

**AN ANALYSIS OF PERFORMANCE OF INITIAL PUBLIC OFFERINGS:
A CASE OF NAIROBI STOCK EXCHANGE**

BY

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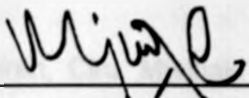
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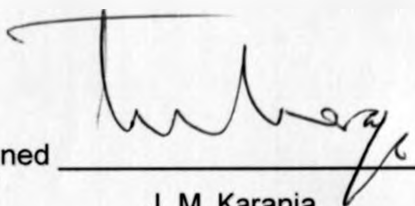
DECLARATION

This research paper is my original work and has not been submitted for examination in any other university.

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Date 02.02.2005

This research paper has been submitted for examination with my approval as a university Supervisor.

Signed 
J. M. Karanja

Date 3/02/2005

DEDICATION

This project is dedicated to my family.

To Jane, thanks for always being there for me and for being my friend.

To my children, Ciru, Mwihaki and Wangari, this project should inspire you to keep aiming high; never leave anything to chance, set your goals in life early enough and pursue them to the end. Always work hard to achieve your goals. If you walk by faith, you will realize your dreams. Just keep the faith.

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ABSTRACT

This study analyses the initial returns and long-run performance of Initial Public Offerings (IPOs) using a sample of companies listed on the Nairobi Stock Exchange during the period 1984 to 2001. The study will hopefully provide one emerging market case of international evidence on performance of IPOs.

The central hypothesis under investigation in this paper is that IPOs are usually underpriced in the short-run and that they underperform in the long-run yielding negative abnormal returns during their first few years of trading. Existing research on long term returns has tended to follow the IPOs for three or five years after issuance.

Based on a sample of 14 IPOs, the results show an average market adjusted abnormal return of 22.57% on the first day returns after the launch of the IPOs with a standard deviation of 24% and a median of 17.42%. This is consistent with previous research on the initial performance of initial public offerings that has been documented that abnormal returns are obtained during the first day of trading following new issues.

CHAPTER 1: INTRODUCTION

1.0 Introduction

One of the most important events in the life of a firm, and one of particular interest to institutional investors, is the transition from being a private company to a public one through the initial public offering (IPO) process. The IPO provides a fresh source of capital that is critical to the growth of the firm and provides the founder and other shareholders a liquid market for their shares. From an institutional investor's point of view, the IPO provides an opportunity to share in the rewards of the growth of the firm.

1.1 Financing Decision

The financing decision is one of the key finance functions. The other key finance functions are investment, dividend and liquidity. A firm performs these functions simultaneously and continuously in the normal course of the business. They call for skilful planning, control and execution.

A company must decide when, where and how to acquire funds to meet the firm's investment needs. The central issue is to determine the proportion of equity capital and debt capital (capital structure).

The company must strive to obtain the best financing mix or the optimum capital structure. The firm's capital structure is considered to be optimum when the market value of its shares is maximized. The use of debt affects the return and risk of shareholders. It may increase the return on equity funds but it always increases risk.

1.2 Why Issue Equity?

There are many reasons why corporations issue equity stock to the public. Firstly, most start-up companies seeking external financing do not immediately utilize the public capital markets, but instead raise capital from private sources.

The source of capital for an entrepreneur that is subject to problems caused by information asymmetries is self-financing where entrepreneurs contribute their

own money. With limited resources, however, the ability to grow rapidly will be constrained if external sources are not used. It is for this reason that companies consider a public equity issue in order to seek additional funds for growth.

Companies also issue equity in order to gain liquidity as this enables them to gain access to additional equity finance in the future via secondary issues. Almost all private companies go public because they need additional funds.

Secondly, companies issue equity to restructure their balance sheet. The amount raised from an issue of securities is used to reduce debt thus reducing the company's long-term liabilities, reducing leverage risks and enhancing its net worth through increase in earnings per share. This often has a positive impact on a newly public company's balance sheet, changing its financial risk profile relative to its pre-IPO days.

Thirdly, issue of equity stock to the public is an alternative financing for public enterprises. Once public, firms can easily go back to the public markets to raise more cash. The privatization of government owned enterprises has been taking place in Kenya during the last ten years.

So far more than three companies have listed their shares thorough privatization earmarked to reduce the government's shareholding. These companies include Kenya Commercial Bank, National Bank of Kenya, Mumias Sugar Company and Kenya Airways. Public enterprises are generally managed poorly and the main purpose of privatization is to increase the productivity of these firms. Hence, investors expect higher performance after privatization.

In addition to these three main motives, corporations also go public for reasons such as a need to raise the company's profile thus enhancing turnover.

1.3 Reasons for Going Public

The conventional wisdom on going public is that it is a rational decision for a growing firm looking for new capital to fund investment. Firstly, the most obvious benefit of going public is to gain access to an alternative to bank finance and

reduce the cost of capital. Going public may also give the company more bargaining power relative to its bankers and reduce its interest costs on existing debt.

Secondly, going public might be portfolio diversification by existing owners where the owners aim to spread their risk, either by selling part of the family business and buying equity in a broader portfolio asset, or by raising new equity, which can then be used to acquire stakes in other companies.

Thirdly, going public, and the threat of takeover it brings, may also be used by owners to increase the market disciplines on the managers they employ i.e. it can be used to solve the agency problem.

Fourthly, going public may be an optimal first step if the owners ultimately plan to sell the company, since an initial sale to small shareholders may boost the market value of the company. Indeed, the very fact of floatation may increase public recognition of the company and so raise its value.

Lastly, companies, which believe that other public companies in their sector are overpriced, have an incentive to go public and take advantage of this window of opportunity to benefit from overpricing.

These are the benefits, but there are also costs to going public in addition to administrative expense. Because investors know less about private companies, there is a greater incentive for bad companies to go public. This tends to depress the share price of all newly listed companies.

1.4 Advantages of Going Public

Firstly, a company avoids borrowing costs in terms of interest charges on loans and bonds. Secondly, the shares of a public company have a stronger ratio of owner investment to credit debt, which means a better credit standing in the business world. This provides better protection and makes credit available in times of financial need.

Thirdly, public shares put a company in a better position to finance future growth and expansion through capitalization of reserves. Fourthly, shares offer flexibility in meeting the financing obligations as dividends can be varied appropriately. Fifthly, the shares are freely tradable through stock markets, imparting liquidity to investors who are willing to pay a premium for liquidity.

1.5 Disadvantages of Going Public

1.5.1 Profit Sharing

When a company goes public, the ownership base widens and hence the initial owners will in future share profits with outsiders.

1.5.2 Reporting and Fiduciary Responsibilities

Public companies must continuously file reports with the Capital Markets Authority and Nairobi Stock Exchange. They must comply with certain state securities laws and exchange guidelines. It costs money and discloses information to competitors.

1.5.3 Loss of Control

Outsiders often could take control and even fire the original owners.

1.5.4 IPO Expenses

An IPO is a costly undertaking. A typical firm may spend about 15-25% of the money raised on direct expenses. Even more resources are spent indirectly i.e. management time and disruption of business.

1.5.5 Legal Liability

All IPO participants in the coalition are jointly and severally liable for each other's actions.

1.6 Initial Public Offerings (IPOs)

When companies need to raise capital, they either borrow i.e. issue debt securities (bonds) or by equity (selling stock). As companies grow, they may move from being privately owned to publicly-owned. To fund expansion, private

companies can raise money by offering securities for the sale to the public for the first time. This is called an initial public offering, or IPO.

Many companies start out by raising equity capital from a small number of investors. As a company expands its business, additional funding is usually required to support growth, expansion and additional investment.

To enhance liquidity for public companies, such securities are traded in the secondary market on the Stock Exchange.

1.7 Determining the Issue Price

With all the media hype surrounding the IPO, the fundamental analysis of an IPO's true market value is what really matters when it comes to making an informed IPO investment decision.

IPO valuation analysis may probably be the single most critical component of the IPO investment decision and investors who gain a good understanding of IPO valuations could hold one of the keys to IPO investing success.

The central issue in IPOs is the determination of the offering price. Standard techniques in security analysis are used in order to approximate the correct price i.e. discounted cash flows, earning multiples or book value multiples. The output of such techniques is highly dependent on their input, which is based on the subjective opinion of the analysts.

A company's potential for earnings is one of the primary determinants of value. An IPO price is usually based on a pro-forma estimate of earnings. While some known facts are considered, such as historical and recent earnings trends, a projection of future earnings is one of the primary components of value. These projections reflect the use of the new capital injected into the company through the public offering.

The underlying assumptions imbedded in the IPO pricing includes a projection of earnings based upon a successful IPO and a capital infusion into the company.

In an analysis of fair market value, the past performance of a company is typically an analyst's best evidence of expected future performance and current earning power is projected based upon past performance and future prospects.

All IPOs across the globe share one characteristic – underpricing. The offering price is usually on average lower than the post-listing market price.

1.8 Deciding When to Issue

There are clear windows of opportunity that open and close for IPO issuers. Most of what determines suitability includes the following:

- The general stock market condition (e.g. the NSE index)
- The industry market condition
- The frequency and size of all IPO's in the financial cycle

There is normally a 3-6 months lead time between starting the IPO process and going public. So, the firm needs to forecast the market conditions 3-6 months later. It is therefore not a bad guess to make decisions about going public based on current stock market conditions.

In order for a company to go public, it needs to hire the services of several professional firms. It is important for entrepreneurs to hire someone independently who understands IPO's, preferably someone who understands IPO's in the same industry.

1.9 Initial Public Offerings in Kenya

During the last seventeen years (1984-2001), there have been 23 equity issues of which 17 were IPOs and 5 Secondary Public Offerings (SPOs) as shown in Table 1. Of the 17 IPOs, 13 were issues by private companies and 4 were issues by public, government owned stocks sold to the public as part of the Kenya Government's privatization programme.

Only 15 IPOs issued during this period will be analysed in this study as two, Kenya Finance Corporation and African Lakes Corporation, have since been delisted from the Nairobi Stock Exchange.

An observed phenomenon at the NSE has been the oversubscription of all successful IPOs. It is noted that unlike US and European markets, most of the issues were made directly to the investing public as opposed to investment banks. It was only in 2002 when the Capital Markets Authority (CMA) released guidelines for investment banks.

From the subscription rates of IPOs in Kenya, it is evident that Kenyan investors have a high affinity for initial public offers with Barclays Bank of Kenya recording the highest rate of 613% and Mumias Sugar Company recording a low of 60%. Is it that the investors normally have readily available funds that require new investment opportunities?

1.10 Market Constraints that Companies face in Pricing IPOs

Companies face the following market constraints while pricing their Initial Public Offerings:

- i. Market Structure
- ii. Political Scenario
- iii. Institutional Endowment

1.10.1 Market Structure

The market structure in which firms operate is key to the design of the sale of an IPO. The technological characteristics of the industry, the demand for the goods and services, and legal restrictions to entry and exit determine the market structure.

1.10.2 Political Scenario

First, transparency plays a very important role in enhancing political acceptability. Competitive and open processes are politically more acceptable. Second, the way in which the process affects the insiders like unions and managers influences the outcome of the sale.

1.10.3 Institutional Endowment

This involves the institutional endowment of the country. Potentially competitive markets require an efficient and properly enforced competition policy. Some countries also face constitutional restrictions that impose limits on foreign ownership and/or private ownership in specific sectors that reduce the set of available options for the sale.

The degree of development of the local financial sectors especially the stock market can lead to very different sale methods in order to avoid financial distress, because the amounts that are traded in can represent an important proportion of the existing market.

The capacity of the financial market to absorb the amounts to be traded must be carefully assessed. The development of the financial sector is usually measured through the following indicators; financial depth (ratio of liquid liabilities of financial system to GDP), stock market development (ratio of market capitalisation to GDP), the share of total financial assets in private non-bank financial institutions and degree of private ownership in the banking sector. The higher those ratios, the more developed the financial sector.

1.11 Nairobi Stock Exchange (NSE)

The NSE was established in 1954 by the colonial government as a voluntary association of stockbrokers registered under the Societies Act. Since its inception, the NSE has witnessed growth in terms of turnover, capitalization and index level. The NSE 20-Share index recorded an all record high of 5030 points in February 1994.

It is the only stock exchange in Kenya. It plays an important role in facilitating the functioning of the capital markets in Kenya as an important facility for liquidity of the listed securities.

As part of Kenya's capital markets, NSE plays an important role in facilitating the mobilization and efficient allocation of both domestic and international capital and savings to the productive sectors of the economy.

By July 2004, NSE had had 48 quoted companies spread over four market sectors: Agricultural, Commercial and Allied, Finance & Investment and Industrial and Allied. Common stocks, preferred stocks and bonds are listed on the market.

According to the CMA's Strategy Paper of 8 May 2000, the slow growth of listings at the NSE may be attributed among others, to the basic structure of the real economy due to the continued depressed manufacturing, trading and services sectors as well as the reliance on the banking sector financing.

The largest share issue in the history of NSE was the privatization of Kenya Airways in 1996. More than 110,000 shareholders acquired a stake in the airline. Consequently the Kenya Airways privation team was awarded the World Bank Award for Excellence for 1996 for being a model success story in the divestiture of state-owned enterprises.

1.12 The Role of Nairobi Stock Exchange

The NSE's mission statement is 'To develop and operate an efficient and transparent securities market to the best international standards for the benefit of all stakeholders'.

The NSE plays the following role:

1. The NSE plays a key role in promoting the culture of thrift or saving. The NSE ensures that the surplus wealth that we create is managed efficiently and that it increases the overall stock of wealth in the economy.
2. The NSE assists in the transfer of savings to investment in productive enterprises as an alternative to keeping the savings idle.
3. The NSE assists in the rational and efficient allocation of capital, which is a scarce resource. The fact that capital is scarce means that we have to develop a system where capital goes to the most deserving users of it.
4. The NSE promotes higher standards of accounting, resource management and transparency in the management of business. This is because the financial sector encourages the separation of owners of capital from managers of capital.

5. The NSE plays a role in improving the access of finance by different types of users by providing the flexibility in allowing different users of capital to raise capital in different ways that are suited to meeting their needs.
6. The NSE provides investors with an efficient mechanism to liquidate their investments in securities.

1.13 The Role of Underwriters

The underwriter is the principal player in the IPO, providing the company with:

1.13.1 Reputation: Because the underwriter is legally liable and has ongoing dealings with the customers (institutional investors) to whom he sells shares, the underwriter puts his reputation on the line.

1.13.2 Finding Investors: The underwriter first puts together a syndicate of other underwriters to distribute firm shares. The syndicate finds investors willing to put their money into the company. This has serious implications: Will the new investors be institutional or private? Is the company widely held or are shares concentrated with just a few investors? Are the current shareholders credible/ Will there be a lot of trading in the company in the aftermarket, or will there be long-term investors?

1.13.3 Experience: The underwriter knows the details of the process better than any other participant as issuing shares is one of their primary business functions. Underwriters are the ones to provide proper guidance.

1.13.4 Aftermarket Support: The underwriter provides price stabilization. This protects investors and makes the offering more attractive.

1.13.5 Future Services: The underwriter often provides post IPO analyst coverage and market-making services. A good relationship with an underwriter can save time and money in future offerings.

1.13.6 Pre-Offering Sales: The underwriter will conduct road-shows with the company's management, distribute the preliminary prospectus, and talk to

potential investors about appropriate pricing. Some part of the value potential shareholders attach to shares is directly generated by the marketing of the underwriters itself.

1.14 The Role of Capital Markets Authority

The CMA is a statutory body created by an Act, (CAP 485A) of the laws of Kenya. The Act was enacted in 1989. The basic objective of the Act is to establish an Authority for the purpose of promoting and facilitating the development of an orderly, fair and efficient Capital Market in Kenya.

The CMA has the following responsibilities:

- a. To encourage savers to invest in securities
- b. To encourage companies to issue securities or to go public
- c. To ensure fair and equal treatment of all market players
- d. To enforce adequate disclosure to enable the securities market to perform its key functions.

1.15 General Listing Requirements

The CMA's general eligibility requirements ensure that only bona fide companies seek listing on the NSE market segments. The following requirements are expected of companies seeking listing:

1. The company must be incorporated or registered under the Companies Act (Cap 486).
2. Availability and reliability of past financial records
3. The company's management, shareholding and core business must be the same prior to listing.
4. The company's shares must be freely transferable and not subject to any restriction on marketability or pre-emption rights.
5. the company must undertake to comply with the rules of the CMA and NSE
6. The company must have only one class of voting shares
7. The company must have its information memorandum or prospectus approved by the CMA and the NSE.
8. Only fully paid-up shares should be listed on the exchange.

1.16 Problem Statement

The correct pricing of an IPO is important to both the issuing firm and investors. In reality, the pricing of IPOs is more of an art than a science. Consequently, price changes may be expected immediately the stocks start trading. The changes have serious implications on investor strategies, be they individuals or institutions such as pension/provident funds or insurance companies.

Whereas the NSE has continued to grow over the years, it is important to look back and see how the IPOs have performed during the subsequent 36 months since their launch and make recommendations for future research in this area.

It is hoped that this study and many others will initiate studies on this subject. The study is aimed at filling the void by providing evidence on the initial and long-run performance of IPOs in Kenya.

1.17 Objectives of the Study

This study analyses the initial returns and long run performance of Initial Public Offerings (IPOs) using a sample of 15 companies listed on the Nairobi Stock Exchange during the period 1984 to 2001 during their first 36 months since launch.

The central hypothesis under investigation in this study is that IPOs are usually underpriced in the short run and that they underperform in the long yielding negative abnormal returns during their first few years of trading. The best-known pattern associated with the process of going public is the frequent incidence of large initial returns accruing to investors in IPOs of common stock.

The objectives of this study are:

- 1) To analyse the short-run performance of 15 IPOs listed at NSE between 1984 and 2001.
- 2) To analyse the long-run performance of 15 IPOs listed at NSE between 1984 and 2001.
- 3) To establish some of the factors that may influence the performance of IPOs, for example:

- i. The size of company
- ii. Multinationals versus local companies
- iii. Private companies versus government owned enterprises

1.18 The importance of the Study

Nairobi Stock Exchange with about 48 listed companies is a relatively small market as compared to other exchanges where a lot of research has been done. If one was to consider the annual turnover at the NSE and market capitalization, it is evident that the NSE contributes a great deal to our economy. It is for this reason that the NSE has become a focus of many finance research studies.

This study will be of benefit to private companies in Kenya that may be considering listing their shares at the exchange in future. The study is aimed at adding value to other local and international studies done in the past on this subject.

The study will also be useful to investors in seeing the trend and returns that IPOs yield during the first thirty six months. As a result of this study, one would be able to see whether it is more beneficial to buy and hold shares during an IPO or to wait and buy the same in the secondary market.

Many individual and institutional investors in Kenya bought shares of some of these companies at the offer price and have held them over the years not knowing their performance except for some dividend payments at the end of each year.

One company worth mentioning is Kenya Airways that listed its shares in 1996 at an offer price of Kshs. 11.25 per share. These shares have during the past years traded at a price of between Kshs. 7.00 and Kshs. 9.00, far much below the initial offer price.

Consequently, shareholders have lost their initial investment worth millions of shillings since the shares could not fetch their initial prices. Why would a share of

such a prominent company in Kenya trade a price below its initial offer price for such a long time?

1.18 **Conclusion**

1.19 Organization of the Study

The source of information used in this project is mainly secondary data collected from different sources including records and reports from institutions such as the Capital Markets Authority (CMA), Nairobi Stock exchange, journals and research publications posted on the Website, and various textbooks.

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CHAPTER 2: LITERATURE REVIEW

2.0 Background

Once a firm's capital structure has been established, it must decide how equity holders are to finance the planned growth. Initially, the choice is restricted to two options i.e. retained earnings or new equity. So long as the growth rate is not phenomenon, the existing shareholders can afford to finance the growth.

However, if growth is dramatic there may be need to apply to the capital market regulators for permission to make a public issue. Once permission is granted, then the applying firm must furnish the regulators and prospective investors with information to enable them to appraise the investment.

A key piece of information provided in the prospective is the issue price. This price is determined by the management of the firm upon advice furnished by professional investment analysts. Several valuation methods are used in valuation including comparative valuation, earnings valuation and net asset valuation.

But the most important considerations in valuation are the amount and uncertainty of future cashflows. A firm's potential for earnings is one of the primary determinants of value. An IPO price is normally based on a pro-forma estimate of earnings.

While some known facts are considered, such as historical and recent earnings trends, a projection of future earnings is one of the primary components of value. These projections reflect the use of the new capital injected into the firm through the public offering.

2.1 Pricing of an IPO

When a firm issues stock for the first time, it is much more difficult to determine what the correct price should be. Having no previous public market, there is no stock price bench mark. Consequently, there is more uncertainty than there is

when a public company sells additional stock i.e. seasonal price offerings (SPOs).

It seems that the price of an IPO is normally set by the underwriters. They price the IPO at a level they believe will reflect the true market value. In most cases, the underwriters do not make their value calculations public information, making it difficult for investors to determine if their set-offering price is fair or accurate.

There are three major parties involved in the IPO issue process: the issuing company, the underwriter and investors. Rock (1986) categorizes investors as informed and uninformed participants in the market.

Though researchers in this aspect of the subject differ in method of analysis of the problem, their common view is that underpricing in IPO occurs as a result of differences in the level of valuable information that one class of IPO market participants possesses over others.

IPOs are characterized by a great deal of uncertainty about their true value because of the scarcity of public information at the time of the initial offering. In such an environment, determining the true value of a new issue is obviously a difficult task. Consequently, the initial return on an IPO reveals significant information because it provides the first public indication that the market's average assessment of the IPO differs from that of the underwriter and the issuing company.

2.2 IPOs' Valuation Methodologies

2.2.1 Comparative Valuation – This involves looking at comparable companies that are public and in the business. Here, the comparison is made on earnings per share (EPS), market share, size of business, price earning multiples etc.

2.2.2 Earnings Valuation – This involves analyzing the profits of the company at that particular time and the previous years (may be 5 years). Projections of profits in the coming years are made for about 10 years. The profits are then discounted to the present value and then a price is fixed at par.

2.2.3 Net Asset Valuation – This involves the valuation of the firm's financial, tangible and intangible assets. Based on their value, a price is fixed after deducting liability claims. Their valuation necessarily requires the involvement of the relevant valuation experts.

2.3 Performance of IPOs

Because of the need to raise finances at the crucial stage in the growth of companies, it is important that prices of their shares reflect the true value of company assets and growth potential. In particular, if their shares are sold too cheaply, these firms will have raised less capital than was warranted by the intrinsic values of their assets. In other words, their shares will have been underpriced.

Short-run underpricing is the positive return that a shareholder can achieve when a newly public share is brought at its offering price and sold at its closing day-price or within a few days or weeks after the closing of the offering. It refers to the widespread observation that regardless of the method of coming to market, IPOs tend to yield substantial returns in the days immediately following the issue.

Several studies have examined the performance of IPOs and documented the existence of short-run excess returns in combination with long-run underperformance.

A large empirical literature exists documenting this phenomenon. This literature can be traced back to a 1963 study by the U.S. Securities and Exchange Commission that finds positive average initial returns on companies going public.

The long-run and short-run price performance of IPOs has recently become the focus of attention attracting several research studies. A pioneering article by

Ibbotson (1975) reported a negative relation between initial returns at the IPO and long-run share price performance for a sample of US IPOs issued during the period 1960-1969.

Ibbotson found that although initial returns were not erased in the aftermarket, average returns for one month holding periods were positive in the first year after the IPO, negative performance during the following three years and a general positive performance in the fifth year.

2.4 Short-run Performance

Considerable evidence shows that new or initial public equity offerings are underpriced on average. That is the prices of firm's shares offered to the public for the first time are, on average, set below prices investors appear willing to pay when the stocks start trading in the secondary market. Jumba, W. N., 2002, Initial Public Offer Performance in Kenya, Unpublished MBA Project, concluded that IPOs are deliberately underpriced in the pre-market leading to initial high returns. In her study she reported that all IPOs registered initial high returns in comparison to the market return for the same period.

Tim Loughran, Jay Ritter and Kristian Rydqvist have provided international evidence of the underpricing phenomenon for 38 countries from various sources as reproduced in Appendix 1. Other international evidence on initial returns according to various studies is shown in Appendix 2.

From this evidence, the abnormal initial returns have ranged from 6.5% observed in Canada to a high of 256.9% observed in China. Therefore, either the offering price is set too low or the investors systematically overvalue IPOs on the first trading day(s).

To date, no complete explanation of the underpricing phenomenon exists, though various theories based on different rationales shed light on the factors that may be influential, with different theories focusing on various aspects of the relations between investors, issuers, and the investment bankers taking the firms public.

First, winners curse (Rock 1986), second; costly information acquisition hypothesis (Benveniste & Pindt, 1989), third; cascades hypothesis (Welsh, 1992) and fourth: the investment banker's monopsony hypothesis (Baron & Holmstrom, 1980 and Baron, 1982) and others. These theories are discussed in detail later in this chapter.

Traditionally, IPO underpricing was explained on the basis of risk aversion on the part of underwriters. Underpricing new issues greatly reduces the chances that the underwriter will end up with an under-subscribed issue with the associated losses.

Investment bankers possess substantial information advantage over IPO issuers and can use this power to lower their own risk of loss. Baron (1982) suggests that underpricing results from such vertical information asymmetry and serves to compensate the underwriter for the use of his superior information.

Tinic (1988) suggests that IPO underpricing serves as a form of insurance. He demonstrates that gross underpricing 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.

Another model is by Rock (1986), who applies the concept of the winner's curse to the new issues market. It is based on a horizontal asymmetry of information, specified to exist between different groups of investors. He specifies that there are two groups of potential investors in the market, called 'informed' and 'uninformed'.

Shares of companies going public for the first time are typically at a price below that achieved on their first day trading, giving subscribing investors large positive returns.

There is 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 the issue. Ibbotson and Ritter (Table 1 page 996), 1995:

Loughran, Ritter and Rydqvist, *Initial Public Offerings: International Insights, 1994 and updated in 2002*, have provided international evidence on this phenomenon.

These empirical studies look at the stock price performance immediately (a few days or weeks) after the issue. Numerous studies have been undertaken since the pioneering works of Ibbotson. Ibbotson (1975) was among the first to report on the so called "underpricing of IPOs", by documenting initial excess returns of 11.44% on US common stocks of IPOs on the first day of trading. Levis (1993) reported an average first day return of 14.3% for 712 UK IPOs during the period 1980 to 1988.

John Affleck-Graves (1995) examined the performance of 2096 US IPOs during the period 1975 to 1991 and found out that the IPOs outperformed matched firms of the same size by 6.4% over the first three months of trading.

Stoll and Curley (1970) find significant positive short-term returns for their sample of 205 small offerings, as do Chalk and Peavey (1987) for 649 IPOs in the first six months following the offering.

Lee, Taylor and Walter (1996) investigate initial and long-run returns for Singaporean IPOs during the period of 1973-1993. They report initial returns of 30%, which is positively related to the level of oversubscription and retained ownership. In another paper, Lee Taylor & Walter (1998) studied the price performance of 266 Australian Industrial firms during the period 1976 to 1989 and found an overpricing of over 11.8% on the first day the stocks started trading.

Ritter (1997), 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.

Aggarwal, Leal and Hernandez (1993) examines the performance of IPOs in short and long-run based on a sample of 62 Brazilian IPOs (during 1980-1990), 36 Chilean IPOs (1982-1990), and 44 Mexican IPOs (1987-1990). Results indicate that initial one-day returns are found to be 78.5%, 16.3% and 2.8% for Brazil, Chile and Mexico respectively.

In a study paper, *IPOs – Evidence from the British, French and Swedish Property Share Markets*, by Dirk Brounen and Piet Eichholtz, on 54 European property share companies, IPOs outperformed the benchmark on the first day of trading, on average with 2.55%.

Janice How in her paper, *Initial and Long-Run Performance of Mining IPOs in Australia*, for mining IPOs issued during the period 1979 to 1990, shows an average underpricing of 107.18%.

Giancarlo Giudici and Stefano Paleari (2001) have also provided evidence of initial underpricing using data from 169 IPOs listed at the Italian Stock Exchange for the period 1985 to 2000. They found positive underpricing of 23.58%.

Anthony Saunders in his article, *Why Are So Many New Stock Issues Underpriced?*(pp 501), provides summary results of performance of IPOs (Table 3 below) during the first week and one month of trading based on several studies.

