THE SHORTRUN PERFORMANCE OF INITIAL PUBLIC OFFERINGS IN THE NAIROBI STOCK EXCHANGE

BY

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Declaration

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

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Dedication

❖ To my loving mama, Josephine Nyambura Thuo.

I know that you are still shining down on me from the heavens and watching over me. You are my source of inspiration and the memory of you is what gives me strength to go on. May your soul rest in eternal peace.

❖ To my loving grandmother, Gladwell Wanjiru Thuo.

Thank you for your immense faith and believe in me and for loving me as your very own. May your soul rest in eternal peace.

❖ To my loving grandfather, Fredrick Thuo Muikia.

Thank you for bringing me up in wisdom and in strength. I am very proud to be your granddaughter.

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Abbreviations

- NSE- Nairobi Stock exchange
- IPO- Initial Public Offering
- MAIRs- Marginal Initial Abnormal Returns
- AR- Average Returns
- CARs-Cumulative Average Returns

Abstract

This study was aimed at contributing to the growing question surrounding the performance of IPOs on the Nairobi stock exchange. It aimed at testing whether investors can make abnormal returns by buying IPOs at their issue price and consequently selling them on the first day of trading. It also aimed at evaluating if the IPOs are able to sustain their initial abnormal returns over a longer time horizon.

The study examines 5 Kenyan IPOs issued between 1998 and 2008. It uses both descriptive statistics and regression analysis to measure the performance of these IPOs. The Market Adjudted Initial Return (MAIR) is used to calculate the excess return on the first day of trading whereas the Cummulative Average return is used to measure the IPOs performance over the 15 month period.

An average market adjusted initial return (MAIR) of 70.06% was reported on the first day of trading and a Cumulative Average Return (CAR) of 0.98% was reported at the end of the 15 months. Therefore, it reports a significant drop in returns, a phenomena commonly referred to as longrun under-performance. The regression results of the data analysis support the ex ante uncertainty hypothesis, the signaling hypothesis and, to some extent, the market cyclicality hypothesis as possible explanations for the underpricing phenomenon on the Kenyan IPO market.

CHAPTER ONE

INTRODUCTION

1.0 Background of The Study

An initial public offering (IPO) occurs when a security is sold to the general public for the first time, with the expectation that a liquid market will develop. Although an IPO can be of any debt or equity security, this study will only focus on equity issues. Most companies start out by raising equity capital from a small number of investors, with no liquid market existing if these investors wish to sell their stock. 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. Once the stock is publicly traded, this enhanced liquidity allows the company to raise capital on more favorable terms than if it had to compensate investors for the lack of liquidity associated with a privately-held company (Ritter,1991).

Pricing initial public offerings is difficult because no market price is observable prior to the offer therefore making an IPO be a risky investment. For the individual investor, it is tough to predict what the stock or shares will do on its initial day of trading and in the near future since there is often little historical data with which to analyze the company. Also, most IPOs are of companies going through a transitory growth period, and they are therefore subject to additional uncertainty regarding their future value. However, in order to make money, calculated risks need to be taken. An IPO issuer may obtain the assistance of an underwriting firm or lead managers, which helps it determine what type of security to issue (common or preferred), best offering price and time to bring it to market. There are two ways in which the price of an IPO can be determined: either the company, with the help of its lead managers, fixes a price or the price is arrived at through the process of book building {(Gregoriou, 2006), (Khurshed and Mudambi ,2006)}.

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The empirical literature on after market performance of Initial Public offerings(IPOs) has shown some irregularities two of which are the short run underpricing and the long run market underperformance. The first one known as the short run anomaly is that IPOS are on average substantially underpriced in the first few days of trading. Under pricing of an IPO is defined as the percentage difference between the offering price of an IPO and the market price during the first trading day(s) in the secondary market(Engelen, 2003). Ibbotson (1975) was among the first to report on the under pricing of IPOs by documenting initial excess returns of 11.40% on U.S. common stock IPOs. Similar patterns have been documented for IPOs in several other countries around the world e.g US- Ibbotson and Jaffe(1975); Ritter(1991) Ibbotson, Sindelar and Ritter(1994) , Canada-Kooli and Suret(2001) , European Countries-Husson and Jacquillant(1990); Levis(1993); Kunz and Aggrarwal(1994), Malaysia and Singapore-Dawson(1987),Chile-Aggrarwal et al(1993),and the U.K-Menyah and Paudyal(1996).

Second, what appears to be underpricing in the shortrun turns out to be overpricing in the longrun Ritter (1991) and Aggarwal and Rivoli (1990), showed that this initial outperformance appears to be a short-run phenomenon. Welch and Ritter (2002) ,who used U.S. data from 1980 to 2001, also reported that at the end of the first day of trading, IPOs traded at 18.6% (on average) above the price at which the company sold them but over three years the average IPO underperformed the CRSP value-weighted index by 23.4%(Syamsurijal A. K et al, 2008).

Theories of IPO underpricing began to appear shortly after the introduction of the literature documenting the large initial returns to new issues. Characteristics of the issuing firm, the issue, and the general market climate have all been cited as possible determinants of IPO underpricing i.e., why do firms leave money on the table by setting the offer price low? (Loughran, 2002). One great example of all these factors at play was seen with theglobe.com IPO in the US which helped fuel the IPO mania of the late 90's internet era. Underwritten by Bear Stearns on November 13, 1998 the stock had been

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priced at $9 per share, and famously jumped 1000% at the opening of trading all the way up to $97, before deflating and closing at $63 after large sell offs from institutions flipping the stock . Although the company did raise about $30 million from the offering it is estimated that with the level of demand for the offering and the volume of trading that took place the company might have left upwards of $200 million on the table (Arosio, 2000).

Most previous studies on IPOs have reported differences in under-pricing by looking at the different characteristics of the offerings. They report differences in under pricing by offering type, by country, by underwriter reputation, by industry type, in hot and cold markets, to name a few. The literature dealing with under-pricing is rich with theories that have been put forward to explain this anomaly. The existence of the underpricing phenomenon in Initial Public Offerings (IPOS) seems to be a common characteristic of most international markets, as highlighted by Loughran et al. (1994). The interpretations of this widely diffused "anomaly" of the financial markets are quite numerous and in most cases they interpret the underpricing as the outcome of an equilibrium consistently with modern financial theories. Other works relate the underpricing to market "fads" (Aggarwal and Rivoli, 1990), to noisy trading activities (Chen et al., 1999), to investors' overoptimism about growth prospects (Rajan and Servaes, 1997, Bossaerts and Hillion, 1998) or to irrational behaviours due to speculation bubbles (Tinic, 1988).

Theories of underpricing can be grouped under four broad headings: asymmetric information, institutional reasons, control considerations, and behavioral approaches. The best established of these are the asymmetric information based models. The key parties to an IPO transaction are the issuing firm, the bank underwriting and marketing the deal, and investors. Asymmetric information models assume that one of these parties knows more than the others. Institutional theories focus on three features of the marketplace: litigation, banks' price stabilizing activities once trading starts, and taxes.

Control theories argue that underpricing helps shape the shareholder base so as to reduce intervention by outside investors once the company is public. Behavioral theories assume either the presence of 'irrational' investors who bid up the price of IPO shares beyond true value, or that issuers suffer from behavioral biases causing them to put insufficient pressure on the underwriting banks to have underpricing reduced Ibbotson (1975), Ritter (1991) and Aggarwal and Rivoli (1990), Welch and Ritter (2002), (Ritter et al., 2006), Ljungqvist (2005), Huygen and Tourani (1993), Eigenhuijsen (1989), Kim and Lee, Eigenhuijssen and Valk, 1997), Krinsky et al. (1993), Ibbotson and Jaffe (1975).

Empirical studies on the subject of IPO performance have also shown enormous differences between countries and also time periods. Take for example, the under pricing of IPOs in China in the period 1990 to 2000 is more than 250 percent (Ritter et al., 2006) while the under pricing of IPOs in Denmark between 1984 and 1998 is only 5 percent. The variation between different years in countries is also very large. Ljungqvist indicates these differences to be at least partly related to differences in the institutional framework in which IPOs are priced and allocated. This raises the question of whether countries with better developed capital markets have more moderate under pricing than those with emerging markets(Ljungqvist 2005) .

There are two important conclusions that can be derived from the studies of under pricing of IPOs collected worldwide. Firstly, there are large differences in the level of under pricing between countries eg In France, researchers calculated an average initial return of 3 to 14 percent, in Australia of 11 to 30 percent, in Taiwan of 30 to 47 percent, in Greece of 48 to 64 percent, in Brazil of 74 to 78.50 percent and in China of 127 to 950 percent. So the extent of under pricing fluctuates from country to country. Secondly, there are also large differences in countries between different time periods. Huygen and Tourani (1993) calculated for the Netherlands in the period 1987 to 1992 an average under pricing of IPOs of only 2.68 percent, while Eigenhuijsen (1989) came in the period 1982-1987 to an average under pricing of more than 16 percent. In South Korea the

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variation is even larger. Kim and Lee reported a level of under pricing of 37 percent in the period 1984 to 1986 (Eigenhuijssen and Valk, 1997)

Researchers have also documented that the gains from early price appreciation are not sufficient to compensate the losses that occur throughout subsequent price declines. With regard to the long-run underperformance result documented by Ritter (1991) and Loughran and Ritter (1995) academics have examined the role of monitoring mechanisms in reducing informational asymmetry and improving the long-run performance of the firm. Ritter (1991) finds a significant mean market-adjusted return of 29.13% at the end of the third year following the offering for a sample of 1,526 IPOs over the period from 1975 to 1984. Further, Ritter (1991) reports that the underperformance is concentrated among younger firms and firms that went public in the heavy-volume years. Indeed, for more established firms going public, and for those that went public in the light-volume years of the mid and late 1970s, there is no long run underperformance. Also, venture-backed IPOs, in which the venture capitalists provide a certification role and facilitate in reducing the informational asymmetry, do not exhibit significant underperformance (Brav and Gompers 1997).

The Nairobi stock exchange was established in 1954 and it is the only stock exchange in Kenya. The history of IPOs in Kenya dates many years back and from then on every IPO has witnessed growth in subscription rates to a high of 400% as more and more companies are turning to going-public as a means of acquiring capital. In Kenya IPOs are mainly done through the fixed price offer method in which case potential investors specify the number of shares to which they wish to subscribe at a preannounced price. Tender offers, where the applicants specify a price (at or above a minimum price) and a quantity of shares, have never used in Kenya (NSE handbook Manual 2008)

Gathering empirical evidence for the Kenyan IPO market is interesting for several reasons. Firstly the NSE is the only stock exchange in Kenya. Besides the fact that the

market had for a long time issued IPOs, every IPO has witnessed a growing number of subscriptions with just a few issues being undersubscribed for. Whereas for a long time the knowledge of IPOs was left with the financial elite, it has become a very common phenomenon lately. Every other Kenyan investor has taken a deep interest in investing in IPOs after they have realized that they can make excess returns by selling the shares in the secondary market once they start trading. Banks have also started lending money to investors to buy IPO stocks with the stocks themselves being collateral to such lending. People are not only investing as individuals but the IPO fever has trickled down right to the village social development groups. Also, there are not many studies that have looked at the performance of IPOs. The NSE as an institution has also gone through tremendous changes in the last few years which have seen the introduction of a fully computerized trading system called the Central Depository System (CDS). The market has also ensured strict listing requirements that the companies are supposed to observe prior and after listing (NSE handbook Manual 2008).

1.1 Problem Statement

The empirical literature on after market performance of Initial Public offerings (IPOs) has shown some irregularities two of which are the short run underpricing and the long run market underperformance. The first one known as the short run anomaly is that IPOs are on average substantially underpriced in the first few days of trading. Under pricing of an IPO is defined as the percentage difference between the offering price of an IPO and the market price during the first trading day(s) in the secondary market (Engelen, 2003). This issue is a widely researched anomaly in finance: Ibbotson (1975), Ritter (1991) and Aggarwal and Rivoli (1990), Welch and Ritter (2002), (Ritter et al., 2006), Ljungqvist (2005), Huygen and Tourani (1993), Eigenhuijsen (1989), Kim and Lee, Eigenhuijssen and Valk, 1997), Krinsky et al. (1993), Ibbotson and Jaffe (1975).

