

**THE EFFECT OF CAPITAL MARKET IMPERFECTION ON  
INVESTMENT-CASH FLOW SENSITIVITY OF LISTED FIRMS  
AT THE NAIROBI SECURITIES EXCHANGE**

**BY**

**SAMUEL ONYANGO OKUMU**

**RESEARCH PROJECT SUBMITTED IN PARTIAL  
FULFILLMENT OF THE REQUIREMENT FOR THE AWARD  
OF THE DEGREE OF MASTER OF SCIENCE IN FINANCE,  
SCHOOL OF BUSINESS**

**UNIVERSITY OF NAIROBI**

**OCTOBER, 2014**

## DECLARATION

This research project is my original work and has not been submitted before any other academic institution for any award.

Signature: \_\_\_\_\_

Date

Samuel Onyango Okumu

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

Signature: \_\_\_\_\_

Date

Mr. Mirie Mwangi

Lecturer; Department of Finance and Accounting

University of Nairobi

## **ACKNOWLEDGEMENT**

I would like to extend my sincere appreciation to all who contributed to the success of this work.

I thank my supervisor, Mr. Mirie Mwangi for his dedicated guidance, advice, criticism and suggestions. His tutelage has indeed seen me through the study.

I would also like to posthumously thank my late mother, Auma nyar Kadera, for teaching me the ways of this life. She continuously encouraged me and reminded me that everyone has a purpose in this life and with God this would definitely come to be. Thank you mama!

I also extend my gratitude to my lecturers who taught me in the MSC programme, thereby enriching my research with knowledge.

Finally, I thank The Almighty God for His mercies and unparalleled love for giving me the strength and seeing me through my studies.

## **DEDICATION**

I dedicate this work to my brothers for their unwavering support, financially or otherwise, throughout my school life. It is through their strict guidance that I have come this far. I am deeply indebted to them!

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## **ABBREVIATIONS**

CCFS	-	Cash-Cash Flow Sensitivity
ETFs	-	Exchange Traded Funds
GMM	-	Generalised Method of Moments
ICFS	-	Investment- Cash Flow Sensitivity
ICI	-	Investment Company Institute
NPV	-	Net Present Value
NSE	-	Nairobi Securities Exchange

## ABSTRACT

The study sought to determine the effect of capital market imperfection on investment - cash flow sensitivity of listed firms in NSE. The factors identified in the study are proxies for capital market imperfections and investment cash flow sensitivity. The proxies for capital market imperfections included; institutional ownership, the size of the firm and the liquidity of the firm. Whereas the proxy for cash flow sensitivity was taken to be the change in capital expenditure of the listed firms at the NSE. Because of the big values involved, the natural logs (ln) of the variables were used. This research was conducted through a descriptive survey design. The descriptive survey design was considered appropriate as it enables description of the characteristics of certain groups, estimation of the proportion of people who have certain characteristics and making of predictions. This study collected quantitative data in the form of secondary data. The secondary data sources were obtained from the published annual reports of the listed firms over a period of 5 years (2009-2013). Quantitative data was analyzed by descriptive statistics. The multiple linear regression analysis and t-statistic test was used to determine the relative importance (sensitivity) of each independent variable (institutional ownership, the size of the firm and the liquidity of the firm) in affecting the investment-cash flow sensitivity of listed firms in NSE. From the findings, the study found that the size and liquidity of the firms had a positive significant influence on the investment- cash flow sensitivity of the listed firms while institutional ownership did not significantly influence the listed firms' investment- cash flow sensitivity. The study concludes that capital market imperfections had a significant influence on the listed firms' investment- cash flow sensitivity. The study recommends that the managers of the listed firms should focus more in investing in high return assets, adopt a balanced dividend policy and seek an optimal equity-debt financing in order to positively influence their firms' investment-cash flow sensitivity.



## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Background of the Study**

As argued by Modigliani and Miller (2008) the investment decisions of firms are not affected by their financing decisions in perfect capital markets. Capital markets, however, are not perfect, and existing imperfections introduce a wedge between the costs of external and internal funds. Firms facing higher informational imperfections experience a wider wedge, and therefore are more financially constrained. A measure that has been used in the literature to assess the degree of financial constraints experienced by firms is the sensitivity of investments to the availability of internal funds, controlling for investment opportunities as measured by Tobin's Q.

##### **1.1.1 Capital Market Imperfection**

All the limitations that reduce the range of financial contracts that agents can sign and/or that prevent them to be honored are called imperfections. These restrictions are more common in capital markets (Schiantarelli, 2006). There are three basic reasons for that: Firstly, lenders do not have full information about the borrower, whether they have the capacity to pay back their debt and/or whether they are willing to pay (asymmetric information) (Stickney, Brown and Wahlen, 2003). Secondly, lender needs to trust the borrower to commit and to pay back his/her debt or there needs to have a third party to enforce the contract as it is more difficult to enforce contracts ex post (limited commitment).

Finally, since the exchange does not happen at the same time, there is always room for renegotiation. In perfect capital market case, assuming complete markets, perfect

rationality of agents and under full information, the equilibrium occurs where the interest rates clear the market, with the supply of funds equal to the demand. This type of equilibrium is called Arrow-Debreu equilibrium, which is defined as there is a set of prices (in this case interest rates) under which demand and supply of the market are equal to each other (Arrow and Gerard, 2004). Moreover, we can analyze the firm's investment decision and its owner's consumption/saving decision separately (Fisher, 2010). In addition to that, even in case of bankruptcy risk, the resulting optimum choice of firm will be efficient as the interest rate increases to capture the bankruptcy risk. Therefore, the possibility of default of the borrower is not a main driving force that leads to imperfect capital markets.

### **1.1.2 Investment- Cash Flow Sensitivity**

The seminal work of Fazzari, Hubbard, and Petersen (1988) utilizes estimated coefficients from regressing firms' capital investment on internally generated cash flow (investment-cash flow sensitivity) to explore the impact of financing constraints on investment decisions and to investigate theories of financing frictions. This approach builds on the idea that if financing frictions cause internal funds to have a cost advantage over outside debt or equity finance, then the capital investment decisions of financially constrained firms will be sensitive to internally generated cash flows, after controlling for investment opportunities. Consistent with the existence of significant financing frictions, many studies find that firms which are classified as a priori more likely to confront binding financing constraints display a greater sensitivity of capital investment to cash flow.

Following a paper by Kaplan and Zingales (1997) a literature has emerged that criticizes the investment cash flow sensitivity approach along several key dimensions. As noted in Brown and Petersen (2009) “The study of the investment-cash flow (ICF) sensitivity constitutes one of the largest empirical literatures in corporate finance. The standard approach to estimating investment-cash flow sensitivity is to run fixed effects panel regressions of capital investment on cash flow and Tobin’s Q (to control for investment opportunities). One line of argument posits that investment cash flow sensitivity results are an artifact of measurement error in investment opportunities (i.e., Tobin’s Q) rather than a manifestation of financing frictions whereby cash flow acts as a proxy for investment opportunities not captured by Tobin’s Q and does so differentially across firms.