Therefore, either the offering price is set too low or the investors systematically overvalue IPOs on the first day of trading. One of the anomalies associated with the process of going public is the frequent incidence of large initial returns (the price change measured from the offering price to the market price within a few weeks of the offering date) accruing to investors in IPOs of common stock.

2.5 Reasons for New Issue Underpricing

A number of reasons have been advanced for the new issues under pricing phenomenon, with different theories focusing on various aspects of the relationship between investors, issuers, and the investment bankers taking the firms public.

Most of the theoretical models explaining IPO initial returns share three features:

- 1) Imperfect information and agency costs among firms, intermediates and investors,
- 2) Choice and institutional setting of introduction procedure and
- 3) Investors over-optimism in hot-issue markets.

A common explanation for the abnormal first-day price behaviour of public shares is the so-called 'winners curse'. According to Rock's (1986) model, the IPO market contains two investor types; well-informed investors, who have superior knowledge about the true value of the issue and less-informed investors, who lack the special knowledge to correctly value the issue.

This information asymmetry causes a 'lemons problem' where the uninformed investors are left with the less successful IPOs. In order to keep badly informed investors interested in the IPO market, issuing firms are required to sell their shares at a discount. An explanatory factor directly derived from this winner's curse is the size of the issue.

The larger the issue the more professionally it is likely to be managed and the more information about the true value will be available. This wider spread of information decreases the information asymmetry among investors. Because of this lower information asymmetry, these larger IPOs have less reason to under price and are expected to show less initial out-performance.

A second factor that might explain the abnormal price behaviour of IPOs is the degree of debt financing. Smith and Watts (1992) argued that a firm 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 under pricing.

Another issue related to the under pricing of IPOs is the amount of uncertainty concerning the true value of the company involved. Alli, Yau and Young (1994) have examined this relationship by studying initial aftermarket price behaviour of financial institutions, since financial institutions are monitored by regulatory agents, the information asymmetry problem and uncertainty regarding true value should be less severe for financial institutions than for non-financial institutions. This proved to be the case.

2.6 Theories for Underpricing of IPOs

2.6.1 The winner's Curse Hypothesis

An important rationale for the under pricing of IPOs is the 'winner's curse' explanation introduced by Rock (1986). Since a more or less fixed number of shares are sold at a fixed offering price, rationing will result if demand is unexpectedly strong.

Rationing in itself does not lead to under pricing, but if some investors are at an informational disadvantage relative to others, some investors will be worse off.

For simplicity, Rock groups all investors into two categories: perfectly informed, and completely uninformed with respect to knowledge of the future market price of the shares being sold. In the model, informed investors will only attempt to buy shares when an issue is under priced.

Uninformed investors, on the other hand, do not know which issues will be under priced or overpriced and so will be allocated only a fraction of the most desirable new issues, while they are allocated all of the least desirable new issues.

Numerous studies have attempted to test Rock's winner's curse model, both for the U.S. and other countries. A cross-sectional implication of the model, developed in Beatty & Ritter (1986), is that riskier issues should have greater under pricing, on average.

While the evidence is consistent with this prediction, other explanations of the under pricing phenomenon also make this prediction. A direct test of the model by Koc & Walter (1989) using data from Singapore supported the model.

2.6.2 The Costly Information Acquisition Hypothesis

Welch (1992) presents an equilibrium model in which he argues that the IPO market is subject to 'cascades'. In the model, potential investors pay attention not only to their own information about a new issue, but also whether other investors are purchasing.

If an investor sees that no one else wants to buy, he may decide not to buy even when he has favourable information. To prevent this from happening, an issuer may want to under price an issue to induce the first few from happening, an issuer may want to under price an issue to induce the first few potential investors to buy, and induce a cascade in which all subsequent investors want to buy irrespective of their private information.

2.6.3 The Information Asymmetry Hypothesis

This hypothesis focuses on information asymmetries between issuing firms and their investment bankers. Baron & Holmstrom (1980) and Baron (1982) hypothesize that investment bankers take advantage of their superior knowledge of market conditions to under price offerings, which permits them to expend less marketing effort and endear themselves with buy-side clients.

In Baron's information asymmetry theory, it is argued that underwriters are better informed about the appropriate price for IPO shares than the issuers, because they possess greater information about investor demand for the securities. In addition, underwriters have an incentive to recommend an offering price below the true market value to reduce the marketing effort and to avoid unsold shares.

2.6.4 The Lawsuit Avoidance Hypothesis

Since the U.S. Securities Act of 1933 makes all participants in the offer who sign the prospectus liable for any material omissions, one way of reducing the

frequency and severity of future lawsuits is to under price. Tinic (1988) develops this hypothesis, and presents evidence that is consistent with it.

2.6.5 The Signalling Hypothesis

Under priced new issues 'leave a good taste' with investors, allowing the firms and insiders to sell future offerings at a higher price than price than would otherwise be the case.

This reputation argument has been formalized in signalling models by Allen & Faulhaber [1989], Welch [1989], and Grinblatt & Hwang [1989]. In these models, issuing firms have private information about whether they have high or low values. They follow a dynamic issue strategy, in which the IPO will be followed by a seasoned offering.

There is some probability that investors will become aware of the true value before the seasoned offering, in which case any actions undertaken at the time of the IPO will have little consequence for the seasoned offering.

2.6.6 The Stabilization Hypothesis

Ruud (1993) argues that the practice of stabilization by investment bankers results in average initial returns that are substantially overstated. Stabilization is the practice of buying large numbers of shares in the immediate aftermarket in an effort to prevent the price from falling.

2.6.7 The Ownership Dispersion Hypothesis

Issuing firms may intentionally underprice their shares in order to generate excess demand and be able to have a large number of small shareholders. The disperse ownership will both increase the liquidity of the market for the stock, and make it more difficult for outsiders to challenge management.

2.7 Long-run Performance

A large body of evidence shows that, on average, IPOs underperform in the aftermarket i.e. aftermarket hype. Ibbotson & Ritter (1995) provide international

evidence on this long-run underperformance as per their Table 2 on page 1005, as reproduced in Table 4.

Jumba, W. N., Initial Public Offer Performance in Kenya, Unpublished MBA Project (2002), reported an average daily return for a sample of nine IPOs (1992-2000) of 0.06% in the three years after going public. According to her study, a market model of the NSE index constituent companies produced an average daily return of 0.3% over the same three-year period.

Affleck-Graves, Hedge & Miller page 26 have also given similar evidence of long-run underperformance of IPOs. The abnormal negative returns have ranged from 8.1% in the UK to 46% in Brazil.

Several theories have been advanced to explain the phenomenon of the long-run underperformance of IPOs. Firstly, is the divergence of opinion hypothesis advanced by Miller in 1977. The hypothesis proposes that the investors who are most optimistic about an IPO will be the buyers.

Secondly, is the impresario hypothesis advanced by Shiller in 1990. The theory proposes that the market for IPOs is subject to fads that IPOs are underpriced by investment bankers to create the appearance of excess demand for new shares.

Thirdly, is the window of opportunity hypothesis advanced by Ritter in 1991 and Loughran & Ritter in 1995. The theory proposes that the long-run returns on IPOs are consistent with issuers taking advantage of windows of opportunity in which the market is willing to overpay for their equity.

Numerous studies in several countries have confirmed underperformance after one (Aggarwal and Rivoli, 1990), three (Ritter, 1991) and Loughran et al, 1994) and five years (Loughlan and Ritter, 1995).

Aggarwal and Rivoli (1990) attribute underperformance to a temporary overvaluation of the IPO company at the offering date, the so-called 'fads' theory. After a while the over optimism disappears and the value of the new share will be

downwardly adjusted. Ritter (1991) has further advanced the fads theory and showed that IPO firms with a high risk profile (younger, smaller and active in certain sectors) are sooner subject to shareholder sentiment; the so called fads of the stock market.

Loughlan and Ritter (1995) find evidence that underperformance in the long-run is the result of the utilization of 'windows of opportunity' by the issuer and the lead manager. Companies go public at the moment of relative overvaluation i.e. high market-to-book ratio.

If, after a while those firms do not live up to their expectations, their value will be adjusted downwards. Based on the provided information investors initially overvalue the issue. If the company is not able to fulfil the expectations after going public, investors will revalue their positions, which will cause the stock price to fall.

Empirical literature on IPOs performance is not just restricted to new stock pricing but also the long-term performance.

Levis (1993) reports in a study of 712 UK firms during the period 1980 to 1988, a long-run underperformance of -11.4% 3 years after issue of the stocks. Levis confirms Ritter's (1991) finding of statistically significant long-run IPO underperformance, although he notes that average underperformance in his UK sample appears to be less excessive than in Ritter's US sample.

Lee Taylor et al (1996) in a study of 266 Australian industrial firms found out that the stocks underperformed the market by -51% in the 3 year period subsequent to the listing. Lee Taylor et al (1996) in a Singaporean study covering the period 1973 to 1993 failed to detect any significant underperformance.

Buser & Chan (1987) find a mean 2 year adjusted return of 11.2% for 1078 NASDAQ/NMS IPOs in 1981-1985. Ritter (1984) & Sterns Bornstein (1985) provide evidence suggestive of negative aftermarket performance.

Ritter (1991) finds a significant mean market-adjusted return of -24.33% at the end of 3rd year following the offering for a sample of 1526 IPOs over the period 1975 to 1984. However, this result appears to be time sensitive; mean three-year aftermarket returns are positive for 1975-1980 IPOs and negative for 1981-1984 IPOs.

Aggarwal and Rivoli (1990) similarly find negative aftermarket performance of -13.73% in the first year following the initial offering for 1435 IPOs in the period 1977-1987, and so do Carter and Dark (1990) who find a significant average return of -8.3% over the first 18 months for a sample of 927 IPOs over the period 1979-1984.

Loughlan (1993) further documents that such underperformance extends for five years following the initial offering. Similar underperformance has been documented in many other markets, including London (Levis, 1993) and Latin America (Aggarwal, Leal and Hernandez, 1993)

Arif Khurshed et al in their study paper entitled, *On the Long-run Performance of IPOs* (1999), using IPOs listed on the London Main Market from 1991-1998 have documented a long-run underperformance of 17.81%. They have also found out that the pre-IPO performance of a firm has significant effect on long-run performance, for example, found a significant relationship between the long-run performance and the first day return.

Loughran and Ritter (1995) and Spiess have documented long-term underperformance for up to five years following seasoned equity offerings. John Affleck-Graves (1995) found that IPOs that were initially underpriced outperformed matched firms by 6.4% over the first three months of trading.

By contrast, IPOs which were initially overpriced underperformed matched firms of the same size by an average of 4.42% over the first month of trading. Subsequently, overpriced IPOs earned similar negative abnormal returns implying gross underperformance in the long-run.

Dirk Brounen and Piet Eichholtz in a study of 54 European property share IPOs, which became publicly listed during the period 1984-1999, found that the IPOs tended to underperform their benchmark over the twelve month period subsequent to their initial offering.

Arosio et al (2001) found in their study of Italian IPOs that if an individual purchased the average IPO on the first day of listing and sold it at any time till the 6th year of listing, they would earn on average a negative market adjusted return.

Stehle et al (2000) consider long-run IPO performance in Germany using buy-and-hold abnormal returns. They found that, consistent with Ljungqvist (1997), German IPOs underperform similar sized companies by about 6% in the three-year post-listing.

Dr. Halil Kiymaz in his study, *Long-Run Performance of IPOs: Case of Istanbul Stock Exchange*, has also provided further evidence of long-run underperformance of IPOs. His sample consisted of 138 firms listed and traded on the Istanbul Stock Exchange during the period 1990-1995. He reported that the Turkish IPOs are underpriced on initial trading day on average of 13.6%.

Depending upon parameter values, the high-value firms may choose to under price their IPOs as a way of signalling that they are high value. According to a research paper done in July 1998, *Testing the Robustness of Long-Term Underperformance of UK Initial Public Offerings* by Susanne Espenlaub (Manchester School of Accounting and Finance, University of Manchester), Alan Gregory (University of Exeter) and Ian Tonks (University of Bristol), it was found that on average, there are negative abnormal returns to an IPO such that typically a one pound investment after the IPO is worth less than 85 pence after three years.

2.9 Long-run IPO Underperformance

A theory that could explain the long-run underperformance of IPOs is the so-called "fads theory". Both Aggarwal and Rivoli (1990) and Ritter (1991) reported

strong underperformance of IPOs after three years of -13.73% and -29.13%, respectively.

Though the international evidence on the long-run performance of IPOs is limited, Ritter and Ibbotson (Table 2 page 1005) have provided evidence of long-run IPO overpricing in Australia, Brazil, Chile, Finland, Germany, Sweden, UK and US.

Both studies point out that the abnormal price behaviour 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 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.

The winner's curse theory, signalling-based models, and the theory that IPO performance is driven by fads have been used to attempt to explain this puzzling abnormal price behaviour.

Studies on the long-run aftermarket price behaviour, such as Ritter (1991) and Aggarwal and Rivoli (1990), showed that this initial out-performance appears to be a short-run phenomenon.

2.10 Theories for Long-run Underperformance

The following three theories have been advanced to explain the phenomenon of the long-run underperformance of IPO.

2.10.1 The divergence of opinion hypothesis

Miller (1977) argues that investors who are most optimistic about an IPO will be the buyers. If there is a great deal of uncertainty about the value of an IPO the valuations of optimistic investors may be much higher than those of pessimistic investors.

As time goes on and more information becomes available, the divergence of opinion between optimistic and pessimistic investors will narrow, and consequently, the market will drop. Thus, Miller predicts that IPOs will underperform in the long run.

2.10.2 The impresario hypothesis

Shiller (1990) presents an impresario hypothesis in which he argues that the market for IPOs is subject to fads and that IPOs are underpriced by investment bankers (the impresarios) to create the appearance of excess demand.

Shiller's hypothesis predicts that companies with the highest initial returns should have the lowest subsequent returns. There is some evidence of this relation in Ritter (1991).

2.10.3 The windows of opportunity hypothesis

If there are periods when investors are especially optimistic about the growth potential of companies going public, the large cycles in volume may represent a response by firms attempting to time their IPOs to take advantage of these swings in investor sentiment.

Ritter (1991) and Loughran & Ritter (1995) argue that the low-run returns on IPOs are consistent with issuers taking advantage of 'windows of opportunity' in which the market is willing to overpay for their equity.

The windows of opportunity framework predicts that there will be low long-run returns on firms conducting IPOs and on firms conducting seasoned equity offerings. Loughran & Ritter (1995) provide evidence that this is indeed the case.

Mixed results for long-term performance exist, with many countries showing underperformance. Hence, evidence for long-run performance is not conclusive.

The implications of long-run underperformance of IPOs mean that the shareholders of these shares who hold them over a long time lose value through time.

CHAPTER 3: RESEARCH METHODOLOGY

3.0 Introduction

The closing price on the first trading day is used as the most appropriate place to begin measurement of long-run performance of IPOs. Initial return is defined as the return from buying shares at the offering price and selling them at the closing price on the first day of trading.

To obtain monthly return during the 36 months, the closing monthly (end of month) share prices have been used for each IPO. The analysis of the initial returns has used raw returns data, i.e. returns which have not taken into account of what a normal return or expected return might be. For the initial after market (close of the day of trading), the market adjusted abnormal returns (MAAR₀) for each company have been computed using the NSE index. The methodology is described here below:

3.1 IPO Underpricing

The first day total return for each IPO has been computed as per formula (1) below. The first day return on market index for each IPO has been computed as per formula (2) below. Using the results of the first day total return and first day return on market index, the market adjusted abnormal return for each IPO has been computed using formula (3) below. The mean of the first day return for the sample and standard deviation have been determined.

The total return for stock, 'i' at the end of the first trading day has been calculated as:

$$R_{i,1} = \ln(P_{i,1}/P_{i,0}) \quad (1)$$

Where $P_{i,1}$ is the price of stock, i at the close of the first trading day, $P_{i,0}$ is the offer price and $R_{i,1}$ is the total first day return on the stock.

The return on the market index during the same time period has been calculated as:

$$R_{m,1} = \ln(I_{m,1}/I_{m,0}) \quad (2)$$

Where $I_{m,1}$ is the market index value at the close of first trading and $I_{m,0}$ is the market index value on the offer day of the appropriate stock and $R_{m,1}$ is the first day's comparable market return.

Using the two returns, the market adjusted abnormal return (MAAR) for each IPO on the first day of trading has been computed as:

$$MAAR_{i,0} = 100 \times \{ [(1 + R_{i,1}) / (1 + R_{m,1})] - 1 \} \tag{3}$$

3.2 Long-run Returns

The long run return for each IPO has been computed using formula (4) below for each month. The average monthly long-run returns for each of the 14 IPOs have also been computed during the period of 36 months.

The overall average return and standard deviation for the entire sample have been calculated. This return has been compared with the performance of the 20-NSE Index, which is derived from the daily performance of NSE 20-share index constituent companies (see Table 6). The index has been used as the benchmark, which is commonly used as a performance indicator. A stock index usually measures changes that have occurred in a given stock exchange in relation to either the prices, quantities, or the value of the stock quoted in the stock exchange.

An increase in the index implies an improvement in market activities in terms of price, traded volume or both. The index reflects what investors think of the prospects for the economy as a whole or sector of the economy. Research evidence shows that there is a strong relationship between the general economic conditions and the way the stock market performs, (Reilly, 1979 and 1994). Apart from the investor expectations about firm's profitability, this relationship is also due to the various economic series and indicators.

These indicators include money supply (changes of which have been shown to greatly influence stock prices), inflation, exchange rates and interest rates. Eck (1967) in his "Review of the German Stock Market" found out that the performance of the stock market has an impact and is also impacted upon by

other variables of the economy, such as inflation, interest rates, unemployment rates, money supply and exchange rates.

Other indicators of stock market performance include market liquidity, market capitalization, turnover, efficiency of pricing of risk, market concentration, level of international integration, size of market, volatility of returns and level of technology.

4.2. Long-run performance

The methodological issues relating to the measurement of long-run performance of IPOs have been addressed in several recent studies. Barber and Lyons (1997) explain that long-run performance should be calculated as the long-run buy-and-hold returns (BHRs) rather than cumulative average returns (CARs), which are subject to measurement bias, new listing bias and rebalancing bias.

4.2.1. Buy-and-hold returns and cumulative average returns

Kothari and Warner (1997) show that tests using BHRs are least as misplaced as those using CARs. Fama (1998) in an excellent overview of long-run return anomalies argues that CARs rather than BHRs should be used on theoretical and statistical grounds.

4.2.2. Buy-and-hold returns and market buy-and-hold returns

The following methodology as used by Ritter (1991) has been used to calculate the long-run returns:

4.2.2.1. Market buy-and-hold returns

$$MBHR_i = [\ln(P_{i,t}/P_{i,t-1}) - \ln(I_{m,t}/I_{m,t-1})] \quad (4)$$

Where $MBHR_i$ denotes the market buy and hold return for a firm i over a 36 month period and $P_{i,t}$ and $I_{m,t}$ denote the end of the month t share price for the firm i and the corresponding end of the month index respectively.

4.2.2.2. Market buy-and-hold returns with initial underpricing

These returns exclude initial underpricing. Allowing for the initial underpricing and the possibility of price support in the first few trading days, the first month of trading will be excluded from the study as it is expected that this month would allow prices to adjust downwards towards the true market equilibrium after the support has been withdrawn. Due to lack of the relevant information, these returns have not incorporated dividend payments during the 36 months' trading

period for each IPO. The returns have also not been adjusted for rights issues, inflation and systematic risk.

Information on share prices, date of going public, 20-Share NSE Index, offer size and other relevant data have been obtained from the Nairobi Stock Exchange.

3.3 Sample Design

During the period 1984 to 2001, 17 companies were listed on the Nairobi Stock Exchange. They are spread over the NSE's four market sectors.

Assistance has been sought from the NSE to locate the relevant data for analysis. The end of month prices for the 14 IPOs during the period 1984 - 1992 were sought from the Daily Nation's market reports as they were not available at the stock market.

3.4 Sample Size

This study uses a sample size of 14 companies that were listed on NSE during 1984 – 2001. Two of these companies will not be used as they have since been delisted from the stock exchange. Mumias Sugar Company, which was listed in 2000, has been omitted as its trading details at the stock market were not available as the company did not show any trading activity during the first couple of months since going public. Details of the IPOs are shown in Schedule 2.

3.5 Data Analysis

Data collected for all the 14 IPOs has been analysed as shown in Tables 1 to 15, graphs 1 to 15 and Schedules 1 to 17. Schedule 1 shows the computations of the first day short-run returns: total return, first day return on index and market adjusted abnormal returns using formula 1, 2 and 3 above.

Schedule 2 shows the computations of the market buy and hold returns percentage growth of the return, cumulative growth, growth in index, growth in share price, cumulative growth in price and cumulative growth in index for each of the 14 IPOs. The mean, standard deviation and the median have been computed for each of the above parameters. The percentage growth in returns

for each IPO and percentage growth in the index have been plotted in Graphs 1 to 14. Graph 15 plots the overall percentage growth in the returns and index for all the IPOs.

Descriptive statistics of the share prices of each IPO and the index during the first 36 trading months have been computed using correlations as shown in Table 1 to 14. The Pearson Correlation is used to show the relationship between the share prices and the index. Descriptive statistics of the index and all the share prices for the 14 IPOs is summarised in Table 15.

CHAPTER 4: FINDINGS AND INTERPRETATIONS

4.1 Short-run Performance of IPOs

Schedule 1 presents the first day market adjusted abnormal returns for the 14 IPOs with an average return of 22.57%, standard deviation of 24.088 and a median of 17.42% for the entire sample. Standard Chartered Bank showed the highest initial return of 72% and Athi River with the lowest initial return of -28.31% as its first day posting price was Kshs. 9.05 as compared to the offer price of Kshs. 12.25. It appears that the best time for short term investors to buy shares of a company is at the initial public offer as the prices rise significantly during the first few days of trading.

The 14 IPOs show a first day return ranging from -0.30 to a high of 0.62. Standard Chartered Bank shows the highest first day total return of 0.62 followed by Kenya Commercial Bank, and Housing Finance of Kenya with 0.59 and 0.41 respectively. Only Athi River Mining reported a negative first day total return of -0.30.

4.2 Long-run Underperformance of IPOs

Schedule 2 shows the Market Buy and Hold Returns (MBHR) of the 14 IPOs during their 36 months' trading period after launch. Barclays Bank of Kenya, Kenya Airways and TPS Serena have positive MBHR of 0.02747, 0.14053 and 0.08944.

All the 14 IPOs have a mean MBHR of -0.07788, standard deviation of 0.1163, median of -0.0796 and a percentage growth of -68.46%. In terms of percentage growth on MBHR, Nation Printers had the lowest growth of negative 428.38% and Firestone East Africa with the highest of positive 609.83%. In terms of cumulative percentage growth in price the 14 IPOs show an overall growth of 43.12 with a standard deviation of 92.75.

In terms of overall cumulative percentage growth on index, the IPOs show a cumulative growth of 593.796 with a standard deviation of 2030.37. The average percentage growth in index for all the IPOs is -0.297 with a standard deviation of

3.49. This shows that the index was on average showing a higher cumulative growth as compared to the overall growth in prices for all the 14 IPOs. Graphs 1 to 14 show the plotting of the MBHRs for each of the companies while Graph 15 plots the overall percentage growth in returns and in index.

Tables 1 to 14 show individual relationship of the companies' share prices and the NSE Index during their first 36 trading months since launch. Table 15 shows an overall relationship of the share prices of the 14 companies and the NSE Index. The results show a correlation of 0.10 (10%) that there is a close relationship between the movement of the share prices and the index.

Individual company's Pearson Correlations are as follows; Jubilee Insurance Company 0.75 (75%), Barclays Bank 0.943 (94.3%), Kenya Commercial Bank - 0.177 (-17.7%), Nation Printers -0.806 (-80.6%), Standard Chartered Bank 0.042 (4.2%), Uchumi Supermarkets Ltd 0.915 (91.5%), Crown Berger 0.869 (86.9%), Housing Finance 0.757 (75.7%), Firestone East Africa 0.630 (63%), National Industrial Credit 0.432 (43.2%), Rea Vipingo 0.507 (50.7%), Kenya Airways 0.235 (23.5%), TPS Serena 0.107 (10.7%) and Athi River Mining 0.781 (78.1%).

Considering the whole period during which the 14 IPOs were listed on the market, the companies have a mean price of 22.54, standard deviation of 14.05. During the same period the NSE Index shows a mean of 2249.72 and a standard deviation of 1249.80.

4.3 Other Possible Factors That May Influence the Performance of IPOs

i) The Size of the Company

The 14 IPOs under study were of various sizes before going public. The size could be rated in terms of annual turnover, number of employees, asset base, previous ownership and general perception. From an investor's perspective, the bigger the size of a company before going public, the greater the potential for growth, profitability and perhaps the level of dividend payment. This, however, may not always be the case.

It is perhaps for these considerations that some companies such as Athi River Mining have continued to perform poorly in terms of their share prices, turnover, profitability and dividend payment while the big companies have continued to attract impressive interest in form of demand for their shares.

The first reported case of a collapsed IPO in the history of NSE was that of Anglo African Property Holdings Ltd. In October 2000 the company sought to go public to strengthen its financial position by retiring residual liabilities and raise additional equity working capital. The offer collapsed as very few investors subscribed to the shares.

The resultant collapse of the IPO was perhaps caused by strict listing rules and procedures, absence of market makers, economic recession, but probably by the profile of the company's owners, size of the company, and previous financial performance. This is indicative that investors consider several factors before buying IPOs.

ii) Multinational Versus Local Companies

Barclays Bank of Kenya and Standard Chartered Bank are the only two multinational IPOs listed on the stock market during the period 1984 to 2001. Barclays Bank had an initial return of 42.49% while Standard Chartered recorded a return of 72%.

The lowest return on first day return was recorded by Athi River Mining Company with a return of -28.31%. Looking at the performance of the two multinationals, it is apparent that their performance in terms of profitability, market capitalization and share price has been better than that of the local companies.

Looking at the growth in share prices during the first thirty six months of trading, Kenya Airways, TPS Serena and Athi River Mining traded at prices in most cases below their initial offer prices. Kenya Airways traded at a high of Kshs. 10.10 per share and a low of Kshs. 7.00 per share (share price depreciation of 38% compared to the initial price), while TPS Serena traded at a high of Kshs. 17.95 and a low of Kshs. 12.50 per share (a depreciation of 24%).

Athi River Mining traded at a high of Kshs. 11.50 and a low of Kshs. 4.50 per share (depreciation in price of 63%). Barclays Bank and Standard Chartered Bank did not trade at prices below their initial offer prices. Whereas this is not conclusive evidence that multinational companies perform better than the local companies, it is true to say that multinational companies listed at the NSE have shown greater and steady growth of their share prices, profitability and a high level of professional management.

iii) Private Companies versus Government-Owned Enterprises

Of the 14 IPOs studied, Kenya Commercial Bank, Uchumi Supermarkets Ltd, Housing Finance of Kenya and Kenya Airways had substantial government holding. Selling their shares to the public was part of the government's privatisation program. The most successful privatisation of a government enterprise was that of Kenya Airways with an oversubscription of 194.5% raising a record of Kshs. 2.664 billion.

According to research by Seung-Doo Choi and Sang-Koo Nam on Korean IPOs, they have shown that there has been a general tendency for governments around the world to under price the privatisation IPOs to a greater degree than their counterparts of private IPOs.

High initial return on privatisation IPOs may be a result of deliberately chosen behaviour by the government. Thus privatisation of an IPO at significant underpricing seems to be an appropriate vehicle to accomplish various objectives of privatisation. Thus share ownership distribution in a country may be an important factor explaining the performance of privatisation IPOs.

However, there is usually a general feeling that the government-owned enterprises are usually mismanaged through lack of good corporate governance, loss-making and the reason why the government would want to privatise them. Kenya Airways is an example. Before it went public, Kenya Airways was a loss-making company with lots of unserviceable liabilities. Upon going public, the most crucial thing was to engage a strategic partner, KLM Royal Airlines.

The company has since recorded very good profits over the years and declaring dividends during some years. However, the performance of its shares has remained low in terms of the share price, which has in most cases, averaged below the initial offer price of Kshs. 11.25.

