THE RELATIONSHIP BETWEEN THE FUNDAMENTAL VALUES AND THE ISSUE PRICES OF INITIAL PUBLIC OFFERS AT THE NAIROBI SECURITIES EXCHANGE

By

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OCTOBER, 2013
DECLARATION

I declare that this research project is my original work and that it has not been previously presented for a degree at the University of Nairobi or any other university.

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This research project has been submitted for examination with my approval as the University Supervisor.

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………………………….                                                             ………………………
Signature                                Date
DEDICATION

This research project is dedicated to my father, Christopher Mbithi, who has spent all his energy and resources to ensure that I receive the best education possible and who has provided the moral support that I needed to complete this research project.
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ABSTRACT

It is often recommended that the issue price of an IPO be equal to the fundamental value because this is the optimum price for all the parties involved in the IPO process including the underwriters and investors. However, this rarely happens in practice because in determining issue prices, certain subjective considerations are made that have nothing to do with the perceived fundamentals of the company. It is this relationship between the fundamental value at the time of an IPO and the issue price selected that is the focus of this research project. In determining whether a particular IPO has been undervalued or overvalued, most studies take the initial day closing price as a substitute for the fundamental value and compare it with the issue price. However studies such as those carried out by Purnanandam and Swaminatham (2004) demonstrate the need for a more realistic approach in determining fundamental values for the purpose of establishing under pricing/under valuation. In this particular study a retrogressive discounted cash flow approach was used to determine the fundamental values at the time of the IPOs by using the post-IPO financial performance of the companies to determine the free cash flows to the firm. These free cash flows along with a terminal value were then discounted back to the IPO date. A sample of 5 IPOs that were carried out between the year 2006 and 2010 was selected for this study. The results that were obtained after a detailed analysis were mixed, with 60% of the sampled companies showing that they were significantly overvalued at the time they went public by an average of 128.7%. It is important to note at this point that 2 of the companies that registered the largest valuation premiums namely, Eveready East Africa Ltd and Safaricom Ltd experienced sharp price reversals a few months after going public. 40% of the IPOs were found to be under valued with discounts averaging 43.5%. A mean computation of the entire sample revealed an overall average premium of 59.9% for the entire sample, this in line with the results of Purnanandam and Swaminatham (2004) that found that on average IPOs in India that were described as being under priced, were in fact over valued by an average of 50%.
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CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

A private or state owned corporation can choose to sell its shares to members of the public in a securities market through an initial public offer (IPO) among many other forms of stock introduction. An initial public offer is a type of public share sale where a portion of the equity of a privately held company is sold to the public with the expectation that a liquid market will develop (Ritter, 1998). This usually converts a business from one that is privately owned to one that is publicly owned. Going public has various advantages, the primary advantage being that it helps a company raise capital that it may then use to fund research and development, capital expenditure or even to pay off existing expensive debt in its books (KPMG, 2008). It also helps increase public awareness of the company and this may generate publicity for their products and help increase their market share (Ernst and Young, 2012). In the case of Kenya, the relevant security market is Nairobi Securities Exchange. The NSE can be defined as the meeting place between those who want to sell securities and those who want to buy securities in the Kenyan market.

It is well known that initial public offers face numerous challenges in the process of price discovery. This is because the market is usually not certain about the quality of the company while the issuing company does not know the market demand of its shares (Gregoriou, 2006). Issuers therefore delegate the offer price decision to the investment bank that underwrites the offer (Baron, 1982) because these investment banks repeatedly bring firms public, have strong incentives to build a reputation as valuation experts and are able to certify that the offer price reflects fundamental value (Ibbotson and Ritter, 1995).

1.1.1 Fundamental Value of a Company

The fundamental or intrinsic value of a company or its stock is generally considered to be the value based on all the facts and circumstances of the business, both internal
and external. Fundamental analysis on the other hand is the process of evaluating the information contained in the financial statements, industry reports and economic forecasts in order to determine the fundamentals of a corporation. The term fundamental analysis encompasses a wide range of analysis concepts that help determine the value of a company (Schlichting, 2008). The fundamental analysis process is usually be broken down into three distinct parts; economic analysis, industry analysis and the company analysis (Kulkarni, 2011). It is after an exhaustive fundamental analysis that an actual valuation of a company can be undertaken by applying the information gathered to a valuation model that will arrive at a numerical valuation of the corporation.

The overall valuation methods can be subdivided into the income methods that comprise of the discounted cash flows or the dividend discounting approaches, the market multiples method and the real options or contingent claims methods. These various methods arise due to the different premises on how a company should be valued (Schlichting, 2008). With regard to its higher practical (Gantenbein and Gehrig, 2007) and scientific (Prokop and Zimmermann, 2007) relevance, the present value methods are considered to be the best and it is this method, specifically the discounted cash flows approach has been used in this study.

1.1.2 Issue Prices of IPOs

The valuation of IPOs is quite relevant from an economic efficiency perspective because this is the first opportunity that managers of such companies get to observe the price signals from the public capital markets. Such signals can either affirm or repudiate management’s belief regarding its future growth opportunities (Aggarwal, Bhagat and Rangan, 2007). Very little is publicly known about the IPO valuation process used by underwriters because the process is unobservable. This is made even worse in some jurisdictions like the United States where earnings and cash flow forecasts of IPO firms are generally unavailable in Securities and Exchange Commission documents and underwriters are prohibited from publishing opinions concerning valuations before an IPO (Kaplan and Ruback, 1995). Information on IPO
valuation in Kenya is also not released to the general public, and therefore the actual methodology used and considerations made are usually not clear.

However, some general information on the process still exists. The first stage of the IPO valuation process, in most markets, is composed of the book building process, a method that was first developed in the United States (Sherman, 2000; Cornelli and Goldreich, 2001). During this book building process the company’s management meets institutional investors in a road show across multiple cities in order to enable these institutional investors to place indications of interest. Book building usually involves the creation and measurement of demand while at the same time acting as a basis of price revision through the collection of indications of interest from potential investors (Ritter and Welch, 2002). The second stage is the use of pricing models along with certain subjective considerations to come up with a price that will be adjusted based on the results of the book building process.

1.1.3 Theoretically Expected Relationships

Theoretically, the price that would minimise the risk trade-off and serve as the optimum for both the issuer and the underwriter is the fundamental value of the issuing company’s stock. If the underwriter sets the offer price at exactly this value, the issuer will be able to raise the maximum amount and the underwriter will be able to get the maximum spread. At that price, all the shares are sold eliminating the risk of under subscription. In theory an offer price above the fundamental value should result in an under subscription resulting in higher gains for the issuer if the issue has been underwritten and lower proceeds if it has not as well as lower proceeds for the underwriter. At a price below fundamental value issuers receive lower proceeds and underwriters receive a lower spread but the risk of under subscription is significantly reduced (Gregoriou, 2006).

The situation described above is the ideal, but it rarely occurs in practice. In reality the offer prices of initial public offers rarely if ever reflect the fundamental values of their respective companies. This is because the determination of the offer price is done using various pricing models along with certain subjective considerations. These
subjective considerations are influenced first and foremost by the overall objective of the issue which can broadly be to either raise additional capital or the exit of an investor, the market sentiment at the time of the stock issue and lastly, the conflicting objectives of the underwriter to raise as much money as possible while avoiding under-subscription of the share issue. The particular pricing model used also depends on both the market environment into which the company will sell its shares and the internal characteristics of the company itself (Chemmanur and Liu, 2003). The resulting difference between the offer price arrived at and the intrinsic or fundamental value of the firm or company is the subject of this study, with a particular focus on the Nairobi Securities Exchange.

This difference between the offer price and the fundamental value can either be positive or negative, meaning that the shares can either be under valued or over valued. The terms that are mostly used in place of over valued or undervalued are over priced or under priced and therefore these terms will be used alternatively to refer to the same thing in this study. Under pricing occurs when the issue price of a company’s stock is less than their fundamental value represented by the opening day’s closing market price while the vice verse results in over pricing.

