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Research project

How listed firms finance their investment in the capital market

By

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of the requirements of the Degree of Master of Arts in Economics**



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Declaration

This research paper is my original work and has not been presented for a degree in any other university.

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Dedication

I dedicate this paper to Honorable William Ruto for his support during the entire period of my masters study. His financial assistance and guidance has enabled me to come through successfully.

Thanks and God bless you.

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ABSTRACT

This paper primarily investigates the role played by both internal and external finance in investment decisions of Kenyan listed firms. The objectives were to find out the sources of funds for listed firms, and whether cash flows and debt influence these firms' investment decisions. We used firm-level panel data for the period 2000-2008. Tests were based on fundamentals q investment equations in which cash flow and debt were added as explanatory variables. All these variables were normalized by beginning period capital stock. We demarcate between two types of firms, namely (a) small firms (with capitalization of less than sh. 10 billion); (b) large firms (whose market capitalization $>$ sh. 10 billion). Two hypotheses were tested. First, whether there is a relationship between cash flows and firm investment. Secondly, whether there is a relationship between firm level debt and investment.

The results reveal a significant positive relationship between debt and investment levels in both types of firms. Interestingly, we found a negative but insignificant relationship between cash flows and investment in both types of firms. Whereas coefficients of q are positive in both firms, q is insignificant in large firms.

We conclude that corporate investment of firms in both groups does not respond to market fundamentals and liquidity position. The findings support corporate life cycle hypothesis where as firms become mature past investments generate higher cash flows, making present investment rates to slow down, and become less attractive. Hence the negative empirical relationship between investment and cash flows.

A favourable legal and institutional framework that ensures creditors' protection and proper functioning of commercial banks should be enforced. This is because Kenya needs an appropriate level of interest rate established by monetary and fiscal policy to enable corporate investment. Lastly, the Kenyan debt market should be enhanced further to improve access of firms to cheap credit, and expand their options.

CHAPTER ONE: INTRODUCTION

1.1 Introduction

This study seeks to find out how listed firms in Kenya finance investment. The firms are divided into two groups based on the market capitalization sizes. We are going to show how their annual investment is influenced by cash flows and debt and debt levels. We would like to see the magnitude and direction in which these two variables determine firm investment. Investment considered here is one that is channeled to property plant and machinery, and not to shares of other companies.

1.2 Background

All over the world, the capital market has played a significant role in national economic growth and development. One intermediary in the market that operates as a rallying point for the overall activity is the stock exchange. The liquidity role stands out as the most significant among the numerous functions performed by the stock market. Levine (1991, 1997) postulates that without a liquid stock market many long term profitable investments would not be undertaken because savers may be reluctant to tie up their investments for long periods of time. According to Molitadi and Argawal (2004), large stock markets lower the cost of mobilizing savings, facilitating investments in the most productive technologies. The market provides increased economic growth by making available the information on firm's prospects, and redistributing investible capital. Yartey and Adjasi (2007) argue that the stock market provides an avenue for growing companies to raise capital at a lower cost than bank loans, while positively influencing individual savings in the economy, and that companies in countries with developed stock markets are less dependent on bank financing, which can reduce the risk of credit crunch.

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 (Neube and Senbet, 1997). There is overwhelming evidence for the importance of investments as an engine for economic growth. Research in a variety of fields has generated insights concerning the foundations for the investment decisions of firms. A robust finding from De Long and Summers (1991) is that an extra percent of gross domestic product (GDP) invested in equipment is associated with an increase in GDP growth of one-third of a percent per year and argue that investment causes growth.

In Kenya firms are growing rapidly, and hence there need for increased source of re-investible funds. It means that they cannot meet their investment demand with internal finance.

1.3 Statement of the Problem

Firms have many options from which they raise capital in the Nairobi Stock Exchange. This is depicted by the various ways in which different firms have financed their investment. Instruments that have been used include: corporate bond, commercial papers, rights issues, bank loan, new issues, preference shares, and retained earnings

We are going to study how firms respond to changes in cash flows, debt and Tobin's q. these variables are explained in chapter five. This is because the motivational study carried out before showed that some listed firms depend solely on debt in purchase of property and equipment over the period 2000 to 2008.

Kenya is a developing country with a great potential. As it plans to meet millennium development goals, it has also drawn a blueprint termed Vision 2030, in which she desires to be an upper middle income country, with high literacy levels, food sustainability, better living standards, low unemployment, and vibrant private and public sectors.

One of the pillars of this plan is increased savings to 30 % of total income. Kenya currently saves only around 7%. These savings will be mobilized to viable investments through organized structures for example the Nairobi Stock Exchange. Therefore investment is critical to Kenya's future performance. It is for this reason that we study the Kenyan capital market to see how it has succeeded in allocation of the little funds available to the listed firms.

Empirical models of investment rely on assumptions that firms are able to respond to prices set by centralized security markets through the cost of capital "q". Internal finance has certain cost advantages over external finance. We shall use the cash flow to determine firm investment spending. We know that the markets for equity and debt are imperfect in Kenya. A prior motivation study found out that some firms do not use debt, which means that they do not have sufficient access to external debt. To the extent that some firms are constrained in their ability to raise funds, it means investment will be sensitive to the availability of internal finance, i.e. investment should display sensitivity to levels of cash flows.