During the first thirty six months of trading, the share traded at a high of Kshs. 10.10 per share and a low of Kshs. 7.00 per share (a share price depreciation of about 38% relative to the offer price), though the share continued to experience a huge trading volume. In terms of share price, Kenya Airways has not recorded significant growth since going public. Even when other securities have tended to rise in share price, its share price has remained relatively low.

Jubilee Insurance Company, TPS Serena, Rea Vipingo, Nation Printers Ltd, Firestone East Africa and Athi River Mining were privately owned. Barclays Bank of Kenya and Standard Chartered Bank were foreign companies and still retain over 50% ownership of their United Kingdom holding companies.

Before going public, National Industrial Bank was owned by Barclays Bank of Kenya. Based on the first day returns it is apparent that both private companies and government-owned enterprises have shown high returns with the highest recorded by a private company, Standard Chartered Bank, with a rate of 72%.

CHAPTER 5: CONCLUSION

5.0 Conclusion

In this study the short-run market performance of initial public offerings in Kenya was analysed. The first day return of 14 IPOs from 1984 to 2001 obtaining a mean underpricing of 22.57% with a standard deviation of 24.09. This shows that IPOs are generally underpriced at the offer stage as their prices go up significantly on their first day of trading at the stock market.

The above findings are consistent with other studies carried out in other market across the world and further confirm that IPOs are indeed grossly underpriced at the initial stage. A number of reasons have been put forward for the new issues underpricing phenomenon, each with different theories focusing on various aspects of the relations between investors, issuers and the underwriters taking the firms public.

According to a study by Jumba W. N. in her unpublished MBA Project, University of Nairobi in 2002, Public Offer Performance in Kenya, she found out that the average daily return for a sample of nine IPOs (1992 to 2000) was .06% in the three years after going public. However, in the same study, a market model of the NSE index constituent companies produced a daily average return of 0.3% over the same period three-year period. Her findings suggested that IPOs in Kenya are deliberately underpriced in the pre-market leading to high initial returns in comparison to the market return for the same period.

One observation made from the 14 companies studied is that there is a general oversubscription of IPOs in Kenya with Barclays Bank of Kenya reporting the highest subscription rate of 613% and Mumias Sugar Company with the lowest rate of 77%. It is therefore fair to say that nearly all the IPOs placed at Nairobi Stock Market have had very good response from investors. However, it is important for the investors to note that IPOs are generally timed to benefit the seller by aiming to extract the maximum value from the market.

According to the winner's curse hypothesis on IPO underpricing, if some investors are more likely to attempt to buy shares when the issue is underpriced, then the amount of excess demand will be higher when there is more underpricing.

The signalling hypothesis on underpricing of IPOs indicates that underpriced issues 'leave a good taste' with investors, allowing the firms and insiders to sell future offerings at a higher price than would otherwise be the case. This reputation argument has been formalised in several signalling models. In these models, issuing firms have private information about whether they have high or low values.

The study found out that in the long-run the IPOs underperformed the growth in the index indicating that apart from the first day abnormal returns, IPOs generally may not be very good investment in the long run. All the 14 IPOs recorded an overall negative cumulative growth of 68.46% as compared to NSE index growth of negative 12.00%.

However, other factors such as dividend payment, capital gains and passion for investing in shares may be the reason why many investors buy IPOs and hold them for a very long term. This is consistent with studies carried out in other parts of the world with Australian industrial firms recording an underperformance of -51% (Lee Taylor et al, 1996) and -47% recorded in Brazil (Aggarwal et al).

It was found out that the movement of the share prices had a significant relationship with the movement of the index with a Pearson Correlation of 10%.

5.1 Limitations of the Study

5.1.1 Lack of Vibrancy at NSE

Since its inception in 1954, the NSE has witnessed significant growth in terms of annual turnover, capitalization, index level and number of listed companies. However, despite this remarkable growth, activities at NSE have been low as compared to other stock markets where similar research projects have been carried out.

An article in the Business Week, Daily Nation, Tuesday, 21 November 2000 summarises the market as one starved of investment opportunities. The article points out that incremental public issues borne out of privatization as having been very scant. The article goes on to say that, while the market capitalization has risen over the years, there has not been similar upswing in the number of deals necessary to evolve a liquid market.

The lows at the NSE have been blamed on among others, strict listing rules and procedures, lack of an alternative investment markets segment absence of market makers and a depressed economy. Also, the cost of going public may be a hindrance for some companies to go public. It may be the reason why most companies in Kenya prefer cheap debt financing rather than going public. The low activity at the NSE may also be caused by lack of investment knowledge on the part of prospective investors. The effect of the small number of investors is exemplified by the low turnover and low activity on the market.

5.1.2 Lack of Necessary Information

While collecting data for this project at the NSE library, it was evident that share prices of listed companies and other important details prior to 1993 were not available. For companies listed between 1984 and 1993, the share prices were extracted from the Daily Nation library in the daily NSE market reports. During the formative years of the NSE, most of its operations were not computerised making it very difficult to retrieve the necessary data.

This means that it would be difficult for any meaningful research to be carried out for companies listed prior to this period as relevant information is not available. One limitation faced in data collection was that the NSE operations for a long time were not computerised thus making it difficult to retrieve the necessary information.

5.1.3 Sample Size

This project considered only 14 IPOs out of 54 companies listed at NSE. This translates to about 26%. A larger sample would have been ideal. As compared to other researches in other countries this is a very small sample. It is evident that the Nairobi Stock Exchange is not as developed as those in Europe and the US.

It was noted that the sample used in the study was relatively small compared to other studies carried out in other countries particularly in the developed world. This is because the Nairobi Stock Exchange is not as big as in other countries. By end of 2001, the NSE had 40 listed companies on the Main Investment Market Segment (MIMS) and 10 companies in the Alternative Investment Market segment (AIMS).

With 50 companies, NSE is indeed a small exchange market though it is the most developed within the East African region. A bigger sample would probably have given better results of the performance of IPOs in Kenya.

5.2 Recommended Areas for Further Study

This study covered only IPOs issued between June 1984 and July 1997. It is recommended that a study be carried out for all the IPOs issued since the inception of the NSE in 1954 so as to provide more comprehensive evidence of the performance of IPOs listed at the Nairobi Stock Exchange.

It is also recommended for further study to determine other pre-IPO factors that determine the long-run performance of IPOs such as the age of the firm, the reputation of the underwriter, the firm's profitability, experience of the board of directors and level of corporate governance, the state of the economy etc.

A further study is recommended to determine why there have been very few IPOs at the NSE after operating for nearly fifty years and how other successful private companies could be encouraged to float their equity to the public in future.

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APPENDICES

Appendix 1: International Evidence of IPOs Underpricing

Country/Source	Sample Size	Time Period	Average Initial Return %
Australia (Lee, Taylor & Walter)	381	1976-1995	12.1
Austria (Aussenegg)	76	1984-1999	6.5
Belgium (Rogiers, Manigart)	86	1984-1999	14.6
Brazil (Aggarwal, Leal etc)	62	1979-1990	78.5
Canada (Jog & Riding)	500	1971-1999	6.3
Chile (Aggarwal, Leal)	55	1982-1997	8.8
China (Datar & Mao)	432	1990-2000	256.9
Denmark (Jakobsen & Sorensen)	117	1984-1998	5.4
Finland(Keloharju)	99	1984-1997	10.1
France (Husson & Jacquillant)	571	1983-200	11.6
Germany (Ljungqvist)	407	1978-1999	27.7
Greece (Kazantzis & Thomas)	129	1987-1994	51.7
Hong Kong (McGuinness)	334	1980-1996	15.9
India (Krishnamurti etc)	98	1992-1993	35.3
Indonesia (Hanafi)	106	1989-1994	15.1
Israel (Kandel, Sarig etc)	285	1990-1994	12.1
Italy (Arosio, Giudici etc)	164	1985-2000	23.9
Japan (Fukuda etc)	1,689	1970-2001	28.4
Korea (Dhatt, Kim etc)	477	1980-1996	74.3
Malaysia (Isa & Yong)	401	1980-1998	104.1
Mexico (Aggarwal, Leal etc)	37	1987-1990	33.0
Netherlands (Wessels etc)	143	1982-1999	10.2
New Zealand (Vos & Cheung)	201	1979-1999	23.0
Nigeria (Ikoku)	63	1989-1993	19.1
Norway (Emilsen Etc)	68	1984-1996	12.5
Philippines (Sullivan & Unite)	104	1987-1997	22.7
Poland (Aussenegg)	149	1991-1998	35.6
Portugal (Almeida & Duque)	21	1992-1998	10.6
Singapore (Lee, Taylor & Walter)	128	1973-1992	31.4
South Africa (Page & Reyneke)	118	1980-1991	32.7

Spain (Ansotegui & Fabregat)	99	1986-1998	10.7
Sweden (Rydqvist)	251	1980-1994	34.1
Switzerland (Kunz & Aggarwal)	42	1983-1989	35.8
Taiwan (Lin & Sheu)	293	1986-1998	31.1
Thailand (Wethyavivorn etc)	292	1987-1997	46.7
Turkey(Kiyamaz)	138	1990-1996	13.6
United Kingdom (Dimson, Levis)	3,122	1959-2001	17.4
United States (Ibbotson, S. & Ritter)	14,840	1960-2001	18.4

Source: Loughran T., Ritter, J. R., and Rydqvist, Pacific-Basin Finance Journal, June 1994 (Updated September 5, 2002), 165-199.

Appendix 2: Initial returns according to various studies

Study		Sample Size	Initial Returns (%)	
			1 Wk	1 Mth
Reilly/Hafied (1969)	1963-65	53	9.9	8.7
McDonald/Fisher (1972)	1969-70	142	28.5	34.6
Logue (1973)	1965-69	250	-	41.7
Reilly (1973)	1966	62	9.9	-
Neuberger/Hammond (1974)	1965-69	816	17.1	19.1
Ibbotson (1975)	1960-71	128	-	11.4
Reilly (1978)	1972-75	486	10.9	11.6
Block/Stanley (1980)	1974-78	102	5.9	3.3
Neuberger/LaChapelle (1983)	1975-80	118	27.7	33.6
Ibbotson (1982)	1971-81	N/A	-	2.9
Ritter (1984)	1960-82	5162	18.8	-
	1977-82	1028	26.5	-
	1980-81	325	48.4	-
Giddy (1985)	1976-83	604	10.2	-
John/Saunders (1986)	1976-82	78	-	8.5
Beatty/Ritter (1986)	1982-82	545	14.1	-
Chalk/Peavy (1986)	1974-82	440	13.8	-
Ritter (1987)	1977-82			
	Firm commitment	664	14.8	-
	Best efforts	364	47.8	-
Miller/Reilly (1987)	1982-83	510	9.9	-
Muscarella/Vetsuypens (1987)	1983-87	1184	-	7.6

Source: Anthony Saunders, *Why Are So Many New Stock Issues Underpriced*, pp 501

Appendix 3: International Evidence of IPOs' Long-run Underperformance

Country	Author(s)	Number of IPOs	Issuing years	Total abnormal return
Australia,	Lee, Taylor & Walter	266	1976-89	-46.55
Austria,	Aussenegg	57	1965-93	-27.3%
Brazil,	Aggarwal et al	62	1980-90	-47.0%
Canada,	Jog & Srivistava	216	1972-93	-17.9%
Chile,	Aggarwal et al	28	1982-90	-23.7%
Finland,	Keloharju	79	1984-89	-21.1%
Germany,	Ljungqvist	145	1970-90	-12.1%
Japan,	Cai & Wei	172	1971-90	-27.0%
Korea,	Kim et al	99	1985-88	+2.0%
Singapore,	Hin & Mahmood	45	1976-84	-9.2%
Sweden,	Loughran et al	162	1980-90	+1.2%
U.K.,	Levis	712	1980-88	-8.1%
U. S.,	Loughran & Ritter	4,753	1970-90	-20.0%

Source: Updated version of Table 7 in Loughran, Ritter and Rydqvist (1994)

Appendix 4: New Public Offerings 1984-1997

Date	Company	Shares Floated in Mio	Issue Price Kshs.	1 st Post Listing Price Kshs.	Subs. Rate %	Amount Raised Kshs. In Mio
13 June 1984	Jubilee Insurance	0.8	14.40	15.00	220	11.6
21 April 1986	Barclays Bank	5.0	16.00	23.00	613	80
19 July 1988	Kenya Commercial Bank	7.5	20.0	36.00	327	150
30 November 1988	Nation Printers	2.50	11.50	11.80	133	28.75
8 November 1989	Standard Chartered Bank	21.0	14.50	27.00	233	304.50
8 December 1992	Uchumi Supermarkets Ltd	16.00	14.50	17.75	103.2	232.00
1 December 1992	Crown Berger	8.64	16.00	16.50	104	138.00
4 November 1992	Housing Finance of Kenya	18.00	7.00	10.50	400	126.00
12 October 1994	Firestone E.A. Ltd	40.00	33.50	34.00	101	1,420.00
14 September 1994	NIC Bank	179.30	52.00	56.00	77	718.00
20 March 1996	Rea Vipingo	8.00	10.50	12.00	216	84.00
19 April 1996	Kenya Airways	235.40	11.25	12.55	194.5	2,664.00
14 April 1997	TPS Serena	12.89	13.00	16.80	400	167.10
July 1997	Athi River Mining	23.00	12.25	9.05	250	281.75
2001	Mumias Sugar Company	300	6.25	6.25	60	1,125

Source: Nairobi Stock Exchange

Appendix 5: NSE 20-Share Index Constituent Companies

By year 2001 the Nairobi Stock Exchange 20-Share Index is computed from the daily performance of the following companies:

-
1. Bamburi Cement
 2. Barclays Bank
 3. BOC Gases
 4. British American Tobacco
 5. Brooke Bond
 6. Diamond Trust
 7. East African Breweries
 8. East African Packaging
 9. George Williamson
 10. Kakuzi
 11. Kenya Airways/CMC Holdings*
 12. Kenya Commercial Bank
 13. Kenya National Mills
 14. Kenya Power & Lighting
 15. Lonrho Motors**
 16. Nation Media
 17. Sasini Tea
 18. Standard Chartered Bank
 19. Total Kenya
 20. Uchumi Supermarkets
-

Source: Nairobi Stock Exchange

* In 1995, CMC Holdings was a constituent company of the Index before being replaced by Kenya Airways in 1996 onwards.

** Lonrho Motors was suspended from trading in 2000 after being put under receivership.

DESCRIPTIVE STATISTICS

Table 1: SUMMARY OF DESCRIPTIVE STATICS FOR THE 14 COMPANIES

Descriptive Statistics

	Mean	Std. Deviation	N
PRICE	22.5413	14.0483	499
INDEX	2249.7190	1249.7973	503

Correlations

		PRICE	INDEX
PRICE	Pearson Correlation	1.000	.100*
	Sig. (2-tailed)	.	.026
	Sum of Squares and Cross-products	98283.055	873480.0
	Covariance	197.356	1753.976
	N	499	499
INDEX	Pearson Correlation	.100*	1.000
	Sig. (2-tailed)	.026	.
	Sum of Squares and Cross-products	873480.0	7.8E+08
	Covariance	1753.976	1561993
	N	499	503

*. Correlation is significant at the 0.05 level (2-tailed).

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.100 ^a	.010	.008	13.9922	.010	5.004	1	497	.026

a. Predictors: (Constant), INDEX

Table 2: Descriptive Statistics: Jubilee Insurance Company

Descriptive Statistics

	Mean	Std. Deviation	N
PRICE	16.0431	2.6874	36
INDEX	446.9217	59.7495	36

Correlations

		PRICE1	INDEX1
PRICE	Pearson Correlation	1.000	.750**
	Sig. (2-tailed)		.000
	Sum of Squares and Cross-products	252.781	4213.930
	Covariance	7.222	120.398
	N	36	36
INDEX	Pearson Correlation	.750**	1.000
	Sig. (2-tailed)	.000	
	Sum of Squares and Cross-products	4213.930	124950.0
	Covariance	120.398	3569.999
	N	36	36

** . Correlation is significant at the 0.01 level

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.750 ^a	.562	.549	1.8041	.562	43.662	1	34	.000

a. Predictors: (Constant), INDEX1

Table 3: Descriptive Statistics: Barclays Bank of Kenya

Descriptive Statistics

	Mean	Std. Deviation	N
PRICE	38.9611	7.1452	36
INDEX	682.9214	153.3119	36

Correlations

		PRICE2	INDEX2
PRICE	Pearson Correlation	1.000	.943**
	Sig. (2-tailed)	.	.000
	Sum of Squares and Cross-products	1786.871	36156.582
	Covariance	51.053	1033.045
	N	36	36
INDEX	Pearson Correlation	.943**	1.000
	Sig. (2-tailed)	.000	.
	Sum of Squares and Cross-products	36156.582	822658.4
	Covariance	1033.045	23504.527
	N	36	36

** . Correlation is significant at the 0.01 level

Model Summary

					Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate					
1	.94 ^a	.889	.886	2.4117	.889	273.215	1	34	.000

a. Predictors: (Constant), INDEX2

Table 4: Descriptive Statistics: Kenya Commercial Bank

Descriptive Statistics

	Mean	Std. Deviation	N
PRICE3	32.4000	2.6158	35
INDEX3	882.1169	38.5225	36

Correlations

		PRICE3	INDEX3
PRICE	Pearson Correlation	1.000	-.177
	Sig. (2-tailed)		.310
	Sum of Squares and Cross-products	232.650	-605.578
	Covariance	6.843	-17.811
	N	35	35
INDEX	Pearson Correlation	-.177	1.000
	Sig. (2-tailed)	.310	
	Sum of Squares and Cross-products	-605.578	51939.389
	Covariance	-17.811	1483.983
	N	35	36

Model Summary

Mod el	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.177 ^a	.031	.002	2.6134	.031	1.063	1	33	.310

a. Predictors: (Constant), INDEX3

Table 5: Descriptive Statistics: Nation Printers

Descriptive Statistics

	Mean	Std. Deviation	N
PRICE	10.1764	1.1929	36
INDEX	892.6211	41.5786	36

Correlations

		PRICE4	INDEX4
PRICE	Pearson Correlation	1.000	-.806*
	Sig. (2-tailed)	.	.000
	Sum of Squares and Cross-products	49.802	-1399.110
	Covariance	1.423	-39.975
	N	36	36
INDEX	Pearson Correlation	-.806**	1.000
	Sig. (2-tailed)	.000	.
	Sum of Squares and Cross-products	-1399.110	60507.378
	Covariance	-39.975	1728.782
	N	36	36

** . Correlation is significant at the 0.01 level

Model Summary

Mod el	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.806 ^a	.650	.639	.7164	.650	63.031	1	34	.000

a. Predictors: (Constant), INDEX4

Table 6: Descriptive Statistics: Standard Chartered Bank

Descriptive Statistics

	Mean	Std. Deviation	N
PRICE	24.2528	3.3205	36
INDEX	979.3917	124.8651	36

Correlations

		PRICE5	INDEX5
PRICE	Pearson Correlation	1.000	.042
	Sig. (2-tailed)	.	.809
	Sum of Squares and Cross-products	385.910	604.204
	Covariance	11.026	17.263
	N	36	36
INDEX	Pearson Correlation	.042	1.000
	Sig. (2-tailed)	.809	.
	Sum of Squares and Cross-products	604.204	545695.4
	Covariance	17.263	15591.296
	N	36	36

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.042 ^a	.002	-.028	3.3661	.002	.059	1	34	.809

a. Predictors: (Constant), INDEX5

Table 7: Descriptive Statistics: Uchumi Supermarkets Ltd

Descriptive Statistics

	Mean	Std. Deviation	N
PRICE	41.1528	15.9871	36
INDEX	3044.1519	1108.8887	36

Correlations

		PRICE6	INDEX6
PRICE	Pearson Correlation	1.000	.915**
	Sig. (2-tailed)	.	.000
	Sum of Squares and Cross-products	8945.535	567881.0
	Covariance	255.587	16225.172
	N	36	36
INDEX	Pearson Correlation	.915**	1.000
	Sig. (2-tailed)	.000	.
	Sum of Squares and Cross-products	567881.0	4.3E+07
	Covariance	16225.172	1229634
	N	36	36

** . Correlation is significant at the 0.01 level

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.915 ^a	.838	.833	6.5356	.838	175.429	1	34	.000

a. Predictors: (Constant), INDEX6

Table 8: Descriptive Statistics: Crown Berger

Descriptive Statistics

	Mean	Std. Deviation	N
PRICE	19.2931	3.7167	36
INDEX	3044.1519	1108.8887	36

Correlations

		PRICE7	INDEX7
PRICE	Pearson Correlation	1.000	.869**
	Sig. (2-tailed)		.000
	Sum of Squares and Cross-products	483.486	125408.1
	Covariance	13.814	3583.088
	N	36	36
INDEX	Pearson Correlation	.869**	1.000
	Sig. (2-tailed)	.000	.
	Sum of Squares and Cross-products	125408.1	4.3E+07
	Covariance	3583.088	1229634
	N	36	36

** . Correlation is significant at the 0.01 level

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.869 ^a	.756	.749	1.8634	.756	105.247	1	34	.000

a. Predictors: (Constant), INDEX7

Table 9: Descriptive Statistics: Housing Finance of Kenya

Descriptive Statistics

	Mean	Std. Deviation	N
PRICE	20.9343	9.2262	35
INDEX	2958.6206	1138.1744	36

Correlations

		PRICE8	INDEX8
PRICE	Pearson Correlation	1.000	.757**
	Sig. (2-tailed)	.	.000
	Sum of Squares and Cross-products	2894.164	263943.4
	Covariance	85.122	7763.040
	N	35	35
INDEX	Pearson Correlation	.757**	1.000
	Sig. (2-tailed)	.000	.
	Sum of Squares and Cross-products	263943.4	4.5E+07
	Covariance	7763.040	1295441
	N	35	36

** . Correlation is significant at the 0.01 level

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.757 ^a	.573	.560	6.1225	.573	44.208	1	33	.000

a. Predictors: (Constant), INDEX8

Table 10: Descriptive Statistics: Firestone East Africa

Descriptive Statistics

	Mean	Std. Deviation	N
PRICE	26.3472	3.8188	36
INDEX	3364.7800	315.4237	36

Correlations

		PRICE9	INDEX9
PRICE	Pearson Correlation	1.000	.630**
	Sig. (2-tailed)		.000
	Sum of Squares and Cross-products	510.410	26545.402
	Covariance	14.583	758.440
	N	36	36
INDEX	Pearson Correlation	.630**	1.000
	Sig. (2-tailed)	.000	
	Sum of Squares and Cross-products	26545.402	3482224
	Covariance	758.440	99492.114
	N	36	36

** . Correlation is significant at the 0.01 level

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.630 ^a	.396	.379	3.0100	.396	22.335	1	34	.000

a. Predictors: (Constant), INDEX9

Table 11: Descriptive Statistics: National Industrial Credit Bank

Descriptive Statistics

	Mean	Std. Deviation	N
PRICE	47.2361	6.1881	36
INDEX	3372.2997	317.4199	36

Correlations

		PRICE10	INDEX10
PRICE	Pearson Correlation	1.000	.462**
	Sig. (2-tailed)		.005
	Sum of Squares and Cross-products	1340.243	31777.715
	Covariance	38.293	907.935
	N	36	36
INDEX	Pearson Correlation	.462**	1.000
	Sig. (2-tailed)	.005	
	Sum of Squares and Cross-products	31777.715	3526439
	Covariance	907.935	100755.4
	N	36	36

** . Correlation is significant at the 0.01 level (2-tailed).

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.462 ^a	.214	.191	5.5675	.214	9.238	1	34	.005

a. Predictors: (Constant), INDEX10

Table 12: Descriptive Statistics: Rea Vipingo

Descriptive Statistics			
	Mean	Std. Deviation	N
PRICE	8.5514	1.9023	36
INDEX	3105.6356	254.5418	36

Correlations			
		PRICE11	INDEX11
PRICE	Pearson Correlation	1.000	.507**
	Sig. (2-tailed)		.002
	Sum of Squares and Cross-products	126.657	8589.166
	Covariance	3.619	245.405
	N	36	36
INDEX	Pearson Correlation	.507**	1.000
	Sig. (2-tailed)	.002	
	Sum of Squares and Cross-products	8589.166	2267704
	Covariance	245.405	64791.553
	N	36	36

** . Correlation is significant at the 0.01 level (2-tailed).

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.507 ^a	.257	.235	1.6638	.257	11.751	1	34	.002

a. Predictors: (Constant), INDEX11

Table 13: Descriptive Statistics: Kenya Airways

Descriptive Statistics

	Mean	Std. Deviation	N
PRICE	7.9471	.7890	34
INDEX	3129.1586	257.9649	35

Correlations

		PRICE12	INDEX12
PRICE	Pearson Correlation	1.000	.235
	Sig. (2-tailed)	.	.182
	Sum of Squares and Cross-products	20.545	1599.529
	Covariance	.623	48.471
	N	34	34
INDEX	Pearson Correlation	.235	1.000
	Sig. (2-tailed)	.182	.
	Sum of Squares and Cross-products	1599.529	2262560
	Covariance	48.471	66545.885
	N	34	35

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.235 ^a	.055	.026	.7789	.055	1.864	1	32	.182

a. Predictors: (Constant), INDEX12

Table 14: Descriptive Statistics: TPS Serena

Descriptive Statistics

	Mean	Std. Deviation	N
PRICE	14.5750	1.9123	36
INDEX	2870.4647	414.3348	36

Correlations

		PRICE13	INDEX13
PRICE	Pearson Correlation	1.000	.107
	Sig. (2-tailed)		.536
	Sum of Squares and Cross-products	127.997	2954.986
	Covariance	3.657	84.428
	N	36	36
INDEX	Pearson Correlation	.107	1.000
	Sig. (2-tailed)	.536	
	Sum of Squares and Cross-products	2954.986	6008565
	Covariance	84.428	171673.3
	N	36	36

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.107 ^a	.011	-.018	1.9292	.011	.390	1	34	.536

a. Predictors: (Constant), INDEX13

Table 15: Descriptive Statistics: Athi River Mining

Descriptive Statistics

	Mean	Std. Deviation	N
PRICE	6.6857	1.7298	35
INDEX	2747.2597	432.9447	36

Correlations

		PRICE14	INDEX14
PRICE	Pearson Correlation	1.000	.781**
	Sig. (2-tailed)		.000
	Sum of Squares and Cross-products	101.733	19491.696
	Covariance	2.992	573.285
	N	35	35
INDEX	Pearson Correlation	.781**	1.000
	Sig. (2-tailed)	.000	
	Sum of Squares and Cross-products	19491.696	6560440
	Covariance	573.285	187441.1
	N	35	36

** . Correlation is significant at the 0.01 level (2-tailed).

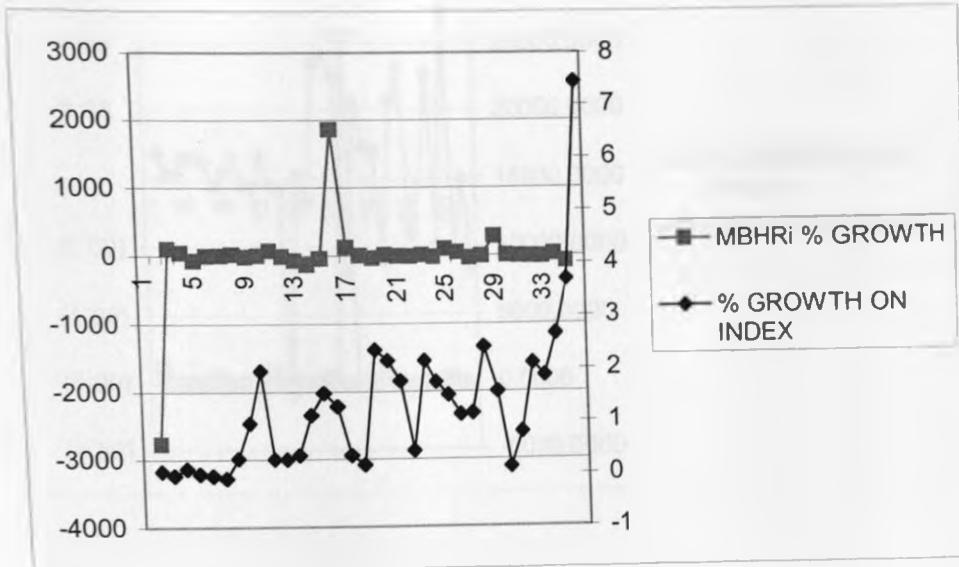
Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.781 ^a	.610	.599	1.0959	.610	51.710	1	33	.000