A second line of criticism focuses on the central role played by the a priori partitioning of firms based on financial constraints in a typical design partitions firms based on measures of the a priori likelihood that they face financing constraints and then examines whether investment-cash flow sensitivity increase as financial constraints intensify. For an excellent synthesis of the criticism leveled against the investment-cash flow sensitivity approach establishing the interpretation of investment cash flow sensitivity. The ordering of investment-cash flow sensitivity across financial constraint partitions is sensitive to how financial constraints are measured, finding that investment-cash flow sensitivity can actually be decreasing in financial constraints under some measures. In a third criticism Moyen (2004) posits a potential correlated omitted variable problem, showing that positive investment-cash flow sensitivities can be generated even if firms do not face financing frictions

because current debt financing is correlated with cash flow and debt finance is omitted in the regression.

### **1.1.3 Relationship Between Capital Market Imperfection and Investment-Cash Flow Sensitivity**

Fazzari, Hubbard and Petersen (1988) argued that investment is more sensitive to cash flow for firms that have a high degree of financial constraints. On the other hand Kaplan and Zingales (1997) and Cleary (1999) show that investment-cash flow sensitivity can be higher for unconstrained firms. Additionally, Gilchrist and Himmelberg (1995), Erickson and Whited (2000) and Altı (2003) are of the view that measurement problems associated with Tobin's Q affect the sensitivity of investments to the availability of internal funds. According to Gomes (2001) and Altı (2003), investment-cash flow sensitivity can be positive even without any financial frictions. As shown by Altı (2003) in the absence of financial frictions, small and young firms can have higher investment-cash flow sensitivities since cash flow captures near-term investment opportunities that are not captured by Tobin's Q.

Allayannis and Mozumdar (2004) show that including firms with negative cash flows can lead to these findings, since these firms are financially distressed and therefore their investments are not sensitive to cash flow. Moyen (2004) shows that the criteria used to differentiate between financially constrained and unconstrained firms can lead to results consistent both with Fazzari, Hubbard, and Petersen (1988) and Kaplan and Zingales (1997) when dividend payout is used as the criterion, the simulation results of Moyen supports the findings of Fazzari, Hubbard and Petersen. If investment-cash flow sensitivity is indeed linked with financial constraints, then it should decrease

with the factors that reduce capital market imperfections. There is some international cross-sectional evidence to support this hypothesis.

The wedge between the internal and external funds should reduce with reducing capital market imperfections. Therefore, observing a decrease in investment-cash flow sensitivity in response to decreasing capital market imperfections would be consistent with investment-cash flow sensitivity providing information about financial constraints. As a remedy for the measurement error problem highlighted in their critique, Erickson and Whited (2000) propose a class of GMM estimators that exploit the information in the higher order moments of the regression variables. Using these estimators and their sample of U.S. manufacturing firms over the 1992-1995 period, they find that the explanatory power of Q improves dramatically relative to traditional OLS estimates, while cash flow loses significance as a determinant of investment. Naturally then, the first question that needs to be settled is whether the investment-cash flow sensitivity estimates reported by the earlier papers and their apparent decline over time really represent anything, or whether they are purely art factual.

#### **1.1.4 Firms Listed at the Nairobi Securities Exchange**

The Nairobi Securities Exchange (NSE) was established in 1954 as a voluntary association of stock brokers registered under the Societies Act. A total of 58 firms are now listed on the NSE and trade in Shares and Bonds. NSE is not perfect, and existing imperfections introduce a wedge between the costs of external and internal funds. Firms facing higher informational imperfections experience a wider wedge, and therefore are more financially constrained (Owido, Onyuma and Owuor, 2003).



In NSE, the measure that has been used to assess the degree of financial constraints experienced by firms is the sensitivity of investments to the availability of internal funds, controlling for investment opportunities is measured by Tobin's Q.

Petersen (1988) shows that investment is more sensitive to cash flow for firms that have a high degree of financial constraints. Alti (2003) argue that measurement problems associated with Tobin's Q affect the estimated sensitivity of investments to the availability of internal funds. If investment-cash flow sensitivity is linked with capital market imperfections, then it should decrease with factors that reduce these imperfections.

Nairobi Securities Exchange has been characterised by various market anomalies just like several emerging markets in Africa. Empirical studies on the day-of-the-week effect, for example, started as early as the 1970s. According to Fama (1970) a market is efficient if security prices always fully reflect available information about their fundamental value. The notion of efficiency being invoked is that of informational efficiency which means that information is readily and equally available without costs to all market participants. Therefore all investors in the market have homogeneous expectation. This proposition is usually termed as the efficient market hypothesis. It implies that securities are typically in equilibrium, fairly priced and their expected returns equal to their required rates of returns. At any point in time, security prices will reflect all publicly available information about firms and its securities since they react swiftly to new information. Investors should therefore not waste time trying to find and capitalize on mispriced securities, (Owido, Onyuma and Owuor, 2003).

## **1.2 Research Problem**

The investment-cash flow sensitivity approach continues to be widely used as a tool to study a variety of issues in corporate finance and accounting. This is because it provides a novel and intuitive explanation for documented patterns in investment-cash flow sensitivity that exploits the fundamental nature of the cash flow variable. It provides strong corroborating evidence that estimated investment-cash flow sensitivity reflect a fundamental economic connection between capital investment and working capital investment as interrelated manifestations of firm growth, rather than reflecting consequences of financing frictions.

As argued by Şenay and Abon (2007), the investment decisions of firms are not affected by their financing decisions in perfect capital markets. Capital markets, however, are not perfect, and existing imperfections introduce a wedge between the costs of external and internal funds. Firms facing higher informational imperfections experience a wider wedge, and therefore are more financially constrained. Wurgler (2000) examines cross-sectional data from 65 countries, and shows that capital allocation is more efficient in financially developed markets. Using cross-sectional data for several countries, Love (2003) showed that the sensitivity of investment to cash decreases with financial market development while Hennessy (2004) found out cash flow to be significant for firms with junk-rated debt and insignificant for those with investment-grade debt governance.

Financial markets in Sub-Saharan Africa are usually described as imperfect. Central to the major issues in financial regulation and liberalization in Africa are agency problems between creditors and equity-shareholders, between the public and the

private sectors, and between managers and capital contributors. The agency problems are accentuated by information asymmetry, search, transaction and contracting costs. In particular, there is a relative absence of legal and regulatory mechanisms, such as bankruptcy courts and laws, to enforce contracts. This has resulted in an abundance of credit rationing and high collateralization, which discourages new growth opportunities, with adverse consequences for the economic growth of Africa (Ncube and Senbet, 1997). This is equally true of Kenya. Despite the size and policy relevance of finance and economic literature that has studied the relationship between corporate investment and finance, the empirical evidence has been largely unexplored. This is a major research gap which this study sought to fill. The main question being how do the institutional ownership, size of the firm and liquidity of the firm affect investment-cash flow sensitivity among the firms listed in the Nairobi Securities Exchange?

### **1.3 Objective of the Study**

The objective of this study was to examine the effect of capital market imperfection on investment- cash flow sensitivity of listed firms in Nairobi Securities Exchange.

### **1.4 Value of the Study**

The agency firms listed at the NSE would benefit in that they would get to know the dynamics of market imperfection, understand its environment and the factors around it and be able to set milestones that are realistic. The information generated from this study is useful to the firms for they would be able to know the link between market imperfection and its impact on cash flow sensitivities in the stock market.

New and existing firms would benefit through the findings from this study. They would be able to use the findings in developing a framework that would work towards effective investment and analysis of the market structures. This would aid the firms in avoiding costs which come as a result of not studying the market well.