This paper will examine financial hierarchy created by market imperfections. Data from non-financial firms will be used. The firms will be divided into two groups, based on the market capitalization. We shall compare the q values for these groups, and their sensitivities to cash flows, and impacts of debt to their investment functions.

1.4 Significance of the Study

Despite the size and policy relevance of finance and the economic literature that has studied the relationship between corporate investment and finance, the empirical evidence has been largely unexplored in Africa generally, including Kenya. This is a major research gap which this study seeks to fill

There are a number of reasons why Kenya is a good case to test the impact of capital market imperfections on corporate investment behavior. Firstly, evidence shows that information is not instantaneously and simultaneously available to all investors. This is because the market is still developing and has abnormally high returns on equity. The fact that the true value of shares is not known by all the market players enables speculators to make a killing. Secondly, the Kenyan capital market has been classified by International Finance Corporation (IFC) as emerging and undeveloped (Levine et al., 1996). It exhibits different forms of imperfections. These include imposition of price caps on share price movement, political instability which resulted in thinness of trading, low market capitalization and low turnover. Furthermore, corporate investment is an important part of total investment. It is clearly important to understand the financial aspects of the decisions corporations make about investment. The importance of private investment, however, goes beyond its actual weight in the data. With the private sector now carrying a heavy burden of generating economic growth in African countries, it is important to understand the financial mechanisms it can use in shouldering this responsibility.

Lastly, there are links between corporate behavior and macroeconomic stability. Corporations that carry heavy debt burdens can pose a threat to the health of their creditor financial institutions. In addition, high levels of indebtedness can exacerbate macroeconomic instability by increasing the sensitivity of economies to economic shocks (Mayer, 1990).

There has been a renewed policy debate about the link between finance and real investment. Academic research (Hubbard, 1990; Fazzari et al., 1988) shows that it exists. The aim is to provide a consistent data set on the sources of finance for the listed Kenyan companies over the period 2000 to 2008, and to find out the extent to which these options determine firm investment.

This study will provide a basis for comparisons for other developing countries to which Kenyan experience would serve as useful a lesson.

1.5 Research Questions

The paper will investigate the impact of an imperfect capital market on corporate investment behavior of 15 listed firms at the NSRF. We address the following questions

- a) What options of raising funds are used by Kenyan listed firms?
- b) Is there any relationship between debt and firm investment?
- c) Do cash flows influence firm investment?

1.6 Objectives

The three questions will collectively form the objectives of this study

General objective

- a) To find out the number of options available for firms at the Kenyan Capital market, and how many are used by each of the listed firms

Specific objectives

- b) To empirically find out whether debt levels influence firm investment behavior
- c) To empirically find out whether cash flows influence firm investment.

1.7 Hypotheses

1. There exist no relationship between cash flow and investment spending in small firms
2. There exist no relationship between debt and investment spending in small firms.
3. There exists no relationship between cash flow and investment spending in large firms
4. There exists no relationship between debt and investment spending in large firms

CHAPTER TWO: BACKGROUND ANALYSIS

2.1 Stylized facts about Firms Listed at the NSE

The NSF has 55 companies, listed under five sections. The Agricultural Sector has three companies, Commercial and Services has 12, Finance and Investment has 15, Industrial and Allied has 17, and the Alternate Segment has 8 companies.

The Agricultural Sector does not rely on capital markets for their funds. Most of their investments are financed by banks, shareholder loans, and retained earnings. This counter faces numerous risks, including but not limited to:

- a) Adverse weather conditions
- b) Unpredictable world prices for their output and input.

They are classified as capital risky and hence a limited source of funds. The only exception is Sasini which raised sh.600¹ million through a corporate bond towards the end of the study period. The Commercial and Services section was one of the busiest in capital raising options as most explored more than two options. Three IPOs in this group raised a sum of Ksh.515,521,050,000 shillings, with Safaricom contributing 96%. Notably, Safaricom is the largest firm by capitalization at the bourse. It issued bonds worth sh. 4 billion in 2001, and sh 7 billion in 2009. Commercial papers issued were worth a total of sh. 861 million. Bank loans are also a major feature where the firms have special drawing rights from the large Kenyan banks. Three of them rely on parent company loans while Car and General relies on shareholders loans.

The Finance and Investment group issued four IPOs raising a total of sh. 7.07 billion. Three firms have used corporate bonds raising a total of sh. 3.175 billion. Commercial papers are not popular here. Over 50% of the firms have done rights issues worth 15.02 billion shillings. These firms are dependent on deposits and are a source of money both for government through treasury bills subscription.