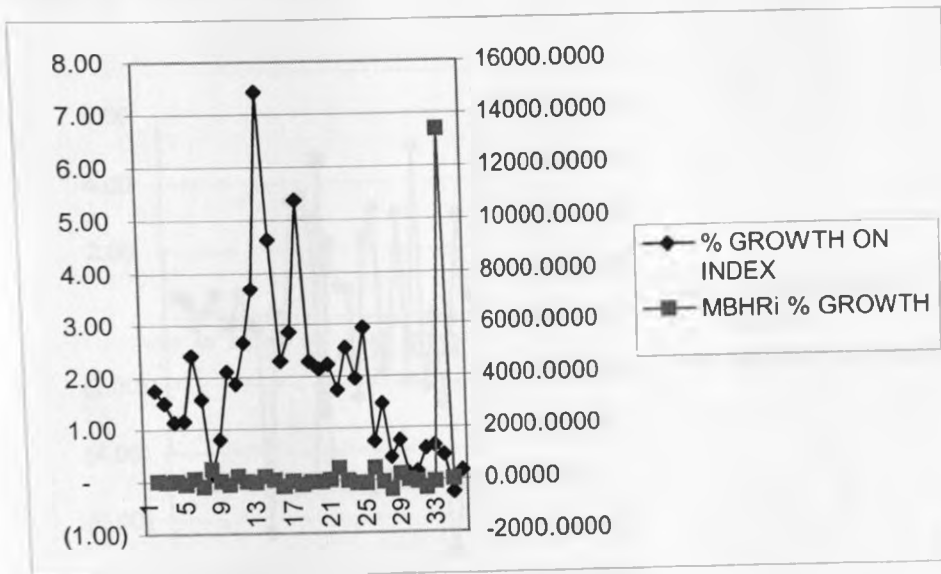
a. Predictors: (Constant), INDEX14

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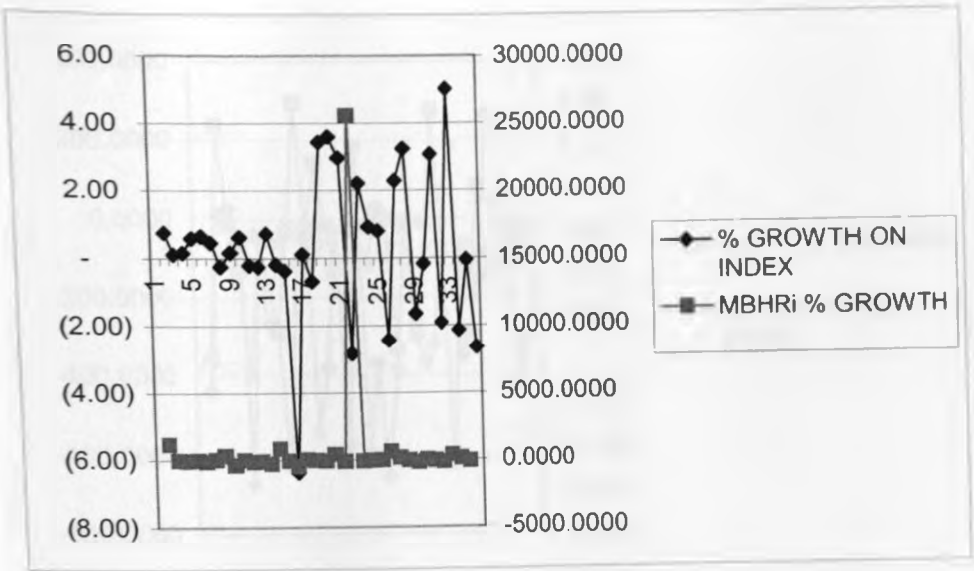
Graph 1: Jubilee Insurance Company



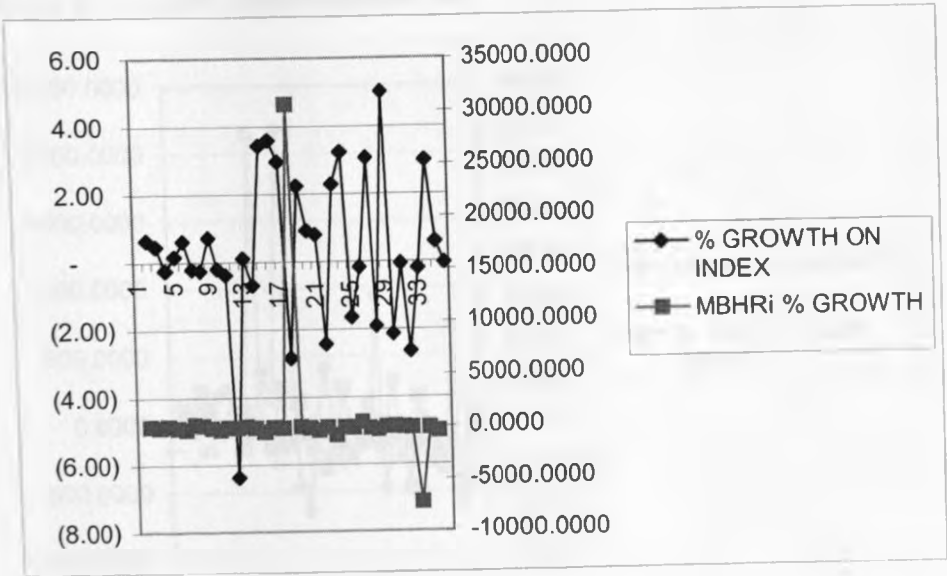
Graph 2: Barclays Bank



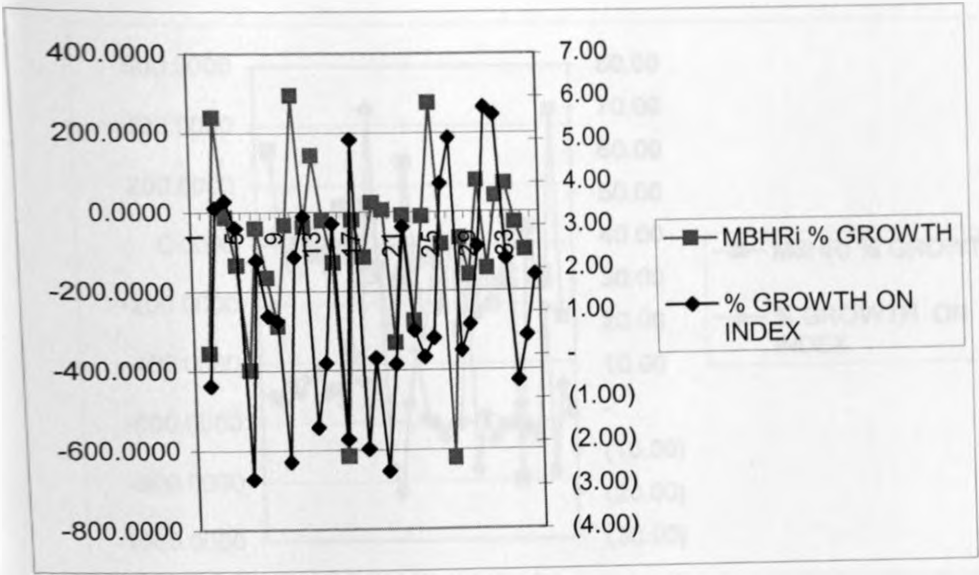
Graph 3: Kenya Commercial Bank



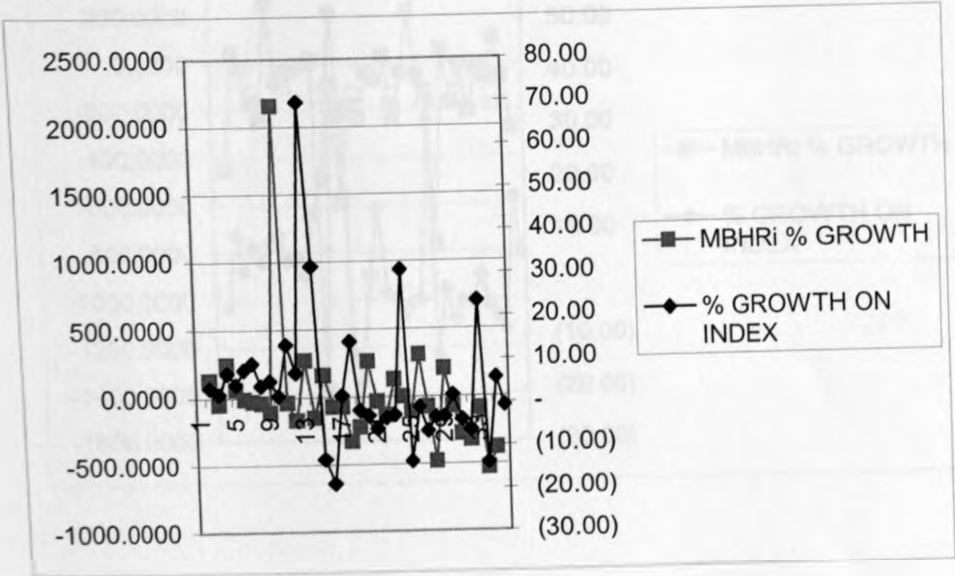
Graph 4: Nation Printers



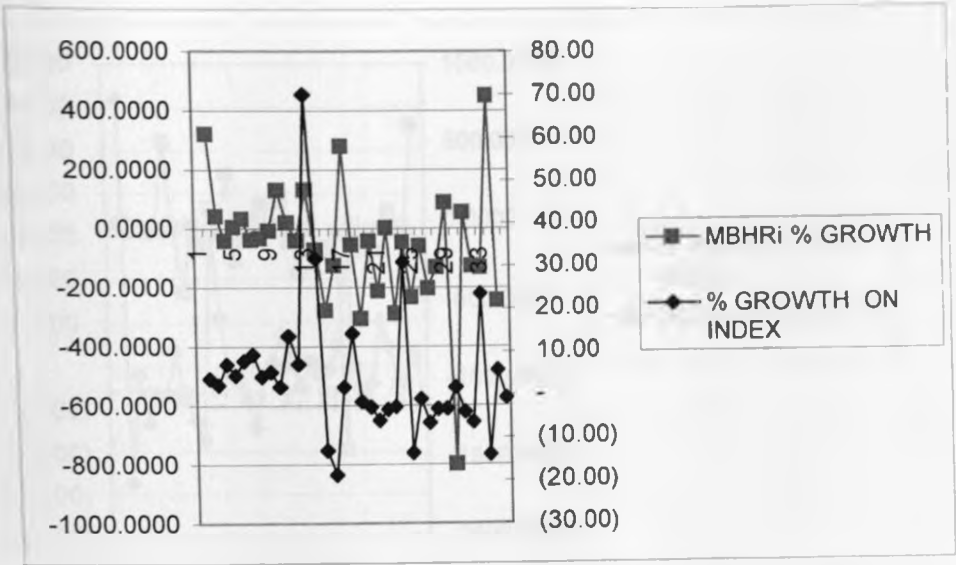
Graph 5: Standard Chartered Bank



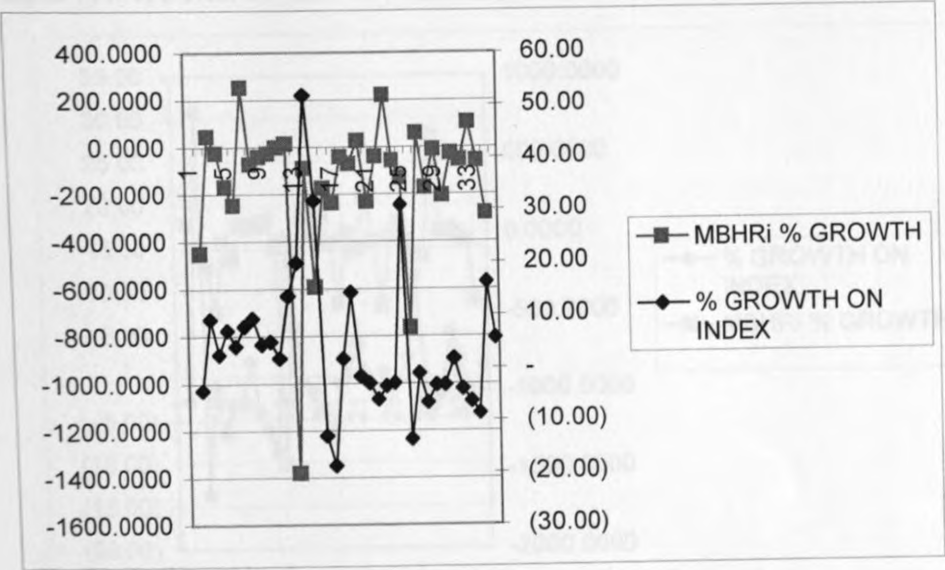
Graph 6: Uchumi Supermarkets Ltd



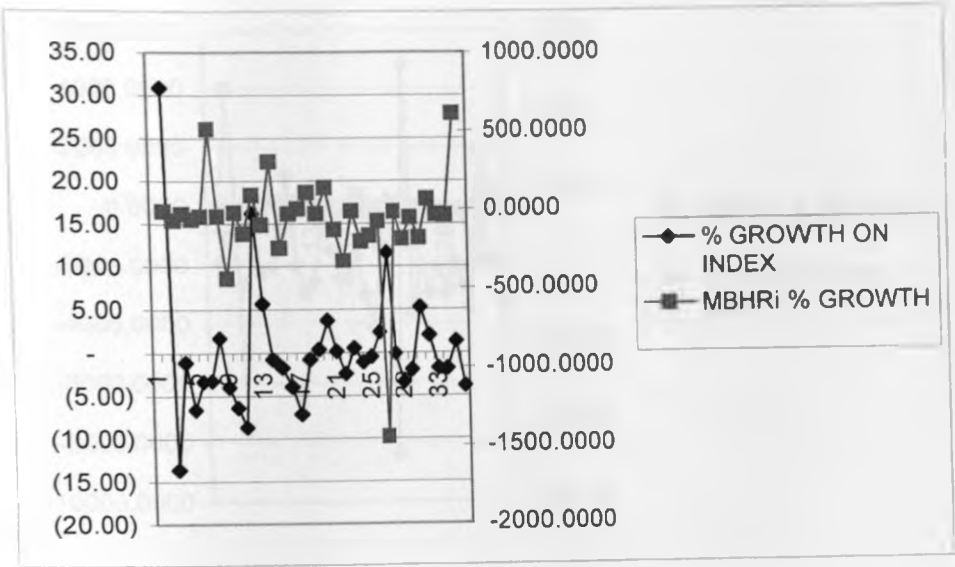
Graph 7: Crown Berger



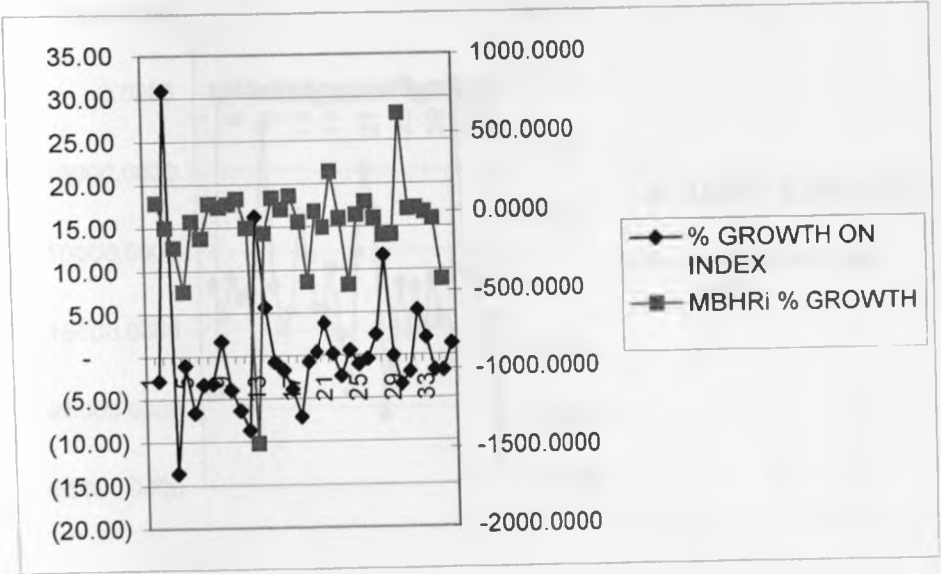
Graph 8: Housing Finance of Kenya



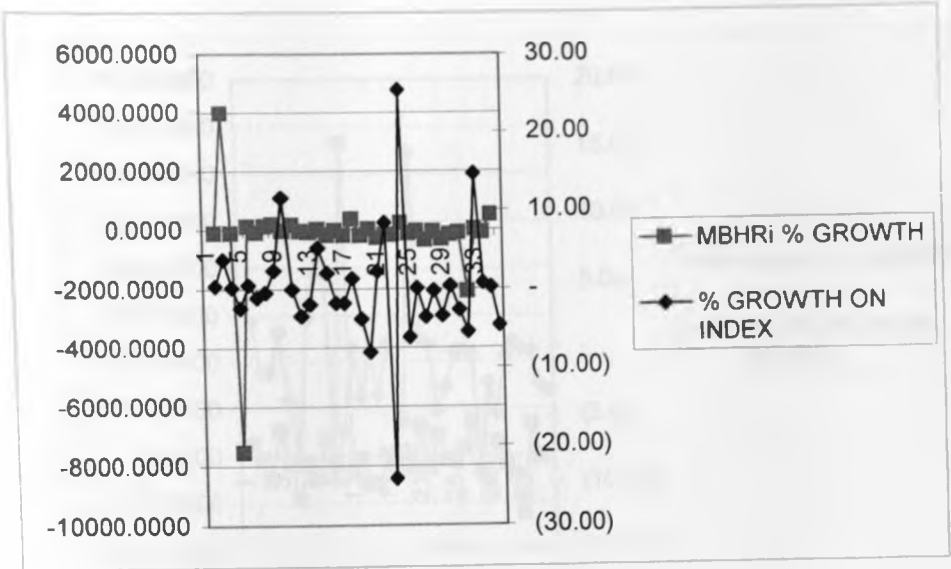
Graph 9: Firestone East Africa



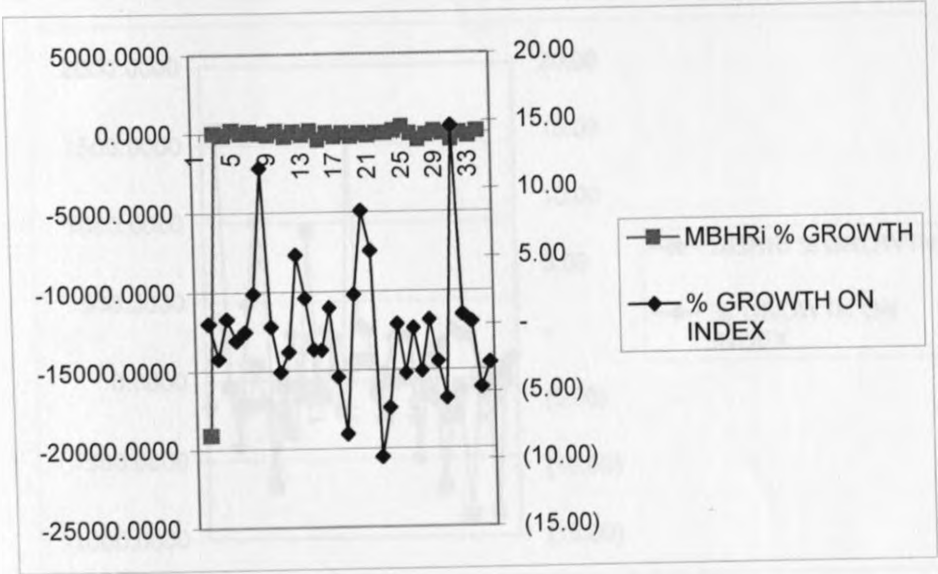
Graph 10: National Industrial Credit Bank



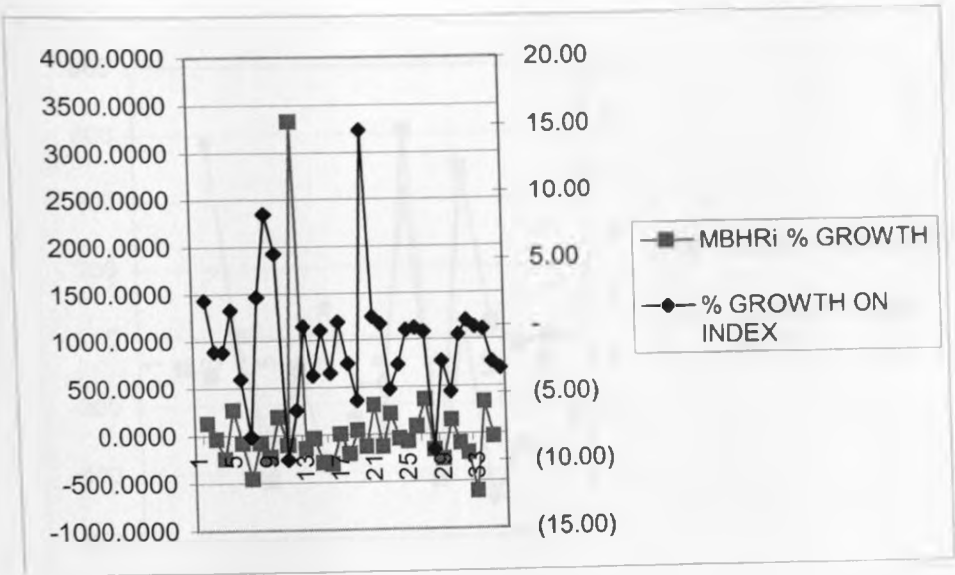
Graph 11: Rea Vipingo



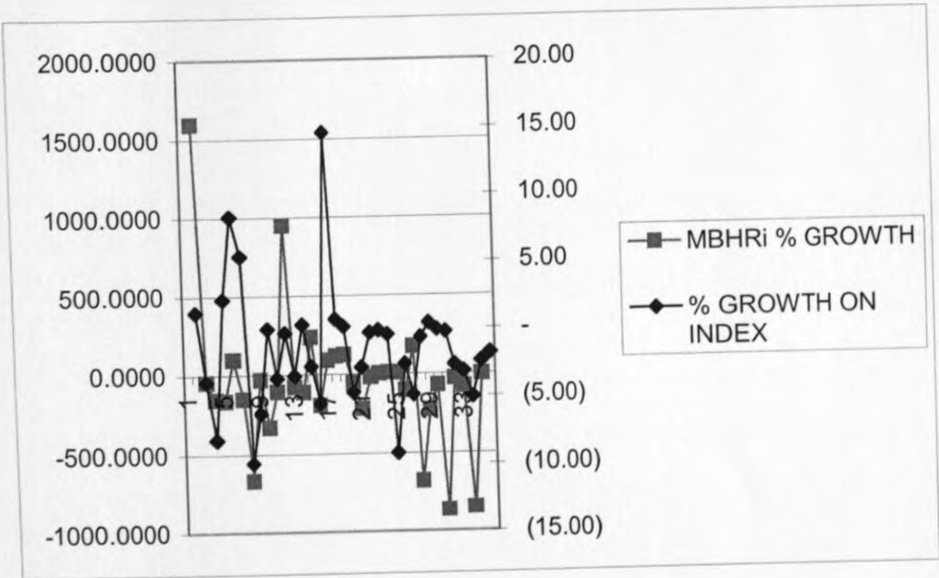
Graph 12: Kenya Airways



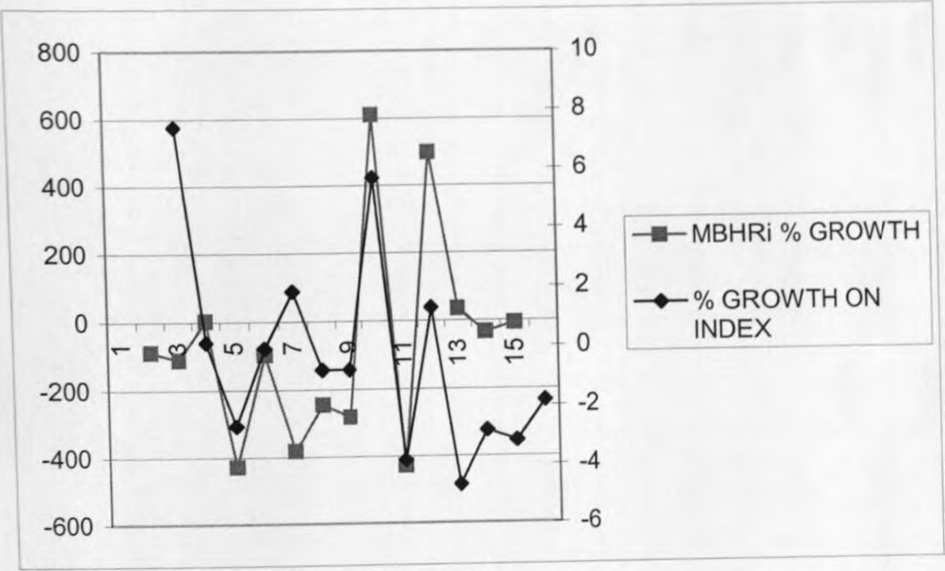
Graph 13: TPS Serena



Graph 14: Athi River Mining



Graph 15: Summary of all the 14 IPOs



SCHEDULES

Schedule 1

					Formula 1	Formula 2	Formula 3
SHORT RUN RETURN - 1ST DAY		1st Post	NSE Index	NSE Index	1st Day	1st Day	Mkt Adjusted
	Offer	Listing	on Offer	on 1st	Total Return	Return on	Abnormal
IPO	Price	Price	Day	Trading		Mkt Index	Return – 1st Day
Jubilee Insurance Company	14.40	15.00	385.51	385.46	0.040821995	-0.000129707	4.095701365
Barclays Bank	16.00	23.00	470.09	450.09	0.362905494	-0.043476603	42.48532738
Kenya Commercial Bank	20.00	36.00	829.08	847.46	0.587786665	0.021926988	55.3718302
Nation Printers Ltd	11.50	11.80	855.68	853.66	0.025752496	-0.002363486	2.81825917
Standard Chartered Bank	14.50	27.00	871.12	822.61	0.621688217	-0.057297528	72.02545493
Uchumi Supermarkets Ltd	14.50	17.75	1,265.95	1,175.77	0.202236866	-0.073899576	29.81711657
Crown Berger	16.00	16.50	1,240.35	1,152.99	0.030771659	-0.07303503	11.19855568
Housing Finance of Kenya	7.00	10.50	1,231.38	1,213.56	0.405465108	-0.014577303	42.6256075
Firestone East Africa	33.50	34.00	3,825.58	3,499.00	0.014815086	-0.089232876	11.42421147
National Industrial Bank	52.00	56.00	4,012.25	3,854.11	0.074107972	-0.04021207	11.91096892
Rea Vipingo	10.50	12.00	3,180.99	3,075.67	0.133531393	-0.033669705	17.30268615
Kenya Airways	11.25	12.55	3,075.24	2,907.12	0.109352537	-0.056220047	17.543558
TPS Serena	13.00	16.80	3,288.84	3,288.84	0.256429529	0	25.64295289
Athi River Mining	12.25	9.05	3,377.87	3,286.69	-0.302761179	-0.027364354	-28.31449026
Mean	17.60	21.28	1,993.57	1,915.22	0.18	(0.03)	22.57
Standard Deviation	11.2332	12.62773	1312.04841	1251.673796	0.238449109	0.03181581	24.08828811
Median	14.45	16.65	1,253.15	1,194.67	0.12	(0.04)	17.42