1.1.4 Context of the Study

Under pricing is typically but not exclusively indicated if the opening day’s closing price is higher than the offer price (Paleari and Vismara, 2007). A lot of studies have been conducted on the issue of under pricing and conclusive evidence has been obtained showing that this phenomenon is widespread across many if not all of the security exchanges (Loughran, Ritter and Rydqvist 1994). It has also been observed that IPO under pricing varies over time, a factor which is attributed to changes in the characteristics of companies going public together with changes in the objectives and incentives of company owners and prospective investors (Loughran and Ritter, 2002).

Negative initial returns caused mostly by overpricing are less studied and as a result, less understood. Normally, the commitment to support the issue reduces the underwriter’s incentive to deliberately overstate the issue price (Benveniste, Busaba
and Wilhelm, 1996). Furthermore, since investment banks are repeat players in the equities market, their reputation would suffer any time they inaccurately price an offering (Chemmanur and Fulghieri, 1994). Despite this, certain circumstances may make overpricing strategically desirable (Zheng Liu, 2012). This is also consistent with Loughran, Ritter and Rydqvist’s (1994) hypothesis that issuers may take advantage of ‘windows of opportunity’ periodically offered by optimistic investors. Overpricing is consistent with the purpose of an initial public offer, which is to raise as much capital as possible for the issuer.

However, it should also be appreciated that under pricing and over pricing cannot always be shown by comparing the issue price with the closing price of the initial trading day. Most studies in jurisdictions with developed capital markets assume that an IPO’s initial trading day’s closing price represents a reliable proxy of a firm’s fundamental value, but this is usually not the case because this closing price may be influenced by factors that have nothing to do with the perceived fundamentals of the company, and this especially applies to the less developed security markets. A good example of this has been witnessed in the Nairobi Securities Exchange where opening day transactions of initial public offers are normally dominated by speculative retail investors who usually buy more or sell existing shares for purely speculative purposes. Secondly, the use of the opening day’s closing price to determine an IPO’s mis-pricing is a short-term view, it can be argued that a more accurate and realistic representation can be found by looking at the medium to long term market price of a stock. It is because of these reasons that a study focussing on the relationship between fundamental value and the issue price of initial public offers at the Nairobi Securities Exchange should obtain a more realistic representation of the fundamental or intrinsic value.

1.2 Research Problem

There are three basic findings that can be expected when comparing the intrinsic or fundamental value of a stock that is the subject of an initial public offer with its offer price. The issue price can be lower than, equal to or higher than the fundamental value at the time of the IPO. Each one of these relationships is as likely as the other
depending on the market conditions surrounding an initial public offer as well as the competence and experience of the underwriter. The main challenge in trying to determine the above relationship comes from trying to determine the fundamental value of a company whose shares were offered to the public through an IPO. Most of the studies carried out on the issue of under pricing and over pricing in the developed markets assume that the first trading day’s closing price represents the fundamental value of the company that the market has correctly priced (Gregoriou, 2006). How true is this assumption? Moreover, can the same school of thought be transferred to a less developed market that does not have the same level of information efficiency in its security markets?

Most studies focused on this issue have yielded similar results showing significant IPO under pricing when looking at the short term returns in the United States as well as other developed financial markets. This has been consistently seen in studies such as Ibbotson, Sindelar and Ritter (1988), McDonald and Fisher (1991), Ritter and Welch (2002), Ritter and Loughran (2002) among many others. A pattern of long run underperformance has also been observed among these under priced IPOs (Ritter, 1991). Some researchers such Purnanandam and Swaminatham (2004) have actually performed detailed studies using alternative ways of determining fundamental values and have concluded that IPOs that are typically referred to as under priced or under valued based on opening day closing prices are usually over priced by very large margins. This divergence of opinion presents a viable research gap and exciting research opportunity, especially when looking at it from a local point of view.

Little research has been done in the area of under or over valuing or pricing of IPOs in Kenya or the greater East African region as compared to other regions of the world. However, some research still exists. Ochenge (2011) sampled 15 Kenyan IPOs for the period 1990-2008 and found that the average initial market adjusted returns for the first three days of listing is about 64.3 percent indicating a significant level of under pricing. Statistical analysis also indicated that the level of IPO under pricing in Kenya is related to listing delays, offer size, offer price, oversubscription rate and the type of issuer. Lishenga and Ndatimana (2012) also pointed out conclusive evidence of IPO under pricing and long run under performance. However, the results of long run under performance were mixed depending on how long the period under study was. Thuo
(2009) also performed a similar study which confirmed under pricing of IPOs at the Nairobi Securities Exchange as well as long term under performance. She examined 5 initial public offers issued between 1998 and 2008 and she used descriptive statistics and regression analysis to measure the performance of these IPOs. An average market adjusted initial return of 70.06% was reported on the first day of trading and a cumulative average return of 0.98% was reported at the end of 15 months.

This particular study differs from all the above local studies in that it attempts to calculate a more representative fundamental value of an issuing company’s shares like Purnanandam and Swaminatham (2004), but this time using a modified version discounted cash flows approach as opposed to using first day market returns as a proxy for the fundamental value as is the case in most of these studies. This is because the assumption in most foreign studies that the market has sufficient information to correctly price a company’s stock based on its fundamentals on the initial day of trading cannot be directly applied to the Nairobi Securities Exchange where first day IPO trades are dominated by speculative retail investors.

1.3 Objective of the Study

This study is aimed at determining the relationship that exists between the fundamental values and the issue prices of initial public offers at the Nairobi Securities Exchange.

1.4 Value of the Study

A number of different parties will benefit from the findings of this study. Some of these parties are; the issuing companies that will be provided with a better understanding of the local IPO market and the underwriters and transaction advisors who will be exposed to the trends surrounding IPO under pricing and over pricing in the local market thereby enabling them to further refine their valuation techniques. Investors will also significantly benefit from the study because an understanding of the over or under valuation of stocks in IPOs will help them in choosing those investments that will increase their chances of earning positive returns.
CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

A review of literature was undertaken to support the study carried out in this research project. A general survey was first conducted to familiarise myself with the research gaps before the research topic was settled on, after which a more detailed review was done. This chapter on the literature review contains a review of the empirical studies that have been conducted in multiple locations and across multiple time periods on the relationship between the IPO issue prices and their corresponding fundamental values. These findings are supported by details of the theories affecting and explaining particular relationship, specifically detailing those theories that explain IPO under pricing as well as over pricing.

2.2 Review of Theories

Much of the theoretical research in this field of study has mainly been focused on explaining the empirical findings on IPO pricing that have been encountered over and over by multiple researchers.

These new issue anomalies seem to be exceptions to the efficient market hypothesis (EMH) which defines the degree of efficient market pricing in terms of the relevant information available (Fama, 1976). In a stylized version of efficient markets, an IPO would arrive at the correct levels where all the supply and demand is at equilibrium on the first day itself, and from that point on the stock reacts to the flow of news. But in reality, market participants take time to adjust to events before reaching an equilibrium price. The price of a stock in a perfect market setting should also ideally be a reflection of its demand. The unique setting of an IPO deviates from this premise due to the absence of that channel of communication (Qeska and Bakshi, 2010). Bossaerts (2004) further reinforces this idea by stating that the efficient market hypothesis is too strict for the IPO market due to the limited information about IPOs in the market. The ongoing debate is whether the anomalies of IPO initial under pricing and long term under performance are a manifestation of market inefficiency.
caused by the irrational behaviours of investors and issuing companies. Many theories, most of which are not mutually exclusive have been put forward to explain these anomalies. Chen and Mohan (2001) stated that ‘Most of the theoretical and empirical studies hold that initial under pricing is undertaken deliberately’. Many reasons have been put forward to explain why underwriter under price new issues and why these issues under perform in the long run.

2.2.1 Self Interest Theory

A possible reason for under pricing may be the self interest of investment bankers (Baron and Holmstrom, 1980; Baron, 1982). According to Baron and Holmstrom (1980), most new security issues are managed and distributed by investment banking syndicates that perform three basic services for the issuers of the securities. First, they offer advice and counsel regarding the type of security to be issued, coupon rates, maturity, offer price etc. Secondly, they provide an underwriting function by bearing all the risks associated with the proceeds of the issue and thirdly, they provide a distribution function by selling the securities to investors.