¹ Exchange rate 1 dollar = Shs 77

The fourth sector, Industrial and Allied, is a diverse one but with emphasis on bank loans. Most of the firms in this group have leases and employ hire purchase agreements with respect to highly capital intensive equipment. A keener look indicates that the government is a major shareholder in most of the companies in this group, hence the prevalence of internationally negotiated forms of credit. Most firms are manufacturers and hence heavily rely on sale of goods. International lending institutions fund new investments. There is a large presence of lending syndicates and financiers of leases. Three firms undertook IPOs and raised a total of sh 10.33 billion. KenGen issued a corporate bond in 2009.

The Alternative Investment group which consists of 8 companies, does not use the capital markets so much. Only two companies did rights issues. The said firms have large parent companies and hence a great proportion of the source of capital is foreign. Their credit ratings are low and hence these firms prefer to use other channels to raise funds. Majority of firms use shareholder loans or parent company loans. Overdraft facilities are also popular here, an indication of extensive use of internally generated funds. Most of the dividends are also left unclaimed.

In totality, the IPO rumped in a total sh. 67 billion. The rights issue raised sh 18.404 billion while the corporate bond raised sh 10.15 billion. Commercial papers raised another sh 11.392 billion. During the year 2009, despite the depressed financial market, Safaricom issued another 15 billion, while KenGen sh. 25 billion. Their uptake was oversubscribed indicating renewed appetite for the debt market. This indicates that most firms in the NSE have very strong fundamentals, and favorable credit ratings. It also serves to explain the growth of a capital market as a mobilizer of funds.

2.2 The Banking Sector

The banking sector is composed of the Central Bank, commercial banks, non bank financial institutions and forex bureaus. This sector is comprised of 43 commercial banks, two mortgage companies and 120 foreign exchange bureaus as at 31st December 2008. Of the 45 financial institutions, 33 are locally owned, and 12 foreign owned.

Government has a significant holding in 3 of the 33 locally owned institutions. Local private financial institutions (67% of the sector institutions) control 55% of the total assets. Those with foreign ownership of more than 50% control 40% of total net assets. There were 887 branches in 2008. 14 large financial institutions (in terms of assets) control 83% of net assets, 84% of deposits, and 92% of profits in the sector. Two major banks in the group are not listed at the exchange. Their total assets were sh. 1,193.4 billion in 2008 (which was 51% of the year GDP at market prices). Loans and advances were sh. 671.8 billion (44% of total assets).

This paper will set out to give the contribution of this sector to the listed firms total borrowing requirements.

Table 2.1: Trends in the raising funds through the various options available at the NSE (in sh. millions)

year	IPC	Corporate bond	Commercial paper	Rights issue	Total as a percentage of GDP
2000	636 (2)				0.66
2001	1,875 (1)	4,000 (1)	146 (1)	1,569.1 (3)	0.73
2002			38.65(1)		0.004
2003		1,750 (1)	300 (1)	178 (1)	0.44
2004			1,400 (3)	2,450 (1)	0.30
2005		800 (1)	1,186 (1)	2,004 (2)	0.28
2006	8,936.7 (3)		200 (1)	776.4 (1)	0.72
2007	3,080 (2)	1,600 (2)	3,501 (3)	3,204 (3)	0.63
2008	50,662.4 (2)	2000 (1)	300 (1)	7,844 (2)	2.59

The numbers in brackets indicate the number of firms which used the option in the specified year. The source: Nairobi Stock Exchange Fact Book

The definition of these fund raising options are in the Appendix

2.3 Corporate investments in perspective

Investment is the value of machinery plants and machinery that are bought by firms for production purposes. Investment plays six macroeconomic roles:

1. it contributes to current demand of goods, thus it increases domestic expenditure,
2. it enlarges the production base (installed capital), increasing production capacity,
3. it modernizes production processes, improving cost effectiveness,
4. it reduces the labour needs per unit of output thus potentially producing higher productivity and lower employment,
5. it allows for the production of new and improved products increasing value added in production,
6. it incorporates international world-class innovations and quality standards, bridging the gap with more advanced countries and helping exports and an active participation to international trade

A good investment climate fosters productive private investment- the engine of growth and poverty reduction. It creates opportunities and jobs for people. Some features of a good investment climate include efficient infrastructure, courts and finance markets. Improving investment opportunities and incentives for firms to invest productively is key to sustainable progress in attacking poverty and improving living standards.

An important condition for economic development and improvement of living standards in a country is a continual increase in the productive capacity at the micro-economic level. The growth in productive capacities of firms requires new investments, therefore firms should have access to reliable and cost-effective financial sources and they should expect the intended investments to be profitable. The cost of finance is a very important factor that influences the profitability of an investment. Therefore it is crucial for firms to pay a lot of attention to finding appropriate sources of investment finance and thereby also take into account, that the preferred financial source need not be currently available in the capital market.

The sources of investment finance can be divided into internal and external. Internal sources (retained earnings) are both in theory and practice considered as the most appropriate source of investment finance, but their amount is limited by the profitability of the firm. External debt (loans and bonds) is limited by the capacity of the firm to guarantee its obligations, i.e. by the amount of fixed assets that could serve as collateral.

