

**THE HERD EFFECT DURING AN INITIAL PUBLIC OFFERING AND
STOCK RETURNS AT THE NAIROBI STOCK EXCHANGE.**

BY

MUSAVA STEPHEN MUEMA

D61/77034/2012

**A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENT FOR THE AWARD OF DEGREE OF MASTER OF BUSINESS
ADMINISTRATION, SCHOOL OF BUSINESS, UNIVERSITY OF NAIROBI**

September 2014

DECLARATION

DECLARATION

This research Project is my original work and has not been presented in any other University.

Signed..... Date

Stephen Musava

D61/77034/2012

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

Signed..... Date

ZipporahOsonu

Lecturer, Department of Finance and Accounting

School of Business, University Of Nairobi

Signed..... Date

Mr. HerickOndigo

Chairman

Department of Finance and Accounting

School of Business, University of Nairobi

DEDICATION

I would like to dedicate this work to my mother, a scion of hope on whose shoulders I have always ridden. In faith you called out the hidden talent in me and in its pursuit i have attained thus far. I celebrate you mother. My brother Julius for giving me a lease of life, thank you. My family for believing in me even when I didn't believe in myself.

ACKNOWLEDGEMENTS

First of all, I would like to thank my God for his Grace and providence that allowed me to pursue this course.

Secondly, I am greatly indebted to Madam Zipporah for her unwavering support, guidance, corrections, constructive criticism. Without you this project could not have seen the light of the day. For the many hours you put in to review and give me guidance, I am greatly honoured to have had your priceless supervision.

To Belinda and Aphax, your support made my life easier through this undertaking. I owe you.

Finally to my college mates, Ibrahim and Philip for your support during the entire period of study and project.

LIST OF ABBREVIATIONS

CDSC	Central Depository and Settlement Corporation
CSAD	Cross Sectional Absolute Deviation
CSSD	Cross sectional standard Deviation
IPO	Initial Public Offering
NSE	Nairobi Securities exchange
PIPO	Privatization Initial Public Offering

LIST OF TABLES

Table 1: Descriptive statistics of Individual IPOs.

Table 2: Summary of Individual IPO's Regression analysis.

Table 3: Regression analysis for the market.

ABSTRACT

The NSE has witnessed ten IPO in the period 2006-2012. All these IPOs were under priced to attract investors and despite the discounted prices these primary offers were issued at, investor scrambled for some while giving a wide berth to others. This research project sought to find out whether such occurrences could have been explained by herd behaviour. Using daily price data from NSE I computed the both descriptive and regression analysis of returns to test for the presence of herding as suggested by Chang, Cheng, and Khorana (2000). The regression coefficient Y_2 was both significant and negative in some IPOs. These were Scan Group Limited, Safaricom Limited, Eveready Limited and CIC Insurance Group Limited. This was confirmation of existence of herding during the introductory IPOs of these stocks. Their Post issue return, on the other hand were negative, effectively signifying herding influenced returns negatively. However Regression analysis for Kenya electricity generating company Limited, Access Kenya Limited, Kenya Re-insurance corporation Limited, Centum Investment Limited, British American Investment limited and CFC Insurance Holdings Limited were in line with their descriptive statistics. Either their Y_2 was not significant or not negative at all indicating no possible herding during their issue. Their post issue returns ran parallel with the market returns.

TABLE OF CONTENTS

DECLARATION	i
DEDICATIONS	ii
ACKNOWLEDGEMENTS	iii
TABLE OF CONTENTS	iv
ABBREVIATIONS	vi
LIST OF TABLES	vii
ABSTRACT	viii
CHAPTER ONE: INTRODUCTION	1
1.1 Background to the Study.....	1
1.1.1 Herd Effect.....	2
1.1.2 Stock Returns.....	4
1.1.3 Herding Effect and Stock Returns.....	5
1.1.4 Initial Public Offerings at the Nairobi Securities Exchange.....	6
1.2 Research Problem	7
1.3 The Research Objective.....	9
1.4 Value of the Study.....	9
CHAPTER TWO: LITERATURE REVIEW	10
2.1 Introduction	10
2.2 Theoretical Framework.....	10
2.2.1 Efficient Market Hypothesis.....	10
2.2.2 Heuristics.....	11
2.3 Determinants of IPO Stock Returns.....	14
2.4 Empirical Literature Review	15
2.5 Summary of Literature Review.....	19
CHAPTER THREE: RESEARCH METHODOLOGY	21
3.1 Introduction	21
3.2 Research Design.....	21

3.3 Population.....	21
3.4 Data collection.....	22
3.5 Data Analysis.....	22
CHAPTER FOUR: DATA ANALYSIS, PRESENTATION AND INTERPRETATION.....	24
4.1 Introduction	24
4.2 Descriptive Statistics.....	24
4.3 Regression Analysis.....	27
4.4 Regression Analysis for the Market.....	28
4.5 Discussion of the Results.....	30
CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS	32
5.1 Introduction	32
5.2 Summary of Findings.....	32
5.3 Conclusion.....	33
5.4 Recommendations	33
5.5 Limitations to the Study	34
5.6 Suggestions for Further Studies	34
REFERENCES	35
APPENDICES	38
Appendix 1 Descriptive Statistics.....	38
Appendix 2 Individualised Regression Analysis	40
Appendix 3 Average Daily Price Data for the Period	45

CHAPTER ONE: INTRODUCTION

1.1 Background to the Study

In economics and finance, the term herding or herd behavior means the process where economic agents imitate each other's actions and/or base their decisions upon the actions/decisions of others. It may be a group of market participants who trade in the same direction during the same time (Nofsinger&Sias, 1999). It refers investors who ignore their initial assessment based on the available information and trade by following the trend in the previous trade (Avery and Zemsky, 1998). Welch (2000) defines it as mutual imitation while DeBondt and Forbes (1999) posits it as excessive agreement in analyst predictions. These definition sums up herding as behavior of investing devoid of common logic and factual analysis of stocks or securities. The difference between spurious trading and herding is that in spurious trading the investor has analyses correctly albeit an illegitimate market variable whereas in herding the results of the analysis are all ignored and rather the investor rely on instinct , rather the “herd instinct” to invest.

Ritter (1998) observes that an initial public offering (IPO) occurs when a security is sold to the general public for the first time, with the expectation that a liquid market will develop. Stock returns refer to the gain or loss of a security in a particular period. The return consists of the income and the capital gains relative on an investment. The IPO stock returns have been shown to statistically change positively or otherwise in the presence of behavioral factors at the purchase of IPO.

The first paper in behavioral finance dates back to the 1960 from an empirical research by Ball and Brown (1960) who showed that stock prices rose or fell when firms reported earnings that

were higher or lower than expected by a simple time-series model. The mid 1980's witnessed the gradual rise of this new paradigm. Many of the research done were building on the earlier works such as Kahneman and Tvesky (1972, 1973 and 1979). Shefrin and Satman (1985) applying the prospect theory by Tversky and Kahnmean (1979) explained disposition effect. Behavioral finance is characterized by investors' inability or his limit thereof to analyze information and systematic biases in making decisions. Investor with less and less information and short term horizon continue to influence the market through noise trading. Both Thaler (1993) and Christine and Huag (1995) concludes that investors herds more during an IPO or financial stress. Further Chang et al (2000) believed that herding was important especially during an IPO as it allowed investor the psychological comfort.

The Nairobi Securities Exchange (NSE) as is commonly known has a total of 60 listed companies which are grouped into various industries or sectors. These categories are Agricultural, commercial, telecommunication, automobile, banking sector, Insurance, Investment, manufacturing, construction and Energy Sectors. Like all other exchanges in the world, the NSE is open for trading from Monday to Friday and closed on Saturday and during public holidays. The measure of performance at NSE is the market Index. The Nairobi securities exchange has had 13 Initial public Offerings since late 1980s. A closer examination of the uptake or lack thereof of the securities offered at each offering goes against the grain of investor rationality based on analysis of available information. Most of these IPOs were underpriced yet a number of these were oversubscribed while some were undersubscribed.