Schedule 2									
SUMMARY									
			MBHRI					CUM.	CUM.
			MBHRI	% GROWTH	GROWTH	ON INDEX	ON PRICE	GROWTH	GROWTH
			MBHRI	% GROWTH	GROWTH	ON INDEX	ON PRICE	ON PRICE	ON INDEX
IPO									
Jubilee Insurance Company		-0.01734	(88.72)	-665.7111	41.97	9.5	15.5	220.81	
Barclays Bank		0.02747	(110.76)	27042.179	-25.18	5	20.75	579.04	
Kenya Commercial Bank		-0.07578	2.56	132448.0062	1.44		30	1104.38	
Nation Printers Ltd		-0.08339	(428.38)	21066.4097	0.34	0.75	-1.75	-24.32	
Standard Chartered Bank		-0.00291	(96.97)	-3020.7217	23.03	0.5	-2	-104.49	
Uchumi Supermarkets Ltd		-0.18753	(381.43)	129.9585	-27.04	-3	20.25	770.5	
Crown Berger		-0.20192	(245.50)	-1955.9017	-27.04	-2.5	4.5	144.58	
Housing Finance of Kenya		-0.11526	(262.27)	-4942.8443	188.14	3.75	31.75	732.7	
Firestone East Africa		-0.16373	609.83	-2288.5755	-132.56	-4.25	-18.75	578.61	
National Industrial Bank		-0.20137	(428.02)	-3101.7365	44.19	-11.5	(2.00)	-267.02	
Ree Vipingo		-0.05389	497.83	-6743.6936	-140.09	-0.3	-5.3	-76.63	
Kenya Airways		0.14053	35.01	-21149.4819	-80.9	0.1	8.1	268.9	
TPS Serena		0.08944	(34.05)	1458.8582	-70.98	-0.95	0.5	-0.17	
Athi River Mining		-0.24469	(7.57)	-1871.8023	36.58	-0.05	4.5	268.69	
Mean		-0.077883571	-68.45955714	9743.211643	-12.00714286	-0.226923077	7.575	299.5414286	
Standard Deviation		0.116336813	308.6257671	37147.97279	83.13096715	4.966748408	14.36524585	398.6393513	
Median		-0.079585	-92.8441	-1913.852	-12.42	-0.05	4.5	243.75	

Schedule 3																
JUBILEE INSURANCE COMPANY																
Per.	End of Month				End of Month						MBHRI	MBHRI	MBHRI	GROWTH	GROWTH	CUM. GROWTH
1	Price	PI,t-1	PI,t/PI,t-1	Ln(PI,t/PI,t-1)	NSE Index	F	G	H	I	MBHRI	% GROWTH	CUMULATIVE GROWTH	ON INDEX	ON PRICE	ON PRICE	ON INDEX
2	14.50				385.83				0							
3	14.50	14.50	1.00000	-	386.07	385.83	1.0006	0.0006	(0.0006)	-0.000621842				0.24	-	0.24
4	14.75	14.50	1.01724	0.01709	386.02	386.07	0.9999	(0.0001)	0.0172	0.01690211	-2769.8267	-2769.8267	(0.05)	0.25	0.25	0.19
5	15.00	14.75	1.01695	0.01681	386.45	386.02	1.0011	0.0011	0.0157	0.033826062	103.7456	-2666.0811	0.43	0.25	0.50	0.62
6	14.50	15.00	0.96667	(0.03390)	386.51	386.45	1.0002	0.0002	(0.0341)	0.049519868	46.3956	-2619.6855	0.06	(0.50)	-	0.68
7	14.50	14.50	1.00000	-	386.43	386.51	0.9998	(0.0002)	0.0002	0.015463069	-68.7740	-2688.4595	(0.08)	-	-	0.60
8	14.50	14.50	1.00000	-	386.16	386.43	0.9993	(0.0007)	0.0007	0.015670071	1.3387	-2687.1208	(0.27)	-	-	0.33
9	14.60	14.50	1.00690	0.00687	387.35	386.16	1.0031	0.0031	0.0038	0.016369019	4.4604	-2682.6604	1.19	0.10	0.10	1.52
10	14.70	14.60	1.00685	0.00683	391.14	387.35	1.0098	0.0097	(0.0029)	0.020185012	23.1901	-2659.4703	3.79	0.10	0.20	5.31
11	15.00	14.70	1.02041	0.02020	398.83	391.14	1.0197	0.0195	0.0007	0.017254102	-14.4354	-2673.9058	7.69	0.30	0.50	13.00
12	15.25	15.00	1.01667	0.01653	400.01	398.83	1.0030	0.0030	0.0138	0.017987101	4.2483	-2669.6575	1.18	0.25	0.75	14.18
13	15.25	15.25	1.00000	-	401.17	400.01	1.0029	0.0029	(0.0029)	0.031562117	75.4708	-2594.1867	1.18	-	0.75	15.34
14	15.00	15.25	0.98361	(0.01653)	402.64	401.17	1.0037	0.0037	(0.0202)	0.028666386	-9.1747	-2603.3614	1.47	(0.25)	0.50	16.81
15	15.00	15.00	1.00000	-	407.19	402.64	1.0113	0.0112	(0.0112)	0.008479499	-70.4201	-2673.7814	4.55	-	0.50	21.36
16	15.25	15.00	1.01667	0.01653	413.49	407.19	1.0155	0.0154	0.0012	-0.002757545	-132.5201	-2806.3016	6.30	0.25	0.75	27.66
17	15.00	15.25	0.98361	(0.01653)	418.83	413.49	1.0129	0.0128	(0.0294)	-0.001581667	-42.6422	-2848.9438	5.34	(0.25)	0.50	33.00
18	14.50	15.00	0.96667	(0.03390)	420.34	418.83	1.0036	0.0036	(0.0375)	-0.030942748	1856.3379	-992.6059	1.51	(0.50)	-	34.51
19	14.50	14.50	1.00000	-	421.10	420.34	1.0018	0.0018	(0.0018)	-0.068443098	121.1927	-871.4132	0.76	-	-	35.27
20	15.25	14.50	1.05172	0.05043	431.04	421.10	1.0236	0.0233	0.0271	-0.070249525	2.6393	-868.7739	9.94	0.75	0.75	45.21
21	15.50	15.25	1.01639	0.01626	440.32	431.04	1.0215	0.0213	(0.0050)	-0.04314923	-38.5772	-907.3511	9.28	0.25	1.00	54.49
22	15.85	15.50	1.02258	0.02233	448.11	440.32	1.0177	0.0175	0.0048	-0.048189551	11.6811	-895.6700	7.79	0.35	1.35	62.28
23	16.00	15.85	1.00946	0.00942	450.09	448.11	1.0044	0.0044	0.0050	-0.043397077	-9.9450	-905.6150	1.98	0.15	1.50	64.26
24	16.30	16.00	1.01875	0.01858	459.75	450.09	1.0215	0.0212	(0.0027)	-0.03838668	-11.5455	-917.1605	9.66	0.30	1.80	73.92
25	16.75	16.30	1.02761	0.02723	467.79	459.75	1.0175	0.0173	0.0099	-0.041045595	6.9267	-910.2338	8.04	0.45	2.25	81.96
26	16.50	16.75	0.98507	(0.01504)	474.81	467.79	1.0150	0.0149	(0.0299)	-0.031149059	-24.1111	-934.3449	7.02	(0.25)	2.00	88.98
27	16.25	16.50	0.98485	(0.01527)	480.18	474.81	1.0113	0.0112	(0.0265)	-0.061082183	96.0964	-838.2485	5.37	(0.25)	1.75	94.35
28	17.00	16.25	1.04615	0.04512	485.75	480.18	1.0116	0.0115	0.0336	-0.087595964	43.4067	-794.8418	5.57	0.75	2.50	99.92
29	17.50	17.00	1.02941	0.02899	497.47	485.75	1.0241	0.0238	0.0051	-0.054008584	-38.3435	-833.1853	11.72	0.50	3.00	111.64
30	15.50	17.50	0.88571	(0.12136)	505.26	497.47	1.0157	0.0155	(0.1369)	-0.048862212	-9.5288	-842.7141	7.79	(2.00)	1.00	119.43
31	15.50	15.50	1.00000	-	505.96	505.26	1.0014	0.0014	(0.0014)	-0.185760964	280.1731	-562.5410	0.70	-	1.00	120.13
32	15.85	15.50	1.02258	0.02233	510.00	505.96	1.0080	0.0080	0.0144	-0.18714543	0.7453	-561.7958	4.04	0.35	1.35	124.17
33	16.50	15.85	1.04101	0.04019	520.73	510.00	1.0210	0.0208	0.0194	-0.172789065	-7.6819	-569.4777	10.73	0.65	2.00	134.90
34	17.25	16.50	1.04545	0.04445	530.47	520.73	1.0187	0.0185	0.0259	-0.153399132	-11.2115	-580.6891	9.74	0.75	2.75	144.64
35	17.25	17.25	1.00000	-	544.58	530.47	1.0266	0.0263	(0.0263)	-0.127479102	-16.8971	-597.5862	14.11	-	2.75	158.75
36	20.50	17.25	1.18841	0.17261	564.67	544.58	1.0369	0.0362	0.1364	-0.153730551	20.5927	-576.9935	20.09	3.25	6.00	178.84
37	30.00	20.50	1.46341	0.38077	606.64	564.67	1.0743	0.0717	0.3091	-0.017344443	-88.7178	-665.7111	41.97	9.50	15.50	220.81
Ave.	16.04				446.92				(0.04)	(19.58)	(1.566.78)	6.31	0.44	1.59	62.84	
STD	2.69				59.75				0.07	584.41	961.00	7.83	1.73	2.71	58.68	

Schedule 4																
BARCLAYS BANK OF KENYA																
Per.	End of Month				End of Month						MBHRI	CUMULATIVE	GROWTH	GROWTH	CUM.	CUM.
t	Price	P _{t-1}	P _t /P _{t-1}	Ln(P _t /P _{t-1})	NSE Index	F	G	H	I	MBHRI	% GROWTH	GROWTH	ON INDEX	ON PRICE	ON PRICE	ON INDEX
2	23.00				459.75				0							
3	26.35	23.00	1.145852174	0.135974059	467.79	459.75	1.017487765	0.017336614	0.118637445	0.118637445			8.04	3.35	3.35	8.04
4	26.90	26.35	1.020872865	0.020658012	474.81	467.79	1.015006734	0.014895247	0.005762765	0.12440021	4.8575	4.8575	7.02	0.55	3.90	11.94
5	29.05	26.90	1.079925651	0.076892197	480.18	474.81	1.011309787	0.01124631	0.065645887	0.071408852	-42.5976	-37.7402	5.37	2.15	6.05	17.99
6	29.50	29.05	1.015490534	0.01537178	485.75	480.18	1.011599817	0.011533055	0.003838725	0.069484612	-2.6944	-40.4346	5.57	0.45	6.50	24.49
7	29.75	29.50	1.008474576	0.008438869	497.47	485.75	1.024127638	0.023841165	-0.015402296	-0.011563571	-116.6419	-157.0765	11.72	0.25	6.75	31.24
8	30.00	29.75	1.008403361	0.00836825	505.30	497.47	1.015739643	0.015617059	-0.007248809	-0.022651106	95.8833	-61.1932	7.83	0.25	7.00	38.24
9	31.00	30.00	1.033333333	0.032789823	505.96	505.30	1.001306155	0.001305302	0.03148452	0.024235711	-208.9957	-268.1889	0.68	1.00	8.00	46.24
10	34.75	31.00	1.120967742	0.114192368	510.00	505.96	1.007984821	0.007953111	0.106239257	0.137723777	468.2679	200.0790	4.04	3.75	11.75	57.99
11	36.75	34.75	1.057553957	0.055958654	520.73	510.00	1.021039216	0.020820948	0.035137706	0.141376963	2.6525	202.7316	10.73	2.00	13.75	71.74
12	35.00	36.75	0.952380952	-0.048790164	530.47	520.73	1.018704511	0.018531733	-0.067321897	-0.032184191	-122.7648	79.9668	9.74	(1.75)	12.00	83.74
13	35.00	35.00	1	0	544.58	530.47	1.026599054	0.026251449	-0.026251449	-0.093573346	190.7432	270.7100	14.11	-	12.00	95.74
14	34.50	35.00	0.985714286	-0.014388737	564.67	544.58	1.038890815	0.038226634	-0.050615372	-0.076886821	-17.8539	252.8560	20.09	(0.50)	11.50	107.24
15	37.50	34.50	1.088956522	0.083381609	606.64	564.67	1.074326598	0.071694045	0.011687564	-0.038927808	-49.3568	203.4992	41.97	3.00	14.50	121.74
16	35.00	37.50	0.933333333	-0.068992871	634.74	606.64	1.046320717	0.045279932	-0.114272803	-0.102585239	183.5269	367.0261	28.10	(2.50)	12.00	133.74
17	35.00	35.00	1	0	649.33	634.74	1.022985789	0.022725596	-0.022725596	-0.136998399	33.5459	400.5720	14.59	-	12.00	145.74
18	42.75	35.00	1.221428571	0.200021134	667.87	649.33	1.028552508	0.028152482	0.171868652	0.149143056	-208.8648	191.7072	18.54	7.75	19.75	165.49
19	43.00	42.75	1.005847953	0.00583092	703.77	667.87	1.053752976	0.052358054	-0.046527134	0.125341518	-15.9589	175.7484	35.90	0.25	20.00	185.49
20	43.00	43.00	1	0	719.88	703.77	1.022891001	0.022632833	-0.022632833	-0.069160067	-155.1773	20.5711	16.11	-	20.00	205.49
21	43.50	43.00	1.011627907	0.011560822	735.29	719.88	1.021406346	0.021180448	-0.009619625	-0.032252559	-53.3653	-32.7943	15.41	0.50	20.50	225.99
22	44.25	43.50	1.017241379	0.017094433	751.68	735.29	1.022290525	0.022045722	-0.004951289	-0.014570914	-54.8225	-87.6167	16.39	0.75	21.25	247.24
23	44.50	44.25	1.005649718	0.005633818	764.75	751.68	1.017387718	0.017238282	-0.011604464	-0.016555753	13.8219	-73.9948	13.07	0.25	21.50	268.74
24	42.00	44.50	0.943820225	-0.057819571	784.24	764.75	1.025485453	0.025166113	-0.082985684	-0.094590148	471.3431	397.3483	19.49	(2.50)	19.00	287.74
25	43.00	42.00	1.023809524	0.023530497	799.57	784.24	1.019547587	0.019358987	0.00417151	-0.078814174	-16.6782	380.6700	15.33	1.00	20.00	307.74
26	44.50	43.00	1.034883721	0.034289073	823.00	799.57	1.02930325	0.028882118	0.005408956	0.009578466	-112.1532	268.5168	23.43	1.50	21.50	329.24
27	44.50	44.50	1	0	829.08	823.00	1.007387606	0.007360452	-0.007360452	-0.001953496	-120.3947	148.1221	6.08	-	21.50	350.74
28	45.00	44.50	1.011235955	0.011173301	841.24	829.08	1.01466686	0.014580342	-0.003387041	-0.010747493	450.1672	598.2893	12.16	0.50	22.00	372.74
29	45.25	45.00	1.005555556	0.00554018	844.86	841.24	1.004303172	0.004293939	0.001246241	-0.0021408	-80.0809	518.2084	3.62	0.25	22.25	394.99
30	45.80	45.25	1.012154696	0.012081421	851.20	844.86	1.007504202	0.007478185	0.004605236	0.005851477	-373.3313	144.8771	6.34	0.55	22.80	417.79
31	46.50	45.80	1.015283843	0.015168221	852.19	851.20	1.001163064	0.001162388	0.014005833	0.018611069	218.0577	362.9347	0.99	0.70	23.50	441.29
32	46.75	46.50	1.005376344	0.005361943	853.53	852.19	1.001572419	0.001571184	0.003790759	0.017796592	-4.3763	358.5584	1.34	0.25	23.75	465.04
33	47.00	46.75	1.005347594	0.005333346	858.64	853.53	1.005986901	0.005969051	-0.000835705	0.003155054	-82.2718	276.2868	5.11	0.25	24.00	489.04
34	47.00	47.00	1	0	864.22	858.64	1.006498649	0.006477624	-0.006477624	-0.007113329	-325.4583	-49.1714	5.58	-	24.00	513.04
35	47.50	47.00	1.010638298	0.010582109	868.25	864.22	1.004663164	0.004652326	0.005929784	-0.00054784	-92.2984	-141.4698	4.03	0.50	24.50	537.54
36	43.75	47.50	0.921052632	-0.082238098	866.15	868.25	0.997581342	-0.002421588	-0.07981651	-0.073886727	13386.9141	13245.4443	(2.10)	(3.75)	20.75	558.29
37	44.00	43.75	1.005714286	0.005698021	867.59	866.15	1.00166253	0.001661149	0.004036872	-0.075779638	2.5619	13248.0062	1.44	-	20.75	579.04
Ave.	38.96				682.92					0.00	389.65	922.59	11.65	0.61	18.41	238.24
STD	7.15				153.31					0.08	2,304.52	3,134.18	9.80	1.97	8.69	181.93

Schedule 5																
KENYA COMMERCIAL BANK																
Per.	End of Month				End of Month						MBHRI	CUMULATIVE	GROWTH	GROWTH	CUM.	CUM.
t	Price	P _{t-1}	P _t /P _{t-1}	Ln(P _t /P _{t-1})	NSE Index	F	G	H	I	MBHRI	% GROWTH	GROWTH	ON INDEX	ON PRICE	ON PRICE	ON INDEX
					844.86				0							
2	36.00				851.24	844.86	1.007551547	0.007523177	-0.007523177	-0.007523177			6.38	36.00	36.00	6.38
3	33.00	36.00	0.916666667	-0.087011377	852.19	851.24	1.001116019	0.001115397	-0.088126774	-0.09584995	1171.4037	1171.4037	0.95	(3.00)	33.00	39.38
4	33.00	33.00	1	0	853.57	852.19	1.001619357	0.001618047	-0.001618047	-0.089744821	-6.1737	1165.2300	1.38	-	33.00	72.38
5	32.25	33.00	0.977272727	-0.022989518	858.64	853.57	1.005939759	0.005922188	-0.028911706	-0.030529754	-65.9816	1099.2484	5.07	(0.75)	32.25	104.63
6	32.50	32.25	1.007751938	0.007722046	864.22	858.64	1.006498649	0.006477624	0.001244422	-0.027667284	-9.3760	1089.8724	5.58	0.25	32.50	137.13
7	32.75	32.50	1.007692308	0.007662873	868.25	864.22	1.004863164	0.004852326	0.003010547	0.004254969	-115.3791	974.4934	4.03	0.25	32.75	169.88
8	32.75	32.75	1	0	866.15	868.25	0.997581342	-0.002421588	0.002421588	0.005432135	27.6657	1002.1590	(2.10)	-	32.75	202.63
9	33.50	32.75	1.022900763	0.022642477	867.59	866.15	1.00166253	0.001661149	0.020981328	0.023402916	330.8236	1332.9826	1.44	0.75	33.50	236.13
10	31.00	33.50	0.925373134	-0.077558234	872.99	867.59	1.006224138	0.006204848	-0.083783083	-0.062781755	-368.2647	984.7179	5.40	(2.50)	31.00	287.13
11	31.50	31.00	1.016129032	0.016000341	871.19	872.99	0.997938121	-0.002064008	0.018064349	-0.065898733	4.6462	969.3641	(1.80)	0.50	31.50	296.63
12	31.75	31.50	1.007936508	0.00790518	868.99	871.19	0.997474718	-0.002528475	0.010433655	0.028498004	-143.3768	825.9873	(2.20)	0.25	31.75	330.38
13	31.75	31.75	1	0	875.31	868.99	1.007272811	0.007246492	-0.007246492	0.003187163	-88.8162	737.1711	6.32	-	31.75	362.13
14	31.75	31.75	1	0	873.67	875.31	0.998126378	-0.001875379	0.001875379	-0.005371112	-268.5233	468.6478	(1.64)	-	31.75	393.88
15	30.00	31.75	0.94488189	-0.056895344	870.38	873.67	0.996234276	-0.003772832	-0.052922512	-0.051047132	850.4015	1319.0494	(3.29)	(1.75)	30.00	423.88
16	29.00	30.00	0.966666667	-0.033901552	814.95	870.38	0.936315173	-0.065803138	0.031901585	-0.021020927	-58.8206	1260.2288	(55.43)	(1.00)	29.00	452.88
17	30.50	29.00	1.051724138	0.050430854	815.85	814.95	1.001104382	0.001103753	0.049327101	0.081228685	-486.4182	773.8106	0.90	1.50	30.50	483.38
18	32.00	30.50	1.049180328	0.048009219	810.26	815.85	0.99314825	-0.006875331	0.05488455	0.104211651	28.2941	802.1048	(5.59)	1.50	32.00	515.38
19	34.00	32.00	1.0625	0.060624622	838.07	810.26	1.034322316	0.033746445	0.026878176	0.081762726	-21.5417	780.5631	27.81	2.00	34.00	549.38
20	35.00	34.00	1.029411765	0.028987537	868.22	838.07	1.035975515	0.03534351	-0.006355973	0.020522204	-74.9003	705.6628	30.15	1.00	35.00	584.38
21	40.25	35.00	1.15	0.139761942	893.96	868.22	1.029646864	0.029215893	0.11054605	0.104190077	407.6944	1113.3572	25.74	5.25	40.25	624.63
22	35.00	40.25	0.869585217	-0.139761942	868.67	893.96	0.971710144	-0.028697725	-0.111064217	-0.000518168	-100.4973	1012.8599	(25.29)	(5.25)	35.00	659.63
23	35.00	35.00	1	0	887.90	868.67	1.02213729	0.021895818	-0.021895818	-0.132980035	25559.6611	26572.5210	19.23	-	35.00	694.63
24	35.00	35.00	1	0	896.13	887.90	1.009269062	0.009226368	-0.009226368	-0.031122185	-76.5928	26495.9282	8.23	-	35.00	729.63
25	35.00	35.00	1	0	903.27	896.13	1.007967594	0.00793602	-0.00793602	-0.017162388	-44.8548	26451.0733	7.14	-	35.00	764.63
26	34.00	35.00	0.971428571	-0.028987537	881.31	903.27	0.975688332	-0.024612075	-0.004375462	-0.012311482	-28.2647	26422.8086	(21.96)	(1.00)	34.00	798.63
27	32.00	34.00	0.941176471	-0.060624622	901.44	881.31	1.022840998	0.022584048	-0.08320887	-0.087584131	611.4020	27034.2106	20.13	(2.00)	32.00	830.63
28	29.00	32.00	0.90625	-0.098440073	930.60	901.44	1.032348243	0.031836055	-0.130278128	-0.213484797	143.7483	27177.9589	29.16	(3.00)	29.00	859.63
29	29.00	29.00	1	0	915.34	930.60	0.983601977	-0.016533958	0.016533958	-0.113742169	-46.7212	27131.2377	(15.26)	-	29.00	888.63
30	31.50	29.00	1.086206897	0.082691716	913.81	915.34	0.99832849	-0.001672909	0.084364624	0.100898583	-188.7082	26942.5295	(1.53)	2.50	31.50	920.13
31	33.00	31.50	1.047619048	0.046520016	941.81	913.81	1.030640943	0.030180883	0.016339132	0.100703757	-0.1931	26942.3364	28.00	1.50	33.00	953.13
32	33.25	33.00	1.007575758	0.007547206	923.78	941.81	0.980856011	-0.019329608	0.026876813	0.043215946	-57.0861	26885.2504	(18.03)	0.25	33.25	986.38
33	33.00	33.25	0.992481203	-0.007547206	970.08	923.78	1.050120158	0.048904594	-0.0564518	-0.029574987	-168.4354	26716.8150	46.30	(0.25)	33.00	1,019.38
34	30.00	33.00	0.909090909	-0.09531018	949.26	970.08	0.978537853	-0.021695809	-0.073614371	-0.130066171	339.7844	27056.5994	(20.82)	(3.00)	30.00	1,049.38
35	25.00	30.00	0.833333333	-0.182321557	948.72	949.26	0.999431136	-0.000569026	-0.181752531	-0.255366902	96.3361	27152.9355	(0.54)	(5.00)	25.00	1,074.38
36	30.00	25.00	1.2	0.182321557	923.54	948.72	0.973458976	-0.026899595	0.209221152	0.027468622	-110.7565	27042.1790	(25.18)	5.00	30.00	1,104.38
37									-0.271364736	-0.751950624						
Ave.	32.40				882.12					(0.04)	795.36	11,835.10	2.25	0.88	32.40	559.65
STD	2.62				38.52					0.15	4,387.59	12,930.95	19.48	6.50	2.62	334.61

Schedule 6																
NATION PRINTERS LTD																
Per.	End of Month				End of Month						MBHRI	CUMULATIVE	GROWTH	GROWTH	CUM.	CUM.
t	Price	P _{t,t-1}	P _{t,t-1}	Ln(P _{t,t-1})	NSE Index	F	G	H	I	MBHRI	% GROWTH	GROWTH	ON INDEX	ON PRICE	ON PRICE	ON INDEX
2	11.00				858.64				0							
3	11.25	11.00	1.022727273	0.022472856	864.22	858.64	1.006498649	0.006477624	0.015995232	0.015995232			5.58	0.25	0.25	5.58
4	11.50	11.25	1.022222222	0.021978907	868.25	864.22	1.004663164	0.004652326	0.017326581	0.033321813	108.3234	108.3234	4.03	0.25	0.50	6.08
5	11.50	11.50	1	0	866.15	868.25	0.997581342	-0.002421588	0.002421588	0.019748169	-40.7350	67.5884	(2.10)	-	0.50	6.58
6	12.00	11.50	1.043478261	0.042559614	867.59	866.15	1.00186253	0.001681149	0.040898465	0.043320053	119.3624	186.9508	1.44	0.50	1.00	7.58
7	11.75	12.00	0.979168667	-0.021053409	872.99	867.59	1.006224138	0.006204848	-0.027258257	0.013640208	-88.5129	118.4378	5.40	(0.25)	0.75	8.33
8	11.85	11.75	1.008510638	0.008474627	871.19	872.99	0.997938121	-0.002064008	0.010538635	-0.016719623	-222.5760	-104.1382	(1.80)	0.10	0.85	9.18
9	11.00	11.85	0.928270042	-0.074432595	868.99	871.19	0.997474718	-0.002528475	-0.071904119	-0.081365484	267.0267	162.8880	(2.20)	(0.85)	-	9.18
10	10.00	11.00	0.909090909	-0.09531018	875.31	868.99	1.007272811	0.007246492	-0.102556671	-0.174460791	184.2979	347.1865	6.32	(1.00)	(1.00)	8.18
11	10.25	10.00	1.025	0.024692613	873.67	875.31	0.998126378	-0.001875379	0.026567992	0.075988679	-56.4437	290.7428	(1.64)	0.25	(0.75)	7.43
12	11.00	10.25	1.073170732	0.070617567	870.38	873.67	0.996234276	-0.003772832	0.074390399	0.100958391	-232.8596	57.8830	(3.29)	0.75	-	7.43
13	10.50	11.00	0.954545455	-0.046520016	814.95	870.38	0.936315173	-0.065803136	0.019283121	0.09367352	-7.2157	50.6673	(55.43)	(0.50)	(0.50)	6.93
14	11.00	10.50	1.047619048	0.046520016	815.85	814.95	1.001104362	0.001103753	0.045416263	0.064699383	-30.9310	19.7363	0.90	0.50	-	6.93
15	11.75	11.00	1.068181818	0.065957968	810.26	815.85	0.99314825	-0.006875331	0.072833299	0.118249561	82.7677	102.5040	(5.59)	0.75	0.75	7.68
16	11.75	11.75	1	0	838.07	810.26	1.034322316	0.033746445	-0.033746445	0.039088853	-66.9455	35.5585	27.81	-	0.75	8.43
17	11.00	11.75	0.938170213	-0.065957968	868.22	838.07	1.035975515	0.03534351	-0.101301477	-0.135047923	-445.5073	-409.9488	30.15	(0.75)	-	8.43
18	11.00	11.00	1	0	893.96	868.22	1.029646864	0.029215893	-0.029215893	-0.13051737	-3.3548	-413.3035	25.74	-	-	8.43
19	11.00	11.00	1	0	868.47	893.96	0.97148642	-0.028927889	0.028927889	-0.000287904	-99.7794	-513.0829	(25.49)	-	-	8.43
20	10.00	11.00	0.909090909	-0.09531018	887.90	868.47	1.022372678	0.022126081	-0.117436261	-0.088508272	30642.2861	30129.2032	19.43	(1.00)	(1.00)	7.43
21	10.00	10.00	1	0	896.13	887.90	1.009269062	0.009226368	-0.009226368	-0.126662629	43.1082	30172.3114	8.23	-	(1.00)	6.43
22	10.00	10.00	1	0	903.27	896.13	1.007967594	0.00793602	-0.00793602	-0.017162388	-86.4503	30085.8611	7.14	-	(1.00)	5.43
23	10.25	10.00	1.025	0.024692613	881.31	903.27	0.975688332	-0.024612075	0.049304688	0.041368667	-341.0426	29744.8185	(21.96)	0.25	(0.75)	4.68
24	10.25	10.25	1	0	901.44	881.31	1.022840998	0.022584048	-0.022584048	0.02672064	-35.4085	29709.4100	20.13	-	(0.75)	3.93
25	9.00	10.25	0.87804878	-0.130053128	930.60	901.44	1.032348243	0.031836055	-0.161889183	-0.184473231	-790.3773	28919.0327	29.18	(1.25)	(2.00)	1.93
26	9.00	9.00	1	0	915.34	930.60	0.983601977	-0.016533958	0.016533958	-0.145355225	-21.2052	28897.8274	(15.26)	-	(2.00)	(0.07)
27	8.75	9.00	0.972222222	-0.028170877	913.81	915.34	0.99832849	-0.001672909	-0.026497968	-0.00996401	-93.1451	28804.6824	(1.53)	(0.25)	(2.25)	(2.32)
28	8.75	8.75	1	0	941.81	913.81	1.030640943	0.030180883	-0.030180883	-0.056678852	468.8358	29273.5181	28.00	-	(2.25)	(4.57)
29	9.00	8.75	1.028571429	0.028170877	923.81	941.81	0.980887865	-0.019297133	0.04746801	-0.017287127	-130.5001	29143.0180	(18.00)	0.25	(2.00)	(6.57)
30	8.75	9.00	0.972222222	-0.028170877	970.08	923.81	1.050086057	0.04887212	-0.077042996	-0.029574987	-271.0810	28871.9370	46.27	(0.25)	(2.25)	(8.82)
31	9.00	8.75	1.028571429	0.028170877	949.26	970.08	0.978537853	-0.021695809	0.049866686	-0.027176311	-8.1105	28863.8265	(20.82)	0.25	(2.00)	(10.82)
32	8.25	9.00	0.916666667	-0.087011377	948.72	949.26	0.999431136	-0.000569026	-0.086442351	-0.036575665	34.5866	28898.4131	(0.54)	(0.75)	(2.75)	(13.57)
33	8.50	8.25	1.03030303	0.029852963	923.54	948.72	0.973458976	-0.026889595	0.056752559	-0.029689792	-18.8264	28879.5867	(25.18)	0.25	(2.50)	(16.07)
34	8.00	8.50	0.941176471	-0.060624622	921.72	923.54	0.998029322	-0.001972622	-0.058651999	-0.001899441	-93.6024	28785.9843	(1.82)	(0.50)	(3.00)	(19.07)
35	10.00	8.00	1.25	0.223143551	949.26	921.72	1.029878922	0.029441244	0.193702307	0.135050308	-7210.0035	21575.9808	27.54	2.00	(1.00)	(20.07)
36	8.50	10.00	0.85	-0.162518929	954.77	949.26	1.005804521	0.00578774	-0.16830667	0.025395638	-81.1954	21494.7854	5.51	(1.50)	(2.50)	(22.57)
37	9.25	8.50	1.088235294	0.084557388	954.43	954.77	0.999843893	-0.00035617	0.084913558	-0.083393111	-428.3757	21066.4097	(0.34)	0.75	(1.75)	(24.32)
Ave.	10.18				892.62				-0.279036283	-0.642986124						
STD	1.19				41.58				(0.04)	619.80	14,806.61	2.74	(0.05)	(0.85)	0.34	
									0.13	5,448.43	14,334.54	19.97	0.66	1.20	10.52	