Financial system is also a key element in Kenya (and other countries) with the bank-based financial system, commercial banks are important loan providers, whereby their relation to the firm can turn into a mutually beneficial long-term relationship (the bank gains a good insight into the business of the firm, the firm can acquire loans under more favorable conditions). The amount of new external equity (new funds from the owners) is largely dependent on the legal form of the firm and its ownership structure, on the degree of involvement of the owners into the management of the firm and their willingness to take on new partners, and in the case of public limited companies also on the effectiveness of the stock market. Additionally, there are other alternative external sources of funds that are going to be discussed in the paper

2.4 The impact of information asymmetry on investment finance

From the point of view of a firm, different financial sources are not perfect substitutes. This can also be concluded from the pecking order theory by Myers and Majluf (1984) and Myers (1984), according to which firms follow a certain pecking order when they need to raise new capital for their investments: they prefer internal financial sources and out of external sources they prefer debt over equity. The reason is information asymmetry between managers and potential investors, who would require an inappropriately high rate of return. It follows, that profitable firms can fund the most of their investments with retained earnings, and less profitable or loss-making companies must rely more on external funds. Therefore more profitable firms are expected to have a lower leverage than less profitable or loss-making firms.

Because of information asymmetry, internal financial sources have several advantages over external sources from the point of view of the firm:

- managers need not disclose confidential information about the value of the existing assets or about the value of new investments;
- the firm can avoid external funds, which may be too expensive, because it would be too costly or even impossible for the firm to credibly inform potential investors, who could consider such an information to be not credible, purposive or distorted;
- the firm can avoid the so called agency costs, which result from interest conflicts between managers and providers of external funds.

The preference of debt over equity can also be explained with the help of the pecking order theory and information asymmetry. Equity is more severely affected by the problem of information asymmetry than debt for the following reasons:

- investments that are intended to be financed with a bank loan are carefully analyzed by the bank in advance and continually monitored after their implementation. Moreover, banks require certain collateral for the case the firm would not meet its obligations; the interest is paid out regularly on a contractual basis regardless of the profits achieved, and in the case of the firm's liquidation creditors have a preferential right to the profit achieved by selling its assets;
- equity issue can be considered as an inability of the firm to obtain money from other sources: potential investors could conclude, that the intended investment is too risky, or that the firm has already reached its affordable level of indebtedness.

It can be supposed, that the problem of information asymmetry will be the most significant in small (and medium) firms, newly established firms, growing firms, as well as in firms with innovative business that potential investors may consider as too risky, or that may be confidential, so that no imitators appear who would destroy the opportunity of the firm to achieve an acceptable profit from the innovative investment.

In general, such firms will also face problems to fund their potential investments with internal funds, either because the volume of their investments is relatively large, or because their profits have not reached their adequate level yet. Moreover, the access of these firms to external financial sources is limited: because of the problem of information asymmetry and a lack of tangible assets that could serve as collateral, it is difficult for them to obtain a bank credit under acceptable conditions. Issuance of securities can be taken into account only by large companies.

For the reasons mentioned above, such firms are often forced to resort to "informal" sources of funds (e.g. trade credit, financial support from family and friends), especially in the initial phase of their business, when the amount of financial sources needed is relatively small, or they can try to acquire venture capital. Venture capital investors are usually involved in the business of the firm, thereby reducing the problem of information asymmetry and increasing the probability of the firm being successful. After the expiration of the period of time for which the venture capital has been provided, the firm has to rely on internal financial sources and debt finance (bank credits). Thus the "pecking order" of financing seems to be modified in young, small, growing and innovative firms.

Summary of the way listed firms raised their funds for investment from the capital market and other sources during the nine year period (2000 to 2008) is shown in appendix 1.

CHAPTER THREE: LITERATURE REVIEW

3.1 Theoretical literature

Most of the studies since the mid 1960s have isolated real firm decisions from financial factors with Modigliani and Miller (1958) characteristically demonstrating the so-called Irrelevance Theorem. The main conclusion being that a firm's financial structure will not affect its market value in perfect capital markets. Applied to capital expenditure, a firm's financial status is irrelevant for real investment decisions in a world of perfect and complete capital markets. In particular, the neoclassical theory of investment developed by Jorgenson (1963) and Hall and Jorgenson (1967) advocates that a firm's optimization problem could be solved without reference to financial factors, qualifying the user cost of capital as the sole determinant of investment. In a world without frictions (i.e. symmetric information, no taxes, no transaction costs), investment decisions would solely depend on whether the project at hand had a sufficiently positive net present value, and could therefore be financed by any combination of equity and/or debt capital. Early research on investment, especially the work of Meyer and Kye (1957), stressed the significance of financing constraints for business investment. The importance of how investment is financed was derived with the development of theoretical models of asymmetric information based on the "lemons" problem, (Akerlof, 1970). The argument is that sellers with inside information about the quality of an asset will be unwilling to accept the terms offered by a less informed buyer. The appropriate theoretical analysis builds on information asymmetries in financial markets, placing it as the core problem in this study. If credit markets were characterized by asymmetry of information, then unobserved differences in borrower quality can induce credit rationing (Jaffee and Russell, 1976; Stiglitz and Weiss, 1981). Further research showed that without fully collateralized loans, and the borrower's net worth being used as an indicator for her creditworthiness, the perfect substitutability of external and internally generated funds breaks down. Consequently, a cost differential, known as the External Finance Premium, exists between external and internal funds, with the former being more costly than the latter (Townsend, 1979; Greenwald, *et al.* 1984; Myers and Majluf, 1984; Bernanke and Gertler, 1990; Gertler, 1992; Kiyotaki and Moore, 1997).