The study would be of great significance to other researchers who may undertake further research on the same topic in future. They would have a better understanding of the relationship between capital markets and investment-cash flow sensitivity and have data that could assist them come up with conclusions and fill in the gaps left out by this study. The findings would also help them in developing empirical studies in future.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1: Introduction**

This chapter presents the literature that has been reviewed on capital markets imperfections and investment cash-flow sensitivity. The literature has been specifically reviewed on the relevant theories i.e. the theory of investment and agency cost theory, determinants of investment cash flow i.e. creditworthiness, industrial structures, firms size, other studies that have been done on capital markets and investment cash flow-sensitivity and ends with a summary of the literature review.

#### **2.2 Theoretical Review**

This study was anchored on the theory of investment and agency cost theory.

##### **2.2.1 Theory of Investment**

The theory of investment was introduced by Keynes (1936) and Brainard and Tobin (1968, 1977) and Tobi (1969) and extended to models of investment assuming convex costs of adjusting the capital stock by Hayashi (1982). Their approach emphasizes equity prices and shifts attention away from the bond and money towards equity markets. In place of interest rates, equity prices become the channel whereby monetary policy affects investment spending (Blanchard, 1981, Palley, 2001). According to the theory, 'the rate of investment and the speed at which investors wish to increase the capital stock should be related, it to anything, to the value of capital relative to its replacement cost. The principal way in which financial policies and

event affect aggregate demand is by changing the valuations of the physical assets relative to their replacement cost.

The cash flow model is adopted in this study because it has a number of theoretical advantages over other models. First unlike most other investment models, it allows output to be endogenously determined. Second, unlike Jorgenson's neoclassical model and the accelerator model, it is forward looking based on market valuation of the firm's assets that based on lags of past variables. Third, it allows for distinct analysis of the effects of temporary versus permanent changes in tax parameters. Finally it avoids the Lucas critique, since the estimate adjustment parameters should not depend on policy rules.

### **2.2.2 The Agency Cost Theory**

According to Jensen and William (1976) an agency relationship is a contract under which one or more persons (the principal) engage another person (the agent) to perform some service on their behalf, which involves delegating some decision making authority to the agent. Often there is a blurred distinction between the principal and the agent—Agent responds to incentives and will not always act in the best interests of the principal. The agency cost theory suggests that, dividend policy is determined by agency costs arising from the divergence of ownership and control. Managers may not always adopt a dividend policy that is value maximizing for shareholders but would choose a dividend policy that maximizes their own private benefits. Making dividend payouts which reduces the free cash flows available to the managers would thus ensure that managers maximize shareholders' wealth rather than using the funds for their private benefits (DeAngelo et al, 2006).

For the current study, the researcher applies this theory which envisions that financing frictions caused by agency problems increases the sensitivity of investment expenditures to fluctuations in internal financing. Agency theory predicts that overinvestment by entrenched managers also increases investment-cash flow sensitivity. Previous empirical tests of the relation between investment and internal financing have relied on indirect measures of financial constraint or employed endogenous measures of this agency problem. Using direct and exogenous measure, generated by state adoption of antitakeover laws, the paper empirically tests the relationship between investments and internal financing.

## **2.3 Determinants of Investment Cash Flow Sensitivity**

### **2.3.1 Institutional Ownership**

A considerable body of research has focused on the role of institutional investors as corporate monitors. The rationale is that due to the high cost of monitoring, only large shareholders such as institutional investors can achieve sufficient benefits to have an incentive to monitor, Grossman and Hart (1980). Shleifer and Vishny (1986) note that large shareholders may have a greater incentive to monitor managers than members of the board of directors, who may have little or no wealth invested in the firm. Moreover, large institutional investors have the opportunity, resources, and ability to monitor, discipline, and influence managers. McConnell and Servaes (1990), Nesbitt (1994), Smith (1996), and Del Guercio and Hawkins (1999) have found evidence consistent with the hypothesis that corporate monitoring by institutional investors can force managers to focus more on corporate performance and less on opportunistic or self-serving behavior. On the other hand, Maug (1998) notes that whether institutions

use their ability to influence corporate decisions is partially a function of the size of their shareholdings. If institutional investor shareholdings are high, shares are less marketable and are thus held for longer periods. In this case, there is greater incentive to monitor a firm's management. However, when institutional investors hold relatively few shares in a firm, they can easily liquidate their investments if the firm performs poorly, and therefore have less incentive to monitor. Several studies conclude that institutional investors' goal of maintaining the liquidity of their holdings and their desire for short-term profit outweighs the benefits of monitoring management in the hope of eliciting higher long-term profitability [see Coffee (1991), Bhidé (1994), Demirag (1998), and Maug (1998)].

On balance, however, it seems clear that large stockholders and institutional investors have become increasingly active in corporate governance, especially in underperforming firms. Gillan and Starks (2000) find that corporate governance proposals sponsored by institutional investors receive more favorable votes than those sponsored by independent individuals or religious organizations. Hartzell and Starks (2003) show that institutional ownership is negatively associated with the level of executive compensation and positively associated with pay-for-performance sensitivity. Chung et al. (2002) find that large institutional shareholdings in a firm deter managers from pursuing opportunistic earnings management through discretionary accrual choices. Finally, Parrino, Sias, and Starks (2003) show that institutional selling is associated with forced CEO turnover and that these CEOs are more likely to be replaced with an outsider.



In addition to institutional investor activism, a number of papers have looked for a direct impact of institutional investor ownership on firm performance. McConnell and Servaes (1990) find that the percent of institutional investor ownership is positively related to a firm's Tobin's  $q$ . Nesbitt (1994), Smith (1996), and Del Guercio and Hawkins (1999) also find a positive relation between institutional investor ownership and various measures of firm performance. However, Agrawal and Knoeber (1996), Karpoff et al. (1996), Duggal and Miller (1999) and Faccio and Lasfer (2000) find no such significant relation.

### **2.3.2 Liquidity of the Firm**

There has been a steady increase in investments through institutions such as mutual funds and pension funds. This increase in fund flows can be seen as a proxy for the increase in overall market liquidity. As documented by Chordia, Roll and Subrahmanyam (2000), Hasbrouck and Seppi (2001) and Huberman and Halka (2001), there is commonality in liquidity across assets, and the liquidity of an asset is positively related to market liquidity. In this respect, increasing fund flows (a proxy for increasing market liquidity) should increase liquidity across all assets. Additionally, institutions have better information processing skills, and therefore, reduce informational asymmetries. Thus, increased fund flows should reduce the external financing costs for all firms. Butler, Grullon and Weston (2005) present evidence supporting this hypothesis by examining seasoned equity offerings. They show that securities issuance costs are lower for firms with stocks that are more liquid, which reduces their cost wedge between external and internal funds. If this

reduction is reflected in the sensitivity of investments to the availability of internal funds, then increasing fund flows should reduce this sensitivity.

### **2.3.3 Firm Size**

Firm size has been used as an indicator of access to external finance (Gertler and Gilchrist, 1994). In addition small firms are generally younger, with higher levels of firm specific risk, and less collateral, making them less likely to attract external finance. The evidence suggests that small firms are more sensitive to monetary policy tightening than larger firms. Gertler and Gilchrist (1994) document that indicators of monetary tightening such as Romer dates are highly significant explanatory variables in time series estimates of small firms' sales, inventory accumulation and short-term debt, in direct contrast to estimates for large firms.