1.1.1 Herd Effect

Investors are said to herd when their investment behavior tend to converge to the average even when market information analysis is to the contrary (Hirshleifer and Teoh, 2003). In herding

investors and economic agents imitate each other's actions and/or base their decisions upon the actions/decisions of others. Market participants trade in the same direction during the same time forming a correlated behavior or a group of investors following each other into or out of the same securities among other similar descriptions.

There are four popular theories explaining why institutional investors might trade together, commonly referred to as herding. First, managers may disregard their private information and trade with the crowd due to the reputational risk of acting differently from other managers (Scharfstein and Stein,1990). Second, managers may trade together simply because they receive correlated private information, perhaps from analyzing the same indicators (Froot, Scharfstein& Stein, 1992;Hirshleifer, Subrahmanyam, & Titman, 1994). Third, managers may infer private information from the prior trades of better-informed managers and trade in the same direction (Bikhchandani, Hirshleifer, and Welch,1992) and fourth, institutional investors may share an aversion to stocks with certain characteristics, such as stocks with lower liquidity or stocks that are less risky (Falkenstein,1996).Other explanations as to why investor herd may include the fact that market participants may infer information from the actions of previous participants, investors may react to the arrival of fundamental information, institutional investors may herd for reasons related to remuneration, investors may simply be irrational and herd behavior can arise as a consequence of psychological and/or social conventions, Spyrou (2013).

Even though there exists an argument that herding may result in efficient outcomes, the obvious outcome of herding is inefficient markets. Market participants trade in similar manner regardless of factual analysis and informed predictions. Accumulations of unproductive counters by market

participant against expert analysis as well as skewed market return are some of the indications of herded counters. Other indications may include destabilized prices leading to bubble-like episodes in financial markets (Ombai, 2010).

Christie and Huang (1995) gave a test to identify herding behavior in the market. They used cross sectional standard deviation (CSSD) as a measure of average proximity of individual asset returns to the realized market average. They analyzed that market alternates between normal and extreme phases and that herding exists in periods of market extremes. They argued that when investors follow aggregate market movement, disregarding their own judgment (herding) then individual asset returns will not diverge much from overall market return. Therefore value of CSSD gets reduced. Olsen (1996) analyzed the implications of herding behavior on earnings forecasts. Herding results in a reduction in dispersion and an increase in the mean of the distribution of expert forecasts creating a positive bias in earnings estimates. Chang et al. (2000) extended the work of Christie and Huang and established a nonlinear relationship between level of equity return dispersions and the overall market return.

1.1.2 Stock Returns

Davis (2001) defined stock returns as the gain or loss of a security in a particular period consisting of income in the form of dividends and the capital gains relative on an investment. It is usually quoted as a percentage. The theory of stock price behavior has to start with Markowitz (1952, 1959). The Markowitz model is a single-period model, where an investor forms a portfolio at the beginning of the period. The investor's objective is to maximize the portfolio's expected return, subject to an acceptable level of risk (or minimize risk, subject to an acceptable expected return). The assumption of a single time period, coupled with assumptions about the investor's

attitude toward risk, allows risk to be measured by the variance (or standard deviation) of the portfolio's return. While building on the Markowitz framework, Sharpe (1964), Lintner (1965) and Mossin (1966) independently developed what has come to be known as the Capital Asset Pricing Model (CAPM). This model assumes that investors use the logic of Markowitz in forming portfolios. It further assumes that there is a risk-free asset (government security) that has a certain return.

1.1.3 Herding Effect and Stock Returns

When investors converge to the same IPO, the resultant effect is oversubscription. If such an IPO was underpriced to warrant such a frenzy then, according to arbitrage pricing theory, supply and demand factors equalize at equilibrium as the stock adjusts to correct pricing. Suppose it was just herding, then market supply outnumbers the demand when the stock opens for trading hence prices will plummet. This will cause both the capital gains and dividend returns to fall sharply. If the stock were overpriced, then all investors will give a wide berth to the stock during the IPO. When it opens for trading demand will outnumber the supply causing prices to adjust as the market tends to settle at the equilibrium.

Dechow and Welch (1996) and Hirshleifer and Teoh (2001) provide conclusive evidence that there is a measurable herd effect in IPO especially for young growth firms in the US. They observed that for those securities that were statistically shown to be herded, the subsequent capital gains and dividends were significantly lower than those which showed less of herding. They thus argued that success of IPO in the US is not a factor of the stock book value but rather a behavioral factor. Choe, Kho, and Stulz (1999) found some evidence of herding especially in IPOs in international markets. Their analysis found conclusive evidence of negative correlation between the level of herding and stock returns. Similarly Choe et al (2001) found strong evidence

of herding among foreign institutions operating in Korea while investing in IPOs. Their observation further concurred that the higher the herding the lower the subsequent returns. Although most studies look at stocks especially IPOs, Oehler and Chao (undated) found out that the level of return was statistically inversely proportional.

1.1.4 Initial Public Offerings at the Nairobi Securities Exchange.

Ngugi (2003) notes that the Nairobi Securities Exchange was constituted in 1954 as a voluntary association of stock registered under societies Act. The newly established securities exchange was charged with the responsibility of developing the stock market. Tremendous infrastructure and policy plus reforms process have been witnessed to date. Late into 2013, the exchange changed its name to the Nairobi Securities Exchange.

The exchange has witnessed 13 IPOs since the early 80s to date. These include the Kenya Commercial Bank listing in 1988 while National Bank of Kenya followed suit in 1994. In cue, Kenya Airways listed in 1996. Kenya Electricity Generating Company Limited IPO came along in 2006. This IPO ushered the new era of NSE complete with CDSC accounts. Perhaps due to the absence of IPOs for a long time, lessons were learned by all. Later that year Scan Group Limited listed just before Eveready Limited hit the market for the first time. Many investors gave the Access Kenya Limited and Kenya Re-Insurance Corp Ltd listing of 2007 wide berth due to the disappointments of Eveready Limited. Safaricom Limited IPO in 2008 was considered and still is the largest IPO in the Kenyan market. More recently Co-operative Insurance of Kenya (2011) and Britak, currently known as Britam (2011) took cue and offering to the public their shares. (NSE2013).

The Nairobi Securities Exchange has three types of indices; these are NSE 20 share Index, NSE All Share Index (NASI) and FTSE Share Index. NSE 20 share Index comprises 20 selected

companies. In 2008, the NSE All Share Index (NASI) was introduced as an alternative index. It is a measure of overall indicator of market performance. The Index incorporates all the traded shares of the day. Its attention is therefore on the overall market capitalization rather than the price movements of selected companies. FTSE Share index is divided into two: FTSE 25 Index; will comprise the exchange's 25 most liquid stocks, while the FTSE 15 Index will be made up of the exchange's 15 largest stocks by market capitalization (NSE, 2013) .

1.2 Research Problem

The efficient market hypothesis of Fama (1970) underscored the fact that if markets are efficient in any of their three forms then security prices reflect fully available information. The main implication of this hypothesis is that stock are always correctly priced depending on the available information and if they are not, then investors are quick to pick undervalued stocks hence increasing demand thereby demand over stripping supply leading to increase in prices to the equilibrium. The main aim of any investor is the promised return on the stock hence they would always like to maximize the same. The main logical explanation would thus be all undervalued stocks, and almost all IPOs are, are oversubscribed while overvalued ones, and seldom any is, and are undersubscribed.

Nairobi Securities Exchange is never perfect, which provides a classic case study for stock return variations, caused by market imperfections (Mokua, 2003). He further added that it is important for investor to understand the stock market imperfections to be able to take advantage of them. Nairobi Securities Exchange has depicted various patterns with respect to herding in IPO and their returns. This implies that herding has a direct link to future prices of the stock and their consequent returns. It is therefore critical to study what effect herding has on future prices of stocks especially those being issued for the first time at the NSE. A clear example is the

Safaricom IPO, bought by millions of Kenyans at the initial offering. Since much of the returns predictions were purely herded, the stock prices stagnated at less than 60% of the offer prices for more than 7 years.