The q theory of investment was introduced by Keynes (1936), Brainard and Tobin (1968, 1977) and Tobin (1969) and extended to models of investment assuming convex costs of adjusting the capital stock by Hayashi (1982). They begin with the intuition of Keynes (1936) and Grunfeld (1960) that a firm should invest in additional assets if this activity increases the stock market's valuation of the firm. In other words, a firm should not acquire new assets unless they are used by the firm to create at least as much market value as the cost of reproducing them; otherwise, the assets would be better employed elsewhere.

They then build upon this idea by arguing that the firm should acquire more assets if the ratio of the market valuation of these assets to their replacement value, Tobin's q , exceeds one. Tobin's q is quite likely the most commonly used regressor in empirical corporate finance. Their approach emphasizes equity prices and shifts attention away from the bond and money markets 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 q theory, 'the rate of investment – the speed at which investors wish to increase the capital stock – should be related, if to anything, to q , the value of capital relative to its replacement cost' Tobin (1969).

The principal way in which financial policies and events affect aggregate demand is by changing the valuations of physical assets relative to their replacement cost. The q and 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 and variable. Second, unlike Jorgenson's neoclassical model and the accelerator model, it is forward-looking based on market valuation of the firm's assets rather than 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 estimated adjustment parameters should not depend on policy rules (Schaller, 1990). Most studies of financing constraints and corporate investment since Fazzari et al. 1988 estimate a q and cash flow model of investment. The existing empirical literature analyzing financial factors in investment decisions has produced a number of findings suggesting the significance of financing constraints for firm decisions (Flubbari, 1998).

Firm characteristics also determine the level of debt that a firm can incur. Several papers predict a positive relationship between size and leverage (e.g. Rajan and Zingales (1995), among others). The explanation offered is that information asymmetries are smaller for large companies so that the latter have easier access to the market of debt finance. Hence, at least when compared to internally generated funds, issuance costs of debt financing decrease, so that this mode of financing becomes more attractive. Therefore one could argue that the Pecking Order theory would predict a positive relationship between size and leverage. However Titman and Wessels (1988) note that both the cost of issuing debt and equity securities is related to firm size.

As issuing equity is relatively much more costly for small firms as compared to the costs for large ones, small firms may be more leveraged than large companies. Furthermore to reduce issuance costs even more, small firms may prefer to borrow short term (through bank loans) rather than issue long term debt. Hence, if there are major differences in the way size impacts on the issuance costs of alternative sources of financing, a negative relationship between size and leverage may also materialize within the Pecking Order logic. From the perspective of the Trade-Off theory one would expect that, as large companies tend to be more diversified and less prone to bankruptcy, the latter firms would opt for more debt in their capital structure.

As more information is available for large firms, there is also less need for quality signaling through high debt levels by those firms. Furthermore, in view of the availability of more information, the agency perspective would also predict less need for debt as a disciplining device. Hence signaling and agency perspectives would predict a negative relationship between size and leverage. Overall, preceding discussion shows that finance theory is not unambiguous about its prediction of the impact of firm size on leverage. Empirical results suffer from the same problem. Rajan and Zingales (1995) find a positive relationship for the US, UK, Japan and Canada. For France they report no effect while the impact for Germany is negative. Other authors like Titman and Wessels (1988) find no relationship for the US. For Belgium, Deloof and Verschueren (1998) report a positive relationship between size and leverage.

The literature is also unclear about the relationship between firm growth and leverage. According to the Trade-Off theory, growth companies borrow less because of increased expected costs of bankruptcy. Specifically, growth opportunities are intangible; they increase the value of the firm

but they cannot be collateralized. Also from the agency perspective growth companies should have lower leverage. For, as already argued before, growth companies have continuously large cash flow needs and are therefore hampered in their normal investment decisions by the pressure of the additional cash outflows for debt servicing. Because internal financing is not likely to fill the needs of these firms, the Pecking Order Theory would predict that growth companies are likely to hold more debt. Finally, as growth may serve as an alternative quality signal, the signaling perspective would hypothesize less need for leverage. Again, also empirical findings show conflicting results. Rajan and Zingales (1995) report a negative relationship between growth and leverage, while Titman and Wessels (1988) do not find any connection.