They identified an incentive problem that was mainly centred on the trade off between the offer price decision and the distribution effort made to place the issue. Distribution involves substantial costs and therefore a banker would be expected to limit those costs to the extent that is feasible. The most common way of limiting those costs is to under price the new issue. This incentive problem was described by Van Horne (1977) in the following way, ‘the underwriter wants a price that is high enough to satisfy the issuer but low enough to make the profitability of successful sale to investors reasonably high’.

Baron and Holmstrom further identified two principle forces that can work to mitigate the incentive to under price. The first is that the investment banking industry is to some extent competitive and a banker that continuously prices new issues lower than the industry norm will likely loose some market share. The second force is the sophistication of the issuer because if the issuer is financially sophisticated and makes
comparisons with similar security issues, the investment banker is forced to price closer to market.

2.2.2 Winners Curse Theory

The ‘winners curse’ theory (Rock, 1986) also provides a plausible explanation for under pricing. The ‘winners curse’ is a well known phenomenon in common value auctions and bidding behaviour. Bidders systematically fail to take into account factors in auction environments indicating that the winning bid is very likely to be an over bid, resulting in expected loss. The two most general and robust results that emerge from past experimental studies of the winners curse are that it is alive and well and that it is persistent, vanishing very slowly if at all (Charness and Levin, 2005).

According to Rock (1986) firms in conjunction with underwriters under value an IPO in order to keep IPO markets functioning by providing liquidity to both investors and owners. This results in each individual investor receiving a smaller allocation of shares that will yield initial positive returns and ensure this that they will remain active in the IPO market.

2.2.3 Book Building Theory

Benveniste and Spindt (1989) looked at how informational frictions affected the marketing of IPOs in an attempt to explain the under pricing and long run underperformance anomalies. Their analysis focused on the role an investment banker plays in eliciting information about the market value of an IPO during the pre-selling period. They modelled the pre-market activity as an auction, conducted by the investment banker, in which investors bid with indications of interest.

The basic difficulty facing an underwriter wishing to collect information useful to pricing an issue is that investors have no incentive to reveal positive information before the stock is sold. By keeping such information to themselves until after the offering, investors can expect to benefit. They would pay a lower initial price for the stock and they could sell it at the full information price in the post offering market.
They suggested that underwriters may therefore knowingly partially adjust offer prices in order to compensate investors for truthfully revealing information regarding the market demand of an issue, especially positive information. This is known as the book building explanation. They further demonstrated that an underwriter can use the leverage of expected future profits to reduce under pricing and thus increase the efficiency of the capital acquisition process.

Benveniste and Spindt also came up with a possible explanation for the long run under performance phenomenon in their book building model. They argued that subsequent performance is positively correlated with the initial price revision that was undertaken during the book building process. If there was more disclosure of negative than of positive information performance may be negative in the future.

2.2.4 Lawsuit Avoidance Theory

Another possible reason for under pricing that has been put forward is lawsuit avoidance (Hughes and Thakor, 1992; Tinic, 1998). This is because some underwriters may stand to face legal action if the market price of a new share issue significantly drops below the offer price.

This was empirically tested by Lin, 2004. She specifically tested the insurance effect of the lawsuit avoidance hypothesis which states that firms that are subject to higher litigation risks under price their issues more to reduce the likelihood of being sued in connection with their IPO. She examined the relationship between IPO under pricing and litigation risk in an international setting and found a positive relationship between the IPO price and litigation risk in a cross country setting but not in single country settings. This confirms the lawsuit avoidance theory as a possible contributor to under pricing.

2.2.5 Other Theories

Other theories that have been put forward include signalling (Allen and Faulhaber, 1989; Welch, 1989), market incompleteness (Mauer and Senbet, 1992) and
information cascades (Welch, 1992). Evidence also suggests that in some countries IPO under pricing may be due to the regulatory environment (Loughran, Ritter and Rydqvist, 1994).

Various theories have also been put forward to explain the long-run under performance anomaly one of which is the price support theory that was put forward by Ruud (1993) in which it is pointed out that the first day trading prices are kept artificially high by supportive underwriters and once this support is withdrawn prices will adjust downwards toward the true market equilibrium. A plausible explanation based on Jensen and Meckling’s conflicting interest between management and ownership has also been proposed. As the ownership stake of the management reduces after an initial public offer, there is less incentive to maximize shareholder value and a greater incentive to increase individual value. This leads to poor company performance and greater agency costs. Lastly, it may also be attributed to over optimistic investors at the start of trading or on ‘window dressing’ accounting measures pre-IPO, that fade away after the IPO.

As compared to under pricing and long-run under performance, the area of IPO overpricing is rarely studied and analyzed, therefore very few theories address it directly. According to Zheng Liu (2012) some underwriters may have the incentive to deliberately overprice weakly received offerings in order to avert potential withdrawal of the offering and loss of underwriting commissions.

2.3 Review of Empirical Studies

The relationship between the offer price of an initial public offer and its corresponding fundamental value has been the subject of a lot of research in many of the jurisdictions with developed capital markets. When the issue price is lower than the fundamental value, the shares being offered to the public can be described as being under valued. However, the term under valued is rarely used. Most empirical studies such as Purnanandam and Swaminatham (2004), Loughran and Ritter (2002) and Ritter and Welch (2002) instead use the term under priced. According to most of these studies, there is an assumption that the market value represents the fundamental
value of the equity that is the subject of the initial public offer and so under pricing is viewed as the difference between the offer price and the first trading day’s closing price.

Empirical evidence of IPO under pricing dates back to a study by the U.S. Securities and Exchange Commission in 1963. A large body of subsequent empirical research has confirmed that IPOs in the U.S. and internationally tend to be under priced.

Ibbotson and Jaffe (1975) presented evidence of the existence of ‘hot issue’ markets which they defined as periods during which the initial performance of IPOs is exceptionally high. In their study they also point to the most well known investigations into these issue that were done on the Securities and Exchange Commission’s (SEC) report on the special study of security markets (28) and the SEC ‘hot issue’ hearings of 1972. They also found a strong concentration of IPO activity in certain periods. Loughran, Ritter and Rydqvist (1994) found that similar patterns can be observed internationally and they even go further by claiming that issuers ‘time’ their IPOs to coincide with periods of excessive optimism. This is consistent with the findings of Lee, Shleifer and Thaaler (1991).

A study by Loughran and Ritter (2002) which looked at 3,025 new issues from 1990 to 1998 also found that on average an IPO gained by 14.1% on its first day of trading leading to $27 billion being left on the table by issuing companies. They defined money being left on the table as the first day price gain multiplied by the number of shares sold. If the shares had been sold at the opening day’s closing market price rather than the offer price, the proceeds of the offering would have been higher by an amount equal to the amount left of the table. Alternatively, the same proceeds would have been raised by selling fewer shares resulting in less dilution of the pre-issue shares. Loughran and Ritter were puzzled by the fact that issuers rarely complain about leaving money on the table since it was equivalent to selling a company’s stock at a fraction of its value.

According to Ritter and Welch (2002) the concept of under pricing where firms exhibit positive first day returns is the first of several anomalous aspects of the process by which firms go public. According to this publication between the years
1998 and 2001, the number of firms going public in the U.S exceeded one per business day and their shares traded on average 18.8 percent above the price at which the company sold them on the first day of trading. For an investor buying shares at the first day’s closing price and holding them for three years, IPOs returned 22.6 percent, this underperformed the CRSP value weighted market index by 23.4 percent and underperformed seasoned companies with the same market capitalization and book-to-market ratio by 5.1 percent. In a nutshell, these numbers summarise the patterns of short term underpricing and long term under performance.

Ochege (2011) carried out research into the issue of IPO underpricing at the Nairobi Securities Exchange because of its apparent contradiction to the efficient market hypothesis. After examining 15 Kenyan IPOs for the period 1990-2008, he found that the average initial market adjusted return for the first three days of listing is about 64.3%.

The long run underperformance anomaly was first presented by Ritter in 1991. He sampled 1,526 IPOs from 1975 to 1984 and he found that their returns were 34.47% in the three years since they went public. This performance was held against a set of comparable firms matched by size and industry whose total average return was found to be 61.86% over this same three year holding period. This clearly revealed underperformance in the long run. Ritter subsequently tried to theorise possible explanations for these empirical findings some of which were risk mis-measurement, bad luck or fads and over optimism.