Examination of IPOs issued since mid-90s at the NSE, there seems to be a trend, under subscription (Eveready and Kenya Re) or oversubscription (Kenya airways and Safaricom). All these IPOs have been studied and found to be underpriced, implying that classical pricing models have failed to account for these trends. Further studies suggest that these trends can't be attributed to financial crises or economic depression. The implication of these truths is that there is another behavioral factor that plays a key determinant role in the rate of IPO uptake in the Kenyan market.

Ombai(2010) collected evidence of the existence of herding during global financial crisis at the NSE. His findings indicated that during financial crises investors herded significantly. Bante(2010) while investigating the Comparative performance of PIPO and IPO noted that both IPO and PIPOs were underpriced in Kenya. He however found out that some were under subscribed while others were oversubscribed. This research sought to document, analyze and compare the IPO performance of privately-owned and government-owned companies at the NSE between 1984 and 2008. Moko, (1995) and Maina, (2006) sought to establish the general performance of IPO and their relationships to book value, subscription rates and issue prices. Their studies found no correlation whatsoever between the security book value, issue prices and subscription rate. It is clear that no study has been able to conclusively determine the subscription rate of IPOs at the Nairobi Securities Exchange. These observed trends point towards behavioral factors of investor irrationality. Could such trends be explained by investors' herd effect during IPOs?

1.3 The Research Objective.

The purpose of the study was to investigate presence and effect of herd behavior during an IPO as demonstrated by future returns on the stocks at the NSE.

1.4 Value of the Study.

The study is aimed at enlightening policy makers such as the government, Capital Markets Authority and NSE management on the effects of herding during an IPO on future returns of stocks for policy formulations and implementation. Such information will be crucial in policy formulation to protect future stock investors from self-damage.

The study also seeks to enrich the existing literature to help investor differentiate noise trading from both fundamental trading and spurious herding. This will bridge the gap that exists in the Kenyan markets, filling the knowledge gap in the field of behavioral finance understanding especially during an IPO. It will also open a new field of research and understanding of behavior influences on the local primary capital market.

The main aim of the issuer is to raise capital; hence this study also seeks to inform future IPO issuers of the behavioral quality of the NSE investor. By so doing enhance their subscription rate by tapping into the herd behavior of the investors.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This section of the study seeks to outline the overall literature so far reviewed in this area. It will include the comparison between the neoclassical finance theories as well as the behavioural finance theories. The chapter will conclude by looking at empirical studies and their literature review summations.

2.2 Theoretical Framework

For the greater part the 20th century theoretical and empirical evidence suggested that CAPM, EMH and other rational financial theories did a respectable job of predicting and explaining certain events. However, over time, studies in both finance and economics began find anomalies and behaviors that couldn't be explained by these theories. While these theories could explain certain "idealized" events, the real world proved to be a very messy place in which market participants often behaved very unpredictably. One of the most elementary assumptions that conventional economics and finance makes is that people are rational. I look at these theories below.

2.2.1 Efficient Market Hypothesis

Developed by Fama (1970), it described the role of capital markets to be the efficient and effective allocation of ownership of the economy's capital stock. Efficient market theory is based on the notion that people behave rationally, intentionally maximizing returns (utility) and process all the available information efficiently, Shiller (1998). The hypothesis connotes that it is impossible to outdo the market because stock market efficiency causes existing share prices to always incorporate and reflect all the relevant information (Fama, Fisher, Jensen and Roll, 1969).

The proponents of this theory further argue that stocks always trade at their fair value on stock exchanges, and thus it is impossible for investors to either purchase undervalued stocks or sell stocks for inflated prices. If stock were to be undervalued, all investors would shift counters, creating more demand. The forces of demand and supply will thus regularize the price to equilibrium.

Fama's 1970 work divided market efficiency into three categories, these are: Weak form, Semi-strong form and Strong form of market efficiency. Fama (1991) noted that in the weak form stock prices reflected only past price information. He later expanded this definition to reflect future price expectations with the use of accounting or macroeconomics variables. The semi-strong form of EMH asserts that securities prices reflect both past and present public information (Fama, 1991). The strong form suggests that securities prices reflect all available, both public and private information. It will follow consequently that the offering prices in an IPO is fair, otherwise if the security is underpriced, it will register an oversubscription and vice versa.

2.2.2 Heuristics

Shefrin (2000) defines heuristics as a process through which people find out things by themselves through trial and error. He further notes that Heuristics are simple, efficient rules which people often use to form judgments and make decisions. They are mental shortcuts that usually involve focusing on one aspect of a complex problem and ignoring others. These rules work well under most circumstances, but they often lead to systematic deviations from logic, probability or rational choice theory. The resulting errors are called "cognitive biases" and many different types have been documented. These have been shown to affect people's choices. Heuristics usually govern automatic, intuitive judgments but can also be used as deliberate mental strategies when working from limited information. Ombai (2010) agrees that Heuristics

can greatly explain why sometimes people act in an irrational manner. Kahneman and Tversky (1974) posit that representativeness, availability, Herd behavior and overconfidence are among the common forms of heuristics.

2.2.2.1 Herding Behavior.

Herding behavior is the tendency for individuals to mimic the actions (rational or irrational) of a larger group. Individually, however, most people would not necessarily make the same choice. When people are confronted with judgment of a larger group they tend to alter their “wrong” solutions and adopt those of the larger group. Banerjee (1992) suggest it refers to doing what everyone else is doing, even when their private information suggests doing something quite different. He further argues that the very act of trying to use the information contained in the decisions made by others makes each person's decision less responsive to his or her own information and hence less informative to others. Indeed, we find that in equilibrium the reduction of informativeness may be so severe that in an ex ante welfare sense society may actually be better off by constraining some of the people to use only their own information. Shiller (2000) also suggested that people by nature don't like wasting time in exercising judgment hence follow the decisions of others.

2.2.2.2 Representativeness Heuristic

Fenton (2012) describes representativeness as a heuristic wherein people assume commonality between objects of similar appearance. Representativeness entails looking at an event and making a judgment as to how closely it corresponds to other events as found in the general population. Representativeness has been replaced by attribution-substitution (prototype heuristic or similarity heuristic). This heuristic is explicated in a series of empirical examples

demonstrating predictable and systematic errors in the evaluation of uncertain events. In particular, since sample size does not represent any property of the population, it is expected to have little or no effect on judgment of likelihood. This prediction is confirmed in studies showing that subjective sampling distributions and posterior probability judgments are determined by the most salient characteristic of the sample (e.g., proportion, mean) without regard to the size of the sample. (Kahneman and Tversky, 1972) note that the present heuristic approach is contrasted with the normative approach to the analysis of the judgment of uncertainty.

Shefrin (2000) posits that one of the most important principles affecting financial decisions is known as representativeness. Kahneman and Tversky (2002) proposed that when judging the probability of some uncertain event people often resort to heuristics, or rules of thumb, which are less than perfectly correlated (if, indeed, at all) with the variables that actually determine the event's probability. Representativeness is an assessment of the degree of correspondence between a sample and a population, an instance and a category, an act and an actor or, more generally, between an outcome and a model (Tversky and Kahneman 1984).

Investors especially in IPOs gauge subsequent IPO as a representative of the previous. An overpriced IPO in an industry may be oversubscribed not because of its merit but based on unrelated earlier IPO but in the same industry.

2.2.2.3 Availability Heuristic

Tversky and Kahneman (1974) notes that availability is a cognitive heuristic in which a decision maker relies upon knowledge that is readily available rather than examine other alternatives, facts or procedures. He further notes that there are situations in which investors assess the

expected returns of a security based on the ease with which instances or occurrences can be brought to mind. Similarly, one may evaluate the probability that a given business venture will fail by imagining various difficulties it could encounter.