3.2 Empirical literature

The body of empirical research which explores the connection between investment and finance has developed with the theme that financial structure is relevant to a firm's investment decisions when capital markets are imperfect. This is in contrast to Modigliani and Miller's (1958) irrelevance theorem. Modigliani and Miller have argued that in a perfect capital market, a firm's investment decisions are independent of its financing decisions because the financial structure would not affect the costs of investing. Under such assumption, they conclude that a firm's financial structure is irrelevant to its value. However, recent research argues that, in an imperfect capital market, internal and external capital are not perfect substitutes for each other. Investment may consequently depend on such financial factors as availability of internal finance, ease of access to debt or new equity finance, or the functioning of particular credit markets. This may be due to imperfect information about the quality or riskiness of the borrower's investment project. Information asymmetries and costly contract enforceability generate agency costs that result in outside investors demanding a premium on debt or stock issued by the firm and cause external funds to be an imperfect substitute for internal funds (Hu and Schiantarelli, 1998).

Imperfections constrain investment expenditure and mobilization of capital for investment as a result of credit rationing or effective denial of external financing. Owing to information asymmetries and agency problems, capital market imperfections will create a wedge between the costs of external and internal funds. In such a situation firms prefer to finance investment with internal funds, and therefore, corporate investment will depend on firms' financial factors.

External finance, if available, will be more costly than internal finance because of transaction costs, agency problems, asymmetric information or the cost of auditing the borrower. Imperfect substitution between internal and external funds will result in the excess sensitivity of investment to cash flow because of problems related to the conflict of interest between managers and outside shareholders in the firm. The cost of issuing new debt or equity to finance investment projects will depend on a firm's financial structures, other characteristics that proxy for the severity of information and agency problems, and on macroeconomic conditions (Hu and Schiantarelli, 1998).

In a seminal work on the effect of financial constraints on investment decisions, Fazzari et al. (1988) show that investment by U.S. firms is sensitive to cash flow. In later works, Calomiris and Hubbard (1995), Calomiris, et al (1995), Carpenter, et al (1994), and Calomiris and Himmelberg (1996) argue that the high shadow cost of external finance will show itself most clearly in the cash flow sensitivity of inventories. Gilson, John, and Lang (1990) find that the more long-term debt a firm has, the more likely it will be to reorganize successfully. Hall (1992) reports that when the ratio of long-term debt to physical capital increases, physical investment and research and develop.

Singh and Hamid (1992) undertook the first major empirical study on corporate financial patterns in developing countries using the company accounts methodology. Their results show that corporations in developing countries use external finance to a far greater extent than firms in advanced countries. Further, in more than half of the countries in their sample, the top corporations used much more equity, rather than debt, to finance the growth in the 1980s. This finding stands in sharp contrast with the financing patterns of corporations in leading advanced countries like France, Japan, and Italy, where corporations traditionally have a relatively greater recourse to external sources of finance.

Akinnifesi (1984) empirically analyzed the determinants of investment behavior of manufacturing industries in Nigeria based on five alternative theories of investment and private foreign investment data for a sample of eight manufacturing industries over the period 1966 to 1976. Odedokun (1995) examined the relationship between dividend policy, investment spending and financing decisions of sixty quoted non-financial firms in Nigeria from 1985 to 1988 and

concluded among others that "on the whole, therefore, the existence of mutual interdependence between financing and investment decisions and the dependence of finance and investment decisions on dividend policy is strongly supported by the data "

Akinnifesi and Odedokun in their studies viewed the firm as a 'black box' that operates to meet the relevant marginal conditions with respect to inputs and outputs, while maximizing profits, or present value. They based their studies on the representative firm assumption by pooling all the firms in their samples together. However, their models are limited because they consider neither firms' heterogeneity by incorporating firm and industry specific characteristics, nor the time dimension in the firms' decision process. Subsequent studies such as Hu and Schiantarelli (1998) have dropped the 'black box' approach and have established that firms face different degrees of financing constraints and different premiums on external finance, by partitioning firms into groups based on a priori criteria or by using an interaction approach. In the paper, we shall work within the q theory of investment. Empirical implementation requires that we rely on the cost of adjustment approach. Abel and Blanchard (1986) find important roles for profits in aggregate investment equations relying on q . Our emphasis is to see whether the imperfect market limits the availability of external finance to particular types of firms

These studies are organized around the commonly used criteria that have been utilized to identify firms that are more likely to suffer from financing constraints. Most of these criteria emphasize the cross-sectional differences that exist across firms. These include earnings retention and dividend pay-out practice, group affiliations, firm size, age, agency problems and concentration of ownership and structural changes in the financial market and classification based on the switching function between high-premium and low-premium regimes (Fazzari et al., 1988; Fazzari and Peterson, 1993; Bond and Meghir, 1994; Alonso-Borrego, 1994; Hoshi et al., 1991; Schiantarelli and Sembenelli, 1995; Chirinko and Schaller, 1995; Jaramillo et al., 1994; Harris et al., 1994; Hu and Schiantarelli, 1998). Bigsten et al (1999) analyzed the investment behavior of four African countries found a positive effect of profits on investment, but this was confined to smaller firms rather than larger firms.

Mayer and Alexander (1991) attempted to investigate the impact of stock markets on corporate performance. Their main findings are that unquoted firms are on average smaller, have higher concentration of ownership, are less diversified across industries and are concentrated in low technology industries. Quoted companies seem to grow faster and be more profitable than non quoted companies. Another important result from Mayer and Alexander is that in their sample quoted firms prove to be more active bidders in the takeover market. From this they conclude that the higher growth of quoted companies is to a large extent attributable to takeover and external growth rather than internal expansion.