Gilchrist and Himmelberg (1995) find excess sensitivity for small firms, and those without a bond rating or commercial paper issue in their sample. According to Huntley (1993) small firms and those that do not belong to a corporate group in Canada are more sensitive cash flow than others. However not all evidence on size goes in the same direction. In their seminal study Fazzari, Hubbard and Petersen (1988) point out that when they split samples according to size, small firms have relatively low cash flow coefficients. Also, Xiaoqiang and Schiantarelli (1998) find that larger firms are more likely to be financially constrained. They explain their result by arguing that (at least in their sample of listed firms) firm size may be inversely related to concentration of ownership, which tends to mitigate agency problems. On the basis of a formal framework that relates theory to empirical

investment models, Chirinko (1997) argue that firm size (and retention behavior) are not appropriate criteria for identifying financially constrained firms.

One has to be careful in projecting the results obtained on US data to European firms. In the US studies, the larger firms are quite different from the small firms in that the large firms have access to bond markets and the commercial paper market. The split really selects firms into those that obtain external finance from banks versus those that obtain external finance from the markets. In contrast, in Germany and the UK, bond markets and commercial paper markets are much less developed than in the US implying that a large-small firm sample split is less likely to generate a partition between bank versus market financed firms. Rather both. Although there are statistically significant differences in the response to monetary policy in relation to firm size, and this has been strongly associated with financial constraints, it is difficult to be sure about the direction of causation. (Eichenbaum, 1994) small and large firms will be mostly (even exclusively) bank financed. In a cross country study of Germany, France, Italy and Spain, Chatelain et al. (2003) find a significant larger effect of cash flow for smaller firms only in the Italian case. So a priori from the above studies it is difficult to argue that small firms are necessarily more likely to face financing constraints in the UK and Germany compared to large firms.

#### **2.4: Empirical Studies**

Fazzari, Hubbard and Petersen projected that the investment response due to a change in cash flow or the investment-cash flow sensitivity (ICFS) might be an interesting proxy to assess the degree of financing constraints a firm faces. This metric is intuitively appealing because a firm that has only limited access to external funds

depends mainly on its internal funds and therefore grows or invests at the pace of its retained earnings (Carpenter and Petersen 2002). FHP88 provide empirical evidence for this assertion by showing that the ICFS is higher for firms that pay out fewer dividends (and therefore are more likely to be financially constrained).

Robert and Bruce (2008) examined how capital market imperfections may affect firms in high-tech industries for unbalanced panel of over 2,400 publicly traded United States high-tech companies over the period 1981 to 1998. They found that most small and medium-sized high-tech firms make little use of debt finance. For small firms, virtually all long-term debt is secured debt. New equity financing, however, plays a critical role at the time the firm makes its initial public offering (IPO). The IPO is typically very large relative to the size of the firm and it often leads to a dramatic change in the firm's size. This increase in size could be difficult to achieve if the firm's only source of external finance was debt. Most firms do not also continue to make heavy use of external equity finance after they go public. Rather, the typical firm finances most of its growth with internal finance. These financing patterns suggest that many publicly traded high-tech firms, especially small firms, face financing constraints on investment and that new equity finance may be key to partially relaxing these constraints.

Olatundun and Ademola (2008) investigated the impact of capital market imperfections in corporate investment behavior using panel data for Nigerian Manufacturing firms from 1984 to 2000. They dealt with both static and dynamic misspecification problems by using an endogenous switching regression model. They found that financial factors have a significant effect on the investment behavior of

Nigerian firms, but the extent and impact of financing constraints are not uniformly distributed. Variables that capture firm's credit-worthiness, asymmetric information, agency problems and size increased the probability of a firm being in the high premium regime. They concluded that the likelihood of being in either a low or high regime varies over the business cycle in line with general macro-economic conditions.

In their seminal paper (Bert and Félix, 2009) investigate different cash flow-augmented investment models to estimate the ICFS as a proxy for financing constraints. Annual financial data were extracted from COMPUSTAT for UK-based listed firms over a five-year time period from 2000-2004 (included). Investments were truncated at zero which is the standard approach in the literature. To remove outliers, the upper and lower 1% of observations was deleted for all variables in the dataset. Additionally, each variable that was entered in the regression equation had to be 'winsorized' if its value exceeded a pre-specified cut-off value. Cut-offs were chosen in such a way that values beyond these points can reasonably be considered outliers. They found empirical support for a negative relation between the firm's investment-cash flow sensitivity (ICFS) and the firm's cash-cash flow sensitivity (CCFS). This negative firm-level relation, which is embedded in the original theoretical model by Almeida et al. (2004) stems from the fact that both investment and the cash-account can be considered two rival uses of funds competing for the firm's limited available cash flows.

Murekefu and Ouma (2010) sought to establish whether there is a relationship between dividend payout and firm performance among listed companies in Kenya. The research intended to specifically establish the relationship between dividend

payout and firm performance among listed companies in Kenya and establish the extent of the relationship between dividend payout and firm performance. The research design was correlation. The data used in this research was obtained from the annual reports of companies listed in the Nairobi Securities Exchange for a nine year period that is, from 2002 to 2010. Dividend payout was measured by the actual dividends paid out and firm performance was measured by the net profit after tax. Regression analysis was carried out to establish the relationship between dividend payout and firm performance. The finding shows that dividend payout affects firm performance and that this relationship is strong and positive. It therefore shows that dividend policy is relevant and therefore affects the performance of a firm hence its value contrary to theories that view dividend policy as irrelevant. Total assets and revenue are also factors that affect the performance of a firm as shown by the research findings.

Musyoka (2011) examined the predictability of accounting earnings using changes in share prices of companies listed at the Nairobi Stock Exchange in the finance and investment sector. The study covered the period between the year 2001 and 2005. The data was obtained from the Nairobi Stock Exchange, where the information selected were Earnings per share, Dividend yield, Price to earnings ratio and the share price. This information was standardized using logarithm and analyzed using the SPSS program. The OLS was used to come up with an equation. Eleven companies were analyzed and all of them had positive change towards the accounting earnings in relation to the share price. Additionally, the relationship between accounting variables and the Nairobi Stock Exchange information indicated mixed results, with some companies showing a strong positive correlation and others weak correlation.

Ngigi (2012) studied the financial securities and the development of capital markets of the Nairobi Securities Exchange (NSE) and the capital market authorities (CMA) in Kenya. The specific objectives were to establish the different types of financial securities listed on the NSE, assess the level of development of the capital market in Kenya and establish the relationship between the different financial securities traded and the development of capital markets in Kenya. The sampling design used in the research considered the various stake holders in the securities domain who included; Nairobi Securities Exchange and Capital Market Authorities staffs/employees, stock brokers, individual investors, and some beneficiaries of listed companies on the NSE which comprised of 40 respondents. The data collection methods were both primary and secondary data from various sources. The instruments used to collect data included the use of questionnaires and in some isolated cases, the use of interview. The findings showed that there is still a lot of ignorance about the stock exchange/ financial securities as the major problem. Low savings and incomes were the other major hindrances to investing in financial securities. Others included high listing requirements, which local companies could not meet and the lack of confidence in the market.