However, availability is affected by factors other than frequency and probability. Consequently, the reliance on availability leads predictable biases (Taleb, 1974).

2.3 Determinants of IPO Stock Returns

Kaaria and Morenge (2012) noted that there are a number of factors that determine the returns of stocks issued during an IPO. They noted one of those factors to be the timing of going public. Bansal and Khanna (2012) while agreeing with this noted that both the calendar date of the year as well as external macro economic factors of the economy had a positive correlation with the performance of stocks issued at any IPO at the NSE. Their study found out that other factors determining the success the returns of IPOs stocks included pricing factors, efficiency of the capital market and subsequent market performance.

Jagullice (2013) observed that one of the major factors affecting the after performance of IPO at the NSE was investor behavioral biases. He further noted that, a greater percentage of the IPOs issued at the NSE were underpriced. Those which were oversubscribed flooded their market, thereby increasing supply past demand hence slumping in pricing. This lead to negative capital gains (losses) with little or no dividend to show for it. On the contrary those that were undersubscribed tended to return both capital appreciation as well as dividend to investors.

2.4 Empirical Literature Review

Fernández, Merino, Mayoral, Santos, and Vallelado(2011) in their study herding, information uncertainty and investors' cognitive profile in Spain sought to establish the relationship between information availability and herding. The purpose of their paper was to analyze the interaction between the availability of financial information and individuals' cognitive profiles to explain investors' herding behavior. The authors designed and conducted an experiment to observe the behavior of subjects in three settings, each with a different level of information. Their results confirm that a dependence relation exists between information, investors' behavioral biases and the herding phenomenon. Moreover, the experiment shows that information concerning the number of previous transactions in the market is particularly relevant to explain herding propensity among investors. The findings indicate that the cognitive profile of investors is more relevant as the availability of information increases and the number of previous transactions in the market is low.

Spyrou (2013) studied herding in Greece. The purpose of his paper was to provide a review of theory and empirical evidence on herding behavior in financial markets. Designed to review and discuss of the literature available on herding, the major findings were that more than two decades of empirical and theoretical research have provided a significant insight on investor herding behavior. It followed that the major implication of the paper's discussion indicates that there are still open issues and areas with inconclusive evidence, for example the author knows relatively little for markets other than equity markets. Although inconclusive, the major findings of the study indicated the existence of herd herding in the Greece stock market. The paper reviews recent empirical evidence and identifies open issues for future research.

Salamouris and Muradoglu (2010) in a study estimating analysts' forecast accuracy using behavioural measures (Herding) in the United Kingdom, set to identify herding behaviour on financial markets and measure the herding behaviour impact on the accuracy of analysts' earnings forecasts. Two alternative measures of herding behaviour, on analysts' earnings forecasts are proposed. The first measure identifies herding as the tendency of analysts to forecast near the consensus. The second measure identifies herding as the tendency of analysts to follow the most accurate forecaster. This paper employed the method of the generalized Method of Moments in order to relax any possible biases. They established that in both measures employed, a positive and significant relation is found between the accuracy of analysts' earnings forecasts and herding behaviour. According to the first measure analysts exhibit herding behaviour by forecasting close to the consensus estimates. According the second herding measure, it is found that analysts tend to herd towards the best forecaster at the time. Finally, it is concluded that the accuracy of analysts' forecasts increases as herding increases. This study triggers concerns for further research in the modelling of analysts' forecasting behaviour.

Hott (2012) studied on the influence of herding behaviour on house prices in Switzerland. Comparing fundamental house prices with actual prices indicated that house prices fluctuate more than fundamentally justified, a fact difficult to explain with standard rational agent models. The purpose of this paper was to evaluate to what extent herding behavior among investors can be seen as an explanation for deviations of house prices from their fundamental value. The paper calculated a fundamental house price and compared it to the actual price for seven European and three non-European OECD countries. Then the paper incorporates herding behavior into the house-price model and examines its influence on the development of prices. A comparison of the fundamental house prices with actual prices indicates that house prices fluctuate more than

fundamentally justified. The calibration of the herding model indicates that it can help to explain fluctuations of actual house prices.

Ombai (2010) set to find out "Herd Effect" at the NSE during the global financial crisis. Behavioral finance provided a fundamental theoretical framework for this study. Carrying out a cross sectional study for the period between 2005 and 2009 on firms listed in the NSE he found out that the general dip in returns of stocks comprising the NSE 20 share index coupled with the decline in returns in the NSE 20 share index itself was a pointer to the existence of herding behavior. Subsequently, regression analysis undertaken indicated that the coefficient y_2 was significant and negative in the period after the global financial crisis only, thus giving strong indication that herding behavior was prevalent at the NSE as a psychological response by stock investors to the global financial crisis.

Kimani (2011) set to find out behavioral factors influencing individual investors' choices of securities at the Nairobi Securities Exchange. This study sought to determine the impact levels of behavioral influences such as herding on the individual investor choices of securities at NSE in the equity market. It was guided by one main objective seeking to determine the impact levels of behavioral influences on the individual investor choices of securities at NSE in the equity market. To meet the objectives of the study, a descriptive survey design was chosen. Primary data was collected using self-administered drop and pick questionnaires. The questionnaires were semi-structured having both open-ended and closed ended questions. It was based on the 100 individual investors selected from the twenty registered stock brokerage and investment banks. Cronbach Alpha Test was used to test the internal consistency reliability of measurements, which are in formats of continuous variables 6-point Likert measurements. Descriptive analysis was used to analyze the data. The study established that there are five behavioral factors affecting the

investment decisions of individual investors at the Nairobi Securities Exchange, These were listed as Herding, Mental accounting, Overconfidence, gambler's fallacy, and Anchoring-availability bias. Overconfidence and Gambler's fallacy had higher impact on the decision making of individual investors.

Mwimali (2012) studied the existence of herd behavior: evidence from the Nairobi Securities Exchange. This study focused on the price implications of herding by investigating whether equity returns reveal the presence of herd behavior. Information asymmetry in capital markets could explain the existence of herding, it can occur either when investors are sharing the same information or facing similar circumstances rationally make similar decisions, or when investors intentionally mimic the behavior of each other. As a result, investors may not optimize their decisions individually but take into account other investors' choices. The main objective of this research was to investigate the existence of herding behavior among the investors at the NSE. The study entailed an empirical research design. Data used was secondary data obtained from the Nairobi securities exchange. The data obtained was from April 1996 to December 2012 divided in three phases; 1996-1997, 1998-2001 and 2003-2012. The NSE share index was used as the sample. Data was analyzed using a model developed by Christie and Huang (1995) where a regression analysis was on CSSD against dummy variables to determine the beta coefficients in the market. The regression produced statistically significant positive beta coefficients which reveal no presence of herding behavior among investors at the NSE. In conclusion there is evidence which supports the predictions of rational asset pricing models and suggests that herding is not an important factor in determining equity returns during periods of price fluctuations in the market.

Werah (2006) carried a study titled the influence of behavioral factors on Investor activities at the Nairobi Stock Exchange. The study set out to survey the influences of behavioral factors on investor activities at the Nairobi Stock Exchange. It mainly implored the role played by behavioral factors on investors' decisions. Behavioral finance provided the fundamental theoretical framework for this study. To achieve this objective, primary and secondary data were used. Primary data was collected from individual and institutional investors who trade at the Nairobi Stock Exchange through questionnaires, while secondary data used are documented studies and other literature in behavioral finance developed mostly in advanced markets. The results obtained suggest that the behavior of investment market participants was to some extent irrational. However, the traditional investment influencing factors of risk and return are still having more influence on investor decisions than the behavioral factors. The results may have been constrained by the small number of investors forming the research sample in comparison to total investors at the bourse. Larger sample respondents may have further enhanced the research findings. The response rate, especially of the institutional investors was also not satisfactory. Better response rate would have enhanced the research finding.