A number of theories have also been advanced to try and explain this abnormal price behavior exhibited by IPOs e.g Signaling-based models, Winner's Curse theory,

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Information asymmetry theories and the theory that IPO performance is driven by fads Rock (1986), Beatty and Ritter (1986),Ritter (1987),Gompers (1997),Ritter (1991) and Loughran and Ritter (1995).

However, what appears to be underpricing in the shortrun turns out to be overpricing in the longrun. Ritter (1991) and Aggarwal and Rivoli (1990), showed that this initial outperformance appears to be a short-run phenomenon. Further research indicates that IPOS under perform in the longrun and the gains made initially are not sufficient to cover for the losses that investors incur in the longrun (Aggarwal and Rivoli 1990), Ritter (1991), Ritter (1995).

It is these observations that raise the need for this study which seeks to establish if similar characteristics i.e. if there is initial mispricing of Kenyan IPOs and if the IPOs are able to sustain their initial abnormal returns and provide investors with positive returns over a longer time horizon. Given that the NSE is a stock market in a developing country and that it has relatively fewer IPOs as compared to the other developed countries in which similar studies have been carried out, this study attempts to understand if the explanations given by the financial literature from previous studies can help in explaining the results of the aftermarket performance on the NSE.

This study intends to answer the following research questions:

- Are IPOs in the Kenyan market mispriced i.e. are there any abnormal returns that can be reported by investors during the first day of trading?
- Are the IPOs in the Kenyan market able to sustain their initial abnormal returns and provide investors with positive average returns over time horizon?
- What are the determinants of initial excess returns of IPOs price in the market?

1.2 Research Objectives

- To determine if IPOs in the Kenyan market are mispriced.

- To establish if IPOs can sustain their initial excess abnormal returns over a longer time horizon.

1.3 Significance of the Study

This study will be useful to the following special groups;

Investors: This study will impact on individual investors by helping them understand the tenets behind IPO performance both in the on the first day and the theafter so that they can be able to make prudent investment decisions

Academicians: This study will also impact on the academia field by adding to the already existing knowledge on IPOs and the explanations behind their after-market performance by basing such explanations on the basic principles of finance. This study also aims at adding to the international evidence on the underpricing and after market performance of IPOs. This study is also a stepping stone for further research in the same area.

Firms going public: The firms going public would find the results useful in understanding the critical factors to be considered in planning for their IPOS.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This section describes and theoretically explains this phenomenon of IPO underpricing and longrun underperformance. It will also discuss the empirical evidence on IPO underpricing and longrun underperformance. In addition, it will also look into the related studies that have been conducted on the NSE.

2.1 Theoretical Framework

One of the most important decisions that has a major influence on the development and lifecycle of a firm is the decision to go public. This process is called an initial public offering (Griffith, 2004). During the IPO process, one of the most important things is to determine the correct offering price. Empirical studies show that most shares in IPO markets are offered below market price, hence the under pricing of IPOs. This section describes and theoretically explains this phenomenon. It furthermore derives the possible explanations between initial under pricing of IPOs and the short term performance

2.1.1 Theories of Short Run IPO Under pricing

Most empirical studies have shown results of significant initial positive returns for IPOs. There are many explanations behind under pricing IPOs. Traditionally, IPO under pricing was explained on the basis of risk aversion on the part of underwriters. It was urged that under pricing new issues greatly reduces the chances that the underwriter (usually, an investment bank) will end up with an under-subscribed issue with the associated losses. Later researchers focused on market structure and suggested that gross under pricing may be a result of the monopoly power of investment bankers in underwriting the common stocks of small speculative firms(for example, Ritter (1984), Chalk and Peavy (1987)).

Different researchers come with different models to give an explanation for under pricing of IPOs. Jenkinson and Ljungvist (1996) summarize more than 60 possible theories to explain under pricing. Ljungvist (2005) groups these 60 theories in four broad categories: (i) asymmetric information between the different parties (issuers, investors and underwriters) involved in IPO process, which creates uncertainty along the parties about value of firm; (ii) institutional theories which focus on factors as legal liability and price stabilization; (iii) control considerations, which focuse on control of firm and corporate governance issues and (iv) behavioral approaches, assuming the presence of irrational investors or issuers.

2.1.2 Explanations for under pricing of IPOs

Winner's Curse Theory: The most prominent theory within the asymmetric information models is the winner's curse proposed by Rock (1986). It is one of the most persuasive models that explain underpricing of IPOs. This model is based on a *horizontal* asymmetry of information, which exists between different groups of investors. In this model Rock applies the concept of the winner's curse to the new issues market. For that reason, the common explanation for the abnormal first-day price behavior is the "winner's curse in which Rock uses the assumption that some investors have better information available about the value of the firm than others. According to Rock the IPO market is made up of two types of investors namely the well-informed investors (these investors have superior knowledge about the true value of the issue) and less-informed investors (these are investors who lack the special knowledge to correctly value the issue). The uninformed investor buys new shares on every IPO, in contrast with the informed investor who only buys shares of attractive IPOs. Due to the fact that the number of shares issued to a firm is restricted, the uninformed investors thus receive the full demand of unattractive IPOs and only a part of attractive IPOs. This is because the attractive shares are oversubscribed as a result of the fact that informed investors subscribe in such an issue as well.

Lemons Theory: This situation whereby the uninformed investors are left with the less successful IPOs due to information asymmetry causes a "lemons problem". The consequence of this is the uninformed investors getting a return below the average under pricing (Ritter and Welch, 2002). If there was no under pricing, the expected returns of the uninformed investor would be negative and they would not bid for any IPO allocation anymore. The IPO market would therefore consist of only of informed investors. Since the uninformed investors only invest in IPOs when they get a positive return (or at least break even), issuing firms are therefore required to sell at a discount in an effort to keep badly informed investors interested in the IPO market. In this model Rock assumes that the IPO market needs the demand of the uninformed investors, as well as the demand of the informed investors is insufficient (Ljungvist, 2005).

The size of the issue is one explanatory factor that can be directly derived from this winner's curse. Accordingly, the larger the issue the more it is likely to be professionally managed and the more information about the true value will be available. This wider spread of information is known to decreases the information asymmetry among investors. As a result of this lower information asymmetry, these larger IPOs have less reason to underprice and are expected to show less initial outperformance. Keloharju (1993) and Michaeley and Shaw (1994) tested Rock's theory for the U.S. common stock market, and found strong support for the existence of a winner's curse.

Asymmetric Information Theory: As convincing as the Rock model is, it does not address the question of why investment banks might want to tempt uninformed investors to remain in the market. Beatty and Ritter(1986) show that this can be understood by examining the incentives of the investment banks. First, it's important to understand that Investment banks are repeat players in the IPO market. Furthermore, being oligopolistic in nature, each of the investment banking industry players knows that it can significantly affect the IPO market through its actions. Investment bankers also possess a substantial information advantage over IPO issuers (typically small

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firms) and can use this as a competitive instrument to lower their own risk of loss i.e. under-priced issues would only be allocated to favoured customers who regularly do business with the investment bank. Baron (1982) suggests that under pricing results from such *vertical* information asymmetry and serves to compensate the underwriter for the use of his superior information.

Consequently, if IPOs are not underpriced, uninformed investors make systematic losses and eventually leave the IPO market. In this situation, only informed investors remain in the market. As pointed out by Jenkinson and Ljungqvist (1996), this is a variation of Akerlof's (1970) lemons problem. Informed investors are likely to constitute a minority of all investors representing a little proportion of the capital that is currently invested in IPOs. As mentioned earlier, Rock himself assumes that informed demand is insufficient to take up all shares on offer, even in rewarding floatations. As such investors will not apply for IPOs that are not expected to trade at a premium, the IPO market reduces drastically. This has immediate adverse consequences for investment bank profits.

Thus, IPO under pricing in the Rock model can be explained as a profit maximising policy adopted by investment banks. Under pricing will therefore persist as long as underwriters can discriminate between informed and uninformed investors in their allocation of shares, but its nature is affected. If the underwriting investment bank favours established clients who are better informed, then the level of under pricing must increase to keep uninformed investors in the market. Similarly, if the underwriter discriminates against informed investors who buy and immediately trade to realise profits (stags) then the required level of under pricing will be lower.

Another important theoretical and empirical implication of the winner's curse model is the relationship between the level of under pricing and the ex ante uncertainty about the value of the firm involved. Beatty and Ritter (1986) conclude in their paper that

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there is a positive relationship between the level of under pricing and the non-observable ex-ante uncertainty about the value of the firm. According to different empirical researchers, firms with more risk and uncertainty about the growth opportunities and the value of the firm have on average a higher level of under pricing than other firms (Ritter, 1984). Examples of this are internet firms and technology firms (Schrand and Verrecchia, 2004). One possible explanation for this is that investors always worry about the future performance of IPOs, and this is reflected in terms of "ex-ante uncertainty". To attract investors to such offers, under pricing might be required to convince uninformed investors to buy. In turn, the greater the ex-ante uncertainty, the greater the under pricing should be to transfer uninformed investors to informed investors. Alli, Yau and Yung (1994) examined this relationship by studying initial aftermarket price behavior of financial institutions and found that since financial institutions are monitored by regulatory agents, the information asymmetry problem and the ex-ante uncertainty regarding true value of those institutions was less severe than that of other non-financial institutions.

Benveniste and Spindt (1989) and Benveniste and Wilhelm (1990) argued that underpricing is used to acquire information from potential purchasers of the issue. As such, IPO underpricing is a cost of acquiring information during the book-building process. They focus on the critical role that informed investors play in setting the offer price. Under-pricing enables the issue manager to reward sophisticated investors who share their information through a larger allocation. There is also a general agreement that some money has to be left on the table by offering IPO shares at a discount to fair value to encourage participation and price discovery. Without that inducement, an investor may wait to buy shares in the after market. If everyone waits, the issue would fail. This money left on the table results into lost capital that could have been raised for the company had the stock been offered at a higher price (Loughran and Ritter. 2002). The effect of "initial underpricing" an IPO is to generate additional interest in the stock

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when it first becomes publicly traded. Through flipping, this can lead to significant gains for investors who have been allocated shares of the IPO at the offering price.

Carter and Manaster (1990), speculate that firms use prestigious underwriters to signal low risk in an effort to combat the effects of information asymmetry. Consistent with their hypothesis, they find that firms using more reputable underwriters exhibit lower initial returns on average. Beatty and Ritter (1986) argue that underpricing is positively related to the uncertainty with regard to the IPOs marke t-clearing price. Similarly, Ritter (1987) argues that uncertainty regarding the true value of the firm is reflected in the degree of IPO underpricing. Additional theories of IPO underpricing include information cascades (Welch, 1992), legal liability avoidance (Tinic, 1988), absence of motivation to avoid underpricing (Habib and Ljungqvist, 2001), and "analyst lust" or irrational behavior of such issues (Loughran and Ritter, 2002).

Signaling Theory: The second important group of asymmetric information models are the signaling models. Almost all signaling models are based on the concept of Ibbotson (1975) i.e. to leave "good taste in investors mouths", so that issuers can raise equity at higher share prices in later stages like during future seasoned offering. Allen and Faulhaber (1989), Grinblatt and Hwang (1989) and Welch (1989) provide a reason for under pricing IPOs, using this "signaling approach". They argue that firms sometimes tend to offer prices below intrinsic values in order to signal their quality to investors and then they will have a possibility to offer subsequent seasoned issues in higher prices. Also Perotti (1995) argues that governments might prefer gradual sales by offering smaller portions of the firm and retaining the higher percentage in order to signal their commitment to privatization. Accordingly, one should expect a negative relationship between the proportion of shares offered and the level of under pricing. This can be explained as follows. In a signaling model there is asymmetric information between the issuer and the investor. The issuer has more and better information about the value, risk and future of the firm. If the issuer has an information advantage about

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the firm, he can use the level of under pricing as a signal about the value of the firm. Notably, there are two types of firms in the world; high quality firms and low quality firms. The high quality firm wants to signal that it is a high quality firm and the low quality firm wants to ape the high quality firm. However, there is a possibility that the quality of the firm is discovered before the seasoned offering. If this turns out to be the case, the benefit for the low quality firm disappears and the cost is higher through a higher level of under pricing and resources that are needed to ape the high quality firm. When the possibility to observe the quality of the firm before seasoned offering is high enough, there is a separate equilibrium possible between the two types of firms.