Schedule 7																
STANDARD CHARTERED BANK LTD																
Per.	End of Month				End of Month							MBHRI	CUMULATIVE	GROWTH	GROWTH	CUM.
1	Price	PI,t-1	PI,t/PI,t-1	Ln(PI,t/PI,t-1)	NSE Index	F	G	H	I	MBHRI	% GROWTH	GROWTH	ON INDEX	ON PRICE	ON PRICE	ON INDEX
2	27.00				815.85				0							
3	27.00	27.00	1	0	810.26	815.85	0.99314825	-0.006875331	0.006875331	0.006875331			(5.59)	-	-	(5.59)
4	27.25	27.00	1.009259259	0.009216655	838.07	810.26	1.034322316	0.033746445	-0.02452979	-0.01765446	-356.7798	-356.7798	27.81	0.25	0.25	(5.34)
5	27.25	27.25	1	0	868.22	838.07	1.035975515	0.03534351	-0.03534351	-0.0598733	239.1398	-117.6400	30.15	-	0.25	(5.09)
6	27.60	27.25	1.012844037	0.012762252	893.96	868.22	1.029646864	0.029215893	-0.016453641	-0.051797151	-13.4887	-131.1287	25.74	0.35	0.60	(4.49)
7	27.75	27.60	1.005434783	0.005420087	868.67	893.96	0.971710144	-0.028697725	0.034117793	0.017664152	-134.1026	-265.2313	(25.29)	0.15	0.75	(3.74)
8	26.00	27.75	0.936936937	-0.065139302	887.90	868.67	1.02213729	0.021895818	-0.08703512	-0.052917327	-399.5747	-664.8060	19.23	(1.75)	(1.00)	(4.74)
9	27.75	26.00	1.067307692	0.065139302	896.13	887.90	1.009269062	0.009226368	0.055912934	-0.031122185	-41.1872	-705.9931	8.23	1.75	0.75	(3.99)
10	27.00	27.75	0.972972973	-0.027398974	903.27	896.13	1.007967594	0.00793602	-0.035334994	0.02057794	-168.1198	-872.1130	7.14	(0.75)	-	(3.99)
11	26.25	27.00	0.972222222	-0.028170877	881.31	903.27	0.975688332	-0.024612075	-0.003558802	-0.038893796	-289.0072	-1161.1202	(21.96)	(0.75)	(0.75)	(4.74)
12	26.25	26.25	1	0	901.44	881.31	1.022840998	0.022584048	-0.022584048	-0.02614285	-32.7840	-1193.9042	20.13	-	(0.75)	(5.49)
13	25.00	26.25	0.952380952	-0.048790164	930.60	901.44	1.032348243	0.031836055	-0.080626219	-0.103210267	294.7935	-899.1107	29.16	(1.25)	(2.00)	(7.49)
14	25.00	25.00	1	0	915.34	930.60	0.983601977	-0.016533958	0.016533958	-0.06409226	-37.9013	-937.0120	(15.26)	-	(2.00)	(9.49)
15	21.00	25.00	0.84	-0.174353387	913.81	915.34	0.99832849	-0.001672909	-0.172680479	-0.15814652	143.6277	-793.3843	(1.53)	(4.00)	(6.00)	(15.49)
16	22.75	21.00	1.083333333	0.080042708	941.81	913.81	1.030640943	0.030180883	0.049861824	-0.122818654	-21.3440	-814.7282	28.00	1.75	(4.25)	(19.74)
17	22.00	22.75	0.967032967	-0.033522692	923.78	941.81	0.980856011	-0.019329608	-0.014193084	0.03566874	-129.0418	-943.7700	(18.03)	(0.75)	(5.00)	(24.74)
18	19.50	22.00	0.886363636	-0.120627988	970.08	923.78	1.050120158	0.048904594	-0.169532582	-0.183725666	-615.0887	-1558.8588	46.30	(2.50)	(7.50)	(32.24)
19	19.50	19.50	1	0	949.26	970.08	0.978537853	-0.021695809	0.021695809	-0.147836773	-19.5340	-1578.3927	(20.82)	-	(7.50)	(39.74)
20	19.50	19.50	1	0	948.72	949.26	0.999431136	-0.000569026	0.000569026	0.022264835	-115.0604	-1693.4532	(0.54)	-	(7.50)	(47.24)
21	19.50	19.50	1	0	923.54	948.72	0.973458976	-0.026899595	0.026899595	0.027468622	23.3722	-1670.0809	(25.18)	-	(7.50)	(54.74)
22	19.50	19.50	1	0	921.72	923.54	0.998029322	-0.001972622	0.001972622	0.028872218	5.1098	-1664.9711	(1.82)	-	(7.50)	(62.24)
23	18.75	19.50	0.961538462	-0.039220713	949.26	921.72	1.029878922	0.029441244	-0.068661957	-0.066689335	-330.9810	-1995.9521	27.54	(0.75)	(8.25)	(70.49)
24	19.00	18.75	1.013333333	0.013245227	954.77	949.26	1.005804521	0.00578774	0.007457487	-0.06120447	-8.2245	-2004.1766	5.51	0.25	(8.00)	(78.49)
25	21.00	19.00	1.105263158	0.100083459	954.43	954.77	0.999643893	-0.00035617	0.100439629	0.107897115	-276.2896	-2280.4662	(0.34)	2.00	(6.00)	(84.49)
26	21.00	21.00	1	0	958.29	954.43	1.004044299	0.004036142	-0.004036142	0.096403486	-10.6524	-2291.1186	3.86	-	(6.00)	(90.49)
27	31.50	21.00	1.5	0.405465108	996.56	958.29	1.039935719	0.039158902	0.386306206	0.362270063	275.7852	-2015.3334	38.27	10.50	4.50	(85.99)
28	24.50	31.50	0.777777778	-0.251314428	1,046.86	996.56	1.050473629	0.049241138	-0.300555566	0.065750639	-81.8504	-2097.1837	50.30	(7.00)	(2.50)	(88.49)
29	23.50	24.50	0.959183673	-0.041672696	1,048.07	1,046.86	1.001155837	0.00115517	-0.042827866	-0.343383433	-622.2511	-2719.4348	1.21	(1.00)	(3.50)	(91.99)
30	22.00	23.50	0.936170213	-0.065957968	1,055.52	1,048.07	1.007108304	0.007083159	-0.073041127	-0.115868993	-86.2567	-2785.6915	7.45	(1.50)	(5.00)	(96.99)
31	26.00	22.00	1.181818182	0.167054085	1,082.22	1,055.52	1.025295589	0.02498095	0.142073134	0.069032008	-159.5776	-2945.2692	26.70	4.00	(1.00)	(97.99)
32	27.00	26.00	1.038461538	0.037740328	1,144.58	1,082.22	1.057622295	0.056023271	-0.018282943	0.123790192	79.3229	-2865.9463	62.36	1.00	-	(97.99)
33	27.50	27.00	1.018518519	0.018349139	1,208.52	1,144.58	1.055863286	0.054358713	-0.036009574	-0.054292517	-143.8585	-3009.8048	63.94	0.50	0.50	(97.49)
34	27.00	27.50	0.981818182	-0.018349139	1,235.58	1,208.52	1.022391024	0.022144025	-0.040493164	-0.076502738	40.9084	-2968.8963	27.06	(0.50)	-	(97.49)
35	24.50	27.00	0.907407407	-0.097163748	1,228.43	1,235.58	0.994213244	-0.005803564	-0.091360184	-0.131853348	72.3511	-2896.5452	(7.15)	(2.50)	(2.50)	(99.99)
36	24.50	24.50	1	0	1,234.12	1,228.43	1.004631929	0.004621234	-0.004621234	-0.095981418	-27.2059	-2923.7511	5.68	-	(2.50)	(102.49)
37	25.00	24.50	1.020408163	0.020202707	1,257.15	1,234.12	1.01866107	0.018489089	0.001713619	-0.002907616	-96.9706	-3020.7217	23.03	0.50	(2.00)	(104.49)
									-0.50933306	-1.020379738						
Ave.	24.25				979.39					(0.06)	(88.84)	(1,671.85)	12.61	(0.06)	(2.83)	(49.88)
STD	3.32				124.87					0.20	210.07	949.99	23.72	2.58	3.33	40.38

Schedule 8																
UCHUMI SUPERMARKETS LTD																
Per.	End of Month				End of Month						MBHRI	CUMULATIVE	GROWTH	GROWTH	CUM.	CUM.
t	Price	PI,t-1	PI,t/PI,t-1	Ln(PI,t/PI,t-1)	NSE Index	F	G	H	I	MBHRI	% GROWTH	GROWTH	ON INDEX	ON PRICE	ON PRICE	ON INDEX
2	19.75				1,176.74				0							
3	20.50				1,220.77	1,176.74	1.037416932	0.036733904	-0.036733904	-0.036733904			44.03	0.75	0.75	0.75
4	20.00	20.50	0.975609756	-0.024692613	1,249.00	1,220.77	1.023124749	0.022861424	-0.047554037	-0.08426794	129.4554	129.4554	28.23	(0.50)	0.25	1.00
5	21.50	20.00	1.075	0.072320662	1,337.87	1,249.00	1.071152922	0.068735566	0.003585096	-0.043968941	-47.8348	81.6206	88.87	1.50	1.75	2.75
6	19.25	21.50	0.895348837	-0.110541874	1,397.77	1,337.87	1.044772661	0.043799312	-0.154341187	-0.150756091	242.8695	324.4901	59.90	(2.25)	(0.50)	2.25
7	19.00	19.25	0.987012987	-0.013072082	1,508.02	1,397.77	1.078875638	0.075919423	-0.088991504	-0.243332691	61.4082	385.8983	110.25	(0.25)	(0.75)	1.50
8	18.25	19.00	0.960526316	-0.040273899	1,649.93	1,508.02	1.094103526	0.089935331	-0.13020923	-0.219200734	-9.9173	375.9810	141.91	(0.75)	(1.50)	-
9	18.50	18.25	1.01369863	0.013605652	1,718.79	1,649.93	1.041735104	0.040887692	-0.02728204	-0.15749127	-28.1520	347.8290	68.86	0.25	(1.25)	(1.25)
10	18.25	18.50	0.986486466	-0.013605652	1,810.89	1,718.79	1.053467847	0.052087433	-0.065893085	-0.092975125	-40.9649	306.8641	91.90	(0.25)	(1.50)	(2.75)
11	20.00	18.25	1.095890411	0.091567194	1,844.35	1,810.89	1.018589598	0.018418924	0.07314827	0.007455184	-108.0185	198.8456	33.66	5.00	0.25	(2.50)
12	25.00	20.00	1.25	0.223143551	2,096.14	1,844.35	1.136519641	0.127970646	0.095172905	0.168321175	2157.7734	2356.6191	251.79	5.00	5.25	2.75
13	27.00	25.00	1.08	0.076961041	2,245.95	2,096.14	1.071469463	0.069031036	0.007930005	0.10310291	-38.7463	2317.8728	149.81	2.00	7.25	10.00
14	42.50	27.00	1.574074074	0.45366721	3,818.74	2,245.95	1.700278279	0.530791931	-0.077124721	-0.069194716	-167.1123	2150.7605	1,572.79	15.50	22.75	32.75
15	46.75	42.50	1.1	0.09531018	5,030.55	3,818.74	1.317332419	0.275608797	-0.180298617	-0.257423338	272.0275	2422.7879	1,211.81	4.25	27.00	59.75
16	55.50	46.75	1.187165775	0.171568765	4,377.97	5,030.55	0.87027661	-0.138944175	0.31051294	0.130214323	-150.5837	2272.2042	(652.58)	8.75	35.75	95.50
17	46.50	55.50	0.837837838	-0.176930708	3,558.51	4,377.97	0.812821924	-0.207243229	0.030312521	0.340825461	161.7419	2433.9461	(819.46)	(9.00)	26.75	122.25
18	50.50	46.50	1.086021505	0.082521024	3,620.24	3,558.51	1.017347148	0.017198404	0.06532262	0.09563514	-71.9401	2362.0080	61.73	4.00	30.75	153.00
19	55.50	50.50	1.099009901	0.094409684	4,137.22	3,620.24	1.142802687	0.133483743	-0.039074058	0.026248561	-72.5534	2289.4525	516.98	5.00	35.75	188.75
20	53.50	55.50	0.963963964	-0.036701367	4,070.42	4,137.22	0.983853892	-0.016277876	-0.02042349	-0.059497549	-326.6698	1962.7828	(66.80)	(2.00)	33.75	222.50
21	57.00	53.50	1.065420561	0.063369614	3,951.77	4,070.42	0.970850674	-0.029582608	0.092952222	0.072528732	-221.9021	1740.8807	(116.85)	3.50	37.25	259.75
22	63.50	57.00	1.114035088	0.107988638	3,715.39	3,951.77	0.940183766	-0.061679927	0.169668565	0.262620788	262.0921	2002.9728	(236.38)	6.50	43.75	303.50
23	61.50	63.50	0.968503937	-0.032002731	3,585.56	3,715.39	0.965056158	-0.035568984	0.003566253	0.173234819	-34.0361	1968.9367	(129.83)	(2.00)	41.75	345.25
24	58.00	61.50	0.910569106	-0.093685484	3,483.54	3,585.56	0.971546983	-0.02886565	-0.064819834	-0.061253581	-135.3587	1833.5780	(102.02)	(5.50)	36.25	381.50
25	68.00	58.00	1.214285714	0.194156014	4,559.40	3,483.54	1.308841007	0.269142018	-0.074986003	-0.139805837	128.2411	1961.8190	1,075.86	12.00	48.25	429.75
26	55.00	68.00	0.808823529	-0.21217452	3,939.68	4,559.40	0.864078607	-0.146091534	-0.066082986	-0.141068989	0.9035	1962.7225	(619.72)	(13.00)	35.25	465.00
27	59.00	55.00	1.072727273	0.070204259	3,897.42	3,939.68	0.98927324	-0.010784706	0.080988965	0.014905979	-110.5664	1852.1561	(42.26)	4.00	39.25	504.25
28	54.00	59.00	0.915254237	-0.088553397	3,639.86	3,897.42	0.933915257	-0.068369576	-0.020183621	0.060805144	307.9245	2160.0806	(257.56)	(5.00)	34.25	538.50
29	54.00	54.00	1	0	3,519.44	3,639.86	0.96691631	-0.033643333	0.033643333	0.013459512	-77.8645	2082.2161	(120.42)	-	34.25	572.75
30	48.00	54.00	0.888888889	-0.117783036	3,405.49	3,519.44	0.96762269	-0.032913051	-0.084869985	-0.051226652	-480.5981	1601.6180	(113.95)	(6.00)	28.25	601.00
31	45.50	48.00	0.947916667	-0.053488685	3,464.23	3,405.49	1.017248619	0.01710155	-0.070590235	-0.15546022	203.4753	1805.0933	58.74	(2.50)	25.75	626.75
32	45.00	45.50	0.989010989	-0.011049836	3,326.11	3,464.23	0.960129668	-0.040686933	0.029637097	-0.040953139	-73.6588	1731.4364	(138.12)	(0.50)	25.25	652.00
33	44.00	45.00	0.977777778	-0.022472856	3,114.80	3,326.11	0.936409199	-0.06570272	0.043229864	0.072866961	-277.9277	1453.5088	(211.51)	(1.00)	24.25	676.25
34	44.25	44.00	1.005681818	0.005665738	3,845.43	3,114.80	1.234646504	0.210784697	-0.20511896	-0.161889096	-322.1708	1131.3380	730.83	0.25	24.50	700.75
35	46.00	44.25	1.039548023	0.038786025	3,307.08	3,845.43	0.860002652	-0.150819805	0.18960583	-0.015513129	-90.4174	1040.9205	(538.35)	1.75	26.25	727.00
36	43.00	46.00	0.934782609	-0.067441281	3,495.92	3,307.08	1.057101733	0.055530949	-0.12297223	0.0666336	-529.5304	511.3902	188.84	(3.00)	23.25	750.25
37	40.00	43.00	0.930232558	-0.072320662	3,468.88	3,495.92	0.992265269	-0.007764799	-0.064555863	-0.187528093	-381.4317	129.9585	(27.04)	(3.00)	20.25	770.50
									-0.412629304							
Ave.	41.15				3,044.15					(0.02)	3.82	1,461.47	85.49	0.58	22.01	291.25
STD	15.99				1,108.89					0.14	432.78	838.93	484.27	5.42	15.79	280.68

Schedule 9																
CROWN BERGER																
Per.	End of Month				End of Month							MBHRI	CUMULATIVE	GROWTH	GROWTH	CUM.
1	Price	PI,t-1	PI,t/PI,t-1	Ln(PI,t/PI,t-1)	NSE Index	F	G	H	I	MBHRI	% GROWTH	GROWTH	ON INDEX	ON PRICE	ON PRICE	ON INDEX
2	16.50				1,176.74				0							
3	16.50	16.50	1	0	1,220.77	1,176.74	1.037416932	0.036733904	-0.036733904	-0.036733904				44.03	-	44.03
4	15.00	16.50	0.909090909	-0.09531018	1,249.00	1,220.77	1.023124749	0.022861424	-0.118171604	-0.154905508	321.6963	321.6963	28.23	(1.50)	(1.50)	42.53
5	14.50	15.00	0.966666667	-0.033901552	1,337.87	1,249.00	1.071152922	0.068735566	-0.102637118	-0.220808721	42.5441	364.2404	88.87	(0.50)	(2.00)	40.53
6	14.75	14.50	1.017241379	0.017094433	1,397.77	1,337.87	1.044772661	0.043799312	-0.026704879	-0.129341997	-41.4235	322.8169	59.90	0.25	(1.75)	38.78
7	14.25	14.75	0.966101695	-0.034486176	1,508.02	1,397.77	1.078875638	0.075919423	-0.110405599	-0.137110478	6.0062	328.8231	110.25	(0.50)	(2.25)	36.53
8	14.50	14.25	1.01754386	0.017391743	1,649.93	1,508.02	1.094103526	0.089935331	-0.072543588	-0.182949187	33.4320	362.2550	141.91	0.25	(2.00)	34.53
9	14.50	14.50	1	0	1,718.79	1,649.93	1.041735104	0.040887692	-0.040887692	-0.11343128	-37.9985	324.2565	68.86	-	(2.00)	32.53
10	14.75	14.50	1.017241379	0.017094433	1,810.89	1,718.79	1.053467847	0.052087433	-0.034993	-0.075880692	-33.1043	291.1523	91.90	0.25	(1.75)	30.78
11	14.50	14.75	0.983050847	-0.017094433	1,844.35	1,810.89	1.018589598	0.018418924	-0.035513357	-0.070506357	-7.0826	284.0897	33.66	(0.25)	(2.00)	28.78
12	14.50	14.50	1	0	2,096.14	1,844.35	1.136519641	0.127970646	-0.127970646	-0.163484003	131.8713	415.9410	251.79	-	(2.00)	26.78
13	14.50	14.50	1	0	2,245.95	2,096.14	1.071469463	0.069031036	-0.069031036	-0.197001682	20.5021	436.4431	149.81	-	(2.00)	24.78
14	23.50	14.50	1.620689655	0.482851772	3,818.74	2,245.95	1.700278279	0.530791931	-0.047940159	-0.116971195	-40.6243	395.8188	1,572.79	9.00	7.00	31.78
15	24.75	23.50	1.053191488	0.051825068	5,030.55	3,818.74	1.317332419	0.275608797	-0.223783729	-0.271723888	132.2998	528.1186	1,211.81	1.25	8.25	40.03
16	25.00	24.75	1.01010101	0.010050336	4,377.97	5,030.55	0.87027661	-0.138944175	0.148994511	-0.074789218	-72.4760	455.6426	(652.58)	0.25	8.50	48.53
17	20.00	25.00	0.8	-0.223143551	3,558.51	4,377.97	0.812821924	-0.207243229	-0.015900323	0.133094189	-277.9591	177.6836	(819.46)	(5.00)	3.50	52.03
18	20.00	20.00	1	0	3,620.24	3,558.51	1.017347148	0.017198404	-0.017198404	-0.033098727	-124.8686	52.8149	61.73	-	3.50	55.53
19	20.50	20.00	1.025	0.024692613	4,137.22	3,620.24	1.142802687	0.133483743	-0.10879113	-0.125989534	280.6477	333.4626	516.98	0.50	4.00	59.53
20	21.25	20.50	1.036585386	0.035932009	4,070.42	4,137.22	0.983853892	-0.016277876	0.052209886	-0.056581244	-55.0905	278.3721	(66.80)	0.75	4.75	64.28
21	22.00	21.25	1.035294118	0.034685558	3,951.77	4,070.42	0.970850674	-0.029582608	0.064268166	0.116478052	-305.8598	-27.4878	(118.65)	0.75	5.50	69.78
22	20.75	22.00	0.943181818	-0.058496207	3,715.39	3,951.77	0.940183766	-0.061679927	0.003183721	0.067451887	-42.0905	-69.5782	(236.38)	(1.25)	4.25	74.03
23	18.50	20.75	0.891568265	-0.114775515	3,585.56	3,715.39	0.965056158	-0.035588994	-0.07920653	-0.07602281	-212.7067	-282.2850	(129.83)	(2.25)	2.00	76.03
24	18.00	18.50	0.972972973	-0.027398974	3,483.54	3,585.56	0.971546983	-0.02886565	0.001466676	-0.077739854	2.2586	-280.0264	(102.02)	(0.50)	1.50	77.53
25	27.25	18.00	1.513888889	0.414881763	4,559.40	3,483.54	1.308841007	0.269142018	0.145539745	0.147006421	-289.1005	-569.1268	1,075.86	9.25	10.75	88.28
26	22.00	27.25	0.80733945	-0.214011068	3,939.68	4,559.40	0.864078607	-0.146091534	-0.067919534	0.077620212	-47.1994	-616.3283	(619.72)	(5.25)	5.50	93.78
27	21.00	22.00	0.954545455	-0.046520016	3,897.42	3,939.68	0.98927324	-0.010784706	-0.03573531	-0.103654843	-233.5410	-849.8673	(42.26)	(1.00)	4.50	98.28
28	19.50	21.00	0.928571429	-0.074107972	3,639.86	3,897.42	0.933915257	-0.068369576	-0.005738396	-0.041473705	-59.9886	-908.8560	(257.56)	(1.50)	3.00	101.28
29	19.80	19.50	1.015384615	0.015267472	3,519.44	3,639.86	0.96691631	-0.033643333	0.048910805	0.04317241	-204.0959	-1113.9518	(120.42)	0.30	3.30	104.58
30	18.00	19.80	0.909090909	-0.09531018	3,405.49	3,519.44	0.96762269	-0.032913051	-0.062397129	-0.013486324	-131.2383	-1245.1901	(113.95)	(1.80)	1.50	106.08
31	19.00	18.00	1.055555556	0.054067221	3,464.23	3,405.49	1.017248619	0.01710155	0.036965671	-0.025431458	88.5722	-1156.6179	58.74	1.00	2.50	108.58
32	21.00	19.00	1.105263158	0.100083459	3,326.11	3,464.23	0.960129668	-0.040886933	0.140770391	0.177736062	-798.8827	-1955.5006	(138.12)	2.00	4.50	113.08
33	22.50	21.00	1.071428571	0.068992871	3,114.60	3,326.11	0.938409199	-0.06570272	0.134695591	0.275465983	54.9860	-1900.5146	(211.51)	1.50	6.00	119.08
34	22.50	22.50	1	0	3,845.43	3,114.60	1.234646504	0.210784697	-0.210784697	-0.076089106	-127.6220	-2028.1366	730.83	-	6.00	125.08
35	24.50	22.50	1.088888889	0.085157808	3,307.08	3,845.43	0.860002652	-0.150819805	0.235977614	0.025192917	-133.1098	-2161.2463	(538.35)	2.00	8.00	133.08
36	23.50	24.50	0.959183673	-0.041672696	3,495.92	3,307.08	1.057101733	0.055530949	-0.097203646	0.138773968	450.8452	-1710.4012	188.84	(1.00)	7.00	140.08
37	21.00	23.50	0.893817021	-0.112477983	3,468.88	3,495.92	0.992265269	-0.007764799	-0.104713184	-0.20191683	-245.5005	-1955.9017	(27.04)	(2.50)	4.50	144.58
									-0.839921815							
Ave.	19.29				3,044.15					(0.05)	(57.53)	(387.01)	65.49	0.13	2.87	71.59
STD	3.72				1,108.89					0.13	213.56	896.21	484.27	2.75	3.74	36.84