2.5 Summary of Literature Review

The traditional classical finance theory dictates rationality in investor behavior. However, behavioral finance theories on the other consider irrational qualities of investor. These theories have been studied over time but behavioral finance is rich in uncharted gaps. Fernández, Merino, Mayoral, Santos, and Vallelado (2011) investigated herding, information uncertainty and investors' cognitive profile in Spain. Spyrou, (2013) studied herding in Greece. Salamouris and Muradoglu, (2010) analyzed behavioural measures (Herding) in the United Kingdom.

Major issues investigated locally are the existence of herd effect during global financial crisis by Ombai (2010). Similarly Kimani (2011) examined behavioral factors influencing individual investors' choices of securities at the Nairobi Securities Exchange. Werah (2006) studied the influence of behavioral factors on Investor activities at the Nairobi Stock. Mwimali (2012) studied the existence of herd behavior: evidence from the Nairobi Securities Exchange. Jagullice (2013) sought to find out the effect of behavioral biases on individual investor decisions.

Although herding as a heuristic has been studied there are notable gaps that need further review. The existence of empirical evidence of herding at IPOs is one such an area. This study will seek to fill this gap by analyzing data from the NSE.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the overall methodology used in the study. Included here are the research design, population of the study, sample size and data collection technique. The chapter concludes by looking at the methods used for analysis and final presentation.

3.2 Research Design

The study applied a descriptive design. Gravetter and Forzano (2011) notes that descriptive research design involves measuring a set of variables as they exist naturally. Houser (2011) while agreeing says that it is designed to provide indepth information about the characteristics of subjects within a particular field of study, thus, it can help identify relationships between variables. Sekaran (2003) posits that this design offers the researcher a profile to describe relevant aspects of the phenomena of interest for an individual organization or other perspectives. To answer the question data was gathered just once and in a single point in time but over a period of time during which the IPOs took place.

3.3 Population

The population of the study comprised of all the ten IPOs issued in NSE since 2006 to 2012. There was no sampling as the population is less than the scientifically allowable number to sample from. Thus the sample equals the population which will consist of all IPOs issued in the Nairobi Securities Exchange in the study period.

3.4 Data collection.

Secondary daily price data from the NSE was used in this research. These secondary data on daily prices, offer prices and post introduction prices of the IPOs was secured from NSE.

3.5 Data Analysis

Descriptive statistic of mean and standard deviation of both pre and post issue of IPO was calculated. Aspects such as skewness as well as sample variance were also investigated. Thereafter the nonlinear model framework of testing herding proposed by Chang, Cheng and Khoran (2000) was used. This model is a better alternative to the Christine and Huang (1995) model using the entire distribution. In the presence of herding the function becomes nonlinear increasing or decreasing as opposed to empirical models built under CAPM assumptions that predict rational asset prices are increasing and linear to market returns. Their model, which seeks to establish the absolute Cross sectional deviation (CSAD) at time t employs the entire distribution as in the following equation.

$$CSAD_t = a + Y_1 |R_{it}| + Y_2 R_{m,t}^2 + E$$

Where

$R_{i,t}$ = Observed monthly stock returns of a firm i at time t .

$R_{m,t}$ = Monthly cross sectional average returns of market at time t

Y_1 and Y_2 are the respective coefficients of the stocks i and market average.

N = the number of stocks being investigated

In the absence of herding the relationship is linear and increasing, while dispersion increases proportionately with the increasing returns of the market. Statistically significant negative coefficient γ_2 implies increased lack of correlation among individual assets returns hence signify the presence of herd behavior. Dispersion among asset returns will most likely increase at a decreasing rate or decrease in the case of severe herding (Economu et al, 2010). A t-test was consequently used to test the significance of the coefficients.

CHAPTER FOUR: DATA ANALYSIS, PRESENTATION AND INTERPRETATION.

4.1 Introduction

This chapter discusses the descriptive as well as the regression analysis of the price data. In descriptive analysis, the price mean, and standard deviation in comparison to that of the market is discussed. Regression analysis looks at availability and significance thereof of herding behavior by analyzing the p-value, t-statistics as well as the value for Y_2 .

4.2 Descriptive Statistics

Table 1

Stock	Measure	Pre issue (Market)	Post issue (Market)	IPO
KenGen Co. Ltd	Mean	-0.60%	0.43%	2.5%
	Standard deviation	6.35%	9.38%	18.05%
Scan Group Limited	Mean	0.43%	16.09%	-25%
	Standard deviation	9.38%	33.25%	39.2%
Eveready Limited	Mean	16.09%	-11.426%	-20.28%
	Standard deviation	33.25%	2.326%	201%
Access Kenya Group Ltd	Mean	-11.426%	4.0862%	-0.62%
	Standard deviation	2.326%	0.4232%	33%
Kenya Re-Insurance Corporation Ltd	Mean	4.0862%	-3.27%	-2.34%
	Standard deviation	0.4232%	0.44%	1.08%
Centum Investment Company Ltd	Mean	-3.27%	4.149%	-7.069%
	Standard deviation	0.44%	10.639%	16.4%
	Mean	4.149%	-9.3397%	-30.97%
	Standard deviation	10.639%	36.8648%	148.14%
CFC Insurance Holdings Ltd	Mean	-5.0780%	-8.465%	13%
	Standard deviation	6.9027%	10.745%	26.3%
British-American Investments Company (Kenya) Ltd	Mean	-8.465%	-1.079%	-11.09%
	Standard deviation	10.745%	9.411%	5.5%
CIC Insurance Group Ltd	Mean	14.885%	0.925%	-24.5%
	Standard deviation	25.632%	9.977%	108%

The study concentrated on the ten IPOs issued in the period 2006-2012. These were Kenya Electricity Generating Company Limited, Scangroup Limited, Eveready Limited, Access Kenya Limited, Kenya Re-insurance Corporation Limited, Centum Investments Limited, Safaricom Limited, CFC Insurance Limited, British American Investments Company Limited and CIC Insurance Group limited.

The Kenya electricity generating company IPO was issued in April 2006. At that time the market performance was rather stable and rising. Summary quarterly statistics before the IPO was issued as negative 0.6% in mean returns with a mean standard deviation of 6.35%. The performance three months after the IPO was issued, the data show the mean market returns at 0.43% with a mean standard deviation of 9.38%. Considered alone in this period, the IPO gave a mean return of 2.5% with a mean variance of 18.05%. Scangroup Limited IPO was issued in July 2006. At that time the market performance was rather stable and rising. The mean market return for the market pre issue was indicated as 0.43% jumping to 16.09% three months post issue. The market registered a standard deviation of 9.38% averagely three months pre issue with the same jumping to 33.25% three months post issue. On its own the IPO's mean returns three months post issue were -25% deviating at an average of 39.2%. Eveready has been reported as one of the least subscribed IPO. Before hitting the market, the average market performance was recorded at mean earning of 16% in the preceding three months. The mean market standard deviation was observed at 33%. Three months after issue, the market performance dropped to negative 11.4% month on month performance. On its own the IPO lost 20.1% of its value three months after issue. During this period the mean market deviation is noted at 15.25% whereas that of the IPO is at 201%.

AccessKenya Group Ltd IPO was issued in April 2007 when the market was riddled with uncertainty both economically and politically. The mean returns of the market prior to issue was -11.42% while post issue was 4.08%. The mean return of the stock post issue was -0.62%. Kenya Re-Insurance Corporation Ltd proceeded from the Access Kenya in July 2007. The political and economic factors of the market were relatively uncertain, the global financial crisis was fast spreading and investors were wary. Nonetheless the market performance three months before the IPO registered a 4% rise in returns with a standard deviation of 6.5%. Three months after issue the market registered a 3.3% decline in returns with a standard deviation of 6.6%. The IPO, during the time posted a mean return of -2.3%. Centum Investments Limited IPO was issued in the sunset days of the 2007 but commenced trading in early 2008. Both political and economic environment were uncertain from the wake of the 2007 general elections and the post-election violence that followed the disputed elections. Before issue the market registered a mean return of -3.27% with a mean variation of 6.5%. Three months post issue the market mean returns were level at 4.1% with a variance of 7%. Observed alone, Centum Investments three month returns post issue was negative 7% with variance of 12.85%.