Further evidence of long run underperformance has been shown by Loughran and Ritter (1995). They studied companies that had issued stock between 1970 and 1990 whether in an initial public offering (IPO) or a seasoned equity offering (SEO). It emerged that average annual returns during the five years after the issue was only 5 percent for firms conducting IPOs and 7 percent for firms conducting SEOs.

Purnanandam and Swaminatham (2004) carried out a study to find out whether initial public offers were really under priced. They sampled more than 2000 IPOs from 1980 to 1997 using comparable firm multiples such as price-to-EBITDA, price-to-sales and price-to-earnings of industry peers as the mode of valuation. They found that from
this sample of 2000 relatively large capitalized IPOs, the average IPO is overpriced by 50%. Their results revealed systematic overpricing despite the positive initial returns that were an indication of under pricing. However, these results were contradicted in a subsequent study that employed a similar methodology to the Japanese IPO market. Nagata and Makinno (2012) found that 60 – 70% of IPO firms are undervalued relative their industry peers.

2.4 Conclusions

This chapter highlights the findings of the literature review that was conducted as part of the first stage of this research project. The review of literature highlighted a number of themes that are relevant to this study. Firstly, it brought out the importance that has been placed on the issue of IPO pricing in different capital markets. It also highlighted how prevalent the mis-pricing of initial public offers is with both under valuing and over valuing of IPOs being common practice, with the former being the more common of the two. Consequently, this review has also brought out different theories and schools of thought about why both under pricing and over pricing with reference to first day closing prices occur.
CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the research methodology that was adopted in this research project. The research methodology refers to the research decisions that were taken within the framework of specific determinants unique to this study. This research methodology describes the study setting, population, sampling technique used, the sample chosen as well as the type of study, the temporal qualities of the study and the data collection and analysis techniques used.

3.2 Research Design

A research design is the plan, structure and strategy of investigation, conceived so as to obtain answers to research questions (Kerlinger, 1973). The research design helped me ensure that the evidence obtained was used to answer the research question as unambiguously as possible. This study can be described as a descriptive study as it attempts to describe the relationship that exists between the fundamental value and issue price of IPOs at the Nairobi Securities exchange. A descriptive study merely collects and presents the information as it is without delving into why the present condition exists as it does (Creswell, 1994). A descriptive study also has the added advantage of being quick and more practical in relation to the subject under study in this paper.

The study setting for this research project was Kenya, specifically the Nairobi Securities Exchange which currently has 63 quoted companies and the units of analysis were these individual companies whose shares are being publicly traded at the market. The relevant time horizon for the study was the entire period the Nairobi Securities exchange has been in existence, from 1954, since all the companies whose shares are traded were once the subject of an initial public offer or other forms of share introduction.
3.3 Population

A population is a well defined set of people, services, elements, groups of things or households that are being investigated (Bryman and Bell, 2003). The target population in this study was all the companies whose shares are currently trading at the Nairobi Securities Exchange since all these companies sold some of their equity to the public at one time or another.

3.4 Sample

A sample is a subset of the population. Therefore, it must be made up of some elements selected from the population. Sampling was necessary for this particular study because collecting and analysing data from the 63 companies currently trading at the Nairobi Securities Exchange would be impractical because of financial and time constraints. The sample selection process is important because by studying the sample the researcher should be able to draw conclusions that are generalizable to the entire population.

In coming up with an appropriate sample, all the elements in the population were considered in the sample frame. A non-probabilistic method of sampling was used, specifically, judgement sampling. This is because it appeared as though more recent initial public offers would offer more reliable and relevant results than those that were undertaken decades ago when Kenya’s capital markets and the corresponding IPO valuation techniques were less sophisticated. Judgement sampling was also necessary because it was important to select only those companies that enjoyed consistently positive free cash flows. It was decided that the study would be carried out on initial public offers that were undertaken from the year 2006 to the year 2010. There were 10 companies that went public during this period but only 8 went public through an initial public offer while 2 went public by way of share introduction. Data availability and positive free cash flows were also important factor in selecting the subjects of the sample and this further reduced the size of the sample to a final number of 5 companies.
The sample for the purpose of this study was therefore made up of 5 subjects. The 5 companies selected came from a wide variety of industries and also represented a wide spectrum of the market segments at the NSE.

3.5 Data Collection

In order to determine the fundamental value of a company for the purpose of this study, some historical company data was collected. The data was from specific time periods. Most of this data that came from company annual reports helped in determining the free cash flows of the companies over the 5 year post-IPO period as well as the terminal values in combination with a constant growth rate that was computed from historical average economic growth rates. Data on the working average cost of capital (WACC) was also collected from reputable investment banks and underwriters operating in the Kenyan market. All the data that was collected was secondary in nature from publications, press releases and journals guided by an information sheet detailing exactly what should be sourced. Most of the data collected was quantitative in nature.

3.6 Data Analysis

According to Miles and Huberman (1994), data analysis consists of three concurrent flows of activity, namely data reduction, data display and conclusion drawing. The methods employed in data analysis mainly depend on the purpose of the study and the type of data collected (Cooper and Schindler, 2003).

The most scientific (Prokop and Zimmerman, 2007), accurate and practical (Gantenbein and Gehrig, 2007) method of estimating the fundamental value of any organization is the discounted cash flow approach, and it is a slightly modified version of this model that was used in this study. The discounted cash flow approach used in this study is slightly different from the conventional approach that is normally used because it will be applied retrogressively instead of being futuristic. Free cash flows to the firm (FCFF) were calculated for a 5 year post-IPO period for each company and these FCFFs were discounted, along with a terminal value, as at the date...
of the IPO using working average costs of capital (WACC) that were collected from reputable investment banks and underwriters operating in the Kenyan market. For some of those IPOs that were carried out in the latter years of the period and which did not have a sixth year FCFF with which to compute a terminal value, a sixth year FCFF was projected using historical FCFF growth rates.

The terminal values (Tv) were estimated using a stable growth approach, with a constant growth rate equivalent to the 5 year average economic growth rate (2008-2012) being used as a substitute because of the uncertainty involved in computing reinvestment rates of the respective companies.

\[
\begin{align*}
\text{FCFF} &= \text{NI} + \text{NCC} + \text{Int} \times (1-\text{tax}) - \text{FCInv} - \text{WCInv} \\
\text{where:} \\
\text{NI} &= \text{Net Income} \\
\text{NCC} &= \text{Non Cash Charges (Depreciation, Amortization etc)} \\
\text{Int} &= \text{Interest Expense} \\
\text{FCInv} &= \text{Fixed Capital Investments} \\
\text{WCInv} &= \text{Increase in Non-cash Working Capital} \\

Tv &= \frac{\text{FCFF}_6}{\text{WACC} - g} \\
Fv &= \frac{\text{FCFF}_1 + \text{FCFF}_2 + \text{FCFF}_3 + \text{FCFF}_4 + \text{FCFF}_5 + \text{Tv}}{(1+\text{WACC})^1 (1+\text{WACC})^2 (1+\text{WACC})^3 (1+\text{WACC})^4 (1+\text{WACC})^5 (1+\text{WACC})^6}
\end{align*}
\]

The data will mostly be presented in tables and graphs with the aid of computer software packages.
CHAPTER FOUR: DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 Introduction

Data analysis is the process of estimating the values of the unknown parameters of the sample in order to draw inferences. In this particular study, the unknown parameters that are established are the fundamental values of the companies that make up the sample. This was accomplished using a retrogressive application of the discounted cash flows (DCF) approach as described in the previous chapter. A comparison was then be made between the intrinsic or fundamental price and the issue price of the IPO. The findings were then presented with the help of tables and respective means were calculated in order to summarise the information and draw conclusions.

4.2 Data Presentation

This section presents all the valuation information that was computed along with a consolidation of all this information.