Schedule 10																
HOUSING FINANCE OF KENYA																
Per.	End of				End of							MBHRI			CUM.	CUM.
Month					Month							CUMULATIVE	GROWTH	GROWTH	GROWTH	GROWTH
1	Price	PI,t-1	PI,t/PI,t-1	Ln(PI,t/PI,t-1)	NSE Index	F	G	H	I	MBHRI	% GROWTH	GROWTH	ON INDEX	ON PRICE	ON PRICE	ON INDEX
					1,167.29				0							
2	12.25	-			1,117.74	1,167.29	0.957551251	-0.043376033	0.043376033	0.043376033			(49.55)	12.25	12.25	12.25
3	11.00	12.25	0.897959184	-0.107630664	1,220.77	1,117.74	1.092177072	0.088173018	-0.195803682	-0.152427649	-451.4098	-451.4098	103.03	(1.25)	11.00	23.25
4	11.00	11.00	1	0	1,252.39	1,220.77	1.025901685	0.025571919	-0.025571919	-0.2213756	45.2332	-406.1766	31.62	-	11.00	34.25
5	10.25	11.00	0.931818182	-0.070617567	1,342.20	1,252.39	1.071710889	0.069256333	-0.1398739	-0.165445819	-25.2647	-431.4413	89.81	(0.75)	10.25	44.50
6	13.75	10.25	1.341463415	0.293761119	1,397.77	1,342.20	1.041402176	0.040568051	0.253193068	0.113319168	-168.4932	-599.9345	55.57	3.50	13.75	58.25
7	9.75	13.75	0.709090909	-0.343771539	1,508.02	1,397.77	1.078875638	0.075919423	-0.419690962	-0.166497894	-246.9283	-846.8628	110.25	(4.00)	9.75	68.00
8	9.00	9.75	0.923076923	-0.080042708	1,649.93	1,508.02	1.094103526	0.089935331	-0.169978038	-0.589669	254.1600	-592.7027	141.91	(0.75)	9.00	77.00
9	9.50	9.00	1.055555556	0.054067221	1,724.24	1,649.93	1.045038274	0.044053511	0.01001371	-0.159964328	-72.8722	-665.5749	74.31	0.50	9.50	86.50
10	9.00	9.50	0.947368421	-0.054067221	1,810.89	1,724.24	1.050138032	0.048921614	-0.102988836	-0.092975125	-41.8776	-707.4525	86.45	(0.50)	9.00	95.50
11	9.50	9.00	1.055555556	0.054067221	1,844.35	1,810.89	1.018589598	0.018418924	0.035648297	-0.067340538	-27.5714	-735.0239	33.66	0.50	9.50	105.00
12	9.75	9.50	1.026315789	0.025975486	2,096.14	1,844.35	1.136519641	0.127970646	-0.10199516	-0.066346862	-1.4756	-736.4995	251.79	0.25	9.75	114.75
13	12.00	9.75	1.230789231	0.207639365	2,513.74	2,096.14	1.199223334	0.181674126	0.025965239	-0.076029921	14.5946	-721.9049	417.60	2.25	12.00	126.75
14	47.00	12.00	3.916666667	1.365240952	3,818.74	2,513.74	1.519146769	0.418148841	0.947092111	0.97305735	-1379.8348	-2101.7397	1,305.00	35.00	47.00	173.75
15	26.25	47.00	0.558510638	-0.582481613	5,030.55	3,818.74	1.317332419	0.275608797	-0.858090409	0.089001701	-90.8534	-2192.5931	1,211.81	(20.75)	26.25	200.00
16	34.75	26.25	1.323809524	0.280513583	4,377.97	5,030.55	0.87027661	-0.138944175	0.419457758	-0.438632851	-592.8363	-2785.4293	(652.58)	8.50	34.75	234.75
17	25.75	34.75	0.741007194	-0.299744945	3,558.51	4,377.97	0.812821924	-0.207243229	-0.092501716	0.326956042	-174.5398	-2959.9692	(819.46)	(9.00)	25.75	260.50
18	18.30	25.75	0.710679612	-0.341533567	3,620.24	3,558.51	1.017347148	0.017198404	-0.358731971	-0.451233688	-238.0105	-3197.9797	81.73	(7.45)	18.30	278.80
19	23.00	18.30	1.256830601	0.228593156	4,137.22	3,620.24	1.142802687	0.133483743	0.095109413	-0.283622558	-41.5774	-3239.5571	516.98	4.70	23.00	301.80
20	19.10	23.00	0.830434783	-0.185805881	4,070.42	4,137.22	0.983853892	-0.016277876	-0.169528004	-0.074418591	-71.7708	-3311.3278	(66.80)	(3.90)	19.10	320.90
21	20.00	19.10	1.047120419	0.046043939	3,951.77	4,070.42	0.970850674	-0.029582608	0.075626547	-0.093901457	26.1801	-3285.1477	(118.65)	0.90	20.00	340.90
22	19.75	20.00	0.9875	-0.012578782	3,715.39	3,951.77	0.940183766	-0.061679927	0.049101145	0.124727692	-232.8283	-3517.9780	(236.38)	(0.25)	19.75	360.65
23	19.55	19.75	0.989873418	-0.010178205	3,585.56	3,715.39	0.965056158	-0.035568984	0.025390779	0.074491924	-40.2764	-3558.2524	(129.83)	(0.20)	19.55	380.20
24	23.50	19.55	1.202048036	0.184025135	3,483.54	3,585.56	0.971546983	-0.02886565	0.212890785	0.238281564	219.8757	-3338.3767	(102.02)	3.95	23.50	403.70
25	27.50	23.50	1.170212766	0.157185584	4,559.40	3,483.54	1.308841007	0.269142018	-0.111956434	0.100934351	-57.6407	-3396.0174	1,075.86	4.00	27.50	431.20
26	25.75	27.50	0.936363636	-0.065751378	3,939.68	4,559.40	0.864078607	-0.146091534	0.080340157	-0.031616278	-131.3236	-3527.3410	(619.72)	(1.75)	25.75	456.95
27	29.00	25.75	1.126213592	0.118861203	3,897.42	3,939.68	0.98927324	-0.010784706	0.129645909	0.209986065	-764.1707	-4291.5117	(42.26)	3.25	29.00	485.95
28	33.25	29.00	1.146551724	0.136758937	3,639.86	3,897.42	0.933915257	-0.068369576	0.205128514	0.334774422	59.4270	-4232.0848	(257.56)	4.25	33.25	519.20
29	20.50	33.25	0.616541353	-0.483629881	3,519.44	3,639.86	0.96691631	-0.033643333	-0.449986548	-0.244858034	-173.1412	-4405.2260	(120.42)	(12.75)	20.50	539.70
30	25.00	20.50	1.219512195	0.198450939	3,405.49	3,519.44	0.967622669	-0.032913051	0.231363989	-0.218622558	-10.7146	-4415.9405	(113.95)	4.50	25.00	564.70
31	25.50	25.00	1.02	0.019802627	3,464.23	3,405.49	1.017248619	0.017101555	0.002701077	0.234065066	-207.0635	-4623.0041	58.74	0.50	25.50	590.20
32	29.00	25.50	1.137254902	0.128817378	3,326.11	3,464.23	0.960129668	-0.040686933	0.169304311	0.172005387	-26.5139	-4649.5179	(138.12)	3.50	29.00	619.20
33	24.75	29.00	0.853448276	-0.158470341	3,114.60	3,326.11	0.936409199	-0.06570272	-0.092787621	0.076536889	-55.5033	-4705.0213	(211.51)	(4.25)	24.75	643.95
34	29.00	24.75	1.171717172	0.158470341	2,845.43	3,114.60	0.913577988	-0.090386535	0.248856876	0.156098254	103.9404	-4801.0808	(269.17)	4.25	29.00	672.95
35	28.00	29.00	0.965517241	-0.03509132	3,307.68	2,845.43	1.162453478	0.150532839	-0.185624159	0.063232717	-59.4894	-4660.5702	462.25	(1.00)	28.00	700.95
36	31.75	28.00	1.133928571	0.125688215	3,495.82	3,307.68	1.056879747	0.055320932	0.070367283	-0.115258875	-282.2741	-4942.8443	188.14	3.75	31.75	732.70
37									-0.144516358							
Ave.	20.93				2,958.62					(0.01)	(145.38)	(2,730.40)	86.53	0.91	20.93	315.99
STD	9.23				1,138.17					0.27	295.99	1,624.84	447.94	8.35	9.23	226.01

Schedule 11																
FIRESTONE EAST AFRICA																
Per.	End of Month					End of Month							MBHRI	CUMULATIVE	GROWTH	CUM.
1	Price	PI,t-1	PI,t/PI,t-1	Ln(PI,t/PI,t-1)	NSE Index	F	G	H	I	MBHRI	% GROWTH	GROWTH	ON INDEX	ON PRICE	ON PRICE	GROWTH
2	40.25				3,483.54				0							
3	37.00	40.25	0.919254658	-0.084192091	4,559.40	3,483.54	1.308841007	0.269142018	-0.353334109	-0.353334109				1,075.86	(3.25)	(3.25)
4	33.00	37.00	0.891891892	-0.114410351	3,939.68	4,559.40	0.864078607	-0.146091534	0.031681183	-0.321652926	-8.9664	-8.9664	(819.72)	(4.00)	(7.25)	1,068.61
5	28.50	33.00	0.863636364	-0.146603474	3,897.42	3,939.68	0.98927324	-0.010784706	-0.135818788	-0.104137585	-87.6242	-76.5906	(42.26)	(4.50)	(11.75)	1,056.86
6	28.25	28.50	0.99122807	-0.00881063	3,639.86	3,897.42	0.933915257	-0.068369576	0.059558947	-0.076259822	-26.7701	-103.3607	(1257.58)	(0.25)	(12.00)	1,044.86
7	25.00	28.25	0.884955752	-0.122217633	3,519.44	3,639.86	0.96691631	-0.033643333	-0.088574299	-0.029015353	-81.9520	-165.3127	(120.42)	(3.25)	(15.25)	1,029.61
8	26.00	25.00	1.04	0.039220713	3,405.49	3,519.44	0.96762269	-0.032913051	0.072133764	-0.016440535	-43.3385	-208.6512	(113.95)	1.00	(14.25)	1,015.36
9	22.25	26.00	0.855769231	-0.155754529	3,464.23	3,405.49	1.017248619	0.01710155	-0.17285608	-0.100722316	512.6462	303.9950	58.74	(3.75)	(18.00)	997.38
10	24.00	22.25	1.078651685	0.075711822	3,326.11	3,464.23	0.960129668	-0.040686933	0.116398754	-0.056457325	-43.9476	260.0475	(138.12)	1.75	(16.25)	981.11
11	24.25	24.00	1.010416867	0.010362787	3,114.60	3,326.11	0.936409199	-0.06570272	0.076065507	0.192464261	-440.9022	-180.8547	(211.51)	0.25	(16.00)	965.11
12	24.00	24.25	0.989690722	-0.010362787	2,845.43	3,114.60	0.913577988	-0.090386535	0.080023748	0.156089254	-18.8996	-199.7544	(269.17)	(0.25)	(16.25)	948.86
13	23.75	24.00	0.989583333	-0.01047113	3,307.68	2,845.43	1.162453478	0.150532839	-0.161004139	-0.080980391	-151.8808	-351.6352	462.25	(0.25)	(16.50)	932.36
14	25.25	23.75	1.063157895	0.061243625	3,495.82	3,307.68	1.056879747	0.055320932	0.005922693	-0.155081445	91.5049	-260.1302	188.14	1.50	(15.00)	917.36
15	24.75	25.25	0.98019802	-0.020000667	3,468.88	3,495.82	0.992293654	-0.007736194	-0.012264473	-0.006341779	-95.9107	-355.0409	(26.94)	(0.50)	(15.50)	901.86
16	24.00	24.75	0.96969697	-0.030771659	3,409.40	3,468.88	0.982853255	-0.017295453	-0.013478206	-0.025740679	305.8905	-50.1504	(59.48)	(0.75)	(16.25)	885.61
17	24.25	24.00	1.010416867	0.010362787	3,275.23	3,409.40	0.960647035	-0.040148227	0.050511014	0.037034808	-243.8766	-294.0270	(134.17)	0.25	(16.00)	869.61
18	22.00	24.25	0.907216495	-0.097374164	3,041.79	3,275.23	0.928725616	-0.073941938	-0.023432226	0.027078788	-26.8829	-320.9099	(233.44)	(2.25)	(16.25)	851.36
19	23.00	22.00	1.045454545	0.044451763	3,019.20	3,041.79	0.992573452	-0.007454262	0.051906025	0.028473799	5.1517	-315.7582	(22.59)	1.00	(17.25)	834.11
20	23.25	23.00	1.010869565	0.010810916	3,031.02	3,019.20	1.003914944	0.003907301	0.006903615	0.05880964	106.5395	-209.2187	11.82	0.25	(17.00)	817.11
21	25.00	23.25	1.075268817	0.072570693	3,144.33	3,031.02	1.037383455	0.036701634	0.035869058	0.042772674	-27.2693	-236.4880	113.31	1.75	(15.25)	801.86
22	26.75	25.00	1.07	0.067658648	3,150.08	3,144.33	1.001828688	0.001827018	0.06583163	0.101700689	137.7702	-98.7178	5.75	1.75	(13.50)	788.36
23	23.75	26.75	0.887850487	-0.118951943	3,073.88	3,150.08	0.975810138	-0.024487242	-0.094464701	-0.028633071	-128.1543	-226.8720	(76.20)	(3.00)	(16.50)	771.86
24	28.00	23.75	1.178947368	0.16462198	3,089.83	3,073.88	1.005188882	0.005175466	0.159446514	0.064981813	-326.9467	-553.8187	15.95	4.25	(12.25)	759.61
25	25.00	28.00	0.892857143	-0.113328685	3,055.97	3,089.83	0.989041468	-0.011019019	-0.102309667	0.057136847	-12.0726	-565.8913	(33.86)	(3.00)	(15.25)	744.36
26	26.00	25.00	1.04	0.039220713	3,042.06	3,055.97	0.995448254	-0.004562137	0.04378285	-0.058526816	-202.4327	-768.3240	(13.91)	1.00	(14.25)	730.11
27	26.50	26.00	1.019230789	0.019048195	3,114.11	3,042.06	1.023684608	0.02340848	-0.004380285	0.039422565	-167.3581	-935.6821	72.05	0.50	(13.75)	716.36
28	30.00	26.50	1.132075472	0.124052649	3,476.67	3,114.11	1.116424918	0.110131542	0.013921107	0.009560822	-75.7478	-1011.4300	362.56	3.50	(10.25)	706.11
29	26.00	30.00	0.866666667	-0.143100844	3,473.99	3,476.67	0.999229147	-0.00077115	-0.142329694	-0.128408587	-1443.0706	-2454.5005	(2.68)	(4.00)	(14.25)	691.86
30	26.00	26.00	1	0	3,354.72	3,473.99	0.965667719	-0.03493548	0.03493548	-0.107394214	-16.3652	-2470.8658	(119.27)	-	(14.25)	677.61
31	27.00	26.00	1.038461538	0.037740328	3,288.84	3,354.72	0.980361997	-0.01983339	0.057573718	0.092509198	-186.1398	-2657.0056	(65.88)	1.00	(13.25)	664.36
32	28.00	27.00	1.037037037	0.036367644	3,460.55	3,288.84	1.052209898	0.050892617	-0.014524973	0.043048746	-53.4654	-2710.4710	171.71	1.00	(12.25)	652.11
33	28.00	28.00	1	0	3,530.43	3,460.55	1.020193322	0.019992141	-0.019992141	-0.034517113	-180.1815	-2890.6525	69.88	-	(12.25)	639.86
34	26.50	28.00	0.946428571	-0.055059777	3,466.92	3,530.43	0.98201069	-0.018153085	-0.036906692	-0.056898833	64.8424	-2825.8101	(63.51)	(1.50)	(13.75)	626.11
35	26.00	26.50	0.981132075	-0.019048195	3,403.22	3,466.92	0.981626343	-0.018544549	-0.000503646	-0.037410338	-34.2511	-2860.0613	(63.70)	(0.50)	(14.25)	611.86
36	25.75	26.00	0.990384615	-0.009661911	3,447.41	3,403.22	1.012984761	0.012901182	-0.022563093	-0.023066739	-38.3413	-2898.4025	44.19	(0.25)	(14.50)	597.36
37	21.50	25.75	0.834951456	-0.180381692	3,314.85	3,447.41	0.981547945	-0.039210851	-0.141170841	-0.163733934	609.8270	-2288.5755	(132.56)	(4.25)	(18.75)	578.61
									-0.577420424							
Avg	26.35				3,364.78					(0.03)	(67.31)	(911.50)	(4.82)	(0.54)	(14.30)	827.18
STD	3.82				315.42					0.11	314.87	1,109.93	262.34	2.23	3.03	153.51

Schedule 12																
NATIONAL INDUSTRIAL CREDIT																
Per.	End of Month				End of Month						MBHRI		CUMULATIVE	GROWTH	GROWTH	CUM.
1	Price	PI,t-1	PI,t/PI,t-1	Ln(PI,t/PI,t-1)	NSE Index	F	G	H	I	MBHRI	% GROWTH	GROWTH	ON INDEX	ON PRICE	ON PRICE	ON INDEX
2	52.00				3,585.56				0							
3	45.50	52.00	0.875	-0.133531393	3,483.54	3,585.56	0.971546983	-0.02886565	-0.104665742	-0.104665742				(102.02)	(6.50)	(6.50)
4	55.50	45.50	1.21978022	0.198670695	4,559.40	3,483.54	1.308841007	0.269142018	-0.070471323	-0.175137065	67.3299	67.3299	1,075.86	10.00	3.50	(98.52)
5	50.50	55.50	0.90990991	-0.094409684	3,939.68	4,559.40	0.864078607	-0.146091534	0.05168185	-0.018789473	-89.2716	-21.9417	(619.72)	(5.00)	(1.50)	(100.02)
6	48.50	50.50	0.96039604	-0.040409538	3,897.42	3,939.68	0.98927324	-0.010784706	-0.029624832	0.022057017	-217.3903	-239.3320	(42.26)	(2.00)	(3.50)	(103.52)
7	42.75	48.50	0.881443299	-0.126194603	3,639.86	3,897.42	0.933915257	-0.068369576	-0.057825026	-0.087449859	-496.4718	-735.8038	(257.58)	(5.75)	(9.25)	(112.77)
8	42.00	42.75	0.98245814	-0.017699577	3,519.44	3,639.86	0.98691631	-0.033643333	0.015943756	-0.04188127	-52.1082	-787.9120	(120.42)	(0.75)	(10.00)	(122.77)
9	41.00	42.00	0.976190478	-0.024097552	3,405.49	3,519.44	0.98762269	-0.032913051	0.008815499	0.024759255	-159.1177	-947.0298	(113.95)	(1.00)	(11.00)	(133.77)
10	43.00	41.00	1.048780488	0.047628049	3,464.23	3,405.49	1.017248619	0.01710155	0.030526499	0.039341998	58.8981	-888.1316	58.74	2.00	(8.00)	(142.77)
11	42.25	43.00	0.98255814	-0.017595762	3,326.11	3,464.23	0.960129668	-0.040686933	0.023091171	0.053617669	36.2861	-851.8455	(138.12)	(0.75)	(9.75)	(152.52)
12	42.00	42.25	0.99408284	-0.005934736	3,114.60	3,326.11	0.936409199	-0.08570272	0.059767984	0.082859155	54.5370	-797.3085	(211.51)	(0.25)	(10.00)	(162.52)
13	42.25	42.00	1.005952381	0.005934736	2,845.43	3,114.60	0.913577988	-0.090386535	0.09632127	0.156089254	88.3790	-708.9295	(269.17)	0.25	(9.75)	(172.27)
14	45.00	42.25	1.065088757	0.063058136	3,307.68	2,845.43	1.162453478	0.150532839	-0.087474703	0.008846567	-94.3324	-803.2619	482.25	2.75	(7.00)	(179.27)
15	46.00	45.00	1.022222222	0.021978907	3,495.82	3,307.68	1.056879747	0.055320932	-0.033342025	-0.120816728	-1465.6905	-2268.9523	188.14	1.00	(6.00)	(185.27)
16	49.00	46.00	1.065217391	0.063178902	3,468.88	3,495.82	0.992293654	-0.007736194	0.070915095	-0.03757307	-131.0992	-2400.0516	(26.94)	3.00	(3.00)	(188.27)
17	48.25	49.00	0.984693878	-0.01542447	3,409.40	3,468.88	0.982853255	-0.017295453	0.001870982	0.072786078	93.7187	-2306.3328	(59.48)	(0.75)	(3.75)	(192.02)
18	50.50	48.25	1.048632124	0.045577508	3,275.23	3,409.40	0.960647035	-0.040148227	0.085725736	0.087596718	20.3482	-2285.9847	(134.17)	2.25	(1.50)	(193.52)
19	51.50	50.50	1.01980198	0.019806471	3,041.79	3,275.23	0.928725616	-0.073941938	0.093550409	0.179276145	104.6608	-2181.3239	(233.44)	1.00	(0.50)	(194.02)
20	50.00	51.50	0.970873786	-0.029558802	3,019.20	3,041.79	0.992573452	-0.007454262	-0.02210454	0.071445869	-60.1476	-2241.4714	(22.59)	(1.50)	(2.00)	(196.02)
21	40.25	50.00	0.805	-0.216913002	3,031.02	3,019.20	1.003914944	0.003907301	-0.220820302	-0.242924842	-440.0124	-2681.4839	11.82	(9.75)	(11.75)	(207.77)
22	40.25	40.25	1	0	3,144.33	3,031.02	1.037383455	0.036701634	-0.036701634	-0.257521937	6.0089	-2675.4750	113.31	-	(11.75)	(219.52)
23	41.50	40.25	1.031055901	0.030583423	3,150.08	3,144.33	1.001826688	0.001827018	0.028756405	-0.007945229	-96.9147	-2772.3897	5.75	1.25	(10.50)	(230.02)
24	38.25	41.50	0.921686747	-0.081549867	3,073.88	3,150.08	0.975810138	-0.024487242	-0.057062825	-0.02830622	256.2669	-2516.1229	(76.20)	(3.25)	(13.75)	(243.77)
25	40.00	38.25	1.045751634	0.044735894	3,089.83	3,073.88	1.005188882	0.005175466	0.039560428	-0.017502197	-38.1684	-2554.2912	15.95	1.75	(12.00)	(255.77)
26	40.50	40.00	1.0125	0.01242252	3,055.97	3,089.83	0.989041468	-0.011018019	0.023441539	0.063001967	-459.9680	-3014.2573	(33.86)	0.50	(11.50)	(267.27)
27	41.50	40.50	1.024691358	0.024391453	3,042.06	3,055.97	0.995448254	-0.004562137	0.02895359	0.052395129	-16.8357	-3031.0930	(13.91)	1.00	(10.50)	(277.77)
28	45.00	41.50	1.084337349	0.080989063	3,114.11	3,042.06	1.023684608	0.02340848	0.057560583	0.086514173	65.1187	-2965.9743	72.05	3.50	(7.00)	(284.77)
29	50.00	45.00	1.111111111	0.105360516	3,478.67	3,114.11	1.116424918	0.110131542	-0.004771026	0.052789557	-38.9816	-3004.9559	362.56	5.00	(2.00)	(286.77)
30	49.00	50.00	0.98	-0.020202707	3,473.99	3,478.67	0.999229147	-0.00077115	-0.019431557	-0.024202584	-145.8473	-3150.8032	(2.68)	(1.00)	(3.00)	(289.77)
31	48.75	49.00	0.994897959	-0.005115101	3,354.72	3,473.99	0.965667719	-0.03493548	0.029820379	0.010388822	-142.9244	-3293.7276	(119.27)	(0.25)	(3.25)	(293.02)
32	50.00	48.75	1.025841026	0.025317808	3,288.84	3,354.72	0.980361997	-0.01983339	0.045151198	0.074971578	621.6562	-2672.0714	(65.88)	1.25	(2.00)	(295.02)
33	55.00	50.00	1.1	0.09531018	3,460.55	3,288.84	1.052209898	0.050892617	0.044417563	0.089568761	19.4703	-2652.6011	171.71	5.00	3.00	(292.02)
34	60.00	55.00	1.090909091	0.087011377	3,530.43	3,460.55	1.020193322	0.019992141	0.067019236	0.111436799	24.4148	-2628.1863	69.88	5.00	8.00	(284.02)
35	61.50	60.00	1.025	0.024692613	3,466.92	3,530.43	0.98201069	-0.018153085	0.042845697	0.109864934	-1.4105	-2629.5968	(63.51)	1.50	9.50	(274.52)
36	61.50	61.50	1	0	3,403.22	3,466.92	0.981626343	-0.018544549	0.018544549	0.061390247	-44.1221	-2673.7189	(63.70)	-	9.50	(265.02)
37	50.00	61.50	0.81300813	-0.207014169	3,447.41	3,403.22	1.012984761	0.012901182	-0.219915352	-0.201370802	-428.0176	-3101.7365	44.19	(11.50)	(2.00)	(267.02)
7 07306E-05																
Ave.	47.24				3,372.30					0.01	(91.23)	(2,012.26)	(3.95)	(0.06)	(4.90)	(207.59)
STD	6.19				317.42					0.11	319.42	1,037.43	261.96	4.10	6.22	66.64