Institutional Theories: Insurance against legal liability is one of the institutional theories that explains under pricing of IPOs. It is argued that with under pricing a firm reduces the possibilities of lawsuits about missing or incorrect information. Tinic is one of the writers who suggests that IPO under pricing serves as a form of insurance. He demonstrates that gross under pricing serves as an efficient form of protection against legal liabilities and the associated damages to the reputations of both the investment bankers and the issuers. In other words, this hypothesis posits an implicit contract between issuers, underwriters and investors. Under this implicit contract, the investors are provided with excess returns as an 'insurance premium' higher percentage. Therefore, a negative relation between the proportion of shares offered and the level of under pricing is expected (Tinic 1988).

Control Theories: The control theories explain under pricing as an instrument to stay in control over their firm and to protect their private benefits. Under pricing creates an excess demand by investors and a more dispersed ownership. He argued that one motivation for underpricing is management's desire to control the firm. Utilizing a sample of U.K. IPOs, the authors present empirical evidence consistent with their hypothesis that underpricing is used strategically to influence ownership dispersion. By reducing the probability that ownership blocks form at the time of the offering, the

likelihood of management maintaining control increases, allowing managers to continue to enjoy private control benefits. While it is possible that ownership blocks form following the issue, the initial ownership dispersion makes it more costly to form these blocks (Tinic 1988).

Another explanation for IPO underpricing is that the degree of under pricing may depend on **market volatility**. Governments will try to minimize the probability of unsuccessful issues by lowering prices as long as market volatility is high. In turn, a positive relation between market volatility and the level of under pricing is expected. Accordingly, such issues should underperform the market in the long-run. In contrast, if IPOs attain their equilibrium value at initial returns, their long-run performance should not be significantly different from that of the market. Given this argument, an inverse relation between initial abnormal returns and long-run performance is expected. (Reilly, 1977).

Another explanation is related to the percentage of shares allocation, also known as "demand multiplier", which argues a negative relationship between the percentage of allocation and under pricing or a positive relationship between demand multiplier and the level of under pricing. Another factor that might explain the abnormal price behavior of IPOs is the **degree of debt financing**. Smith and Watts (1992) argued that firms with high growth potential will rely less on debt financing. This low reliance on debt financing is caused by their higher risk profiles, which make the debt market less accessible. When these growth companies go to the stock market during an IPO, the public will consider them more risky and will demand a higher risk premium in the form of more under pricing. Thus, we expect IPOs with the lowest debt ratios in our sample to be associated with the highest initial returns (Smith, 1992)

IPO under pricing can be considered important from a normative viewpoint as well. The liquidity of IPO markets is a means of creating value in the economy as a whole.

This is because the majority of firms are entrepreneurial in the sense of Casson (1990). Thus, the investment bank's profit maximising behaviour creates even greater value for the economy in the spirit of Adam Smith's invisible hand. The Rock model, supported by the work of Beatty and Ritter regarding investment bank profit maximising behaviour, points to the central importance of informationin IPO under pricing(Rock 1986).

Behavioral Theory: The last group of theories explains under pricing through behavioral reasons. The behavioral theories explain under pricing through irrational behavior of investors or through behavioral biases by issuers. The empirical and theoretical literature on this subject is still limited and in development. In this theory it is assumed that some investors in the IPO market exhibit sentiment. It is also assumed that investors follow positive-feedback investment strategies – buy when prices rise and sell when prices fall. To take advantage of them, speculators (probably some informed investors) buy at the offering and sell shares immediately in the aftermarket. The strong demand of speculators before the offering leads to a higher offer price while the entry of sentimental investors in the aftermarket drives the price even higher, and results in substantial initial returns. Therefore, refiling in the bookbuilding period is a way for underwriters to stimulate investor sentiment since it takes time for the sentimental investors to learn information sentiment[(Dorn, 2002), Ljungqvist, Nanda, and Singh (2003)].

Ibbotson and Jaffe (1975) were the first researchers who mentioned this variation between different time periods and nowadays there is strong evidence of a "hot" and "cold" IPO market (Ibbotson et al., 2001). In a hot IPO market the average level of under pricing is large and the amount of firms going public increases. Afterwards there is a high rate of firms going public, but the level of under pricing decreases. The following (cold) period starts with fewer firms going public and a very low or even a negative

level of under pricing. There is empirical strong evidence of this recurring pattern, but the existence of this pattern is difficult to explain theoretically (Ibbotson & Ritter, 1995). The empirical challenge to theories of under-pricing comes from the following observations. First, there is some evidence supporting the view that the closing price on the first day may not reflect fair value Lamont and Thaler (2003) and Mitchell Pulyino and Stafford (2002). A longterm investor who buys the shares of the firm right after it goes public may realize negative risk adjusted abnormal returns which has empirical support from Ritter (1991) and Loughran and Ritter (1995). However, Brav, Geczy, and Gompers (2000) argue that the longrun underperformance of IPOs documented in the literature may be due to insufficient correction for risk. They find that IPO firms have long-run returns that are similar to non-issuing firms matched on the basis of firm size and book-to-market ratios. Nevertheless the book-to-market matching scheme may miss significant market anomalies (Loughran and Ritter, 2000).

Second, Purnanadam and Swaminathan (2004), using a sample of more than 2000 IPOs during 1980-1997, find that on average the offer price substantially exceeds the corresponding intrinsic value computed using multiples of firms in the peer group of the issuing firm. Furthemore, "overvalued" IPOs have large first day returns but low longrun risk adjusted returns. These observations suggest that from the perspective of a longterm buy and hold investor, IPOs may not be under-priced, but instead may even be overpriced on average. It would indeed be surprising if that were true, since the longterm viability of investment banking as a business depends on taking care of the interests of the banks' pool of longterm investors whose support is crucial to successfully bring new issues to the market. Sherman and Titman argued that overpricing will actually hurt both issuers and underwriters (Sherman and Titman, 2002).

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2.1.3 Theories of the Longrun performance of IPOS.

While there is an agreement by most researchers that average initial underpricing should and does exist in the IPO market, the aftermarket performance provides conflicting findings. Contrary to initial performance of IPOs, mixed results for performance of these issues in the long-run have been found. Some studies on the long run aftermarket performance indicate negative, positive or even zero aftermarket performance. Levis (1993) documents positive longrun returns for investors in 12 UK privatized firms from 1980-1988. Also,Menyah, Paudyal and Inganyete (1995), for a sample of 40 firms, indicated that UK privatizations were underpriced and that investors achieved long run positive abnormal returns. Similarly, UK privatized firms documents positive returns Menyah and Paudyal (1996).

The after market performance could be explained by the above mentioned determinant variables that might affect initial performance of IPOs. However, there are other important possible explanations for the aftermarket performance in addition to these factors. Levis (1993) and Paudyal et al. (1998) argue that initial abnormal returns might be due to **initial overoptimism in the market,** such that such issues under-perform the market in the long-run. They argue that if IPOs attain their equilibrium value in initial return, the long-run performance should not be significantly different from the market performance. With this argument in mind, one should expect an inverse relationship between initial abnormal returns and long-run performance. Therefore, a negative relation between the proportion of shares offered and the level of under pricing is expected.

Another theory that could explain the long-run underperformance is the so-called '**fads theory**'Camerer (1989). Both Aggarwal and Rivoli (1990) and Ritter (1991) reported strong underperformance of IPOs after three years of –13.73% and –29.13%, respectively. They established the possibility that the aftermarket is not immediately efficient in valuing newly issued securities and that the abnormal returns that ensue to

IPO investors are the result of a temporary overvaluation by investors in the early trading. Both studies point out that the abnormal price behavior of IPOs might be due to overoptimistic investors, who expect high excess returns, but sell the shares acquired in the IPO whenever their high expectations are not fulfilled in the longer run. This so-called fad cause's extremely high demand in the early aftermarket, but at the same time drives the disappointed investors to sell their shares, thereby causing the long-run underperformance. Their argument is consistent with the **"impresario" hypothesis or the fads hypothesis** by Shiller (1990) and Debondt and Thaler (1985, 1987)), which argues that the market for IPOS is subject to fads and that IPOS are underpriced by the investment bankers (referred to as the impresarios) to create the appearance of excess demand, just as the promoter of a rock concert attempts to make it an attractive event. This hypothesis predicts that the greater the initial return at the IPO date, the greater the degree of subsequent correction of overpricing by investors will tend to be and the lowest subsequent returns should be. There is some evidence of this in the long run, but in the first six months, momentum effects seem to dominate.

Miller (1997 and 2000) used the **divergence of opinion hypothesis** to explain the underperformance of IPOs. He suggested that the investors who are most optimistic about an IPO will be its buyers. If there is a great deal of uncertainty about the value of an IPO, there will be differences of opinion between the optimistic investors and the pessimistic investors. As the information flow increase with time, the divergence of expectations decreases and thus the prices are adjusted downwards. Miller predicts that the greater the initial divergence of opinion and uncertainty, and the greater the diminution over time are, the more the security should underperform the market. In this hypothesis we expect to see a negative relation between the ex-ante uncertainty and the aftermarket performance. One proxy for ex-ante uncertainty is size. For small firms with little or no operating history it seems clear that there would be a great deal of uncertainty. The age of the firm and of the industry would be other plausible proxies.

Jain and Kini (1994) point out that the 'successful timing or window-dressing actions taken by issuers' may result in potential investors having high, and systematically biased, expectations of earnings growth in the post-issue period. These authors found that IPO firms exhibit a decline in post-issue operating performance in comparison to their pre-IPO levels. This declining can be attributed to the reduction in management ownership that occurs when a firm goes public, which is likely to lead to the agency problem described in Jensen and Meckling (1976).

Ritter (1991) and Loughran and Ritter (1995) confirm the windows of opportunity hypothesis to explain the aftermarket underperformance. This hypothesis predicts that firms going public in high volume periods are more likely to be overvalued than the other IPOS. This has the testable implication that the high-volume periods should be associated with the lowest long-run returns. This pattern exists indeed in U.S.. Loughran and Ritter (1995) affirmed that, for the IPOs, the prior rapid growth of many of the young companies makes it easy to justify high valuations by investors who want to believe that they have identified the next Microsoft.

Teoh, Welch, and Wong (1998) show that IPO underperformance is positively related to the size of discretionary accruals in the fiscal year of the IPO. They document that investors may misinterpret high earnings reported at the time of the offering, and consequently overvalue the new issues. Then, when high pre-issue earnings are not sustained, disappointed investors revalue the firm downwards. This scenario suggests that issuers have unusually high income-increasing accounting adjustments and unusually poor post-issue earnings and return performance.

Loughran and Ritter (1995) who used data for 4,753 U.S companies going public in the period from 1970 to 1990, document the underperformance of IPOS relative to seasoned firms with the same market capitalization. Aggarwal and Rivoli (1990) similarly find negative aftermarket performance of 13.73% in the first year following the initial

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offering for 1,435 IPOS in the period from 1977 to 1987. However, the underperformance of new issues in the aftermarket has not been documented in all studies and the international evidence is varied (Loughran et al. (1994)). These international variations are due, in part, to the differences in regulations, contractual mechanisms, and characteristics of companies going public (Firch (1997)).

2.2 Empirical Evidence on Initial Return

Short run underpricing refers to the widespread observation that regardless of the method of coming to market, IPOs tend to yield substantial returns in the days (and sometimes weeks) immediately following issue. Ritter (1987), Welch (1989), Ibbotson *et al.* (1994) and Rajan and Servaes (1997) among others provide evidence suggesting that the existence of average initial returns of up to 16% has been a regular feature of the US new issue market. Lee *et al.*(1994), Jacquillat (1986), Kaneko and Pettway (1994) and Ljungqvist (1997) among others provide evidence of abnormal returns of up to 14% in the developed markets of the world such as Australia, France, Japan and Germany. For British IPOs, the studies of Dimson (1979), Buckland *et al.* (1981), the Bank of England (1990), Jenkinson and Mayer (1988) and Levis (1993) indicate average first day returns ranging from 8.6% to 17%.