Laeven (2001) investigated whether financial liberalization relaxes the financing constraints of thirteen developing countries. He found that small firms are financially constrained before the start of the liberalization process, but this becomes less so after liberalization; however, financing constraints of large firms are low both before and after financial liberalization. Financial constraints play an important role in determining investment behavior (Hubbard 1998). Also, Rajan and Zingales (1998) offer empirical evidence of the impact of financial market imperfections on investment and firm growth. The q model of investment has achieved a lot in empirical research. Tobin's q, defined as the ratio of the market value of the firm to the replacement cost value of its assets makes a sufficient statistic for investment decisions. (Chirinko 1995, beginning with the work of Fazzari, et al. 1988, and continuing through Devereux and Schiantarelli 1990, and Hoshi, et al. 1991) In the current study, our main objective is to demonstrate, both theoretically and empirically, that there are important interactions between different instruments of external financing and to characterize the impact of these interactions on the investments on firms.

There are two main testable hypotheses derived from this kind of imperfection in the capital market. The first advocates a positive association between cash flow and investment spending. As noted earlier, in the absence of capital market imperfections internal funds should be viewed as perfect substitutes to external funds. As a result, the observed variation of internal funds should not be able to account for any of the variation in investment spending. The second, known as Financial Accelerator, posits that financial profile becomes more important during downturns in economic activity, producing a 'second-round' amplification effect of adverse shocks.

Essentially, investment would exhibit 'excess' sensitivity to internal funds during phases of economic slowdown. Numerous empirical studies have tested these hypotheses, where after conditioning on several state variables of investment, they show that balance sheet variables (usually cash flow or in general measures of liquidity) affect investment spending (Pazzari *et al.*, 1988; Oliner and Rudebusch, 1992; Whited, 1992; Schaller, 1993; Bond and Meghir, 1994; Hubbard *et al.*, 1995; Goergen and Renneboog, 2001; Vijverberg, 2004). Much of this literature has followed Pazzari *et al.* (1988) who reported that the investment decisions of more financially constrained firms exhibit higher sensitivity to liquidity when compared to less financial constrained firms. Hoshi *et al.* (1991) conclude that the investment outlays of 24 Japanese manufacturing firms that are not members of a *keiretsu* are much more sensitive to firm liquidity than that of 121 firms that are members of a *keiretsu* and appear to be less financially constrained. Other firm characteristics may also assist in identifying financially constrained firms. For instance, it would not be hard to defend the argument that the severity of informational asymmetries decreases with firm age, since young firms neither possess a sound nor a long track record. Evidence for that was provided by Oliner and Rudebusch (1992) who, having studied US listed firms, found that investment is more closely related to cash flow for firms facing relatively more severe asymmetries of information and in most cases, these firms tend to be young. In addition, Challer (1993) focusing on investment behaviour of Canadian firms reports evidence suggesting that young firms' investment spending is more influenced by liquidity than that of older firms.

Apart from age, size may also be another important firm characteristic correlated with the degree of informational asymmetries. For instance, Gertler (1988) argued that information-induced financial constraints are more likely to have a greater impact on smaller than larger firms, partly because large firms tend to be more "mature" and have stronger and diachronic attachment with providers of finance. Hu and Schiantarelli (1998) have shown that size is positively related to the probability for quoted companies to be financially constrained. Gilchrist and Himmelberg (1998) in addition stress that small companies, with presumably higher costs of obtaining external funds are more vulnerable to liquidity shocks. Audretsch and Elston (2002) support the hypothesis that smaller firms in Germany tend to be handicapped in terms of access to capital.

However, Devereux and Schiantarelli (1990) report, using a sample of relatively large quoted firms, that large firms are more sensitive than small firms to cash flow fluctuations. In addition, Athey and Laumas (1994) find that large Indian firms are more sensitive to cash flow than small firms and explain their result as an evidence of the Indian government credit policies for promoting small companies. Evidence for an 'excess' sensitivity of investment spending to cash flow, indicating an amplification of output shocks via capital market imperfections, has also been documented by a large number of studies (Gertler and Hubbard, 1988, Gertler and Gilchrist, 1993, 1994; Kashyap *et al.*, 1994; Bernanke *et al.*, 1999).

Gertler and Hubbard (1988) found that fixed investment for high retention firms is more sensitive to cash flow fluctuations in recessions. Gertler and Gilchrist (1993) find that the inventories of small firms decline more sharply in response to tight monetary policy. In addition, Gertler and Gilchrist (1994) have shown that small firms play a major role in the deceleration of inventory demand, following a tightening in monetary policy. Kashyap *et al.*, (1994) examining micro data on US firms' inventories around various macroeconomic episodes, found that inventories of firms not having access to financial markets are significantly sensitive to balance sheet variables. Analogously, Oliner and Rudebusch (1996) have shown a similar pattern in the response of fixed investment to a monetary policy shock across size classes.