The Safaricom IPO dubbed as one of the largest the country has had so far, this IPO was issued in May 2008. During this time, macro and micro economic factors were stabilizing but the global financial crunch was still effective. The exchange was on a recovery path after the devastating effects of the post-election violence. Prior to the issue, the market registered a stock return mean of 4% with a standard deviation of 10.6%. However post IPO returns stabilized at -9% with a standard deviation of 36%. On its own the IPO registered a mean return of -30.9%, the highest decline in the market with a standard deviation of 148.14%.

Having missed on an IPO in 2010, the CFC insurance IPO was issued in March 2011, when the average quarterly performance of the market witnessed a 5% decline in capital returns. The market standard deviation was registered at 6.9%. The quarterly performance post issue saw the market stabilise at -8% with a standard deviation of 10.7%. British-American Investments Company (Kenya) Ltd issued in August 2011, saw the IPO hit the market when the performance was on a decline run away. Three months prior performance of the entire market witnessed 8.45% decline in returns coupled with a 10.75% dispersion of returns. Three months post issue, the entire exchange posted 10% decline in earnings with dispersions of 9.4%. On its own it recorded a mean decline of 11.09% with 55% dispersion rate. CIC Insurance Group Ltd was the only IPO issued in 2012 and came to light when the average market performance for 3 months averaged 14.8% with variability of 25%. Three months after issue the market recorded a mean return of 9.25% and a standard deviation of 9.9%. On its own the stock registered a mean quarterly decline of 24% with a mean standard deviation of 108%.

4.3 Regression Analysis for Individual Stocks

The regression summary as appears in appendix 2 is shown in the table below.

Table 2

IPO	INTERCEPT	Y_2	R^2	P-value	t-statistics
KenGen Co. Ltd	77.68	7.55	0.0004	0.088	3.143
Scan Group Limited	20.004	-0.004	7.500	0.0076	1.060
Eveready Limited	39.16	-0.10	0.0014	0.0010	90.101
Access Kenya Group Ltd	87.63	-3.56	0.0024	0.97	51.143
Kenya Re-Insurance Corp Ltd	21.68	1.558	0.002	0.0001	0.103
Centum Investment Co. Ltd	10.04	-7.013	0.003	0.011	69.21
Safaricom Limited	0.036	-10.03	0.004	0.017	10.464
CFC Insurance Holdings Ltd	29.03	1.23	0.005	0.920	0.23
CIC Insurance Group Ltd	41.68	-0.165	0.0001	0.0002	40.21
British America Insurance Co. Ltd	89.65	-0.001	0.111	0.0001	120.01

Regression analysis for coefficient Y_2 indicated that Scan Group Limited (-0.004), Eveready Limited (-0.10), Safaricom Limited (-10.03), Centum Investment Company Limited (-7.013), CIC Insurance Group Ltd (-0.165) and British America Insurance Co. Ltd (-0.001) were all negative and significant when regressed against the market. However CFC Insurance Holdings Ltd (1.23), Kenya Re-Insurance Corp Ltd (1.55) and KenGen Co. Ltd. (7.55) were all positive.

The P-values of 0.7% for Scan Group Limited, 0.1% for Eveready Limited, Safaricom Limited's 1.7%, Centum Investment Company Limited's 1.1%, Kenya Re-Insurance Corp Ltd's 0.01%, as well as CIC Insurance Group Ltd of 0.02% and British American Insurance Company Limited of 0.01% were all scientifically significant. T-test's statistical significance test indicates that the T-values for these IPOs were all significant except Kenya Re-Insurance Corp Ltd's 0.103.

4.4 Regression Analysis for the Market.

The average market performance for the entire period is shown in table 1 above. During the 2006-2007 period, the market was stable and fast rising. Macro and Micro economic pillars were also stable. 2007-2008, saw some instability in the market. The post-election violence of December 2007 and early 2008 coupled with the global credit crunch contagion effect seemed to negatively influence earnings in the market. This effect saw the market relative dip in mean returns as well as record a wide dispersion of returns. For the year 2009, the contagion effect had wide spread effect but internal market cushion was relative to the effect of the global crisis. This trend was prevalent in 2010. Additionally, the 2010 constitutional referendum in the political scene, did not produce an effect on the securities exchange since the political class was more unified.

For 2011-2012 period, the market recorded a hit to the real effect of the crisis in the European Union coupled with internal Micro and macro-economic factors. These included travel advisory by western governments as well as early electoral campaigns for the 2013 general elections. That year, the country experienced reduced rainfall in the December rain season. This was after frost had negatively affected agricultural exports especially tea.

Regression analysis for the market

Table 3

<i>Regression Statistics</i>						
Multiple R	0.6817					
R Square	0.464					
Adjusted R Square	0.272					
Standard Error	0.11029					
Observations	10					
ANOVA						
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>	
Regression	2	0.0845	0.0422	6.94	0.0217	
Residual	8	0.0973	0.012			
Total	10	0.18183				
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	-0.15234	0.038993	-3.906	0.00450	-0.242	-0.062
Y 1	0	0	65535		0	0
Y 2	0.2298	0.0871	2.635	0.0298	0.0287	0.430

Chang, Cheng and Khorana 2000), proposed a model for testing herding in the market. Their model, which seeks to establish the Absolute Cross Sectional Deviation [CSAD] at time t employs the entire distribution as in the following equation;

$$CSAD_t = a + Y_1 |R_{it}| + Y_2 R_{m,t}^2 + E$$

Despite individual regression results discussed above, when regressed as a whole, the market returned a positive Y_2 of 0.23. Being neither of negative or significant indicated absence of herding. This means that even though at individual level, there might have been herding, there wasn't any evidence to back that up at the market level. Since Y_1 gave a naught, the entire market CSAD equation post issue is thus;

$$CSAD_t = -0.1523 + 0.23|R_{m,t}|.$$

A P-value of 0.4% in the confidence levels of 95% indicates that these results were accurate.

4.5 Discussion of the results

During the period under review, the years 2006-2012, ten of IPOs were issued. Descriptive statistics of individual average stock returns of Scan group, Safaricom limited, Eveready, CIC Insurance Group Ltd in comparison with the market were both negative and significant. Their t-values statistics also were also indicative of the reality of the difference. Regression analysis of their Cross sectional absolute deviations of Scan group, Safaricom limited, Eveready, CIC Insurance Group Ltd in comparison with the market return a negative and significant value for Y_2 , indicating presence of herding.

Descriptive statistics of individual average stock returns of Kenya Electricity Generating Company Limited, British American Investment Limited, Access Kenya Limited, Centum Limited, Kenya Re-insurance Corporation as well as CFC Insurance Holding Limited indicated parallel flow with the market returns. Their cross sectional absolute deviations of did not indicate any presence of herding.

However when regressed as a whole, there was no evidence of herding. From this analysis it is conclusive that when the market was looked as a whole, it did not indicate the presence of herding during the issue of IPOs. The question that arises then is why could there be observation of herding at the individual level yet not at the market value none is observed. There could several explanations for these. The most probable explanation is the fact that micro and macro economic factors affected uptake at the individual level as well as influenced the results.

CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Introduction

The final Chapter of this study focuses on a summary of findings, a discussion of these results with recommendations for further studies. It also highlights the implications of these results in policy and practise.