Lee,Taylor & Walter(1994a) in a study carried out in Australia using a sample of 266 for the period between 1976-1989 reported an initial return of 11.9%. Loughran,Ritter & Rydqvist(1994) in their study in Belgium reported average initial returns of 10.2% from a sample size of 28 for the period between 1984-90. In another study Aggarwal, Leal and Hernandez (1993) reported an average initial return of 78.5% from a sample size of 62 for the period 1979-90 in Brazil. In yet another study but this time in Chile, Aggarwal, Leal & Hernandez (1993) using a sample of 19 for the period between 1982-1990 reported a return of 16.3%. Keloharju(1993) reported a return of 9.6% for the period 1984 using a sample of 85. In France Jacquillat et al (1989) reported a return of 4.2% using a sample of 187 for the time period 1983-92. Uhir(1989) and Ljungqvist(1993)

report a return of 11.1 % from Germany using a sample of 172 between 1978-92. In Greece Kazantziz & Levis (1994) reported a return of 48.5% using a sample of 79 between 1987-91. Dawson (1987) reports a return of 17.6% from Hong Kong using a sample of 80 between 1980-90. Ritter et al (1994) report a return of 27.1% in Italy using a sample of 75 between 1985-91.

Further evidence from Japan Jekinson(1990) reports a return of 32.5% between 1970-91 using a sample size of 472. Aggarwal, Leal & Hernandez (1993) from their study in Mexico between 1987-90 using a sample size of 37 reported a return of 33%. Loughran et al(1994) reported a return of 54.4% from Portugal using a sample of 62 between 1986-87.Lee et al(1994b) in their study on Singapore between 1973-92 using a sample of 128 reported a return of 31.4%.Ritter et al(1994) in their study reported a return of 35% using a sample of 71 between 1985-90. Rydqvist(1993)reported a return of 39% from Sweden using a sample of 213 between 1970-91. Aggarwal(1994) reported a return of 35.8% from Swizerland between 1983-89 using a sample of 42. Levis (1993) in a U.K study reported a return of 12% using a sample of 2133 between 1959-90.Finally Ibbotson (1994) reported a return of 15.3 % frm the U.S based on a sample of 10626 between 1960-92.

2.3 Empirical Evidence on longrun Performance of IPOs

In an early study, Ibbotson (1975) does not reject the hypothesis that the abnormal returns in the aftermarket are zero. Recently, Paudyal et al. (1998) have reported that the performance of IPOs in Malaysia is not different from the performance of the market portfolio; the IPOs with higher initial return underperform compared to the market while those with low initial return outperform the market. In addition, they found that the longterm performance of IPOs is positively related to the reputation of the under-writers. If these results are confirmed, the underpricing will explain the uderperformance of IPOS. Buser and Chan (1987) report positive risk-adjusted returns (11,2%) in the two years after listing for their sample of 1,078 NASDAQ stocks in the period from 1981 to 1985.

Jacquillat and al. (1978) report positive aftermarket returns to IPOs in France during the period from 1966 to 1974. Kim and al. (1995) find that Korean IPOs outperform seasoned firms with similar characteristics. They sustained that .high causality bias. explains the aftermarket underperformance observed in the U.S. and other international findings. For example, about 17% of the sample firms in Ritter (1991) experienced subsequent changes in listing details. The bias is even more severe according to Levis (1993) who reports that 30% of IPOs were de-listed within a 3-year period following their initial listing in the U.K.. Kim and al. (1995) also report that the large degree of underpricing in Korea may explain their results. If they exclude the first month return, they find that the Korean IPOs are characterized by neither over-performance nor underperformance when compared to seasoned firms.

Negative aftermarket returns for IPOs have been reported by Ritter (1991), Aggarwal and Rivoli (1990), Loughran and Ritter (1995), Levis (1993), Aggarwal, Leal and Hernandez (1993), and Firth (1997). Levis (1993) reports long-run underperformance of .22.96% by the third year after the offering in the UK for 712 IPOs between 1980-1988. Aggarwal, Leal and Hernandez (1993) report three-year market-adjusted returns of .47%,-19.6% and 23.7% for Brazil, Mexico and Chile, respectively. Firth (1997) finds that, in average, the new issues in New Zealand underperform the market significantly and the level of long term underperformance is considerably related to profit forecast accuracy, corporate earnings and cash flows, and the growth rate. Brav and Gompers (1997) compared the performance of venture and non-venture capitalbacked IPOs to various benchmarks and found that matching IPOS to similar size and book-to-market firms eliminated the underperformance reported by Loughran and Ritter (1995).

Studies in Australia (Finn and Higham, 1988), Germany (Uhler, 1989), and Hong Kong (McGuinness, 1993) all reported negative aftermarket performance but the abnormal returns they found did not achieve statistical significance, so this is an evidence of market efficiency in the aftermarket. Clearly, there are international variations in

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observed performance and further research seems warranted. These international variations are due, in part to the contractual mechanisms and characteristics of companies going public, which are related to the reasons of the aftermarket underperformance. They are also due to the choice of a performance measurement methodology which directly determines both size and power of the statistical test.

2.4 Empirical evidence from the Kenyan market on IPOs performance

There are a number of studies that have been carried out here in Kenya with regard to the issues surrounding the aftermarket performance of IPOs in the NSE. Whereas most of these studies have looked at issues surrounding the performance of IPOs and shares in general, none touches directly on the comparison between the shortterm and longterm performance of IPOs in the NSE.

Ngahu(2006) carried out a study relating to the relationship between the book value per share, issue price and the 1st day trading prices of IPOs at the NSE using the IPOs issued between 1980-2006. He concluded that the book value per share has little significance in predicting the issue price of the shares.

Maina(2006) did a study investigating into the relationship between the stock prices and the number of shareholders of the firms quoted in the NSE. He used a sample of 48 companies listed in the NSE between 1997-2003. He arrived at the conclusion that there is a negative relationship between the two variables i.e stock prices and the number of shareholders. According to his findings, the companies with the highest number of shares tend to report the lowest prices.

Okeyo(1998) using a sample of all the quoted companies in the NSE between 1980-1997 sought to test the differences in the level of underpricing between the primary and secondary markets at the NSE. He found that secondary offerings were underpriced at a

higher level of 37.79% while the primary offerings were underpriced at a lower rate of 34.46%.

Moko(1995) studied the relationship between the offering price and the subscription rate of initial public offerings at the NSE by analyzing the IPOs floated at the NSE between 1984-1994. He found a linear and positive relationship between the discount on offering price and the rate of subscription in the IPOs.

Gakuru(2006) investigated the empirical relationship between the trading volumes and returns volatility in the NSE using a sample of the companies that formed the NSE 20-share index and that had traded between 1998-2002. The study found that there was no relationship between the trading volume and the returns volatility of the companies that constitute the 20-share index.

2.5 Conclusions

The literature review on after market performance of Initial Public offerings (IPOs) has documented some irregularities two of which are the initial underpricing and the long run market underperformance. It is also evident from these studies that the gains made from early price appreciation are not sufficient to compensate the investors for the losses that occur throughout subsequent price declines.

The other conclusions that can be derived from the literature review on under pricing of IPOs is that firstly, there are large differences in the level of under pricing between countries .So the extent of under pricing fluctuates from country to country. Secondly, there are also large differences in countries between different time periods.

Knowledge Gap: The studies that have been conducted with regard to the performance of IPOs in the NSE mostly revolve around the issues surrounding the issuing of the IPOs but none of these studies has attempted to look at whether IPOs are able to sustain

their initial excess returns over a longer time period. This study will therefore attempt to bridge this gap of knowledge by shedding light on whether IPOs are able to sustain their initial excess returns over a longer time.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Research Design:

This section outlines the research design used in this study, study population and sample, data collection and selection and finally how the data was analysed.

3.1 Methodology of the Study:

The research design that was adopted in this study was descriptive in nature. It described the variables by use of mean and variances in order to evaluate the relationship between the study variables.

3.2 Population and Sample

This study used convenience data sampling method. This is because the sample adopted was made up of only the IPO data that could be easily obtained from the NSE database. The NSE records are considered to be the most reliable source of data on stocks. The sample comprised of only those IPOs listed in the NSE for the period 1998 to 2008. The beginning year is 1998 because it is the year in which the NSE records start show the exact IPO issuing date and first day of trading. Prior to 1998, there were no records of the exact offering dates and the first day of trading was recorded in terms of months only. This information was necessary in calculating the initial and Market Adjusted Initial Returns. The ending year is 2008 because it provides at least a 15-month return period for the IPOs in the sample.

3.3 Data Collection

The collection of data for this study was mainly from secondary sources. Secondary data was used because this study is based on historical data of market statistics on IPOs price performance after their launch in the market. All the IPOs sample data was collected from one source which was the announcements reported in the NSE database.

This database contains the most comprehensive and reliable information of the firms listed on the Stock Exchange available.

The daily prices of the IPOs and Nairobi Stock Exchange 20 share index were recorded and were used to analyze the initial and shortrun price performances of the stocks relative to the market. The offer prices of the new issues at their launch and their respective prices at the end of first day of trading were used to calculate the Market Adjusted Initial Returns (MAIRs) in order to test for IPO underpricing. The excess MAIR, is measured by subtracting the market return from the IPO return. Daily returns on the NSE-20 share Index which is the benchmark of market return is used as a proxy for the market return.

The standard event-study methods are used to test whether there is evidence on whether IPOs are able to sustain their abnormal returns over time. The prices of the IPOs in the sample were observed for 15 periods with each period consisting of 30 days. These monthly prices were used to calculate the cumulative average-market adjusted return (CARs) so as to evaluate the performance of IPOs in the marketover time to see if the IPOs are able to sustain their abnormal returns over the sample period.

The other details about the individual characteristics of the new issues (market value, amount raised and proportion of equity offered) were obtained from the NSE handbook, stock issue prospectuses, annual companies' handbooks, individual annual company reports, NSE website and the individual companies' websites.

3.3.1 Data Selection

The IPOs with issuing dates between January 1, 1998 and December 31, 2008 in the database were identified. The beginning year is 1998 because it is the year in which the NSE records start show the exact IPO issuing date and first day of trading. Prior to 1998, there were no records of the exact offering dates and the first day of trading was recorded in terms of months only. This information was necessary in calculating the

MAIRs and CARs. The ending year is 2008 because it provides at least a 15-month return period for all the IPOs.

For an IPO to qualify to be included in the sample it had to meet the following criteria:

1. The company should have been listed through an offer to the public and not through private placement or introduction method of listing.
2. There should be records of the exact date of the offer and first day of trading so that the MAIR can be calculated accurately.
3. The IPO should have traded for at least 15 months as at 31st December, 2008.
4. The IPO should be the initial offer and not a secondary issue e.g. a rights issue.

From the original list of 14 Kenyan IPOs in this period, some IPOS were filtered out due to their specific reasons e.g. listing by private placement like Equity bank in 2006 and listing by introduction like I.C.D.C.I in 2001. Mumias IPO in 2001 was also dropped since it had missing date of the offer.KCB fourth IPO in 1998 was also eliminated because it was not the first offer. Safaricom and Co-operative bank IPOs were also dropped because they had traded for less than 15-months as at 31st December 2008. The resulting sample consists of 5 IPOs that were used for the analysis of the initial and short-run performance.

3.4 Data Analysis

The data gathered was tabulated and analysed by the use of descriptive statistics and regression analysis with the help of the use of the SSPS/MS EXCEL data analysis package, to provide a summary of the information gathered and in order to be able to analyse the characterics of the variables. The results of the data analysis were presented in form of tables, graphs and equations.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION

4.1 Introduction

This chapter sought to address the objectives of the study. It decribes how the data obtained was used in the analysis and specifically the measures of Market Adjusted Initial Returns (MAIRs) and Cumulative Average Returns (CARs).

In the first part of the analysis, the study starts with testing whether investors, on average, outperform the market through buying IPOs at subscription prices and selling them on the first trading day by calculating the MAIRs of the IPOs. The cumulative average return of the IPOs over 15 months was also calculated to test if IPOs are able to sustain their initial abnormal returns and provide investors with positive abnormal returns over a longer time period.