Okumu (2013) tried to determine whether the introduction of the microstructure changes had improved the informational efficiency of the securities market. Using a data collection sheet, secondary data was obtained from the NSE's authorized data vender (Synergy Ltd.) relating to the NSE 20 Share Index for the period spanning 12 years (2000-2012). The data was analyzed using non-parametric approaches to measure market efficiency before and after market automation. The results indicated

that mean market returns in the post automation period were higher and more volatile than those in the pre automation period. This higher market returns can be attributed to improved price discovery process, while the higher volatility may be due to changes in market microstructure through the trading system. The results from normality tests showed that market returns were not normally distributed in both the periods. In addition, the runs test results revealed that market returns were more random in the period following automation than the prior period, implying that the market had improved in efficiency.

Kirui (2014) examined firm access to external finance in capital market and its effect on firm investment and economic growth in Kenya. Panel data spanning the period 1998 to 2012 and covering listed non-financial firms categories was used. Specifically the study intended to determine if firms satisfy their demand for external finance in the capital market, investigate the effect of firm access to external financing on firm investment and estimate the effect of firm access to external financing on economic growth. He used disequilibrium model to estimate the resource drag model in addition to Oaxaca decomposition. The finding shows that there is a wedge between the cost of external financing and internal financing due to risk premium and lemon premium. The wider the gap between the cost of external financing and internal financing, the higher the likelihood that cost of external financing will exceed the hurdle rate and therefore some firms will find it unprofitable to borrow. Such firms are unable to optimally exploit their investment opportunities and therefore they are likely to under invest. Underinvestment in the economy implies slower growth in aggregate investment and slower expansion of national output. The expansion in national output can significantly be lower, if underinvestment by firm is pervasive in the economy.



Thus, to the extent that a substantial number of firms in the economy are financially constrained, capital market imperfection can inhibit the growth in the national output.

## **2.5 Summary of Literature Review**

Much of the above literature on capital market imperfection and investment cash – flow sensitivity is quite broad and does not focus on the resultant output when the two are put together. These studies argue that investment by undervalued firms that require external equity is particularly sensitive to stock prices in irrational capital markets. They present a model in which investment can appear to be more sensitive to stock prices when capital markets are irrational, but subject to imperfections such as debt overhang, information asymmetries, and financial distress costs. The empirical tests support the rational (but imperfect) capital markets view. Specifically, investment-stock price sensitivity is related to firm leverage, financials lack and probability of financial distress, but is not related to proxies for firm undervaluation or equity dependence. Because, in the model, stock prices reflect the NPVs of investment opportunities, results are consistent with rational capital markets improving the allocation of capital by channeling more funds to firms with positive NPV projects. This study therefore fills this gap by evaluating the effect of capital market imperfection on investment cash-flow sensitivity of the firms listed at NSE. This is equally true of Kenya. Despite the size and policy relevance of finance and economic literature that has studied the relationship between corporate investment and finance, the empirical evidence has been largely unexplored. This is a major research gap which this study sought to fill.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This section contains the research methodology adopted for this study. It is subdivided into; research design, study population, sampling design, the data collection model and the analytical model adopted to analyze the data obtained from the records of the listed companies at the NSE.

#### **3.2 Research Design**

The researcher employed descriptive survey design in order to answer the research question. Shields and Rangarjan (2013) defines a descriptive study as “any study that is not truly experimental whereas the word “survey” is used most often to describe a method of gathering information from a sample of individuals (Salant and Don, 2004). Therefore for this study descriptive survey was conducted to demonstrate the effect of capital market imperfection on investment cash flow sensitivity of the firms listed at the NSE. This design not only helped in examining the effect but also enabled the study to be carried out through documentary analysis of the trading documents held by the NSE (Czaja and Johnny, 2006). In other words, this method was used to describe how market imperfections at the NSE have influenced investment cash flow sensitivity of these firms.

#### **3.3 Study Population**

This study targeted all the 49 firms listed at the Nairobi Securities Exchange. Appendix 1 provides the list of all listed firms at the NSE. The sample design of this

study was based on Kothari's (2004) hypotheses. According to Kothari (2004) a sample of 10-30% of the target population is usually representative and generalizable. Therefore, the sample size for the study was 10 firms listed at the NSE which was 20.4% of the population. The study area was stratified into six sampling sectors namely: banking, insurance, agricultural, automobiles and accessories, telecommunication and technology and commercial and services sector. Therefore, the study used stratified random sampling technique to obtain a sample size of 10 firms listed in NSE from a target population of 49 firms. The study also used simple random sampling technique across strata. According to Mugenda and Mugenda (2008), stratified sampling technique is useful for heterogeneous samples such firms listed in NSE that was grouped into six sectors while random sampling technique accords each element in a sample an equal probability of being sampled hence eliminating representative biasness.

### **3.4 Data Collection Model**

The research relied upon secondary data obtained from Nairobi Securities Exchange or other financial intermediaries where data was not available from Nairobi Securities Exchange. The study also referred to the business and public management financial statements published by companies being studied. The study further obtained data on the capital market imperfection –institutional ownership (Number of shares held by institutions), the size of the firms listed at the NSE as measured by the asset base and liquidity of the firm (i.e. cash at hand, cash in the bank, and assets that can readily be converted into cash e.g. government securities) for the firms listed at NSE for the last 5 financial years (January 2009-December 2013).

### 3.5 Data Analysis Model

The data was then be analyzed using the SPSS program by estimating the OLS as per the analytical model below. The model of analysis adopted regression method in order to test for the specific influence of the independent variables on the dependent variable i.e. their influence on the firms' ability to invest (investment cash flow sensitivity – dependent variable) at the Nairobi Securities Exchange market (NSE).The results were interpreted and discussed to make the study conclusions. The test of significance was 0.05 i.e. the model was considered significant if the p value  $\leq 0.05$ .

### 3.6 Analytical Model

In this study, the study variables were the firm's variations on a firm's actual investment (investment cash flow sensitivity) at the NSE as the dependent variable while institutional ownership, size of the firms and liquidity of the firms were the independent variables.

Therefore the model of analysis took the following form;

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \epsilon$$

Where:

Y – Change in capital expenditure (Fixed Assets) of listed firms at the NSE

X<sub>1</sub> = institutional Ownership (No of shares held by institutions)

X<sub>2</sub> = the size of the firms listed at the NSE as measured by the asset base.

X<sub>3</sub> = liquidity of the firm (i.e. cash at hand, cash in the bank, and assets that can readily be converted into cash e.g. government securities)

$\beta_0$  = is a constant,  $\epsilon$  = is the error term

$\beta_1 - \beta_3$  are the coefficients of the independent variables.

The multiple linear regression analysis and t-statistic test was used to determine the relative importance (sensitivity) of each independent variable (capital market imperfection) in affecting the investment-cash flow sensitivity of listed firms in NSE. The results are said to be statistically significant within the 0.05 level, which means that the significance value must be smaller than 0.05. The significance was determined by the t-value, which indicates how many standard error means the sample diverges from the tested value (Kothari, 2004).

## **CHAPTER FOUR**

### **DATA ANALYSIS, RESULTS AND DISCUSSION**

#### **4.1 Introduction**

This chapter presents data analysis, interpretation and presentation. The objective of the study was to determine the effect of capital market imperfection on investment-cash flow sensitivity of listed firms in Nairobi Securities Exchange. Data was collected from all the firms listed at the Nairobi Securities Exchange. The data sources were the published annual reports of the listed firms spanning five years (2009-2013) as well as other publications from the NSE. Data was collected based on the variables of the study, that is, investment- cash flow sensitivity depicted by institutional ownership, size of the firm and liquidity of the firm.