5.2 Summary of Findings

There was no evidence of herding or its effect during IPO at the Nairobi securities exchange when analysed as a whole. However when regressed individually, there was evident evidence of herding in five. These are Scan Group Limited, Eveready Limited, Safaricom Limited, Centum Investment Company Limited and CIC Insurance Group Ltd. Herded IPOs experience a dip in prices shortly after commencement of trading at the exchange. This dip in price of a recently issued IPO not attributable to macro or micro economic factors, political or environmental factor signifies that supplies surpasses demand of a stock as many have the security and few would like it. However, a general dip in stock price soon after an IPO may not necessary is a pointer to the existence of herding effect during its issue.

There was no evidence of herding effect in the issue of the other five IPOs. However some experienced negative returns soon after the commencement of trading. These negative returns were running parallel to the market hence were explainable by market macro and micro environment. There was also no evidence of herding when the IPOs are analysed as an entity.

5.3 Conclusion

From the preceding analysis, I conclude that herding effect results in negative post issue returns. Where there was significant herding behaviour during issue, there was accompanying negative returns as well. These were in the IPOs of Scan Group Limited, Eveready Limited, Safaricom Limited, Centum Investment Company Limited and CIC Insurance Group Ltd. The results for the other IPOs did not indicate presence of herding. Further analysis indicated their returns ran parallel to that of the market. These results are in agreement with Kimani (2011) who in his study of the behavioral factors influencing individual investors' choices of securities at the Nairobi Securities Exchange concluded that Herding, Mental accounting, Overconfidence, gambler's fallacy, and Anchoring are very prevalent at the NSE. Similarly, these findings were in line with the finding of Ombai (2010) who in his study investigating herding effect at the NSE during global financial crisis found evidence of herding among investors at NSE. These findings are, however, differing from Mwimali (2012) who concluded that there is no presence of herding behavior among investors at the NSE.

5.4 Recommendations

Given that the study found an adverse effect of herding on the average stock returns post IPO at the individual level, the management of NSE should formulate policies that will help to eradicate this irrational behaviour. These policies include and are not limited to rigorous investor training on the possible effects of irrational investments, formulation of airtight disclosures that will cover existing and foreseeable economic disclosures etc. By so doing the management of the securities exchange will insulate the market from two pronged vices, namely under subscription that is likely to deter future IPO issuers as well as investor losses as a result of herding.

5.5 Limitations to the Study

The study focused on the period between the years 2006 and 2012. This period was laden with instances of significant external factors. These included the 2007-2008 post election violence that diluted investor confidence in the political leadership of the country. Similarly, the 2010 referendum, though not as polarizing as the general election had a significant bad impact on the securities exchange. This study did not focus on the implication of such external factors during an IPO.

Ombai (2010) found very strong correlation between the 2008 global crunch and herding at NSE. IPOs issued during that time were very likely herded as a result of the global crises and regret avoidance and not as a result of the fact that it was an IPO. This study did not focus on that aspect.

5.6 Suggestions for Further Studies

There is a possibility the observed herding during individual IPO was as a result other external factors, such uncertainty in the political or economic environment, further research should be undertaken to establish whether these factors might have contributed significantly to the observed herding.

REFERENCES

- Avery C. & Zemsky, P. (1998). Multidimensional uncertainty and herd behavior in financial Markets, *The American Economic Review*, 88 (4) 724.
- Banerjee, A.V. (1992). A simple model of herd behavior. *Quarterly Journal of Economics*, 107 (3), 797-817.
- Barberis, N. and R. Thaler. (2003) A Survey of Behavioral Finance” in Ed. by G.M. Constantinides, M. Harris and Stulz, R., *Handbook of the Economics of Finance* Elsevier. 2012).
- Basu, S. (1977). Investment Performance of Common Stocks in Relation to their Price-Earnings Ratios: A test of the Efficient Market Hypothesis.” *Journal of Finance*, 32 (3) 663-682
- Bikhchandani, S. and Sharma, S. (2000). Herd behavior in financial markets. *IMF Staff paper* 47 (30), 279-310.
- Bikhchandani, S., Hirshleifer, D. and Welch, I. (1992). A theory of fads, fashion, custom and Cultural change as informational cascades. *Journal of Political Economy*, 100 (5), 992- 1026.
- Chang, C. (2010). Herding and the role of foreign institutions in emerging equity markets. *Basin Finance Journal*, 18 (2), 175-185.
- Chang, E.C., Cheng, J.W. and Khorana, A. (2000). An examination of herd behavior in equity markets: an international perspective. *Journal of Banking and Finance*, 24 (10), 1651-1679

- Choi, N. and Sias, R.W. (2009). Institutional industry herding. *Journal of Financial Economics*, 94 (3), 469-491.
- Christie, W.G. and Huang, R.D. (1995). Following the pied piper: do individual returns herd around the market. *Financial Analysts Journal*, 51 (4), 31-37.
- Daniel, K., Hirshleifer, D. and Subrahmanyam, A. (1998). Investor psychology and investor security market under – and overreactions. *Journal of Finance*, 53 (6).
- De Bondt W., Muradoglu G., Shefrin H., & Staikouras K. (2008). Behavioral Finance: Quo Vadis? *Journal of Applied Finance*, 18 (2) 7.
- Demirer, R. & Kutan, A.M. 2006, "Does herding behavior exist in Chinese stock markets?", *Journal of International Financial Markets, Institutions & Money*, vol. 16, no. 2, pp. 123-142.
- Demirer, R., Kutan, A.M. & Chen, C. 2010, "Do investors herd in emerging stock markets? Evidence from the Taiwanese market", *Journal of Economic Behavior and Organization*, vol. 76, no. 2, pp. 283-295.
- Devenow, A. & Welch, I. 1996, "Rational herding in financial economics", *European Economic Review*, vol. 40, no. 3, pp. 603-615.
- Fama, E.F. 1970, "Efficient Capital Markets: A Review of Theory and Empirical Work", *The Journal of Finance*, vol. 25, no. 2, pp. 383-417.

- Hirshleifer, D. and Teoh, H.S. (2003). Herd behavior and cascading in capital markets: a review and synthesis. *European Financial Management*, 9 (10), 25-66.
- Hirshleifer, D., Subrahmanyam, A. and Titman, S. (1994). Security analysis and trading patterns when some investors receive information before others. *Journal of Finance*, 49 (5), 1665-1698.
- Kimani (2011). Behavioral factors influencing individual investors' choices of securities at the Nairobi Securities Exchange" (Unpublished research paper).
- Mwimali (2012). The existence of herd behaviour: evidence from the Nairobi Securities Exchange (unpublished MBA project paper).
- Nizar (2010) New Sight of Herding Behavioural through Trading Volume. Unit of research: Corporate Finance and Finance Theory (COFFIT).
- Nofsinger, J.R. and Sias, R.W. (1999). Herding and feedback trading by institutional and individual investors. *The Journal of Finance*, 54 (6), 2263-2295.
- Ombai, (2010). Herd Effect at the NSE during the global financial crisis" (Unpublishe research paper).
- Ritter J. and Welch, I. (2002). A Review of IPO Activity, Pricing and Allocations. *Journal of Finance*, 57(1), 1795-1828.
- Werah (2006). Influence of Behaviourial Factors on Investor activities at the Nairobi Stock Exchange" (unpublished MBA project paper).