The second part of the analysis deals with the determinants of initial excess returns or the level of underpricing. The regression models are used to show these results.

4.2 Calculation of Initial Excess Return

To meet objective 1 of this study and also answer the first research question of this study; which aimed at testing for underpricing of Kenyan IPOS under review, the Market Adjusted Initial Returns(*MAIR*) was be computed for each firm using the NSE 20-share index as bench mark.

To be consistent with existing empirical evidence, and to facilitate direct comparison with existing empirical evidence the measures of performance for each IPO and for groups of IPOs will be calculated using the methodology employed by Aggarwal, Leal and Hernandez (1993) to measure the short-run performance for each IPO and for groups of IPOs. This methodology is described as follows:

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The total return (Raw Return) for stock 'i' at the end of the first trading day is calculated as:

$$Ri1 = (Pi1 / Pi0) - 1$$

where $Pi1$ is the price stock 'i' at the close of the first trading day, $Pi0$ is the offer price and $Ri1$ is the total first-day return on the stock.

The return on the market index during the same time period is:

$$Rm1 = (Pm1 / Pm0) - 1$$

where $Pm1$ is the market index value at the close of first trading and $Pm0$ is the market index value on the offer day of the appropriate stock, while $Rm1$ is the first day's comparable market return.

Using these two returns, the market adjusted initial Return for each IPO on the first day of trading is computed as:

$$MAIRi1 = 100 \times \{[(1 + Ri1) / (1 + Rm1)] - 1\}$$

The value of MAIRit, i.e., the market adjusted initial Return for IPO 'i' on the tth day of trading can be computed in an analogous manner.

This measure of the abnormal returns does not take into account the systematic risk associated with each issue. When MAIRi1 is interpreted as an abnormal return, the assumption is that the systematic risk of the IPOs under consideration is the same as that of the index, i.e., the betas of the IPOs average to unity. A number of studies, both in the US (Ibbotson 1975, Affleck *et. al* 1991) and the UK (Sudarsanam (1992)), have demonstrated that the average beta of newly listed firms is higher than one. Thus, the abnormal return MAIRi1 calculated using the above formula provides a somewhat upward-biased estimate of the initial performance of the IPO relative to the market. However, the assumption that the beta coefficients average to one is unlikely to affect the essence of the results of this study.

The sample mean abnormal return for the first trading day, MAIRi1, may be viewed as a performance index which reflects the return, in excess of the market return, on a shilling of investment divided equally among N new issues in a sample:

$$MAIRi1 = 1/N \sum MAIRi1$$

4.3 Evaluating the Long term performance of IPOS

To meet the second objective of this study; which is to analyse the price performance of Kenyan IPOs for 15 months and also to answer the second research question of this study i.e. whether Kenyan IPOs are able to sustain their initial abnormal returns and provide investors with positive returns over longer time horizon. Event study methodology was applied to analyze the long-term performance after an IPO, as did McDonald and Fisher (1972), Ritter (1991), Levis (1993), Aggarwal, Leal, Hernandez (1993), and Yavuz (1996). According to this method,

the abnormal return of company i in event day t, AR_{it}, is:

$AR_{it} = R_{it} - (\alpha_i + \sigma_i R_{mt})$,

where R_{it} is the actual return on company i in event day t,

R_{mt} is the return on the market in event day t, α and σ is the beta of company i.

The coefficients, α and σ, are obtained from a regression of the firm's stock returns on the market return over an estimation period prior to the event date. Since IPOs do not have prices before the issues, there is no estimation period for these companies. A number of studies assume σ of 1 and α of zero. According to Levis (1993) and Ritter (1991), this assumption does not affect the results. Ibbotson (1975) reports that the average beta coefficient of newly listed firms is higher than 1.00, and it declines with time following the IPO. Hence, Levis (1993) concludes that: "On the assumption of a positive market risk premium, measures of abnormal return based on IPO betas equal to 1.00 are likely to provide conservative estimates of IPOs underperformance." According to market-adjusted return model, abnormal return (AR) of company i at the time t is:

$AR_{it} = R_{it} - R_{mt}$,

where R_{it} is the actual return and R_{mt} is the return of the benchmark at time t. The NSE 20-share index is chosen as a benchmark in this study.

The actual return on stock i on day t, R_{it}, is defined as $R_{it} = (P_{i,t} / P_{i,t-1})$,

where $P_{i,t}$ is the adjusted closing price of stock i on day t, and $P_{i,t-1}$ is adjusted closing price of stock i on day t-1.

The return on market, R_{mt}, is defined as $R_{mt} = (P_{m,t}/P_{m,t-1})$, where $P_{m,t}$ is the closing price of NSE on day t, and $P_{m,t-1}$ is the closing price of NSE on day t-1. The average market-adjusted return on a portfolio of n IPOs for day t is the equally-weighted arithmetic average of the market-adjusted returns:

$AR_t = 1/n \sum^n AR_{it}$

The cumulative market-adjusted aftermarket performance, $CAR_{1,s}$, is the summation of the average market-adjusted returns from the first day of trading to day s:

$CAR_{1,s} = \sum Ar_t$

4.4 Descriptive statistics of the sample

This section represents the descriptive statistics of the sample in form of tables and graphs as follows:

Table 1: Summary of Sample IPOs characteristics

IPO YEAR	NO. OF IPOS	COMPANY NAME	SHARES FLOATED	OFFER PRICE	AMOUNT RAISED FROM THE OFFER	FIRST DAY PRICE(Average)	VALUE OF SHARES FLOATED-1st Day of Trading
2006	3					40	26,356,000,000
		KENGEN	658,900,000	11.90	7,800,000,000		
		SCAN GROUP	69,000,000	10.45	721,050,000	15	1,035,000,000
		EVEREADY EAST AFRICA	63,000,000	9.50	556,800,000	11	693,000,000
2007	2	ACCESS KENYA GROUP	80,000,000	10.00	800,000,000	13.45	1,076,000,000
		KENYA RE	240,000,000	9.50	2,280,000,000	16	3,840,000,000
Total	5		1,110,900,000	51.35	12,157,850,000	95.45	33,000,000,000
Mean			222,180,000	10.27	2,431,570,000	19.09	6,600,000,000

Table 1 above represents a summary of the characteristics of the IPOs in the sample. In sum, there were 5 IPOs in the sample during the period of study valued at Kshs. 12.158 billion at the offer price, while the combined value of the IPOs at the end of the first-trading day is Kshs. 33 billion, suggesting that the IPO firms leave approximately kshs

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20.842 billion on the table as the underpricing cost. This finding is in agreement with the money left on the table argument proposed by Loughran and Ritter (2002).When IPO shares are offered at a discount to fair value it encourages participation and price discovery. Without that inducement, an investor may wait to buy shares in the after market. If everyone waits, the issue would fail. This money left on the table results into lost capital amounting to kshs. 20.842 billion that could have been raised for the company had the stock been offered at a higher price. The effect of "initial underpricing" an IPO is to generate additional interest in the stock when it first becomes publicly traded.

The table also shows that the average number of shares offered remains at around 22.18 million and shows that the average price is at Kshs. 19.09. The offer price ranges from kshs. 9.5 to kshs. 11.90. It also that shows the capital raised ranges from kshs. 556.8 million to kshs. 7.8 billion

Figure 1: Shares Floated
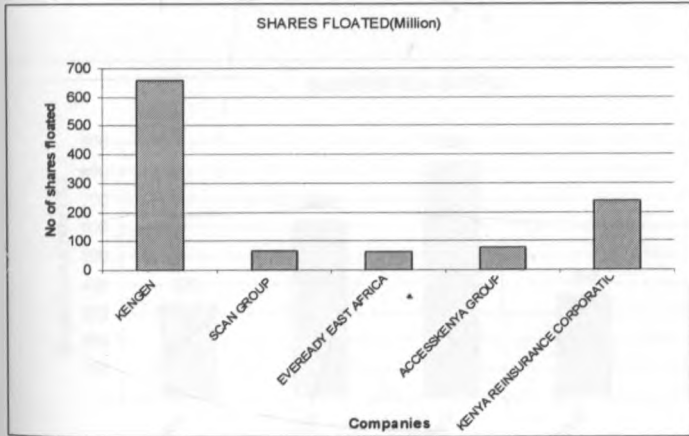
The smallest IPO is the Everyday East Africa, with an issuing volume of 63 million. The largest IPO is Kengen, with an issuing volume of kshs 7.8 billion. In addition, the three largest IPOs have the combined issuing volume of Kshs. 11.205 billion, accounting for almost 85 percent of the total sample IPO volume.

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Table 2: Average Subscription Rates

IPO YEAR	NO. OF IPOS	COMPANY NAME	SHARES FLOATED	SUBSCRIPTION RATE (%)	AVERAGE SUBSCRIPTION	AMOUNT RAISED
2006	3	KENGEN	658,900,000	333		7,800,000,000
		SCAN GROUP	69,000,000	620		721,050,000
		EVEREADY EAST AFRICA	63,000,000	830	594.33	556,800,000
2007	2	ACCESSKENYA GROUP	80,000,000	363		800,000,000
		KENYA REINSURANCE CORPORATION	240,000,000	405	384	2,280,000,000
	5		1,110,900,000		489.167	12,157,850,000

The average subscription rate ranges from 595.33(%) in 2006 to 384% in 2007. In every year, most of the IPOs were oversubscribed for with a subscription rate greater than one . The table also shows that Eveready E.A had the highest subscription rate of its IPO of 830% while Kengen had the lowest subscription rate of 333%.

Figure 2: Subscription Rates of the Sample
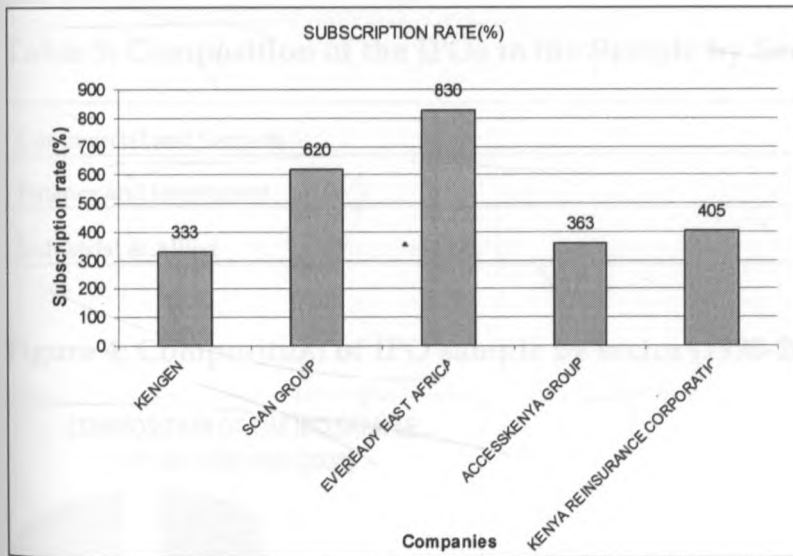
Figure 2 above is a graphical representation of the subscription rates for the IPOs in the sample. Eveready E.A had the highest subscription rates of 830% while Kengen had the lowest subscription rate of 333%.

Figure 3: Amount Raised from IPOs in the Sample
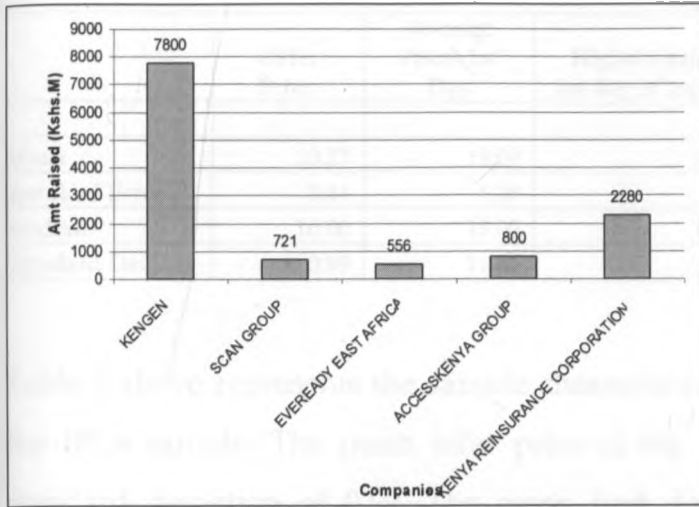
Figure 3 above represents the amount raised from IPOs in the sample. Kengen IPO raised the highest amount of kshs. 7.8 billion raised the smallest amount of kshs. 556 million.