4.2.1 Scan Group Ltd

\[ \text{FCFF} = \text{NI} + \text{NCC} + \text{Int (1-tax)} – \text{FCInv} – \text{WCInv} \]

Table 4.2.1 Scan group Ltd’s free cash flows to the firm

<table>
<thead>
<tr>
<th>Year</th>
<th>Net Income (Ksh'000)</th>
<th>Non-cash Charges (Ksh'000)</th>
<th>Interest (1-t) (Ksh'000)</th>
<th>Fixed Cap Investments (Ksh'000)</th>
<th>Inc in non-cash working capital (Ksh'000)</th>
<th>FCFF (Ksh'000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>244,433</td>
<td>21,883</td>
<td>4,619.20</td>
<td>27,139</td>
<td>-159,037</td>
<td>402,833</td>
</tr>
<tr>
<td>2008</td>
<td>315,789</td>
<td>27,917</td>
<td>20,010.40</td>
<td>75,600</td>
<td>1,334,217</td>
<td>-1,046,101</td>
</tr>
<tr>
<td>2009</td>
<td>401,148</td>
<td>34,756</td>
<td>61,922.00</td>
<td>23,655</td>
<td>-31,066</td>
<td>505,237</td>
</tr>
<tr>
<td>2010</td>
<td>640,585</td>
<td>110,310</td>
<td>2,883.30</td>
<td>252,096</td>
<td>711,403</td>
<td>-209,720</td>
</tr>
<tr>
<td>2011</td>
<td>911,116</td>
<td>74,069</td>
<td>42,130.20</td>
<td>136,763</td>
<td>1,107,577</td>
<td>-217,025</td>
</tr>
</tbody>
</table>

The net income under consideration was the after tax net income of the company while the non-cash charges that were added back comprised of the depreciation,
amortization of intangible assets and deferred taxes of Scan group Ltd. The interest expense that was added back was added back net of any tax shield and was exclusive of any associated foreign exchange gains or losses. A tax rate of 20% was enjoyed by the company between the year 2007 and 2011 as a result of its new status as a publicly traded company. The corporate tax rate of 30% resumed from the year 2012. Fixed capital investments were calculated by deriving the difference between the opening and closing gross property, plant and equipment (before depreciation) while the FCFF amounts were rounded off to the nearest shilling.

WACC = 14% (Source: Dyer & Blair Investment Bank)

Terminal Value (Stable growth approach)

\[
TV = \frac{\text{FCFF}_{2012}}{\text{WACC} - g}
\]

\[
\text{FCFF}_{2012} = 752,009 + 116,644 + 10005.80 + 240,229 + 64,598 = 573,832
\]

Because of the difficulty in establishing the precise reinvestment rate from the company's annual reports, the average annual economic growth rate of 3.8% (2008-2012) will be used as a proxy for the constant growth rate.

\[
Tv = \frac{573,832}{14\% - 3.8\%} = 5,625,803,922
\]

Fundamental value as at the 2006 IPO date (See Appendix II for discounting table) = Ksh 2,215,670,000

4.2.2 Eveready East Africa Ltd

\[
\text{FCFF} = \text{NI} + \text{NCC} + \text{Int (1-tax)} - \text{FCInv} - \text{WCInv}
\]
<table>
<thead>
<tr>
<th>Year</th>
<th>Net Income (Ksh'000)</th>
<th>Non-cash Charges (Ksh'000)</th>
<th>Interest (1-t) (Ksh'000)</th>
<th>Fixed Investments (Ksh'000)</th>
<th>Inc. in non-cash working capital (Ksh'000)</th>
<th>FCFF (Ksh'000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>126,408</td>
<td>24,436</td>
<td>22,515</td>
<td>9,453</td>
<td>74,102</td>
<td>89,804</td>
</tr>
<tr>
<td>2008</td>
<td>17,840</td>
<td>25,086</td>
<td>26,169</td>
<td>31,094</td>
<td>-127,771</td>
<td>165,772</td>
</tr>
<tr>
<td>2009</td>
<td>28,271</td>
<td>21,669</td>
<td>25,613.25</td>
<td>-</td>
<td>247,818</td>
<td>-172,265</td>
</tr>
<tr>
<td>2010</td>
<td>8,703</td>
<td>28,587</td>
<td>28,029</td>
<td>51,235</td>
<td>-198,116</td>
<td>212,196</td>
</tr>
<tr>
<td>2011</td>
<td>-123,994</td>
<td>26,487</td>
<td>31,507.50</td>
<td>-</td>
<td>-215,833</td>
<td>149,834</td>
</tr>
</tbody>
</table>

The net income under consideration was the after tax net income of the company while the non-cash charges that were added back comprised of the depreciation on owned property, plant and equipment, depreciation on assets held under finance lease and the amortization of prepaid lease rentals of Eveready East Africa Ltd. The interest expense that was added back was added back net of any tax shield and was exclusive of any associated foreign exchange gains or losses. A tax rate of 25% was enjoyed by the company between the year 2007 and 2012 as a result of its new status as a publicly traded company. Fixed capital investments were calculated by deriving the difference between the opening and closing gross property, plant and equipment (before depreciation) while the FCFF amounts were rounded off to the nearest shilling.

WACC = 16% (Source: Standard Investment Bank)

Terminal Value (Stable growth approach)

\[ T_v = \frac{FCFF_{2012}}{WACC - g} \]

\[ FCFF_{2012} = 70,084 + 21,635 + 37,740.75 + 5,025 + 28,456 = 95,979 \]
Because of the difficulty in establishing the precise reinvestment rate from the company’s annual reports, the average annual economic growth rate of 3.8% (2008-2012) will be used as a proxy for the constant growth rate.

\[
Tv = \frac{95,979}{16\% - 3.8\%} = 786,713,114
\]

Fundamental value as at the 2006 IPO date (See Appendix III for discounting table) = Ksh 601,650,000

### 4.2.3 Access Kenya Group Ltd

\[
FCFF = NI + NCC + Int (1-t) - FCInv - WCInv
\]

**Table 4.2.3 Access Kenya Ltd’s free cash flows to the firm**

<table>
<thead>
<tr>
<th>Year</th>
<th>Net Income (Ksh'000)</th>
<th>Non-cash Charges (Ksh'000)</th>
<th>Interest (1-t) (Ksh'000)</th>
<th>Fixed Cap Investments (Ksh'000)</th>
<th>Inc. in non-cash working capital (Ksh'000)</th>
<th>FCFF (Ksh'000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>203,656</td>
<td>66,748</td>
<td>4,648</td>
<td>444,768</td>
<td>665,041</td>
<td>-834,730</td>
</tr>
<tr>
<td>2009</td>
<td>147,909</td>
<td>143,823</td>
<td>7,015.20</td>
<td>854,345</td>
<td>-720,365</td>
<td>164,767</td>
</tr>
<tr>
<td>2010</td>
<td>-7,951</td>
<td>245,737</td>
<td>73,292</td>
<td>364,328</td>
<td>-422,352</td>
<td>369,102</td>
</tr>
<tr>
<td>2011</td>
<td>109,084</td>
<td>307,565</td>
<td>101,177.60</td>
<td>277,713</td>
<td>169,519</td>
<td>-131,760</td>
</tr>
<tr>
<td>2012</td>
<td>151,377</td>
<td>338,965</td>
<td>116,016</td>
<td>342,990</td>
<td>-51,224</td>
<td>314,592</td>
</tr>
</tbody>
</table>

The net income under consideration was the after tax net income of the company while the non-cash charges that were added back comprised of the depreciation and amortization expenses of Access Kenya Group Ltd. The interest expense that was added back was added back net of any tax shield. A tax rate of 20% was enjoyed by the company between the year 2008 and 2012 as a result of its new status as a publicly traded company. Fixed capital investments were calculated by deriving the difference between the opening and closing gross property, plant and equipment (before depreciation) while the FCFF amounts were rounded off to the nearest shilling.
WACC = 14% (Source: Kestrel Capital)

Terminal Value (Stable growth approach)

\[ T_v = \frac{\text{FCFF}_{2013}}{\text{WACC} - g} \]

Projected 2013 FCFF (based on historical growth rates of FCFF, ignoring initial negative cash flows) = Ksh 352,048,250

Because of the difficulty in establishing the precise reinvestment rate from the company’s annual reports, the average annual economic growth rate of 3.8% (2008-2012) will be used as a proxy for the constant growth rate.

\[ T_v = \frac{352,048,250}{14\% - 3.8\%} = 3,143,287,946 \]

Fundamental value as at the 2007 IPO date (See Apendix IV for discounting table) = Ksh 1,161,173,000

4.2.4 Kenya Reinsurance Corporation Ltd

\[ \text{FCFF} = \text{NI} + \text{NCC} + \text{Int (1-tax)} - \text{FCInv} - \text{WCInv} \]