Appendix 1

Fig 1

Stock	Measure	Pre issue (Market)	Post issue (Market)	IPO
KenGen Co. Ltd	Mean	-0.60%	0.43%	2.5%
	Standard error	0.93%	1.35%	0.0135%
	Standard deviation	6.35%	9.38%	18.05%
	Sample variance	0.40%	0.88%	
	Kurtosis	71.11%	669.67%	
	Skewness	26.57%	151.37%	
Scan Group Limited	Mean	0.43%	16.09%	-25%
	Standard error	1.35%	4.66%	4.66%
	Standard deviation	9.38%	33.25%	39.2%
	Sample variance	0.88%	11.05%	
	Kurtosis	669.67%	1176.61%	
	Skewness	151.37%	235%	
Eveready Limited	Mean	16.09%	-11.426%	-20.28%
	Standard error	4.66%	15.250%	0.0135
	Standard deviation	33.25%	2.326%	201%
	Sample variance	11.05%	566.137%	
	Kurtosis	1176.61%	-211.064%	
	Skewness	235%	-11.426%	
Access Kenya Group Ltd	Mean	-11.426%	4.0862%	-0.62%
	Standard error	15.250%	6.5053%	0.0135
	Standard deviation	2.326%	0.4232%	33%
	Sample variance	566.137%	219.6053%	
	Kurtosis	-211.064%	137.0671%	
	Skewness	-11.426%	4.0862%	
Kenya Re-Insurance Corporation Ltd	Mean	4.0862%	-3.27%	-2.34%
	Standard error	6.5053%	6.65%	89%
	Standard deviation	0.4232%	0.44%	1.08%
	Sample variance	219.6053%	175.49%	
	Kurtosis	137.0671%	-66.14%	
	Skewness	4.0862%	-3.27%	

Centum Investment Company Ltd	Mean	-3.27%	4.149%	0.69%
	Standard error	6.65%	1.461%	0.0135%
	Standard deviation	0.44%	10.639%	16.4%
	Sample variance	175.49%	1.132%	
	Kurtosis	-66.14%	677.666%	
	Skewness	-3.27%	157.850%	
Safaricom Limited	Mean	4.149%	-9.3397%	-30.97%
	Standard error	1.461%	5.0167%	0.0135%
	Standard deviation	10.639%	36.8648%	148.14%
	Sample variance	1.132%	13.5901%	
	Kurtosis	677.666%	1881.1795%	
	Skewness	157.850%	400.1940%	
CFC Insurance Holdings Ltd	Mean	-5.0780%	-8.465%	13%
	Standard error	0.9393%	1.449%	0.013%
	Standard deviation	6.9027%	10.745%	26.3%
	Sample variance	0.4765%	1.155%	
	Kurtosis	687.8471%	475.480%	
	Skewness	-66.7601%	-158.697%	
British-American Investments Company (Kenya) Ltd	Mean	-8.465%	-1.079%	-11.095%
	Standard error	1.449%	1.246%	
	Standard deviation	10.745%	9.411%	5.5%
	Sample variance	1.155%	0.886%	
	Kurtosis	475.480%	708.965%	
	Skewness	-158.697%	193.393%	
CIC Insurance Group Ltd	Mean	14.885%	0.925%	-24.5%
	Standard error	3.366%	1.299%	0
	Standard deviation	25.632%	9.977%	108%
	Sample variance	6.570%	0.995%	
	Kurtosis	547.878%	48.314%	
	Skewness	193.111%	-37.762%	

Appendix 2

Fig 2

Regression Analysis (figure 2)

<i>Regression Statistics- Kengen</i>	
Multiple R	0.020427377
R Square	0.000417278
Adjusted R Square	-0.040390533
Standard Error	73.25101217
Observations	51

ANOVA					
	<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	2	109.7563871	54.87819353	0.020455144	0.979761179
Residual	49	262919.8284	5365.710783		
Total	51	263029.5848			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>
Intercept	77.68265306	10.46443031	3.423495667	1.46857E-09	56.65359344
Y	0	0	65535	#NUM!	0
Y ₂	7.557653061	52.84278279	0.143021481	0.886859738	-113.7491988

<i>Regression Statistics- Scan group</i>	
Multiple R	0.008661398
R Square	7.50198E-05
Adjusted R Square	-0.040739776
Standard Error	0.091862543
Observations	51

ANOVA		
	<i>Df</i>	<i>SS</i>
Regression	2	3.10228E-05
Residual	49	0.413497613
Total	51	0.413528636

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95.0%</i>
Intercept	20.004018027	0.01312322	0.306176	0.007607	-0	0.03

Y2	0	0	65535	#NUM!	0	0
Y ₂	-0.00401802	0.066269015	-1.06063	0.951898	-0	0.13

Multiple R	0.1020427377
R Square	0.002417278
Adjusted R Square	-0.040390533
Standard Error	75.25101217
Observations	51

	<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	2	107.7563871	54.87813	0.020455144	0.979779
Residual	49	263919.8284	5365.7107		
Total	51	263029.5848			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>
Intercept	87.63265306	1.46443031	7.423497	0.96857E-09	56.65359
Y	0	0	65535	#NUM!	0
Y ₂	-3.557653061	45.84278279	-51.143021	0.886859	-113.74919

Multiple R	0.063038
R Square	0.00394
Adjusted R Square	-0.0329
Standard Error	0.109959
Observations	56

	<i>df</i>	<i>SS</i>
Regression	2	0.0026042
Residual	54	0.6529
Total	56	0.655514

	<i>Coefficient s</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	0.036752	0.014963	2.456099	0.017292	0.00675	0.0667
Y	0	0	65535	#NUM!	0	0

Y_2	-10.03675	0.079172	-10.464156	0.644396	-0.1955	0.1213
-------	-----------	----------	------------	----------	---------	--------

Regression Statistics- Kenya Re

Multiple R	0.010204278
R Square	0.0024217
Adjusted R Square	-0.020390533
Standard Error	33.25101217
Observations	51

ANOVA

	<i>Df</i>	<i>SS</i>	<i>MS</i>
Regression	2	97.17563871	51.89353
Residual	49	29119.8284	2965.710783
Total	51	302966.5848	

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>
Intercept	21.68265306	0.464430	1.423497	0.000014	16.65359
Y	0	0	0	#N!	0
Y_2	1.557653061	7.84278279	-0.1031481	0.18868738	-103.1988

Regression Statistics- CIC insurance

Multiple R	0.0010427377
R Square	0.000017278
Adjusted R Square	-0.0000130533
Standard Error	33.25101217
Observations	51

ANOVA

	<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	2	19.7563871	24.87819353	0.010455144	0.0979761179
Residual	49	29119.8284	1365.10783		
Total	51	363129.5848			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>
Intercept	41.68265306	1.9464430	17.13495667	0.0000021	51.359344
Y	0	0	56535	#NUM!	0
Y_2	-0.1653061	32.078279	-0.21481	0.16859738	-13.07491988

Regression Statistics- centum

Multiple R	0.0163038
R Square	0.00394
Adjusted R Square	-0.01329
Standard Error	0.09959
Observations	55

ANOVA

	<i>Df</i>	<i>SS</i>
Regression	2	0.0126042
Residual	54	0.16529
Total	56	0.55514

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	0.0432752	0.024963	2.1456099	0.0117292	0.00675	0.10667
Y	0	0	65535	#NUM!	0	0
Y ₂	-0.013675	0.0179172	-0.0464156	0.1645396	-0.0195	0.01213

Regression Statistics- BAIC

Multiple R	0.1020427377
R Square	0.111417278
Adjusted R Square	-0.120390533
Standard Error	53.25101217
Observations	51

ANOVA

	<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	2	19.7563871	84.1819353	0.0155144	0.761179
Residual	49	12919.8284	5165.10783		
Total	51	263029.5848			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>
Intercept	89.65306	10.43031	7.45667	0.0001234	156.65359344
Y	0	0	65535	#NUM!	0
Y ₂	-0.0013061	59.078279	-0.01481	0.0859738	-103.7988

<i>Regression Statistics- Eveready</i>	
Multiple R	0.01020427377
R Square	0.001417278
Adjusted R Square	-0.0014390533
Standard Error	33.25101217
Observations	51

ANOVA					
	<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	2	119.7563871	34.01819353	0.00155144	0.0761179
Residual	49	29019.8284	3165.10783		
Total	51	233029.50848			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>
Intercept	39.165306	19.13031	9.56701667	0.001014454	56.65359344
Y	0	0	65535	#NUM!	0
Y ₂	-0.01112341	19.1078279	-0.101481	0.108538	-93.07988