Table 3: Composition of the IPOs in the Sample by Sector

Commercial and Services	1
Finance and Investment	2
Industrial & Allied	2

Figure 4: Composition of IPO sample by sector (1998-2008)
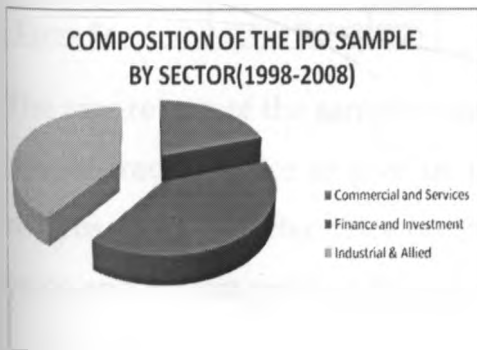
Table 3 and Figure 4 above represents the composition of the IPOs in the sample whereby 1 IPO came from the commercial and services sector, 2 were from the Finance and investments Sector and the last 2 were from the Industrial and allied sector.

Table 4: Summary of 1st day of trading prices

	Offer Price	Average Price- 1st Day	Highest price- 1st day of trading	Lowest Price- 1st day of training
Mean	10.27	19.09	22.60	16.93
Standard Error	0.44	5.30	6.78	4.56
Median	10.00	15.00	18.50	12.00
Standard Dev	0.99	11.84	15.17	10.19

Table 4 above represents the sample characteristics of the first day of trading prices of the IPOs sample. The mean offer price of the IPOs in the sample was 10.27 with a standard deviation of 0.99. The mean first day of trading price was 19.09 with a standard deviation of 11.84. The mean highest price 1st day of trading price of the sample was 22.60% while the lowest price on the first day of trading was 16.93%.

Table 5: Summary of the sample raw returns on the first day of trading

Company Name	Average Return(Ri) Ri=(Pit-Po)/Po	Rmt=(Rmt-mo)/Rmo	Highest Return on the 1st Day of Trading	Lowest Return on 1st Day of Trading
Kengen	2.361344538	0.119523497	3.117647059	1.941176471
Scangroup	0.435406699	0.051091336	0.913875598	0.148325359
Eveready East Africa	0.157894737	0.002958142	0.157894737	0.157894737
Access Kenya	0.345	-0.009567818	0.45	0.2
Kenya Re	0.684210526	0.029532151	0.947368421	0.542105263

The raw return of the sample was calculated using the highest, lowest, and average first day of trading price to give us these values. Table 5 shows the raw percentage stock returns from the offer price on the first day of trading using the average price, highest price and lowest price of the day. The average first day initial raw return of Kengen is

much higher than that of any other IPO with a value of 236% while Eveready East Africa yielded the lowest initial raw return of 15.8%.

Table 6: Calculation of Sample MAIR

Company Name	MAIRi1(average)	MAIR(Highest Price)	MAIR(Lowest Price)
Kengen	198.909771	267.803541	162.716815
Scangroup	36.563460	82.084614	9.250768
Eveready East Africa	15.447962	15.447962	15.447962
Access Kenya	35.799303	46.400736	21.159229
Kenya Re	63.589891	89.150812	49.786994
Total	350.310387	500.887664	258.361769
Mean	70.062077	100.177533	51.672354
StdDev	66.215427	87.884543	57.231591
MAIRi(%)	70.06	100.177533	51.672354

Table 6 above represents the MAIR of the sample IPOs on the first day of trading.It is observed that investors can make an average profit of 70.06 % if they sell their stocks at any time during the first day of trading. Similarly, investors could make an average profit of 100.18 %, if they sold the stocks at the time when the share prices were highest. However, this only applies to investors who subscribed for new issues.

From the above analysis, it is evident that there is underpricing of IPOs in the market and that on average the investors outperform the market through buying stocks at the subscription prices in the primary market and selling them on the first day of trading in the stock market. The results reveal that none of the IPOs in the sample provide the investors with initial negative Initial return (MAIR) on the first day of trading. All the 5 IPOs in the sample provide the investors with positive initial abnormal returns therefore indicating that indeed these IPOs are underpriced. For the entire sample the MAIR is 70.06 %.

Accordingly, a trading strategy that invested a fixed amount in each IPO to be sold at the end of the first day of trading earned a significant positive return. A natural

explanation for decreasing underpricing is learning. As more IPOs have taken place, all market participants learn and the average amount of underpricing reduces.

Table 7: MAIR vs. Issuing Volume

Company Name	Volumes(millions)	MAIRi1(average)
Kengen	659	198.91
Scangroup	69	36.56
Eveready East Africa	63	15.45
Access Kenya	80	35.80
Kenya Re	240	63.59

Table 7 above represents the MAIR and the issuing volume of the IPOs volume of the sample.
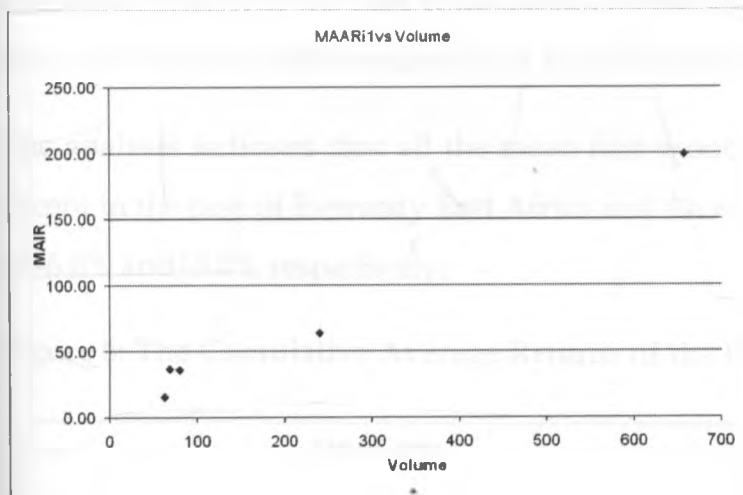
Figure 5: MAIR vs. Issuing volume

Table 6 and figure 5 above represents the MAIR against the subscription rates for the sample. In the plot of MAIR against the issuing volume it is evident that the MAIR rises with the rise in the issuing volume of the IPOs.

Table 8: Period-wise Analysis of the CARs

Period	Kengen	Scangroup	Eveready E.A	Access Kenya	Kenya Re	Sum of CAR	Average
Period 1	0.04	0.72	-0.26	-0.08	0.09	0.51	0.103
Period 2	-0.03	-0.21	-0.14	0.05	-0.04	-0.37	-0.073
Period 3	-0.16	-0.27	-0.16	0.20	-0.03	-0.43	-0.086
Period 4	-0.11	0.17	-0.03	0.02	0.08	0.12	0.025
Period 5	0.00	0.02	-0.08	0.05	0.01	0.00	-0.001
Period 6	-0.18	-0.10	-0.04	0.04	-0.02	-0.30	-0.059
Period 7	-0.09	0.08	0.01	0.12	-0.02	0.10	0.020
Period 8	-0.15	0.03	-0.01	0.15	0.03	0.05	0.010
Period 9	-0.10	0.07	-0.11	0.00	0.00	-0.14	-0.029
Period 10	-0.10	0.05	-0.01	0.09	0.08	0.11	0.021
Period 11	0.15	-0.02	-0.01	0.21	-0.05	0.28	0.056
Period 12	0.25	-0.02	0.03	0.01	0.08	0.35	0.070
Period 13	0.07	0.00	0.08	0.09	0.04	0.29	0.057
Period 14	-0.01	0.03	0.05	-0.05	-0.06	-0.04	-0.009
Period 15	0.10	0.04	-0.09	0.03	0.12	0.21	0.043

The mean returns of the NSE IPOs based on fifteen 30-days periods are analysed i.e. the raw returns (Ri), market returns (Rm) and CARs are calculated.

The analysis indicates that all the mean first month returns of the IPOs were positive except in the case of Eveready East Africa and Access Kenya Ltd which yielded a return of -6.0% and -8.0% respectively.

Figure 6: The Cumulative Average Returns of the IPOs

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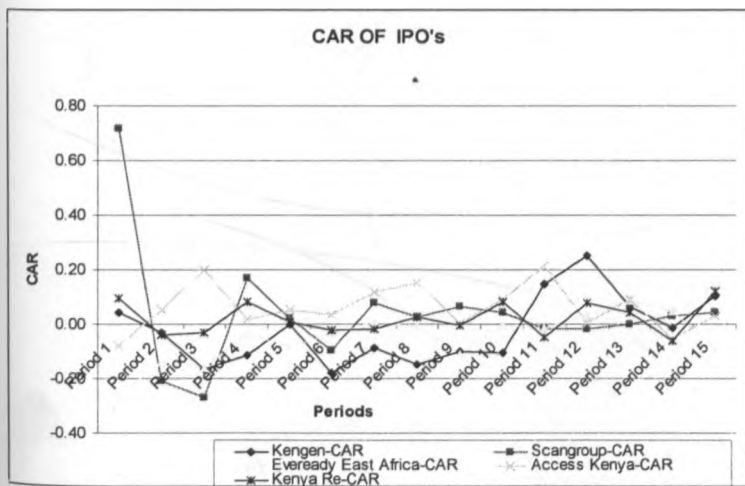
Figure 6 above is a graphical representation of the CARs of each one of the IPOs in the sample plotted against the time periods. It shows that the CARs significantly dropped below zero at some point in during the period of study.

Figure 7: The Cumulative Average Returns of all Firms
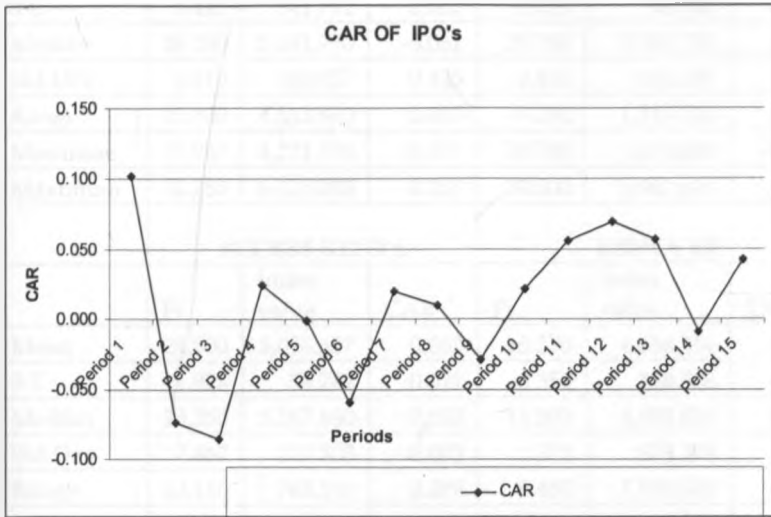

Figure 7 above is a graphical representation of the mean CAR of the whole sample plotted against the time periods. The mean CARs dropped significantly to a negative level during the first few months of trading.