#### **4.2 Descriptive Statistics**

The study findings on change in capital expenditure, institutional ownership, firm size and firm liquidity are given in Table 4.1 below.

**Table 4.1 Change in Capital Expenditure, Institutional Ownership, Firm Size and Firm Liquidity**

	<b>Change in capital expenditure</b>	<b>Institutional ownership</b>	<b>Size of the firms</b>	<b>Liquidity of the Firm</b>
	Natural Log of the change in capital expenditure	Natural Log of the number of shares held by institutions	Natural Log of the assets held by the companies	Natural Log of liquidity of the firm
Std. Deviation	1.0117	0.8145	0.3143	0.2128
Mean	7.989	5.232	11.0204	8.4972
Lowest	7.833	5.231	10.661	8.048
Highest	8.086	5.234	11.286	8.858
Median	8.074	5.233	11.101	

#### **4.2.1 Change in Capital Expenditure (Investment - Cash Flow Sensitivity)**

According to Fazzari, Hubbard and Petersen (2000), investment response due to a change in cash flow or the investment-cash flow sensitivity (ICFS) might be an interesting proxy to assess the degree of financing constraints a firm faces. The findings on the change in capital expenditure for the listed firms under study are as presented in Table 4.1 above.

The findings as shown in Table 4.1 above show the distribution of change in capital expenditure values for the listed firms over a period of 5 years. From the findings, the change in capital expenditure values was; a natural log of 7.833 in year 2009, a natural log of 7.824 in year 2010, a natural log of 8.074 in year 2011, a natural log of 8.132 in year 2012 and a natural log of 8.086 in year 2013. This shows a steady increase in the investment - cash flow sensitivity of the listed firms between year 2009 and year 2012 followed by a slight decrease in year 2013. On the other hand, high scores of

standard deviation indicate variation in change in capital expenditure for the various listed firms statistically. Thus, capital market imperfections had a significant influence on the investment - cash flow sensitivity of the listed firms over the 5 year period.

#### **4.2.2 Institutional Ownership**

The findings as shown in Table 4.1 above indicate the trend of institutional ownership over the 5 year period. From the findings, the lowest value of institutional ownership was a natural log of 5.231 in year 2009 while the highest value of institutional ownership was a natural log of 5.234 in year 2013. This shows a slight increase in the institutional ownership of the listed firms between year 2009 and year 2013. This implies that the listed firms barely changed their institutional ownership over the 5 year period. Thus, institutional ownership as a capital market imperfection does not significantly influence the investment- cash flow sensitivity of listed firms in Nairobi Securities Exchange.

#### **4.2.3 Size of the Firms**

The findings as shown in Table 4.1 above indicate the trend of size of the listed firms over the 5 year period. From the findings, the lowest value of size of the firms was a natural log of 10.661 in year 2009 while the highest value of size of the firms was a natural log of 11.286 in year 2013. This shows a steady increase in the size of the listed firms over the 5 year period. This implies that the listed firms grew in size over the 5 year period as depicted by the growth in their asset base. Thus, size of the listed firms as a capital market imperfection positively influenced the investment- cash flow sensitivity of listed firms in Nairobi Securities Exchange.



#### **4.2.4 Liquidity of the Firm**

The findings as shown in Table 4.1 above indicate the trend of liquidity of the listed firms over the 5 year period. From the findings, the lowest value of liquidity of the firms was a natural log of 8.048 in year 2009 while the highest value of liquidity of the firms was a natural log of 8.891 in year 2012. The liquidity of the listed firms slightly decreased in year 2013 as shown by a natural log of 8.858. This shows a steady increase in the liquidity of the listed firms between 2009 and 2012 followed by a slight decrease in year 2013. This implies that the listed firms enhanced their liquidity position over the 5 year period. Thus, liquidity of the listed firms as a capital market imperfection positively influenced the investment- cash flow sensitivity of listed firms in Nairobi Securities Exchange.

### 4.3 Correlation Analysis

**Table 4.2 Correlation Matrix**

	Investment-cash flow sensitivity	institutional Ownership	size of the firms	liquidity of the firm
Investment-cash flow sensitivity	1.000			
Institutional Ownership	0.521	1.000		
Size of the firms	0.413	0.523	1.000	
Liquidity of the firm	0.187	0.432	0.167	1.000

Based on the correlation matrix on Table 4.2 above, capital market imperfection has a positive relationship with investment-cash flow sensitivity of listed firms in Nairobi Securities Exchange.

### 4.3 Inferential Statistics

In determining the effect of capital market imperfection on investment-cash flow sensitivity of listed firms in Nairobi Securities Exchange, the study conducted a multiple regression analysis to determine the nature of relationship between the variables. The regression model specification was as follows;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Where; Y= Change in capital expenditure (Fixed Assets) of listed firms at the NSE

X<sub>1</sub>= Institutional ownership of the firms listed in the NSE

X<sub>2</sub>= Size of the firms listed in the NSE

X<sub>3</sub>=Liquidity of the firm listed in the NSE

$\beta_0$ =constant,

$\varepsilon$ = error term,

$\beta$ =coefficient of the independent variable.

This section presents a discussion of the results of the multiple regression analysis. The study conducted a multiple regression analysis to determine the relative importance of each of the variables with respect to change in the capital expenditure of the firms listed in NSE. The study applied the statistical package for social sciences (SPSS) to code, enter and compute the measurements of the multiple regressions for the study. The findings are presented in the following tables;

**Table 4.3 Model Summary**

<b>Model</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>
1	.898 <sup>a</sup>	.8064	.798	0.0004

a. Predictors: (Constant), institutional ownership, size of the firms, liquidity of the firms

b. Dependent Variable: change in capital expenditure (investment - cash flow sensitivity)

Coefficient of determination explains the extent to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of variation in the dependent variable (investment - cash flow sensitivity) that is explained by all the three independent variables (institutional ownership, size of the firms and liquidity of the firms).

The three independent variables that were studied, explain 80.64% of variance in investment - cash flow sensitivity of listed firms as represented by the  $R^2$ . This therefore means that other factors not studied in this research contribute 19.36% of variance in the dependent variable. Therefore, further research should be conducted to investigate the other factors that affect the investment - cash flow sensitivity of firms listed in the NSE.

**Table 4.4 ANOVA**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.323	2	.202	8.66	.004 <sup>a</sup>
	Residual	5.408	3	.246		
	Total	6.898	49			

- a. Predictors: (Constant), institutional ownership, size of the firms, liquidity of the firms.
- b. Dependent Variable: change in capital expenditure (investment - cash flow sensitivity)

Analysis of Variance (ANOVA) consists of calculations that provide information about levels of variability within a regression model and form a basis for tests of significance. The "F" column provides a statistic for testing the hypothesis that all  $\beta \neq 0$  against the null hypothesis that  $\beta = 0$  (Weisberg, 2005). From the findings the

significance value is .004 which is less than 0.05 thus the model is statistically significant in predicting how institutional ownership, size of the firms and liquidity of the firms as capital market imperfection attributes affect the investment - cash flow sensitivity of firms listed in NSE. The F critical at 5% level of significance was 3.23. Since F calculated (value = 8.66) is greater than the F critical (3.23), this shows that the overall model was significant.