Table 4.2.4 Kenya Reinsurance Corporation Ltd’s free cash flows to the firm

<table>
<thead>
<tr>
<th>Year</th>
<th>Net Income (Ksh'000)</th>
<th>Non-cash Charges (Ksh'000)</th>
<th>Interest (1-t) (Ksh'000)</th>
<th>Fixed Cap Investments (Ksh'000)</th>
<th>Inc. in non-cash working capital (Ksh'000)</th>
<th>FCFF (Ksh'000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>1,481,100</td>
<td>18,995</td>
<td>-</td>
<td>-</td>
<td>111,730</td>
<td>1,388,369</td>
</tr>
<tr>
<td>2009</td>
<td>1,328,904</td>
<td>11,706</td>
<td>-</td>
<td>8,751</td>
<td>-65,150</td>
<td>1,379,009</td>
</tr>
<tr>
<td>2010</td>
<td>1,541,391</td>
<td>19,631</td>
<td>-</td>
<td>68,755</td>
<td>1,704,184</td>
<td>-211,917</td>
</tr>
<tr>
<td>2011</td>
<td>1,914,584</td>
<td>26,682</td>
<td>-</td>
<td>4,875</td>
<td>790,155</td>
<td>1,146,236</td>
</tr>
</tbody>
</table>
The net income under consideration was the after tax net income of the company. The net income was exclusive on any gains on revaluation of available-for-sale financial assets, surpluses on revaluation of equipment and share of movement in associate reserves. The non-cash charges that were added back comprised of the depreciation and amortization expenses as well as the impairment loss on equipment and impairment of unquoted equity instruments. The company’s interest expense is minimal with the corporation only having a Ksh 15 million overdraft facility with KCB which it uses from time to time. Fixed capital investments were calculated by deriving the difference between the opening and closing gross property, plant and equipment (before depreciation) while the FCFF amounts were rounded off to the nearest shilling.

WACC = 16 % (Source: Standard Investment Bank)

Terminal Value (Stable growth approach)

\[ T_v = \frac{FCFF_{2013}}{WACC - g} \]

Projected 2013 FCFF (based on historical growth rates of FCFF) = Ksh 3,238,851,800

Because of the difficulty in establishing the precise reinvestment rate from the company’s annual reports, the average annual economic growth rate of 3.8% (2008-2012) will be used as a proxy for the constant growth rate.

\[ T_v = \frac{3,238,851,800}{16\% - 3.8\%} = 26,547,965,570 \]

Fundamental value as at the 2007 IPO date (See Appendix V for discounting table) = Ksh 15,009,550,000
4.2.5 Safaricom Ltd

FCFF = NI + NCC + Int (1-tax) – FCInv – WCInv

Table 4.2.5 Safaricom Ltd’s free cash flows to the firm

<table>
<thead>
<tr>
<th>Year</th>
<th>Net Income (Ksh'000)</th>
<th>Non-cash Charges (Ksh'000)</th>
<th>Interest (1-t) (Ksh'000)</th>
<th>Fixed Cap Investments (Ksh'000)</th>
<th>Inc. in non-cash working capital (Ksh'000)</th>
<th>FCFF (Ksh'000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>10,536,760</td>
<td>11,871,102</td>
<td>602,707.00</td>
<td>23,676,575</td>
<td>-4,728,976</td>
<td>4,062,970</td>
</tr>
<tr>
<td>2010</td>
<td>15,148,038</td>
<td>13,992,860</td>
<td>1,064,499.14</td>
<td>17,386,871</td>
<td>647,027</td>
<td>12,171,499</td>
</tr>
<tr>
<td>2011</td>
<td>13,158,973</td>
<td>16,333,355</td>
<td>995,136.00</td>
<td>18,293,695</td>
<td>4,297,275</td>
<td>7,896,494</td>
</tr>
<tr>
<td>2012</td>
<td>12,627,607</td>
<td>17,944,253</td>
<td>1,560,922.50</td>
<td>25,051,884</td>
<td>-7,554,298</td>
<td>14,635,197</td>
</tr>
<tr>
<td>2013</td>
<td>17,539,810</td>
<td>22,139,045</td>
<td>1,534,454.60</td>
<td>24,645,353</td>
<td>-1,002,164</td>
<td>17,570,121</td>
</tr>
</tbody>
</table>

The net income under consideration was the after tax net income of the company while the non-cash charges that were added back comprised of the depreciation on property plant and equipment and the amortization of intangible assets, IRUs and licenses. The Interest expense that was added back was added back net of any tax shield. A reduced tax rate of 27% was enjoyed by the company between the year 2010 and 2012 as a result of its new status as a publicly traded company. From the year 2013, the normal corporate tax rate of 30% was applied. Fixed capital investments were calculated by deriving the difference between the opening and closing gross property, plant and equipment (before depreciation) while the FCFF amounts were rounded off to the nearest shilling.

WACC = 15.3% (Source: Standard Investment Bank)

Terminal Value (Stable growth approach)

\[ TV = \frac{FCFF_{2013}}{WACC - g} \]

Projected 2013 FCFF (based on historical growth rate of FCFF) = Ksh 20,271,551
Because of the difficulty of establishing the precise reinvestment rate from the company's annual reports, the average annual economic growth rate of 3.8% (2008-2012) will be used as a proxy for the constant growth rate.

\[ T_v = \frac{20,271,551}{15.3\% - 3.8\%} = 176,274,356,500 \]

Fundamental value as at the 2006 IPO date (See Appendix VI for discounting table) = Ksh 109,755,506,000

4.2.6 Consolidation of valuation data

The fundamental value of each share at its IPO date is summarized below and a comparison is made with its issue price to determine whether it was under or over valued.

**Table 4.2.6 Fundamental values per share**

<table>
<thead>
<tr>
<th>Company</th>
<th>Fundamental Value (Ksh)</th>
<th>Issued shares at IPO date</th>
<th>Fundamental Price (Ksh) at IPO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scan Group Ltd</td>
<td>2,215,670,000</td>
<td>159,000,000</td>
<td>13.93</td>
</tr>
<tr>
<td>Eveready East Africa Ltd</td>
<td>601,650,000</td>
<td>210,000,000</td>
<td>2.86</td>
</tr>
<tr>
<td>Access Kenya Group Ltd</td>
<td>1,161,173,000</td>
<td>198,330,674</td>
<td>5.82</td>
</tr>
<tr>
<td>Kenya Reinsurance</td>
<td>15,009,550,000</td>
<td>600,000,000</td>
<td>25.01</td>
</tr>
<tr>
<td>Corporation Ltd</td>
<td>109,755,506,000</td>
<td>40,000,000,000</td>
<td>2.74</td>
</tr>
</tbody>
</table>

If: Fundamental Price < Offer price - Overvaluation
Fundamental Price > Offer price - Undervaluation
Fundamental Price = Offer price - Neither undervaluation nor overvaluation
Table 4.2.7 Comparing fundamental and issue prices

<table>
<thead>
<tr>
<th>Company</th>
<th>Fundamental Price (Ksh)</th>
<th>Offer Price (Ksh)</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scan Group Ltd</td>
<td>13.93</td>
<td>10.45</td>
<td>Undervalued</td>
</tr>
<tr>
<td>Eveready East Africa Ltd</td>
<td>2.86</td>
<td>9.50</td>
<td>Overvalued</td>
</tr>
<tr>
<td>Access Kenya Group Ltd</td>
<td>5.82</td>
<td>10.00</td>
<td>Overvalued</td>
</tr>
<tr>
<td>Kenya Reinsurance Corporation Ltd</td>
<td>25.01</td>
<td>9.50</td>
<td>Undervalued</td>
</tr>
<tr>
<td>Safaricom Ltd</td>
<td>2.74</td>
<td>5.00</td>
<td>Overvalued</td>
</tr>
</tbody>
</table>

Figure 4.2.1 Bar graph comparing fundamental and issue prices

Table 4.2.8 Mean of the overvalued IPOs

<table>
<thead>
<tr>
<th>Company</th>
<th>Premium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eveready East Africa Ltd</td>
<td>232.1%</td>
</tr>
<tr>
<td>Access Kenya Group Ltd</td>
<td>71.8%</td>
</tr>
<tr>
<td>Safaricom Ltd</td>
<td>82.4%</td>
</tr>
<tr>
<td>Mean</td>
<td>128.7%</td>
</tr>
</tbody>
</table>
### Table 4.2.9 Mean of undervalued IPOs