Table 9: Summary of the descriptive statistics of CAR of the IPOs

	KENGEN			SCANGROUP			EVEREADY E.A		
	Pi	Index value	CAR	Pi	Index value	CAR	Pi	Index value	CAR
Mean	28.513	5,124.444	-0.022	25.517	5,276.962	0.039	8.763	5,262.215	-0.051
S E	1.423	141.792	0.032	0.620	90.702	0.056	0.611	77.256	0.023
Median	28.250	5,181.770	-0.032	25.750	5,181.750	0.027	8.000	5,163.470	-0.034
Std Dev	5.510	549.157	0.125	2.403	351.287	0.218	2.368	299.212	0.091
Range	20.300	1,853.910	0.430	9.750	1,347.010	0.987	8.700	1,093.880	0.349
Minimum	17.950	4,271.370	-0.177	20.750	4,614.600	-0.271	6.950	4,947.540	-0.264
Maximum	38.250	6,125.280	0.253	30.500	5,961.610	0.716	15.650	6,041.420	0.085

	ACCESS KENYA			KENYA RE			SAMPLE		
	Pi	Index value	CAR	Pi	Index value	CAR	Pi	Index	CAR
Mean	24.300	5,096.637	0.062	15.370	4,836.531	0.021	20.49267	5119.3576	0.009792
S E	1.928	58.742	0.021	0.354	148.536	0.015	0.987299	108.405658	0.029724
Median	23.250	5,167.180	0.050	15.500	4,985.820	0.007	20.15	5135.998	0.003481
Std Dev	7.467	227.508	0.083	1.371	575.278	0.059	3.823794	400.488392	0.115119
Range	22.150	765.140	0.289	5.450	1,930.530	0.184	13.27	2611.50	0.517
Minimum	13.850	4,622.610	-0.077	12.000	3,514.300	-0.060	6.95	3514.30	-0.264
Maximum	36.000	5,387.750	0.212	17.450	5,444.830	0.124	38.25	6125.280	0.253

These results give the average monthly returns for 15 months after the listing. The average CAR over 15 months after listing for the entire sample is found to be 0.98% with a standard deviation of 3.82 from the sample mean. As with most IPOs, it can be noted that both Kengen and Eveready E.A already yield a significantly negative CAR of -2.2% and -5.1% respectively as at the end of the 15 months of the study. This means that the investors who bought those IPOs after they listed experienced negative returns throughout the sample period. It means that in the longrun, performance of these two IPOs was disappointing to investors. However the other 3 IPOs yielded mean positive returns over the study period. The table also presents information about the NSE 20-share index which is used as a benchmark for market return in this study. The CAR fluctuated between -26.4% and 28% during the study period.

It is noted that the index highest value was 3514.30 points whilst its lowest value was 3514.30 points during the period of analysis. So, the index value showed considerable

volatility of 2611.50 points. The N SE 20-share index ranges from 3514.30 points to 6125.28 during the sample period.

4.5 Cross-sectional Regression Analysis

To better understand the magnitude of level of under-pricing i.e. observed initial and aftermarket performance of IPOs, cross-sectional regressions are conducted to identify the significance of several variables. The Market Adjusted Initial Returns (MAIR) is used as dependent variable. The major explanation of under-pricing using variable MAIR was outlined by focusing on the variables Ex-Ante (ex-ante uncertainty), Mkt-Cap (market capitalization), PSO (proportion of shares offered), MV (market volatility), SI (secondary issue), PE (price earning ratio), Over-Sub (over subscription) and Size (offer size). Descriptions of these variables are given in Table 1, in Appendix.

4.5.1 Correlation Analysis Results

Table 10: Correlation matrix

	MAIR	ln of size	ln of mkt cap	ln of age	Over-subscription	Proportion of shares offered	Ex-ante uncertainty	ln of mkt volatility
MAIR	1							
ln of size	0.9563	1						
ln of mkt cap	0.9648	0.9826	1					
ln of age	-0.2780	-0.1028	-0.1032	1				
Oversubscription	-0.6115	-0.6921	-0.5749	0.4472	1			
Proportion of shares offered	-0.4622	-0.3428	-0.3982	-0.3033	-0.2669	1		
Ex-ante uncertainity	0.2448	0.1204	0.2699	-0.4749	0.1283	0.6149	1	
ln of mkt volatility	-0.3737	-0.3906	-0.4650	0.4471	0.3380	-0.4286	-0.4220	1

From the analysis in Table 10 above, we observe that there is a correlation between the MAIR as the response variable and Size, Mkt Cap, Age, Oversubscription, Proportion of shares offered, Ex-ante uncertainty and Mkt volatility, as the predictor variables i.e

Correlation between MAIR and Size= 0.9563

Correlation between MAIR and Mkt Cap=0.9648

Correlation between MAIR and Age= -0.2780

Correlation between MAIR and Oversubscription =-0.6115

Correlation between MAIR and Proportion of shares offered= -0.4622

Correlation between MAIR and Ex-ante uncertainty=0.2448

Correlation between MAIR and Mkt-volatility=-0.3737

These correlation coefficients are moderately high and therefore it is viable to carry out a regression analysis.

However, using correlation matrix with a factor of 0.5 to check on multi-collinearity, the following predictor variables were highly correlated (ln of mkt cap and ln of size, Oversubscription and ln of mkt cap, Ex-ante uncertainty and Proportion of shares offered).This shows that it is not therefore viable to use the these predictor variables in the same regression model since in knowing one can we can explain the other. As a result of the problem of multi-collinearity, the following variables were dropped; ln of size, Oversubscription and Proportion of shares offered

4.5.2 Underpricing Regression model

With regards to determinants of underpricing, the empirical model is estimated using Ordinary Least Squares (OLS) regression Technique and is displayed as follows:

$MAIR1 = \alpha + \beta_1 \text{Ex-ante}_i + \beta_2 \text{Mkt-Cap}_i + \beta_3 MV_i + \epsilon$

Where MAIR, is the Market adjusted initial Return of firm$_i$ which refers to the level of underpricing,

Ex-ante, refers to the exante uncertainity

Mkt- cap is the market capitalisation

MV$_i$ is the market volatility

In this model the MAIR is the dependent variable whereas ex-ante uncertainty, Market capitalization, Proportion of shares offered, market volatility and oversubscription are the predictor variables.

Table 11: Regression Results of Initial Underpricing Model

Regression Statistics	
Multiple R	0.973
R Square	0.947
Adjusted R Square	0.786
Standard Error	34.232
Observations	5

From Table 11 above, the coefficient of determination (R^2) equals 0.947. This shows that market capitalization of IPO's, market volatility of IPO's and Ex ante uncertainty of IPO's explain 94.7 percent of the Market Adjusted Initial Returns (MAIR) leaving only 5.3 percent unexplained.

The P- value of 0.0029 implies that the model of MAIR is significant at the 5 percent or 95% confidence level of significance (Table 12 below)

Table 12: ANOVA

ANOVA	df	SS	MS	F	Significance F
vRegression	3	20750.560	6916.853	5.902	0.0029
Residual	1	1171.854	1171.854		
Total	4	21922.414			

Table 13: Regression Coefficients

	Coefficients	Standard Error	t Stat	P-value
Intercept	-99.074	211.841	-0.468	0.722
ln of mkt cap	58.238	15.103	3.856	0.162
ln of mkt volatility	19.599	36.570	0.536	0.687
Ex-ante uncertainty	7.354	18.499	0.398	0.759

The trend line multiple regression model using the regression coefficient gives the equation

MAIR = -99.074 + 58.238ln of mkt cap + 19.599ln of mkt volatility + 7.354Ex-ante uncertainty

This means that the MAIR is -0.99074 irrespective of the other factors. Thereafter, per every one-unit increase in Mkt Cap MAIR increases with a factor of 58.238 , per every one unit increase of mkt volatility MAIR increases with a factor of 19.599 and for every one unit increase in Ex-ante uncertainty MAIR increases with a factor of 7.354.

It can also be observed that the response of MAIR towards Mkt Cap (52.238) is stronger than the MAIR towards Mkt Volatility (19.599) or that of MAIR towards Ex-ante uncertainty(7.354).Therefore it can be concluded that MAIR is more sensitive to Market capitalisation of an IPO than the market volatility and Ex-ante uncertainty of the IPO.

4.5.3 Explaining the results of the regression analysis using theories of underpricing

After the determinants of initial excess returns or the level of under-pricing are examined, the regression model's results show that there is a positive and highly significant (at the 5% level) relationship between Ex-ante uncertainty and the level of underpricing. This result is in agreement with the asymmetric information theories; the uncertainty about the value of recently established firms such as new issues (IPOs) is higher than that about well-known firms. This finding supports Beatty and Ritter (1986) argument that investors seek higher returns to compensate for their anxiety about future performance of IPOs.

The results also show that there is a positive and highly significant relationship (at the 5% level) between Market capitalization and the level of under-pricing. This result is contrary to MacGuinness (1992), in which Market capitalization variable was found insignificantly related to the level of under-pricing measure. However, this suggests strong support for the signaling view of under-pricing advanced in Allen and Faulhaber (1989) and Welch (1989), where firms with higher intrinsic values signal their

firms' values through increased under-pricing. Therefore, there is a positive relationship between the level of under-pricing and Market capitalization variables. In our regression results there is a very strong relationship of 58.238 between market capitalization and underpricing. In fact, of the three variables used in the regression, market capitalization has the strongest explanation for the degree of underpricing. This evidence is in line with the signaling theory of under-pricing.

This positive relationship is also found between the degree of under-pricing and market volatility variables. This result supports the prior studies, Reilly (1977) and Paul MacGuinness (1992) which argue that IPO issues following a rising market experience higher under-pricing levels than IPOs following a falling market. The regulatory authorities try to minimize the probability of unsuccessful issues by lowering prices as long as market volatility is high. In our regression results there is a positive relationship between market volatility and underpricing of 19.599 thereby offering evidence in support of this theory.

4.5.4 Regression Results of short-run IPO performance

To better understand the significance of underpricing variables in the short-term performance of IPOs a cross-sectional regression is run. The Cumulative Abnormal Returns (CAR) is used as dependent variable. The major explanation of under-pricing using variable CAR was outlined by focusing on the variables Ex-Ante (ex-ante uncertainty), Mkt- Cap (market capitalization) and MV (market volatility).

With regards to determinants of shortrun performance of IPOs, the empirical model is also estimated using Ordinary Least Squares (OLS) regression Technique and is displayed as follows:

$CAR_{i,s} = \alpha + \beta 1\ Ex\text{-}ante_i + \beta 2\ Mkt\text{-}Cap_i + \beta 4\ MV_i + \euro$

Where CAR, is the Market adjusted Cumulative Abnormal Return of firmi over 15 periods which checks if IPOs are able to sustain their abnormal returns over this period.

Table 14: Regression Results of shortrun Performance Model

Regression Statistics	
Multiple R	0.850
R Square	0.723
Adjusted R Square	-0.108
Standard Error	0.048
Observations	5

From Table 14 above, the coefficient of determination (R^2) equals 0.723. This shows that market capitalization, of IPO's, market volatility of IPO's and Ex ante uncertainty of IPO's explain 72.3 percent of the cumulative abnormal return (CAR) leaving only 27.7 percent unexplained. The P- value of 0.00638 implies that the model of MAIR is significant at the 5 percent or 95 percent confidence level of significance (Table 15 below)

Table 15: ANOVA

ANOVA					
	df	SS	MS	F	Significance F
Regression	3	0.006	0.002	0.870	0.00638
Residual	1	0.002	0.002		
Total	4	0.008			

Table 16: Regression Coefficients

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.458	0.299	1.531	0.368	-3.341	4.256	-3.341	4.256
ln of mkt cap	-0.026	0.021	-1.203	0.442	-0.296	0.245	-0.296	0.245
Ex-ante uncertainty	-0.028	0.026	-1.075	0.477	-0.360	0.304	-0.360	0.304
ln of mkt volatility	-0.077	0.052	-1.496	0.375	-0.733	0.579	-0.733	0.579

The trend line multiple regression model using the regression coefficient gives the equation

CAR = 0.458 – 0.026ln of mkt cap – 0.028Ex-ante uncertainty -0.077ln of mkt volatility

This means that the CAR is 0.458 irrespective of the other factors. Thereafter, per every one-unit increase in mkt Cap the CAR decreases with a factor of -0.026 , per every one unit increase of mkt volatility CAR decreases with a factor of -0.028 and for every one unit increase in Ex-ante uncertainty CAR decreases with a factor of -0.077.

It can also be observed that the response of CAR towards mkt volatility (-0.077) is stronger than the CAR towards mkt cap(-0.026) or that of CAR towards Ex-ante uncertainty(-0.028).Therefore it can be concluded that CAR is more sensitive to Market volatility of an IPO than the market cap and ex-ante uncertainty of the IPO.

Conclusion:

These two models (both the underpricing and shortrun performance) can be used for forecasting the underpricing and shortrun performance of IPOs. The reason as to why these models are accepted for purposes of forecasting is because the underpricing model explains 94.7% of the MAIR while the aftermarket model for the shortrun IPO performance explains 72.3% of the CARs. For a model to be accepted as a forecasting model it has to explain at least 75% of the GDP a criteria which this two models meet.