**Table 4.5 Multiple Regression Analysis**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta	B	
(Constant)	3.462	.411		3.61	.000
Institutional ownership	0.324	.342	0.218	1.81	.016
Size of the firms	0.746	.804	0.359	8.41	.008
Liquidity of the firms	0.621	.685	0.142	4.56	.012

From the regression findings, the substitution of the equation

$(Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon)$  becomes:

$$Y = 3.462 + 0.324 X_1 + 0.746 X_2 + 0.621 X_3 + \epsilon$$

Where Y is the dependent variable (investment - cash flow sensitivity),  $X_1$  is the institutional ownership,  $X_2$  is the size of the firms,  $X_3$  is the liquidity of the firms.

According to the equation, taking all factors (institutional ownership, size of the firms and liquidity of the firms) constant at zero, investment - cash flow sensitivity will be 3.462. The data findings also show that a unit increase in institutional ownership will lead to a 0.324 increase in investment - cash flow sensitivity; a unit increase in size of the firms will lead to a 0.746 increase in investment - cash flow sensitivity while a unit increase in liquidity of the firms will lead to a 0.621 increase in investment - cash flow sensitivity of the listed firms. This means that the most significant factor is size of the firm followed by liquidity of the firm. At 5% level of significance and 95% level of confidence, institutional ownership had a 0.016 level of significance; size of the firm had a 0.008 level of significance while liquidity of the firms had a 0.012 level of significance, implying that the most significant factor is size of the firms followed by liquidity of the firms and institutional ownership, respectively.

#### **4.4 Discussion of Research Findings**

From the findings, there was a steady increase in the listed firms' investment - cash flow sensitivity over the 5 year period. Thus, capital market imperfections had a significant influence on the investment - cash flow sensitivity of the firms listed in the NSE. These findings are consistent with Şenay and Abon (2007) who argued that the investment decisions of firms are not affected by their financing decisions in perfect capital markets. Capital markets, however, are not perfect, and existing imperfections introduce a wedge between the costs of external and internal funds. Firms facing higher informational imperfections experience a wider wedge, and therefore are more financially constrained.

The listed firms' institutional ownership did not significantly change over the 5 year period. Thus, the institutional ownership of the listed firms as a capital market imperfection does not significantly influence the investment- cash flow sensitivity of the firms listed in Nairobi Securities Exchange. The findings are in contrast with Raghuram and Zingales (2003) and Gale (2000) who observed that in the UK, market capitalization as a percentage of GDP is some three times that of Germany, and corporate control is exercised by the financial markets rather than banks, in contrast to Germany. Nevertheless bond markets are much less well developed in Germany and the UK versus the US.

The size of the listed firms as a capital market imperfection positively influenced the investment- cash flow sensitivity of listed firms in Nairobi Securities Exchange. These findings are consistent with Alti (2003) who observed that in the absence of financial frictions, small and young firms can have higher investment-cash flow sensitivities since cash flow captures near-term investment opportunities that are not captured by Tobin's Q.

The liquidity of the listed firms as a capital market imperfection positively influenced the investment- cash flow sensitivity of listed firms in Nairobi Securities Exchange. These findings are consistent with Fazzari, Hubbard, and Petersen (1988) who showed that investment is more sensitive to cash flow for firms that have a high degree of financial constraints.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter presents the summary of the data findings on the effect of capital market imperfection on investment- cash flow sensitivity of listed firms in Nairobi Securities Exchange. The conclusions and recommendations are drawn there to. The chapter is therefore structured into summary of findings, conclusions, recommendations and areas for further research.

#### **5.2 Summary of Findings**

The study established that investment - cash flow sensitivity as represented by change in capital expenditure for the firms listed at the NSE increased by a ratio of 0.253 over the 5 year period. This is as represented by the difference between the natural log value of 7.833 in year 2009 and the natural log value of 8.086 in year 2013. Therefore, capital market imperfections had a significant influence on the investment - cash flow sensitivity of the firms listed in NSE. The study found out that there was a slight increase in the listed firms' institutional ownership as reflected by the increase in the natural log values from 5.231 in year 2009 to 5.234 in year 2013. Thus, the listed firms barely changed their institutional ownership over the 5 year period. Therefore, institutional ownership as a capital market imperfection attribute does not significantly influence the investment- cash flow sensitivity of listed firms in Nairobi Securities Exchange.

The study found out that there was a steady increase in the listed firms' board size as reflected by the increase in the natural log values from 10.661 in year 2009 to 11.286



in year 2013. This depicts that the listed firms grew in size over the 5 year period as depicted by the growth in their asset base. Therefore, size of the listed firms as a capital market imperfection attribute, positively influenced the investment- cash flow sensitivity of listed firms in Nairobi Securities Exchange. The study found out that there was an increase in the listed firms' liquidity position as reflected by the increase in the natural log values from 8.048 in year 2009 to a high of 8.891 in year 2012, followed by a slight decrease in year 2013 as shown by the natural log of 8.858. Thus, the listed firms liquidity position improved over the 5 year period. Therefore, liquidity of the listed firms as a capital market imperfection attribute, positively influenced the investment- cash flow sensitivity of listed firms in Nairobi Securities Exchange.

### **5.3 Conclusion**

Given that the listed firms' institutional ownership barely changed over the 5 year period and the listed firms' investment - cash flow sensitivity steadily improved over the same period, the study concludes that institutional ownership as a capital market imperfection does not significantly influence the investment- cash flow sensitivity of listed firms in Nairobi Securities Exchange.

Given the steady increase in the size of the listed firms over the 5 year period and the corresponding increase in the listed firms' investment - cash flow sensitivity over the same period, the study concludes that size of the listed firms as a capital market imperfection positively influenced the investment- cash flow sensitivity of listed firms in Nairobi Securities Exchange.

Given the steady increase in the liquidity of the listed firms over the 5 year period and the corresponding increase in the listed firms' investment - cash flow sensitivity over the same period, the study concludes that liquidity of the listed firms as a capital market imperfection positively influenced the investment- cash flow sensitivity of listed firms in Nairobi Securities Exchange.

#### **5.4 Recommendations**

From the findings, the study established that size of the firm as a source of capital market imperfection positively influenced the investment – cash flow sensitivity of listed firms in Nairobi Securities Exchange. Therefore the study recommends that the managers of the listed firms should adopt strategies to ensure that increase in firm size does not lead to market imperfections and therefore making the cash flow sensitivity in their firms less volatile.

From the findings, the study established that liquidity of the firm as a capital market imperfection positively influenced the investment – cash flow sensitivity of listed firms in Nairobi Securities Exchange. Therefore the study recommends that the managers of the listed firms should constantly monitor their firms' liquidity with a view to ensuring that it does not serve as a source of market imperfections to guarantee the stability of their firms' cash flow sensitivity. An optimal liquidity level should therefore be established.

The study also revealed that institutional ownership as a capital market imperfection did not significantly affect the listed firm's investment - cash flow sensitivity. One reason for not affecting the investment cash flow sensitivity is

because there was marginal change in the institutional ownership over the years. Thus, the managers of the listed firms should maintain the mix of institutional ownership vis a vis individual ownership.

### **5.5 Limitations of the Study**

The study was limited by access to information from firms listed in NSE due to limited availability of information on capital market imperfections. Investment cash flow sensitivity decreases with the existence of bond rating. However, there are very few firms listed at the NSE with rated bonds.