<table>
<thead>
<tr>
<th>Company</th>
<th>Discount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scan Group Ltd</td>
<td>24.9%</td>
</tr>
<tr>
<td>Kenya Reinsurance Corporation Ltd</td>
<td>62.0%</td>
</tr>
<tr>
<td>Mean</td>
<td>43.5%</td>
</tr>
</tbody>
</table>

### Table 4.2.10 Mean of the entire sample

<table>
<thead>
<tr>
<th>Company</th>
<th>Premium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scan Group Ltd</td>
<td>-24.9%</td>
</tr>
<tr>
<td>Eveready East Africa Ltd</td>
<td>232.1%</td>
</tr>
<tr>
<td>Access Kenya Group Ltd</td>
<td>71.8%</td>
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<tr>
<td>Kenya Reinsurance Corporation Ltd</td>
<td>-62.0%</td>
</tr>
<tr>
<td>Safaricom Ltd</td>
<td>82.4%</td>
</tr>
<tr>
<td>Mean</td>
<td>59.9%</td>
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</table>

### 4.3 Summary and Interpretation of Findings

Taking into account the performance of the companies in the sample from the date of their IPOs, it can conclusively be seen that 3 of the 5 (60%) were overvalued as at their IPO dates and the remaining 40% were undervalued. This means that 60% of the IPOs were issued at a premium. These results are in sharp contrast to the results of other studies that have been carried out in the local market such as Thuo (2009) that show evidence of repeated and sustained IPO undervaluation or under pricing.

The primary reason for this divergence from other studies is probably the difference in the methodology that has been adopted in computing the fundamental values of these companies during their IPOs. While other studies assume that the closing day’s market price is a reliable estimate of the fundamental value, this study attempts to compute a more scientifically reliable estimate of the fundamental value. In fact it has emerged that most of the IPOs that were described as being under priced or under valued in a majority of these local studies were actually over priced or over valued by a large proportion.
The mean over pricing is 128.7% meaning that the issue prices of the undervalued IPOs at the NSE are on average more than double their intrinsic values. Of the undervalued IPOs (40% of the sample) the mean discount offered was 43.5% meaning that on average those IPOs that are undervalued at the NSE, are given at a 43.5% discount. A computation of the mean of the entire sample reveals a 59.9% premium on the overall sample. This is similar to the findings of the study that was carried out by Purnanandam and Swaminathan (2004) in India to investigate whether IPOs were really under priced. The similarity in the results arises despite the different valuation techniques that have been adopted. Purnanandam and Swaminathan (2004) adopted a more relativistic approach by comparing price/EBIT ratios among industry peers. They found that on average IPOs were over valued by about 50%.

Although the results are somewhat mixed, showing both over valuation and under valuation, it is clear that the fundamental values of companies during their IPOs diverges greatly from the issue price that are adopted by the underwriters, The next question after identifying this trend is whether this is done deliberately or because of poor forecasting / incompetence on the part of the underwriters. A case can be made that it is done deliberately so that the issuing company can take advantage of excessive optimism in the market to raise as much capital as possible or that the issuing company may sometimes issue shares at a discount in order to guarantee the success of an initial public offer in a bearish market. A more likely answer is that the overvaluation and undervaluation are as a result of poor forecasting techniques caused by over optimistic or pessimistic valuers. This cause seems more plausible given the excessive premiums and discounts that have been identified in this study. However, further research still needs to be conducted to conclusively establish the causes of these deviations.

The next question that arises looks at the impact these premiums and discounts had on the wealth of those investors that took up shares in these IPOs. It is safe to assume that the massive discounts on some of the IPOs would have positively affected shareholder / investor wealth in the short to medium term. However, the same clarity cannot be found in the case of those IPOs that were overvalued. It is theoretically sound to assume that the overvaluation of IPOs ultimately results in price reversals in
the short to medium term, with market prices sometimes falling below IPO prices for extended periods of time. This has the effect of wiping out shareholder value. A good practical example of this that relates to the IPOs in the sample are the IPOs of Eveready East Africa Ltd and Safaricom Ltd whose market prices fell below their the IPO. It should be noted that during these price reversals the price fell to around their fundamental values as estimated in this study. It should also be noted with great concern that the market price of Eveready East Africa Ltd is still below its IPO price to this day approximately 7 years since its IPO.

It is also important to note that in their IPO prospectuses, most of these companies explicitly state that their shares are priced at a discount, undoubtedly so as to generate demand for their shares, however we now know that this is not true as only a proportion of them (40%) are truly undervalued, with the rest being massively over valued. While some over valuation can sometimes be expected based on the growth prospects of the company, the 128.7% average premiums that have been identified are excessive and cannot be justified. This, along with the poor forecasting techniques employed by underwriters in the long run only serves to reduce investor confidence in the IPO market and its participants.

A Reduction in investor confidence with regard to the IPO market typically has an adverse effect on their participation in future IPOs leading to a situation where future IPOs may be under subscribed. Another good example of this can also be seen from our sampled IPOs. The price reversal that was experienced by Safaricom Ltd’s IPO investors that ultimately resulted in a reduction in shareholder wealth by up to 50% at its peak, resulted in a reduction of investor confidence in the valuation and subsequent performance of IPOs. The Cooperative Bank of Kenya Ltd’s IPO that came after this was the the first ever to be undersubscribed since the IPO wave that began in the year 2006. It achieved a subscription rate of 81%. Others that have been under subscribed since then include the British American Investment Company IPO.
CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

Based on the results of the data analysis, it can conclusively be stated that a majority (60%) of the companies in the sample had grossly overvalued or over priced their IPOs. This means that the issue prices, as determined by the relevant underwriters at the time of the public share offers of these companies, were significantly higher than their respective fundamental values. A computation of the mean of the overvalued IPOs suggests that on average, these overvalued companies were overvalued by an average of 128.7% indicating that on average 60% of the IPOs in the sample were issued at prices that are more double what these shares were worth at that time. A mean of the under valued IPOs, which make up 40% of the sample, reveals that on average these IPOs are issued at a 43.5% discount. A mean of the entire sample, inclusive of both the under and over valued IPOs, is found to yield an overall premium of 59.9% indicating that all the IPOs in the sample take together were overvalued by an average of 59%.

The results of this study are in sharp contrast to most of the studies in this particular area that show consistent under pricing or under valuing of IPOs based on initial day closing prices as a proxy for the fundamental value. The results are however similar to those carried out by Purnanandam and Swaminathan (2004). The primary reason both of these studies deviate from the prevailing wisdom is because both studies adopt an out of the box approach in estimating intrinsic or fundamental values.

The application of the dcf approach retrogressively as has been done in this study further reinforces the results of this study because a lot of the valuation has been done based on actual company performance post-IPO, with very little forecasting if any used.
5.2 Conclusions

As was stated in the introduction section, it is well known that IPOs face numerous challenges in the process of price discovery, primarily because the market is not certain about the quality of the company and the issuing company does not know the market demand for its shares. It is for this reason that it is recommended that the issue price be equal to the fundamental price derived from the fundamental value of the company. An issue price that is matched with the corresponding fundamental value will benefit all the parties to the transaction since the offer is likely to be fully subscribed resulting in the full uptake of the company’s shares and the maximum spread for the underwriters. However, the party that will derive the most benefit will be the investor since he would have purchased the shares at their intrinsic value thereby protecting himself against any future price reversals below the issue price that may be caused by inaccurate valuation. A good example of the risks of a price reversal can be seen clearly in the price movements of two of the companies sampled in this study that displayed the highest premiums on their intrinsic values, namely Eveready East Africa Ltd and Safaricom Ltd.

It should however be noted that the main aim of an IPO is for a company to raise as much capital as possible with the lowest amount of shares possible and therefore a premium above the fundamental value should be expected in the issue price. However, such a premium should be reasonable enough to satisfy both the interests of the issuing company and the investors purchasing the shares.

