operative Bank of Kenya Ltd	16-Dec-09	9.10	3174.73

Sources :
McMillan Memorial Library and Nation Media Group (1990 - 2000)
Nairobi Stock Exchange (2001 - 2011)