The descriptive research design also had inherent limitation such as the risk of non-response rate because such studies are conducted on the basis of voluntary participation.

Some of the data was collected from the financial analysts at the NSE. The study was therefore limited by the lack of co-operation from some of the respondents owing to their busy work schedule during data collection.

### **5.6 Suggestions for Further Research**

Since this study explored the effect of capital market imperfection on investment-cash flow sensitivity of listed firms in Nairobi Securities Exchange, the study recommends that; similar study should be done in other markets within the region for comparison purposes and to allow for generalization of findings on the effect of capital market imperfection on investment- cash flow sensitivity of listed firms.

It is possible that the decline in investment-cash flow sensitivity has been due to reduction in capital market imperfections over time. However, such an inference cannot be made categorically without a direct time-series analysis of the relation between the two. The study leaves that exercise for future research.

A similar study should be conducted on the effect of capital market imperfection on share prices of listed firms in Nairobi Securities Exchange. The study also recommends that similar study be done to explore the effect of capital market imperfections on share prices of listed firms in Nairobi Securities Exchange.

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## **APPENDICES**

### **APPENDIX I: FIRMS LISTED AT THE NSE**

#### **AGRICULTURAL**

1. Eaagads Ltd
2. Kapchorua Tea Co. Ltd
3. Kakuzi
4. Limuru Tea Co. Ltd
5. Rea Vipingo Plantations Ltd
6. Sasini Ltd
7. Williamson Tea Kenya Ltd

#### **COMMERCIAL AND SERVICES**

8. Express Kenya Ltd
9. Kenya Airways Ltd
10. Nation Media Group
11. Standard Group Ltd
12. TPS Eastern Africa (Serena) Ltd
13. Scangroup Ltd
14. Uchumi Supermarket Ltd
15. Hutchings Biemer Ltd
16. Longhorn Kenya Ltd

#### **TELECOMMUNICATION AND TECHNOLOGY**

17. Safaricom Ltd

#### **AUTOMOBILES AND ACCESSORIES**

18. Car and General (K) Ltd
19. Sameer Africa Ltd
20. Marshalls (E.A.) Ltd

#### **BANKING**

21. Barclays Bank Ltd
22. CFC Stanbic Holdings Ltd
23. I&M Holdings Ltd
24. Diamond Trust Bank Kenya Ltd
25. Housing Finance Co Ltd

26. Kenya Commercial Bank Ltd
27. National Bank of Kenya Ltd
28. NIC Bank Ltd
29. Standard Chartered Bank Ltd
30. Equity Bank Ltd
31. The Co-operative Bank of Kenya Ltd

### **INSURANCE**

32. Jubilee Holdings Ltd
33. Pan Africa Insurance Holdings Ltd
34. Kenya Re-Insurance Corporation Ltd
35. Liberty Kenya Holdings Ltd
36. British-American Investments Company ( Kenya) Ltd
37. CIC Insurance Group Ltd

### **INVESTMENT**

38. Olympia Capital Holdings Ltd
39. Centum Investment Co Ltd
40. Trans-Century Ltd

### **MANUFACTURING AND ALLIED**

41. B.O.C Kenya Ltd
42. British American Tobacco Kenya Ltd
43. Carbacid Investments Ltd
44. East African Breweries Ltd
45. Mumias Sugar Co. Ltd
46. Unga Group Ltd
47. Eveready East Africa Ltd
48. Kenya Orchards Ltd
49. A. Baumann CO Ltd

## APPENDIX II: RAW DATA

<b>Year</b>	Change in capital expenditure	Institutional ownership	Size of the firms
	Natural Log of the change in capital expenditure	Natural Log of the number of shares held by institutions	Natural Log of the assets held by the companies
2009	7.833	5.231	10.661
2010	7.824	5.232	10.878
2011	8.074	5.233	11.101
2012	8.132	5.233	11.176
2013	8.086	5.234	11.286

### APPENDIX III: RAW DATA

	Com pany	Change in capital expenditure(KES 'Millions') [Additions]					Institutional Ownership (billions) [Total number of shares]					Size of the firm (KES 'Millions') [Total Asset]					Liquidity of the firm(KES 'Millions') [Cash and cash equivalents]				
		20 09	20 10	20 11	20 12	20 13	20 09	20 10	20 11	20 12	20 13	200 9	201 0	201 1	201 2	201 3	20 09	201 0	20 11	20 12	201 3
1	Equity bank	26 88	18 93	22 25	35 18	31 18	3.7	3.7	3.7	3.7	3.7	96, 512	133 ,89 0	176, 911	215, 829	238, 194	10, 00 4	11, 747	19, 13 0	35, 46 7	21, 930
2	KCB	32 96	19 04	17 32	26 65	17 43	2.2 2	2.9 5	2.9 7	2.9 7	2.9 8	168 ,22 3	223 ,02 5	282, 494	304, 112	322, 685	9,8 93	6,7 55	15, 13 7	19, 31 3	16, 429
3	Kaku zi Ltd	16. 6	45. 9	40. 2	66. 6	38. 4	0.0 19 6	0.0 19 6	0.0 19 6	0.0 19 6	0.0 19 6	2,3 43	261 5	309 6	357 6	372 2	34 2	530	89 7	89 8	905
4	Sasin i Ltd	7.3	88. 8	50. 7	20. 7	26. 6	0.2 28 1	0.2 28 1	0.2 28 1	0.2 28 1	0.2 28 1	322 4	383 5	409 1	370 5	393 7	29 5	369	22 5	65	204
5	Keny a Airw ays	18 87	37 25	31 31	31 31	32 58	0.4 61 6	0.4 61 6	0.4 61 6	0.4 61 6	1.4 96 5	78, 293	75, 365	81,5 85	80,5 69	126, 278	2,3 73	3,1 12	5,0 50	6,8 40	14, 393
6	Natio n Medi a Grou p	37 4	46 6.8	45 2.4	44 6	55 5.2	0.1 42 6	0.1 57 1	0.1 57 1	0.1 57 1	0.1 88 5	657 2.4	797 5.2	881 6.3	10,6 77.4	11,4 44.2	14 73. 5	260 3.2	27 44. 7	39 60. 3	409 3.7
7	safari com	17, 43 5	17, 24 5	25, 47 5	25, 28 4	24, 87 6	40	40	40	40	40	91, 332 .2	104 ,37 6	113, 634. 8	122, 575. 8	130, 030. 3	43 10. 8	10, 723 .4		88 08. 1	14, 996 .9
8	Car & Gene ral Keny a	5.6	8.4	4.5	1.1	8.3	0.0 22 3	0.0 22 3	0.0 33 4	0.0 33 4	0.0 33 4	164 2	227 4	344 6	422 0	445 6	48	76	15 1	10 6	41
9	Keno lKob il Ltd	37. 6	97. 2	17 8.1	27 3.5	90. 7	0.1 47 2	1.4 72	1.4 72	1.4 72	1.4 72	17, 378	25, 956	50,9 51	36,4 56	32,5 63	36 78	213 3	32 72	21 91	177 5
10	Pan Afric a Insur ance Co.	0	11. 7	0.8 5	0	0	0.0 48	0.0 48	0.0 96	0.0 96	0.0 96	157 8	175 3	174 4	165 0	177 0	- 25. 2	22. 2	4.0	26 0.0	577 .7