5.3 Recommendations to policy and practice

Based on the results of this study, I recommend that underwriters, valuers and transaction advisors refine or completely re-examine their IPO valuation techniques and methods in order to prevent the gross over valuation of IPOs. This is because over valuing IPOs may adversely affect investors once these IPO enter the market. They can accomplish this primarily through better forecasting techniques that take into account the strengths, weaknesses, opportunities and threats faced by the company as well as its particular industry and the economy in general. A good example of how
investors can be adversely affected by over valuation can be seen in the price reversals that were experienced by the shareholders of 2 of the IPOs that have been identified in this study as being over valued, namely Eveready East Africa Ltd and Safaricom Ltd.

Investor protection agencies such as the Capital Markets Authority should also be more vigilant in protecting would be investors who may wish to take up company shares in an IPO. While they cannot directly affect the actions of the issuing company and the underwriters when it comes to price setting, they may be able to sensitize them on the importance to put investor interest at the centre of their decision making processes. They should also sensitize investors on prevailing valuation trends so as to equip them with all the information necessary for them to make informed investment decisions.

5.4 Limitations of the Study

The primary limitation of this study pertains to the large volumes of data that needed to be analysed under the retrogressive dcf approach that was adopted. While the dcf approach is by all measures the most scientifically accurate and reliable method of determining the fundamental value of a company at a particular point in time, the large volumes of data that are needed to compute its components, such as the free cash flows to the firm, are usually very prohibitive leading to a small sample size of 5 IPOs. A larger sample size would have been adopted had the valuation technique been a relative valuation, but this would have resulted in a less than accurate fundamental valuation. A trade-off was made in favour of the quality of the valuations over the quantity of the IPOs.

A second limitation relates to the sample selection process. Ideally, a probabilistic sampling technique would have improved the generalizability of the research results but this was prevented by the existence of a large number of companies that had successive years of negative cash flows as a result of the nature of their businesses. A good example of such a company that was excluded from the sample based on a
preliminary investigation of its financial reports was the Kenya Electricity Generating Company Ltd.

Another limitation of this study is the reliance on the working average costs of capital that are used by third parties such as investment banks to discount the free cash flows to the IPO date. This was mainly done for practical purposes since the computation of independent working average costs of capital would have involved too many variables and would have been time consuming.

The final limitation of the study was the use of the average five year economic growth rates (2008-2012) to compute the terminal values. This was necessitated by the uncertainty surrounding the reinvestment rates of individual companies in the sample. However, it should be noted that even with estimated growth rates this generous, a large premium above the fundamental value was found in the issue price. If the actual constant growth rates are lower, as is suspected, the under valuation would have been even higher.

5.5 Suggestions for further studies

Studies should be carried out to investigate further the relationship between the fundamental value and issue price of initial public offers at the Nairobi Securities Exchange using a similar approach but utilizing a larger sample. Due in part to time constraints, the sample utilized here is relatively small and further research making use of a larger sample would be able to further reinforce or discount the results presented in this study.

Further research on this particular relationship should also be carried out beyond the Nairobi Securities Exchange to include regional security markets as well as other security markets in Africa. The results can then be compared to local studies and any trends identified.

Similar studies employing different present value valuation techniques such as the dividend discount approach can also be carried out to estimate the fundamental values
of IPOs at their listing dates in order to compare the fundamental prices based on these valuations with the IPO issue prices.

Finally, further research should be conducted to investigate the underlying causes of overvaluation and undervaluation that were identified in this research project. Broadly, there are two main causes for the mispricing of IPOs, it may either be deliberate on the part of the underwriters and the issuing company or it may be a result of poor forecasting at the time of the IPO.
REFERENCES


APPENDICES

Appendix I: Table showing the listed companies that were sampled for this study

<table>
<thead>
<tr>
<th>Name of Company</th>
<th>Date when trading at the NSE Commenced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scan Group Ltd</td>
<td>29th August 2006</td>
</tr>
<tr>
<td>Eveready East Africa Ltd</td>
<td>18th December 2006</td>
</tr>
<tr>
<td>Access Kenya Group Ltd</td>
<td>4th June 2007</td>
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<td>Kenya Reinsurance Corporation Ltd</td>
<td>27th August 2007</td>
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<td>Safaricom Ltd</td>
<td>9th June 2008</td>
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Appendix II: Table of Scan group Ltd’s discounted cash flows

<table>
<thead>
<tr>
<th>Year</th>
<th>FCFF (Ksh’000)</th>
<th>Discount factor (15%)</th>
<th>Value at IPO date (Ksh’000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>-402,833</td>
<td>0.8696</td>
<td>350,304</td>
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<td>2008</td>
<td>-1,046,101</td>
<td>0.7561</td>
<td>(790,957)</td>
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<tr>
<td>2009</td>
<td>505,237</td>
<td>0.6575</td>
<td>332,193</td>
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<tr>
<td>2010</td>
<td>-209,720</td>
<td>0.5718</td>
<td>(119,918)</td>
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<tr>
<td>2011</td>
<td>-217,025</td>
<td>0.4972</td>
<td>(107,905)</td>
</tr>
<tr>
<td>Beyond 2012</td>
<td>5,625,803</td>
<td>0.4323</td>
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FV 2,215,670

Appendix III: Table of Eveready East Africa Ltd’s discounted cash flows

<table>
<thead>
<tr>
<th>Year</th>
<th>FCFF (Ksh’000)</th>
<th>Discount factor (16%)</th>
<th>PV at IPO date (Ksh’000)</th>
</tr>
</thead>
<tbody>
<tr>
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<td>89,804</td>
<td>0.8621</td>
<td>77,420</td>
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<td>2008</td>
<td>165,772</td>
<td>0.7432</td>
<td>123,202</td>
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<tr>
<td>2009</td>
<td>-172,265</td>
<td>0.6407</td>
<td>(110,370)</td>
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<tr>
<td>2010</td>
<td>212,196</td>
<td>0.5523</td>
<td>117,196</td>
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<tr>
<td>2011</td>
<td>149,832</td>
<td>0.4761</td>
<td>71,335</td>
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<td>Beyond 2012</td>
<td>786,713</td>
<td>0.4104</td>
<td>322,867</td>
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FV 601,650
Appendix IV: Table of Access Kenya Ltd’s discounted cash flows

<table>
<thead>
<tr>
<th>Year</th>
<th>FCFF (Ksh’000)</th>
<th>Discount factor (14%)</th>
<th>PV at IPO date (Ksh’000)</th>
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<tr>
<td>2008</td>
<td>-834,730</td>
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<td>2009</td>
<td>164,767</td>
<td>0.7695</td>
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<td>2010</td>
<td>369,102</td>
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<td>-131,760</td>
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<td>314,592</td>
<td>0.5194</td>
<td>163,399</td>
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<td>Beyond 2013</td>
<td>3,143,287</td>
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Appendix V: Table of Kenya Reinsurance Corporation’s discounted cash flows

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<th>FCFF (Ksh’000)</th>
<th>Discount factor (16%)</th>
<th>PV at IPO date (Ksh’000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>1,388,369</td>
<td>0.8621</td>
<td>1,196,913</td>
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<tr>
<td>2009</td>
<td>1,379,009</td>
<td>0.7432</td>
<td>1,024,879</td>
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<tr>
<td>2010</td>
<td>-211,917</td>
<td>0.6407</td>
<td>(135,775)</td>
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<td>2011</td>
<td>1,146,236</td>
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<td>2012</td>
<td>2,930,438</td>
<td>0.4761</td>
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<td>Beyond 2013</td>
<td>26,547,965</td>
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Appendix VI: Table of Safaricom Ltd’s discounted cash flows

<table>
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<tr>
<th>Year</th>
<th>FCFF (Ksh’000)</th>
<th>Discount factor(15.3%)</th>
<th>PV at IPO date (Ksh’000)</th>
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<td>2009</td>
<td>4,062,970</td>
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<td>12,171,499</td>
<td>0.7522</td>
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<td>2011</td>
<td>7,896,494</td>
<td>0.6524</td>
<td>5,151,673</td>
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<td>2012</td>
<td>14,635,197</td>
<td>0.5658</td>
<td>8,280,594</td>
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<td>2013</td>
<td>17,570,120</td>
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<td>Beyond 2014</td>
<td>176,274,356</td>
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