Schedule 13																
REA VIPINGO																
Per.	End of				End of							MBHRI	CUMULATIVE	GROWTH	GROWTH	CUM.
t	Month	PI,t-1	PI,VP,t-1	Ln(PI,VP,t-1)	Month	F	G	H	I	MBHRI	% GROWTH	GROWTH	ON INDEX	ON PRICE	ON PRICE	GROWTH
2	11 00				3,019 20				0							
3	11 30	11 00	1.027272727	0.026907453	3,031 02	3,019 20	1.003914944	0.003907301	0.023000152	0.023000152				11.82	0.30	0.30
4	11 45	11 30	1.013274336	0.013187004	3,144 33	3,031 02	1.037383455	0.036701634	-0.02351463	-0.000514478	-102 2368	-102 2368	113.31	0.15	0.45	12.27
5	11 50	11 45	1.004366812	0.004357305	3,150 08	3,144 33	1.001828688	0.001827018	0.002530287	0.002530287	3978 7635	3876 5266	5.75	0.05	0.50	12.77
6	11 20	11 50	0.973913043	-0.026433257	3,073.88	3,150 08	0.975810138	-0.024487242	-0.001946015	0.000584272	-102 7843	3773 7423	(76.20)	(0.30)	0.20	12.97
7	10 80	11 20	0.964285714	-0.036367644	3,089.83	3,073.88	1.005188882	0.005175466	-0.04154311	-0.043489125	-7543 3022	-3769 5599	15.95	(0.40)	(0.20)	12.77
8	10 10	10 80	0.935185185	-0.06701071	3,055.97	3,089.83	0.989041468	-0.011019019	-0.055991692	-0.097534802	124 2740	-3645 2859	(33.86)	(0.70)	(0.90)	11.87
9	10 50	10 10	1.03960396	0.038839833	3,042 06	3,055.97	0.995448254	-0.004562137	0.04340197	-0.012589721	-87 0921	-3732 3780	(13.91)	0.40	(0.50)	11.37
10	10 00	10 50	0.952380952	-0.048790164	3,114.11	3,042 06	1.023684608	0.02340848	-0.072198644	-0.028796673	128.7316	-3603 6464	72.05	(0.50)	(1.00)	10.37
11	11 00	10 00	1.1	0.09531018	3,478.67	3,114.11	1.118424918	0.110131542	-0.014821362	-0.087020006	202 1877	-3401 4587	362.56	1.00	-	10.37
12	10 50	11 00	0.954545455	-0.046520016	3,473.99	3,478.67	0.999229147	-0.00077115	-0.045748866	-0.060570228	-30.3951	-3431 8537	(2.68)	(0.50)	(0.50)	9.87
13	9 00	10 50	0.857142857	-0.15415068	3,354.72	3,473.99	0.965867719	-0.03493548	-0.1192152	-0.164964066	172 3517	-3259 5020	(119.27)	(1.50)	(2.00)	7.87
14	9 00	9 00	1	0	3,288.84	3,354.72	0.980361997	-0.01983339	0.01983339	-0.09938181	-39 7555	-3299 2575	(65.88)	-	(2.00)	5.87
15	9 00	9 00	1	0	3,460.55	3,288.84	1.052209898	0.050892617	-0.050892617	-0.031059227	-68.7476	-3368 0050	171.71	-	(2.00)	3.87
16	9 30	9 00	1.033333333	0.032789823	3,530.43	3,460.55	1.020193322	0.019992141	0.012797882	-0.038094935	22 8526	-3345 3525	69.88	0.30	(1.70)	2.17
17	9 30	9 30	1	0	3,468.92	3,530.43	0.98201069	-0.018153085	0.018153085	0.030950767	-181.2464	-3526 5989	(63.51)	-	(1.70)	0.47
18	9 20	9 30	0.989247312	-0.010810916	3,403.22	3,468.92	0.981626343	-0.018544549	0.007733633	0.025886718	-16.3616	-3542 9605	(63.70)	(0.10)	(1.80)	(1.33)
19	9 05	9 20	0.983695652	-0.016438726	3,447.41	3,403.22	1.012984761	0.012901182	-0.029339909	-0.021606275	-183.4647	-3728 4252	44.19	(0.15)	(1.95)	(3.28)
20	8 10	9 05	0.895027624	-0.110900696	3,314.85	3,447.41	0.961547945	-0.039210851	-0.071689845	-0.101029754	367.5945	-3358 8307	(132.58)	(0.95)	(2.90)	(6.18)
21	8 75	8 10	1.080246914	0.077189639	3,046.60	3,314.85	0.919078278	-0.084386159	0.161575798	0.089885952	-188.9698	-3547 8005	(268.25)	0.65	(2.25)	(8.43)
22	8 50	8 75	0.971428571	-0.028987537	3,115.14	3,046.60	1.02249721	0.02224788	-0.051235417	0.110340381	22 7560	-3525 0445	68.54	(0.25)	(2.50)	(10.83)
23	8 05	8 50	0.947058824	-0.054394072	3,377.34	3,115.14	1.084169572	0.080814322	-0.135208394	-0.186443812	-268.9715	-3794 0161	262.20	(0.45)	(2.95)	(13.88)
24	8 00	8 05	0.99378882	-0.00623055	2,562.23	3,377.34	0.75865326	-0.276210444	0.269979895	0.1347715	-172.2853	-3966 3014	(815.11)	(0.05)	(3.00)	(18.88)
25	7 00	8 00	0.875	-0.133531393	3,213.30	2,562.23	1.254102871	0.228420473	-0.359951866	-0.089971971	-166 7589	-4133 0603	651.07	(1.00)	(4.00)	(20.88)
26	7 00	7 00	1	0	3,015.01	3,213.30	0.938290854	-0.0636953	0.0636953	-0.296256566	229 2765	-3903 7838	(198.29)	-	(4.00)	(24.88)
27	7 05	7 00	1.007142857	0.007117468	3,016.44	3,015.01	1.000474294	0.000474181	0.006643287	0.070338586	-123.7425	-4027 5262	1.43	0.05	(3.95)	(28.83)
28	7 00	7 05	0.992907801	-0.007117468	2,907.55	3,016.44	0.983901155	-0.036766528	0.028649058	0.036292345	-48 4034	-4075 9296	(108.89)	(0.05)	(4.00)	(32.83)
29	6 20	7 00	0.885714286	-0.121360857	2,900.00	2,907.55	0.997403312	-0.002600065	-0.118760792	-0.089111734	-345 5387	-4421 4682	(7.55)	(0.80)	(4.80)	(37.83)
30	6 50	6 20	1.048387097	0.047252885	2,800.25	2,900.00	0.965603448	-0.035002038	0.082254923	-0.036505869	-59 0336	-4480 5018	(99.75)	0.30	(4.50)	(42.13)
31	6 50	6 50	1	0	2,810.32	2,800.25	1.003596107	0.003589657	-0.003589657	0.078665266	-315 4866	-4795 9885	10.07	-	(4.50)	(46.63)
32	6 00	6 50	0.923076923	-0.080042708	2,733.88	2,810.32	0.972729084	-0.027649669	-0.052393039	-0.055982696	-171.1657	-4967 1542	(76.64)	(0.50)	(5.00)	(51.63)
33	6 00	6 00	1	0	2,583.73	2,733.88	0.945147201	-0.056414596	0.056414596	0.004021557	-107 1836	-5074 3377	(149.95)	-	(5.00)	(56.63)
34	6 00	6 00	1	0	2,962.06	2,583.73	1.146427839	0.136650881	-0.136650881	-0.080236285	-2095 1548	-7169 4925	378.33	-	(5.00)	(61.63)
35	6 30	6 00	1.05	0.048790164	2,983.48	2,962.06	1.007231454	0.007205432	0.041584732	-0.095066149	18 4827	-7151 0098	21.42	0.30	(4.70)	(66.33)
36	6 00	6 30	0.952380952	-0.048790164	2,988.88	2,983.48	1.001809967	0.001808331	-0.050598495	-0.009013763	-90 5184	-7241 5282	5.40	(0.30)	(5.00)	(71.33)
37	5 70	6 00	0.95	-0.051293294	2,848.79	2,988.88	0.9531296	-0.048004393	-0.003288902	-0.053887397	497 8346	-6743 6936	(140.09)	(0.30)	(5.30)	(76.63)
									-0.599331545							
Ave.	8.55				3,105.64					(0.03)	(198.34)	(3,661.23)	(4.87)	(0.15)	(2.52)	(15.48)
STD	1.90				254.54					0.09	1,526.34	2,330.85	225.14	0.48	1.88	28.26

Schedule 14															
KENYA AIRWAYS															
Per.	End of					End of									CUM.
t	Month					Month									CUM.
	Price					NSE Index					MBHRI	CUMULATIVE	GROWTH	GROWTH	GROWTH
		PI,t-1	PI,t/PI,t-1	Ln(PI,t/PI,t-1)		NSE Index	F	G	H	I	MBHRI	% GROWTH	GROWTH	ON INDEX	ON PRICE
2						3,144.33				0					
3	7.05	-				3,150.08	3,144.33	1.001828688	0.001827018	-0.001827018			5.75	7.05	7.05
4	9.75	7.05	1.382978723	0.324239668		3,073.88	3,150.08	0.975810138	-0.024487242	0.34872891	0.348899892	-19087.2134	-19087.2134	(76.20)	2.70
5	10.10	9.75	1.035897438	0.035268139		3,089.83	3,073.88	1.005188882	0.005175466	0.030092673	0.378819583	9.2014	-19078.0120	15.95	9.75
6	9.35	10.10	0.925742574	-0.077159081		3,055.97	3,089.83	0.989041488	-0.011019019	-0.066140082	-0.036047389	-109.5157	-19187.5277	(33.86)	10.10
7	8.90	9.35	0.951871658	-0.049325067		3,042.06	3,055.97	0.995448254	-0.004562137	-0.04470293	-0.110902991	207.6589	-18979.8888	(13.91)	9.35
8	8.70	8.90	0.97752809	-0.022728251		3,114.11	3,042.06	1.023684608	0.02340848	-0.046136731	-0.09089986	-18.0368	-18997.9058	(0.20)	8.90
9	8.50	8.70	0.977011494	-0.023258862		3,476.67	3,114.11	1.116424918	0.110131542	-0.133388404	-0.179525135	97.4981	-18900.4075	(0.20)	8.70
10	8.45	8.50	0.994117647	-0.005899722		3,473.99	3,476.67	0.999229147	-0.00077115	-0.005128572	-0.138516978	-22.8426	-18923.2500	(2.68)	8.50
11	8.35	8.45	0.98816568	-0.011904903		3,354.72	3,473.99	0.985667719	-0.03493548	0.023030577	0.017902005	-112.9241	-19036.1741	(119.27)	8.45
12	8.35	8.35	1	0		3,288.84	3,354.72	0.980361997	-0.01983339	0.01983339	0.042863988	139.4367	-18896.7374	(65.88)	8.35
13	8.20	8.35	0.982035928	-0.018127385		3,460.55	3,288.84	1.052209898	0.050892617	-0.069020002	-0.049186611	-214.7505	-19111.4879	(0.15)	8.35
14	8.20	8.20	1	0		3,530.43	3,460.55	1.020193322	0.019992141	-0.019992141	-0.089012142	80.9682	-19030.5197	69.88	8.20
15	8.30	8.20	1.012195122	0.012121361		3,466.92	3,530.43	0.98201069	-0.018153085	0.030274445	0.010282305	-111.5516	-19142.0712	(63.51)	8.20
16	8.10	8.30	0.975903614	-0.024391453		3,403.22	3,466.92	0.981826343	-0.018544549	-0.005846904	0.024427542	137.5687	-19004.5025	(63.70)	8.30
17	7.60	8.10	0.938271605	-0.063715814		3,447.41	3,403.22	1.012984781	0.012901182	-0.078616997	-0.0824639	-437.5856	-19442.0882	44.19	8.10
18	7.25	7.60	0.953947368	-0.047146778		3,314.85	3,447.41	0.981547945	-0.039210851	-0.007935928	-0.084552924	2.5333	-19439.5550	(132.56)	7.60
19	7.50	7.25	1.034482759	0.033901552		3,046.60	3,314.85	0.919076278	-0.084386159	0.118287711	0.110351783	-230.5121	-19670.0671	(268.25)	7.25
20	7.50	7.50	1	0		3,115.14	3,046.60	1.02249721	0.02224788	-0.02224788	0.09803983	-12.9694	-19683.0365	68.54	7.50
21	7.30	7.50	0.973333333	-0.027028672		3,377.34	3,115.14	1.084169572	0.080814322	-0.107842995	-0.130090875	-235.4551	-19918.4916	262.20	7.30
22	8.00	7.30	1.095890411	0.091567194		3,562.23	3,377.34	1.054744266	0.053298336	0.038268858	-0.089574137	-46.5188	-19985.0104	184.89	7.30
23	7.30	8.00	0.9125	-0.091567194		3,213.30	3,562.23	0.902047313	-0.103088307	0.011521113	0.049789971	-171.5639	-20136.5743	(348.93)	8.00
24	7.00	7.30	0.95890411	-0.041984198		3,015.01	3,213.30	0.938290854	-0.0636953	0.0217311	0.033252214	-33.2150	-20169.7893	(198.29)	7.30
25	7.00	7.00	1	0		3,016.44	3,015.01	1.000474294	0.000474181	-0.000474181	0.021256919	-36.0737	-20205.8630	1.43	7.00
26	7.05	7.00	1.0071142657	0.007117468		2,907.55	3,016.44	0.963901155	-0.036766526	0.043883994	0.043409813	104.2150	-20101.6480	(108.89)	7.05
27	8.25	7.05	1.170212766	0.157185584		2,900.00	2,907.55	0.997403312	-0.002600085	0.159785649	0.203669642	369.1788	-19732.4692	(7.55)	7.05
28	7.00	8.25	0.848484848	-0.164303051		2,800.25	2,900.00	0.965603448	-0.035002038	-0.129301013	0.030484635	-85.0323	-19817.5015	(99.75)	8.25
29	7.15	7.00	1.021428571	0.021202208		2,810.32	2,800.25	1.003596107	0.003589657	0.017612551	-0.111688463	-466.3762	-20283.8778	10.07	7.00
30	7.30	7.15	1.020979021	0.020761991		2,733.68	2,810.32	0.972729084	-0.027649689	0.04841166	0.066024211	-159.1146	-20442.9924	(76.64)	7.15
31	7.30	7.30	1	0		2,583.73	2,733.68	0.945147201	-0.056414596	0.056414596	0.104826256	58.7694	-20384.2230	(149.95)	7.30
32	8.15	7.30	1.116438356	0.110143579		2,962.06	2,583.73	1.146427839	0.136650881	-0.026507302	0.029907294	-71.4697	-20455.6926	378.33	7.30
33	7.55	8.15	0.926380368	-0.076470364		2,983.48	2,962.06	1.007231454	0.007205432	-0.083675796	-0.110183098	-468.4155	-20924.1081	21.42	8.15
34	7.60	7.55	1.006822517	0.006800684		2,988.88	2,983.48	1.001809967	0.001808331	0.004792353	-0.078883443	-28.4069	-20952.5151	5.40	7.55
35	8.00	7.60	1.052631579	0.051293294		2,848.79	2,988.88	0.9531296	-0.048004393	0.099297687	0.104090004	-231.9542	-21184.4693	(140.09)	7.60
36	8.10	8.00	1.0125	0.01242252		2,767.89	2,848.79	0.971601978	-0.028809046	0.041231566	0.140529253	35.0074	-21149.4619	(80.90)	8.00
										0.266351979					
Ave.	7.95					3,129.16				0.01	(640.89)	(19,740.46)	(11.07)	0.23	7.95
STD	0.79					257.96				0.13	3,316.46	713.74	153.86	1.35	0.79

Schedule 16																
TPS SERENA																
Per.	End of Month											MBHRI				
t	Price	PI,t-1	PI,t/PI,t-1	Ln(PI,t/PI,t-1)	NSE Index	F	G	H	I	MBHRI	MBHRI	CUMULATIVE	GROWTH	GROWTH	CUM.	CUM.
											% GROWTH	GROWTH	ON INDEX	ON PRICE	ON PRICE	ON INDEX
2	16.50				3,460.55					0						
3	17.25	16.50	1.045454545	0.044451763	3,530.43	3,460.55	1.020193322	0.019992141	0.024459622	0.024459622			69.88	0.75	0.75	69.88
4	17.50	17.25	1.014492754	0.014388737	3,466.92	3,530.43	0.98201069	-0.018153085	0.032541822	0.057001444	133.0430	133.0430	(63.51)	0.25	1.00	70.86
5	17.25	17.50	0.985714286	-0.014388737	3,403.22	3,466.92	0.981626343	-0.018544549	0.004155812	0.036697634	-35.8198	97.4232	(63.70)	(0.25)	0.75	71.63
6	16.50	17.25	0.956521739	-0.044451763	3,447.41	3,403.22	1.012984761	0.012901182	-0.057352945	-0.053197133	-244.9807	-147.5374	44.19	(0.75)	-	71.63
7	13.80	16.50	0.836363636	-0.178691789	3,314.85	3,447.41	0.961547945	-0.039210851	-0.139480938	-0.196833863	270.0084	122.4710	(132.56)	(2.70)	(2.70)	68.93
8	14.00	13.80	1.014492754	0.014388737	3,046.60	3,314.85	0.919076278	-0.084386159	0.098774896	-0.040706042	-79.3198	43.1514	(268.25)	0.20	(2.50)	66.43
9	15.00	14.00	1.071428571	0.068992871	3,115.14	3,046.60	1.02249721	0.02224788	0.046744991	0.145519888	-457.4897	-414.3383	68.54	1.00	(1.50)	64.93
10	16.00	15.00	1.066666667	0.064538521	3,377.34	3,115.14	1.084169572	0.080814322	-0.016275801	0.03046919	-79.0618	-493.4001	262.20	1.00	(0.50)	64.43
11	16.50	16.00	1.03125	0.030771859	3,562.23	3,377.34	1.054744266	0.053298336	-0.022526677	-0.038802478	-227.3499	-720.7500	184.89	0.50	-	64.43
12	13.60	16.50	0.824242424	-0.193290588	3,213.30	3,562.23	0.902047313	-0.103088307	-0.090202281	-0.112728959	190.5200	-530.2300	(348.93)	(2.90)	(2.90)	61.53
13	14.00	13.60	1.029411765	0.028987537	3,015.01	3,213.30	0.938290854	-0.0636953	0.092682836	0.002480555	-102.2005	-632.4304	(198.29)	0.40	(2.50)	59.03
14	13.90	14.00	0.992857143	-0.007168489	3,016.44	3,015.01	1.000474294	0.000474181	-0.007642671	0.085040166	3328.2717	2695.8412	1.43	(0.10)	(2.60)	56.43
15	13.00	13.90	0.935251799	-0.066939483	2,907.55	3,016.44	0.963901155	-0.036766526	-0.030172957	-0.037815627	-144.4680	2551.3733	(108.89)	(0.90)	(3.50)	52.93
16	13.05	13.00	1.003846154	0.003838776	2,900.00	2,907.55	0.997403312	-0.002600065	0.006438841	-0.023734115	-37.2373	2514.1380	(7.55)	0.05	(3.45)	49.48
17	13.10	13.05	1.003831418	0.003824096	2,800.25	2,900.00	0.965603448	-0.035002038	0.038826135	0.045264976	-290.7169	2223.4191	(98.75)	0.05	(3.40)	46.08
18	11.50	13.10	0.877862595	-0.130285195	2,810.32	2,800.25	1.003596107	0.003589657	-0.133854852	-0.095028717	-309.9387	1913.4803	10.07	(1.80)	(5.00)	41.08
19	11.55	11.50	1.004347826	0.004338402	2,733.68	2,810.32	0.972729084	-0.027649669	0.031988071	-0.101866781	7.1958	1920.6761	(78.64)	0.05	(4.95)	36.13
20	11.70	11.55	1.012987013	0.012903405	2,583.73	2,733.68	0.945147201	-0.056414596	0.069318	0.101306071	-199.4496	1721.2266	(149.95)	0.15	(4.80)	31.33
21	14.50	11.70	1.239316239	0.214559808	2,962.06	2,583.73	1.146427839	0.136650881	0.077908927	0.147226927	45.3288	1766.5554	378.33	2.80	(2.00)	29.33
22	13.00	14.50	0.896551724	-0.109199292	2,983.48	2,962.06	1.007231454	0.007205432	-0.116404724	-0.038495797	-126.1473	1840.4081	21.42	(1.50)	(3.50)	25.83
23	12.50	13.00	0.961538462	-0.039220713	2,988.88	2,983.48	1.001809967	0.001808331	-0.041029044	-0.157433768	308.9635	1949.3716	5.40	(0.50)	(4.00)	21.83
24	13.00	12.50	1.04	0.039220713	2,848.79	2,988.88	0.9531296	-0.048004393	0.087225106	0.048198062	-129.3432	1820.0285	(140.09)	0.50	(3.50)	18.33
25	13.40	13.00	1.030769231	0.030305349	2,767.89	2,848.79	0.971601978	-0.028809046	0.059114395	0.146339501	216.7792	2036.8076	(80.90)	0.40	(3.10)	15.23
26	13.60	13.40	1.014925373	0.014815086	2,760.05	2,767.89	0.997167517	-0.002836502	0.017651587	0.076765982	-47.5425	1989.2851	(7.84)	0.20	(2.90)	12.33
27	13.60	13.60	1	0	2,756.43	2,760.05	0.99868843	-0.001312431	0.001312431	0.018964019	-75.2963	1913.9688	(3.62)	-	(2.90)	9.43
28	14.00	13.60	1.029411765	0.028987537	2,744.55	2,756.43	0.995690077	-0.004319237	0.033306774	0.034619205	82.5521	1996.5208	(11.88)	0.40	(2.50)	6.93
29	14.45	14.00	1.032142857	0.031637085	2,493.50	2,744.55	0.90852781	-0.095929781	0.127568666	0.16087364	364.6948	2381.2156	(251.05)	0.45	(2.05)	4.88
30	11.10	14.45	0.76816609	-0.263749306	2,428.09	2,493.50	0.973767796	-0.026582406	-0.2371669	-0.109600034	-168.1280	2193.0876	(65.41)	(3.35)	(5.40)	(0.52)
31	16.00	11.10	1.441441441	0.365643614	2,309.33	2,428.09	0.951089128	-0.050147501	0.415791115	0.178624215	-282.9782	1930.1093	(118.76)	4.90	(0.50)	(1.02)
32	16.20	16.00	1.0125	0.01242252	2,294.12	2,309.33	0.993413674	-0.006808111	0.019030631	0.434821746	143.4282	2073.5376	(15.21)	0.20	(0.30)	(1.32)
33	16.05	16.20	0.990740741	-0.009302393	2,303.18	2,294.12	1.003949227	0.003941449	-0.013243842	0.00578679	-98.6692	1974.8684	9.06	(0.15)	(0.45)	(1.77)
34	16.15	16.05	1.00623053	0.0062112	2,301.07	2,303.18	0.999083875	0.000916545	0.007127745	-0.006116097	-205.6907	1769.1777	(2.11)	0.10	(0.35)	(2.12)
35	16.50	16.15	1.021671827	0.021440331	2,294.96	2,301.07	0.987344714	-0.002658818	0.024099149	0.031226894	-610.5690	1158.6088	(6.11)	0.35	-	(2.12)
36	17.95	16.50	1.087878788	0.084229734	2,233.18	2,294.96	0.973080141	-0.027288836	0.11151857	0.135617719	334.2978	1492.9066	(61.78)	1.45	1.45	(0.67)
37	17.00	17.95	0.947075209	-0.054376771	2,162.20	2,233.18	0.968215728	-0.032300357	-0.022076414	0.089442155	-34.0483	1458.8582	(70.98)	(0.95)	0.50	(0.17)
									0.500154277							
Avg.	14.58				2,870.46					0.03	42.91	1,309.50	(37.10)	0.01	(1.98)	33.76
STD	1.91				414.33					0.12	620.61	1,080.86	136.76	1.46	1.91	28.00

Schedule 17																
ATHI RIVER MINING																
Per.	End of Month				End of Month							MBHRI	CUMULATIVE	GROWTH	GROWTH	CUM
t	Price	PI,t-1	PI,t/PI,t-1	Ln(PI,t/PI,t-1)	NSE Index	F	G	H	I	MBHRI	% GROWTH	GROWTH	ON INDEX	ON PRICE	ON PRICE	GROWTH
	Price				3,403.22					0						
2	11.50	-			3,447.41	3,403.22	1.012984761	0.012901182	-0.012901182	-0.012901182				44.19	11.50	11.50
3	9.00	11.50	0.782608696	-0.245122458	3,314.85	3,447.41	0.961547945	-0.039210851	-0.205911607	-0.21881279	1596.0677	1596.0677	(132.58)	(2.50)	9.00	53.19
4	9.00	9.00	1	0	3,046.60	3,314.85	0.919076278	-0.084386159	0.084386159	-0.121525448	-44.4615	1551.6063	(268.25)	-	9.00	62.19
5	9.05	9.00	1.005555556	0.00554018	3,115.14	3,046.60	1.02249721	0.02224788	-0.0167077	0.067678459	-155.6908	1395.9155	68.54	0.05	9.05	71.24
6	9.55	9.05	1.055248619	0.053776397	3,377.34	3,115.14	1.084169572	0.080814322	-0.027037928	-0.043745628	-164.6374	1231.2781	262.20	0.50	9.55	80.79
7	9.50	9.55	0.994764398	-0.005249356	3,562.23	3,377.34	1.054744266	0.053298336	-0.058547692	-0.085585617	95.6438	1326.9219	184.89	(0.05)	9.50	90.29
8	9.50	9.50	1	0	3,213.30	3,562.23	0.902047313	-0.103088307	0.103088307	0.044540615	-152.0422	1174.8797	(348.93)	-	9.50	99.79
9	6.25	9.50	0.657894737	-0.418710335	3,015.01	3,213.30	0.938290854	-0.0636953	-0.355015035	-0.251926729	-665.6112	509.2685	(198.29)	(3.25)	6.25	106.04
10	7.50	6.25	1.2	0.182321557	3,016.44	3,015.01	1.000474294	0.000474181	0.181847376	-0.17316766	-31.2627	478.0058	1.43	1.25	7.50	113.54
11	9.00	7.50	1.2	0.182321557	2,907.55	3,016.44	0.963901155	-0.036766526	0.219088083	0.400935458	-331.5302	146.4756	(108.89)	1.50	9.00	122.54
12	7.00	9.00	0.777777778	-0.251314428	2,900.00	2,907.55	0.997403312	-0.002600065	-0.248714363	-0.02962628	-107.3893	39.0863	(7.55)	(2.00)	7.00	129.54
13	6.35	7.00	0.907142857	-0.097455336	2,800.25	2,900.00	0.965603448	-0.035002038	-0.062453298	-0.311167661	950.3096	989.3959	(99.75)	(0.65)	6.35	135.89
14	6.35	6.35	1	0	2,810.32	2,800.25	1.003596107	0.003589657	-0.003589657	-0.086042955	-78.7758	910.6201	10.07	-	6.35	142.24
15	6.25	6.35	0.984251969	-0.015873349	2,733.68	2,810.32	0.972729084	-0.027649669	0.01177632	0.008186663	-112.3960	798.2241	(76.64)	(0.10)	6.25	148.49
16	6.00	6.25	0.96	-0.040821995	2,583.73	2,733.68	0.945147201	-0.056414596	0.015592601	0.027368921	234.3111	1032.5352	(149.95)	(0.25)	6.00	154.49
17	6.60	6.00	1.1	0.09531018	2,982.06	2,583.73	1.146427839	0.136650881	-0.041340701	-0.0257481	-194.0779	838.4573	378.33	0.60	6.60	161.09
18	6.60	6.60	1	0	2,983.48	2,982.06	1.007231454	0.007205432	-0.007205432	-0.048546133	88.5426	926.9999	21.42	-	6.60	167.69
19	6.00	6.60	0.909090909	-0.09531018	2,988.88	2,983.48	1.001809967	0.001808331	-0.097118511	-0.104323943	114.8965	1041.8964	5.40	(0.60)	6.00	173.69
20	5.00	6.00	0.833333333	-0.182321557	2,848.79	2,988.88	0.9531296	-0.048004393	-0.134317164	-0.231435675	121.8433	1163.7397	(140.09)	(1.00)	5.00	178.69
21	5.00	5.00	1	0	2,767.89	2,848.79	0.971601978	-0.028809046	0.028809046	-0.105508119	-54.4115	1109.3282	(80.90)	-	5.00	183.69
22	5.50	5.00	1.1	0.09531018	2,760.05	2,767.89	0.997167517	-0.002836502	0.098146681	0.128955727	-220.3279	889.0003	(7.84)	0.50	5.50	189.19
23	5.50	5.50	1	0	2,756.43	2,760.05	0.99868843	-0.001312431	0.001312431	0.099459113	-21.6584	867.3419	(3.62)	-	5.50	194.69
24	6.05	5.50	1.1	0.09531018	2,744.55	2,756.43	0.995690077	-0.004319237	0.099629417	0.100941848	1.4908	868.8327	(11.88)	0.55	6.05	200.74
25	5.55	6.05	0.917355372	-0.086260344	2,493.50	2,744.55	0.90852781	-0.095929781	0.009669437	0.109298854	8.2790	877.1117	(251.05)	(0.50)	5.55	206.29
26	6.00	5.55	1.081081081	0.077961541	2,428.09	2,493.50	0.973767796	-0.026582406	0.104543947	0.114213384	4.4964	881.6081	(65.41)	0.45	6.00	212.29
27	5.10	6.00	0.85	-0.162518929	2,309.33	2,428.09	0.951089128	-0.050147501	-0.112371429	-0.007827481	-106.8534	774.7548	(118.76)	(0.90)	5.10	217.39
28	5.55	5.10	1.088235294	0.084557388	2,294.12	2,309.33	0.993413674	-0.006608111	0.091165499	-0.021205929	170.9164	945.6711	(15.21)	0.45	5.55	222.94
29	5.75	5.55	1.036036036	0.035401927	2,303.18	2,294.12	1.003949227	0.003941449	0.031460478	0.122625978	-678.2627	267.4084	9.06	0.20	5.75	228.69
30	4.75	5.75	0.826086957	-0.191055237	2,301.07	2,303.18	0.999083875	-0.000916545	-0.190138692	-0.158678214	-229.4002	38.0083	(2.11)	(1.00)	4.75	233.44
31	5.50	4.75	1.157894737	0.146603474	2,294.96	2,301.07	0.997344714	-0.002658818	0.149262292	-0.0408764	-74.2394	-36.2312	(6.11)	0.75	5.50	238.94
32	6.30	5.50	1.145454545	0.135801541	2,233.18	2,294.96	0.973080141	-0.027288836	0.163090377	0.312352669	-864.1394	-900.3705	(61.78)	0.80	6.30	245.24
33	6.40	6.30	1.015873016	0.015748357	2,162.20	2,233.18	0.968215728	-0.032300357	0.048048714	0.21113909	-32.4036	-932.7742	(70.98)	0.10	6.40	251.64
34	6.00	6.40	0.9375	-0.064538521	2,052.90	2,162.20	0.949449635	-0.051872794	-0.012665727	0.035382987	-83.2419	-1016.0160	(109.30)	(0.40)	6.00	257.64
35	4.55	6.00	0.758333333	-0.276632236	2,003.10	2,052.90	0.975741634	-0.024557447	-0.252074789	-0.264740516	-848.2142	-1864.2302	(49.80)	(1.45)	4.55	262.19
36	4.50	4.55	0.989010989	-0.011049836	1,966.52	2,003.10	0.981738306	-0.018430497	0.007380661	-0.244694128	-7.5721	-1871.8023	(36.58)	(0.05)	4.50	266.69
										-0.38981308						
Avg.	6.69				2,747.26					(0.02)	(55.05)	530.85	(41.05)	0.13	6.69	187.07
STD	1.73				432.94					0.16	434.53	893.40	135.90	2.20	1.73	65.10