In addition, the other predictor variables can be included to enhance it which would in clued the P/E ratio of the firm, Proportion of shares offered, Size of the offer, Age of the firm and the degree of oversubscription. This summarises the problem that exists in literature; whereas IPO do very well on the first day or even month of trading , the IPO are not usually able to sustain the abnormal initial returns over a longer time period and in this case 15 months.

CHAPTER 5

CONCLUSIONS & RECOMMENDATIONS

5.0 Introduction

This chapter will make a summary of the findings of the study, draw conclusions from this study and also make recommendations for areas of further study.

5.1 Summary & Conclusions

This study documents the initial and shortrun performance of 5 Kenyan IPOs issued between 1998 and 2008 and attempts to explain the reason behind such performance. It reports an overall excess return of 70.06% on the first trading and a CAR of 0.98 % after fifteen months. In summary, the findings indicate that indeed Kenyan IPOs are underpriced with an average MAIR of 70.06 %. Investors can outperform the market by buying IPOs during the offer date and subsequently selling them on the first day of trading in the market.

However, the study reports a significant drop in the returns from the IPOs over time from an initial return of 70.06% on the first day of trading to an average return of 0.98% at the end of 15 months of the study. Infact, the CARs of some of the IPOs in the sample had already turned negative within the next 15 months in the market. This is what is commonly referred to as under-performance of IPOs in the long run and is in agreement with the findings of Ritter (1991). Consequently, the decline in profits reflects the reversal of pre-offers positive accruals as the long-run is related to the power of competition. Therefore, the IPOs returns were already disappointing to investors as at the end of 15 months of trading. An investor who invests on IPOs on the first day is most likely to experience negative returns throughout the period of the study.

It can therefore be concluded from the findings of this study that IPOs yield economically and statistically significant initial excess returns, in line with underpricing phenomenon of IPOs that has been widely documented in the literature. This phenomenon was first reported by Ibbotson (1975). There is definite profit opportunity for those investors, who are willing to bear price uncertainty in the primary market. These investors according to our sample study may earn an average profit of about 70.06% on the first day of trading.

The results also indicate that IPO firms leave approximately kshs 20.842 billion on the table as the underpricing cost. This finding is in agreement with the money left on the table argument proposed by Loughran and Ritter (2002).When IPO shares are offered at a discount to fair value it encourages participation and price discovery. This money left on the table results into lost capital amounting to kshs. 20.842 billion that could have been raised for the company had the stock been offered at a higher price. The effect of "initial underpricing" an IPO is to generate additional interest in the stock when it first becomes publicly traded.

In this context, it is worth to note that in an attempt to provide explanations for the initial excess returns and aftermarket performance of Kenyan IPOs, the study estimates several multivariate cross-sectional regression models. The results indicate that ex-ante uncertainty, market capitalization and market volatility are some of the significant variables in determining the initial excess returns, while the shortrun abnormal returns are driven the same factors although in an inverse relationship.

The findings of this study also indicate that the level of IPOs underpricing is directly related to the maket capitalization of the IPOs, market volatility before the issue and the ex-ante uncertainity surrounding the IPO issue.

5.2 Limitations of the study

The biggest limitation of this study was the unavailability of data. From the literature review it is clear that the NSE has relatively fewer IPOs than the other developed markets in which similar studies have been carried out. The NSE database also lacks the exact IPO issue date and first day of trading records for the IPOs prior to 1998 which makes it impossible for the study to evaluate the MAIR of those IPOs prior to this year.

This measure of the abnormal returns does not take into account the systematic risk associated with each issue. When $MAIR_{i1}$ is interpreted as an abnormal return, the assumption is that the systematic risk of the IPOs under consideration is the same as that of the index, i.e., the betas of the IPOs average to unity. A number of studies, both in the US (Ibbotson 1975, Affleck *et. al* 1991) and the UK (Sudarsanam (1992)), have demonstrated that the average beta of newly listed firms is higher than one. Thus, the abnormal return $MAIR_{i1}$ calculated using the above formula provides a somewhat upward-biased estimate of the initial performance of the IPO relative to the market. However, the assumption that the beta coefficients average to one is unlikely to affect the essence of the results of this study.

Since we know that the returns on a stock is affected by several other factors besides the return on the market e.g. inflation rates, for the purpose of this study we will assume that all the other factors are controlled and thus held constant in order to be able to ascertain the IPOs performance.

5.3 Recommended areas of further study

The paper, however, leaves us with an resolved issue: the positive abnormal returns of IPOs in the short-run and the negative abnormal performance in the long-run. Is this phenomenon due to the fact that investors are over-optimistic at the date of offerings and short-run trading, which leads to initial stock prices above their (fair) equilibrium level, and when they correct their mis-valuations over time this results in negative abnormal long-run returns? Or do the IPO issuing firms deceive investors by

manipulating financial reports of their firms in the pre-offer period? Or can the abnormal negative returns of IPOs be attributed to market inefficiency?

It could be argued that by extending the sample period beyond 15 months, which this paper does not cover, additional evidence can be gained regarding some of the patterns of IPOS' behavior. Further research could be done on IPOs to establish how IPOs perform in the longer term e.g 3 years or 5 years .More investigation is needed before the results of this paper can be interpreted more generally.

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Appendices:

Table 1: Description of variables, explaining the underpricing of Kenyan IPOs

Variable	Description
MAIR	Market adjusted initial Return (level of underpricing measure over the period between the offer price in the issue and the average first day of trading price on day 1.
Ex-ante	Measure of Ex-ante uncertainty is calculated as the SD of Daily Returns in the newly listed stocks over a period of one month after listing.
Ln(Market Cap)	Measure of the firm's intrinsic value; it is the market capitalization of the issuing firm and is obtained at the close of the tenth day of trading.
Market Volatility	Measure of market volatility as the standard deviation of daily market return (NSE 20-share index) over the two months before the closing date of the subscription.
Ln(Size)	Size of the offer variable. It is the net measured as the number of offering shares multiplied by their offering price.
PSO	Proportion of shares offered to the general public
Oversubscription	Over-sub is the oversubscription. A measure of times the share offering is oversubscribed.
PE	PE is price earning ratio. A proxy variable, used to measure the quality of the firm. It is the average price earning ratio for the last two years or three years before the firm's listing.
CAR	Cumulative Adjusted Return after one year, in order to observe the effect of 15 months after market performance, and in relation to underpricing.(MAIR)

Table 2: Initial Public Offerings in the NSE (1998-2008)

Initial Public Offerings (IPOs) at NSE (1990 – 2008).

Year	Company	Shares Floated	Issue price (KES.)	Subscript ion rate (%)	Amount raised (KES.)	Date/month of First Trading on the NSE
1990	KCB- second IPO	9,000,000	33.00	147	297,000,000	Dec.1990
1991	KFC	3,261,970	12.50	110	40,800,000	Jan. 1992
1992	UCHUMI	16,000,000	14.50	103.2	232,000,000	Jan. 1993
1992	CROWN BERGER	8,638,000	16.00	104	138,000,000	Jan. 1993
1992	HFCK	18,000,000	7.00	400	126,000,000	Jan. 1993
1993	E A OXYGEN	1,600,000	26.50	100	42,400,000	Mar.1993
1993	CMC	2,000,000	10.00	100	20,000,000	Apr.1993
1994	FIRESTONE	40,000,000	33.50	101	1,420,000,000	Dec.1994

I

1994	NBK	40,000,000	10.00	300	400,000,000	Dec.1994
1994	NIC	179,299,286	52.00	77	718,000,000	Dec.1994
1995	REA VIPINGO*	1,200,000	8.50	1100	102,000,000	
1996	REA VIPINGO	8,000,000	10.50	216	84,000,000	May. 1996
1996	KQ	235,423,896	11.25	194.6	2,664,000,000	Jun. 1996
1996	NBK- second IPO	40,000,000	15.00	275	600,000,000	Jun. 1996
1996	KCB- third IPO	11,880,000	50.00	150	560,000,000	Nov.1996
1997	TPS	12,893,000	13.00	400	167,609,000	Jul.1997
1997	ARM	23,000,000	12.25	250	281,750,000	Dec.1997
1998	KCB- fourth IPO	28,050,000	65.00	100	1,823,250,000	Jun.1998
1999	HFCK	30,000,000	14.00	100	420,000,000	Apr.1998
2000	AFRICAN LAKES	4,000,000	94.50	150	378,000,000	Mar. 2001
2001	MUMIAS	300,000,000	6.25	60	1,125,000,000	Nov. 2001
	ICDCI*	8,951,572	37.00	64	331,208,164	
2006	KENGEN	658,900,000	11.90	333	7,800,000,000	11th May. 2006
	SCAN GROUP	69,000,000	10.45	620	721,050,000	29th Aug. 2006
	EQUITY BANK**				0	7th Aug. 2006
	EVEREADY EAST AFRICA	63,000,000	9.50	830	556,800,000	18th Dec. 2006
2007	ACCESSKENYA GROUP	80,000,000	10.00	363	800,000,000	4th Jun. 2006
	KENYA REINSURANCE CORPORATION	240,000,000	9.50	405	2,280,000,000	27th Aug. 2007
2008	Safaricom Ltd	* 10,000,000,000	5.00	532	50,000,000,000	9th June 2008
	Co-operative Bank of Kenya	701,300,000			5,358,801,800	22nd December 2008

Note:

(*) listing by Private placement

(**) listing by introduction

Source: NSE

II

Table 3: IPO'S IN THE NSE SINCE 2001

Nation Centre, 1st Floor: Tel: +254 (020) 283 1000 Cell: 0724253783/0733222007
Fax: +254 (020) 222 4200: www.nse.co.ke

IPO'S SINCE 2001

	COMPANY	1ST DAY OF TRADING	AVERAGE PRICE (KES)
1	I.C.D.C Investments	2nd January 2001	46.50
2	Mumias Sugar Co.	14th November 2001	6.25
3	KENGEN	17TH May 2006	40.00
4	Scan group	29TH Aug 2006	15.00
5	Equity Bank	7th Aug 2006	166.00
6	Eveready East Africa	18th Dec 2006	11.00
7	Access Kenya Group	4th June 2007	13.45
8	Kenya Reinsurance Corporation	27th Aug 2007	16.00
9	Safaricom Ltd	9th June 2008	7.35
10	Co-operative Bank of Kenya	22nd Dec 2008	10.45

SOURCE: NSE MARKETING & BUSINESS DEVELOPMENT DEPARTMENT

Table 4: NSE 20-share Index values for calculating MAIR

Company Name	NSE-20 Share index on offer date	NSE-20 share index 1st Day of trading
Kengen	3973.11	4447.99
Scangroup	4271.37	4489.6
Eveready East Africa	5608.25	5624.84
Access Kenya	5092.07	5043.35
Kenya Re	5,123.23	5,274.53

Table 5: NSE 20-share index for CAR Calculations

	Kengen	Scangroup	Eveready	Access Kenya	Kenya Re
Period 1	4441.54	4246.38	5585.81	5181.07	5282.77
Period 2	4272.43	4881.10	6041.42	5320.42	5034.55
Period 3	4271.37	5106.65	5798.73	5387.75	5231.27
Period 4	4423.60	5791.00	5103.83	5181.63	5444.83
Period 5	4750.80	5522.81	5085.89	4980.49	4942.30
Period 6	4857.58	5961.61	5167.34	5205.06	4924.35
Period 7	5603.03	5665.79	5163.47	5167.18	4905.77
Period 8	5589.64	4614.60	5123.23	4795.96	5156.53
Period 9	6125.28	5211.27	5171.30	5142.27	5149.96
Period 10	5884.26	5134.57	5507.30	4838.08	5251.72
Period 11	5200.75	5052.80	5069.50	5364.72	4985.82
Period 12	5242.80	5193.14	5095.70	5253.53	4744.75
Period 13	5181.77	5181.75	5339.80	5158.81	4349.01
Period 14	5089.22	5491.27	5207.16	4849.97	3630.03
Period 15	5117.37	5164.78	4947.54	4622.61	3514.30