Bernanke *et al.* (1999) advocate the presence of an asymmetry of investment spending across the business cycle through the amplification of shocks. In fact, balance sheet profile becomes more important during periods of decline in economic activity when compared to periods of expansion. Rondi *et al.* (1998), focusing on Italian firms conclude that fixed investment decisions by small firms are more sensitive to measures of creditworthiness in periods of monetary tightening. Guariglia (1999), studying the UK case, finds a significant link between financial variables and inventory investment, which is stronger for firms with weak balance sheets during periods of recession and also tight monetary policy. Peersman and Smets (2002), estimating the effects of a euro areawide monetary policy change on output growth, document that financial accelerator mechanisms work mainly in periods when a recession occurs. Vermeulen (2002) also shows that the financial accelerator is in operation with asymmetric

effects during the business cycle. In particular, investment is more sensitive to liquidity during downturns. Finally, Berg *et. al.* (2004) focusing on Sweden, report that the financial accelerator

3.1 Overview of the Literature

Internally generated funds emerge as the primary source for funding investment plans, either due to firms' inability to access the capital market or due to the higher associated cost when accessing it. This leads borrowers to adopt a rule known as Financial Hierarchy, (already illustrated) which implies that firms' wishing to fund their investment plans, turn initially to own (internal) resources. External funds (borrowing or issuing shares) are not sought, until own resources are exhausted. Mayer (1990) provides evidence for such a hierarchy, showing that across industries in eight developed countries, retentions (own funds) are the leading source of finance, followed by debt (borrowing), and then by equity (issuing new shares).

This paper will shed light on the role played by cash flow on investment decisions. Essentially, a firm's liquidity position should be irrelevant to investment decisions provided that firms operate in perfect capital markets. However, if capital market imperfections stem from informational asymmetries, then cash flow would be highly pertinent. Theoretical work has formally shown that firms facing difficulties in accessing capital markets due to informational asymmetries rely heavily on internal funds. In addition, empirical research has established the importance of financial variables, and in particular cash flow, for investment decisions.

CHAPTER FOUR: METHODOLOGY

4.1 Theoretical framework

The q theory of investment (Abel 1979, Hayashi, 1982, Blanchard, 1986) indicates that the ratio of investment to capital stock is a function of q . Most researchers estimate macro Tobin's q by evaluating a variant of the expression:

$$\frac{D_t + S_t - N_t}{K_t}$$

where D_t is the market value of debt for firm t , S_t is the market value of its equity, N_t is the replacement value of its inventories, and K_t is the replacement value of its capital stock. The numerator only approximates the market value of the capital stock. The market values of debt and equity equal the market value of the firm. If inventories and capital are the firm's only assets, the market value of the capital stock is correctly obtained by subtracting inventories from the value of the firm.

In principle, Tobin's q is observable: the market value of the firm's assets can be measured by examining the market value of the firm's debt and equity, and the replacement cost of assets can be computed via accounting information and the price at which the assets can be purchased or sold. In practice, measuring Tobin's q presents numerous difficulties because accountants do not directly keep track of the market value of a firm's debt or the replacement cost of a firm's assets, especially intangible assets. These difficulties force a data analyst to use some sort of algorithm to estimate the replacement costs and market values from accounting figures. Further complicating the measurement problem is that Tobin's q only equals the true incentive to invest under stringent assumptions. In response to the measurement-error problem, numerous authors have developed different algorithms for estimating Tobin's q . Among the most widely used are those in Lindenberg and Ross (1981), Salinger and Summers (1983), Hall, Cummins, Laderman, and Mundy (1988), Perfect and Wiles (1994), and Lewellen and Badrinath (1997).

Investment and financing decisions of a constrained firm

With imperfect capital market, q can fluctuate over a substantial range with little or no response of investment. Investment here can be excessively sensitive to cash flow fluctuations. Auerbach, 1984, Summers, 1985 used tax based models, where they found that there were differences in the cost of external and internal finance, because there were different tax regimes for capital gains and dividends. What is important to note is that, in this model, the observed q values will differ across firms with different information characteristics. For firms facing asymmetric information, the observed q values will be the weighted average q discussed above. This may well be above one because these firms have no low-cost marginal source of finance to undertake the investment necessary to push q to its full information equilibrium. The model also predicts that q must be substantially higher to induce new share issue to limited-information firms, but the true marginal q is unobservable. We can however observe q and its relationship to new share issues. For good perfect information firms, q^h and q are the same, so we expect no new systematic link between observable q values and new share issues. On the other hand, the q can independently vary from q^h for limited information firms.

If asymmetric information is important empirically, observed q values should rise prior to issue of new shares for limited information firms. For firms paying dividends, the equilibrium shadow price for an additional unit of capital, marginal q is equal to $(1-\theta)/(1-c)$. This is the q value in which shareholders are indifferent between a shilling of retention reinvested in the firm and taxed at the rate c , and a shilling dividend taxed at the rate θ .

Thus firms neither issue shares nor pays dividends over a range $\frac{1-\theta}{1-c} < q < 1$.

When firms are not paying dividends and internal finance is exhausted, $\beta = 0$ and

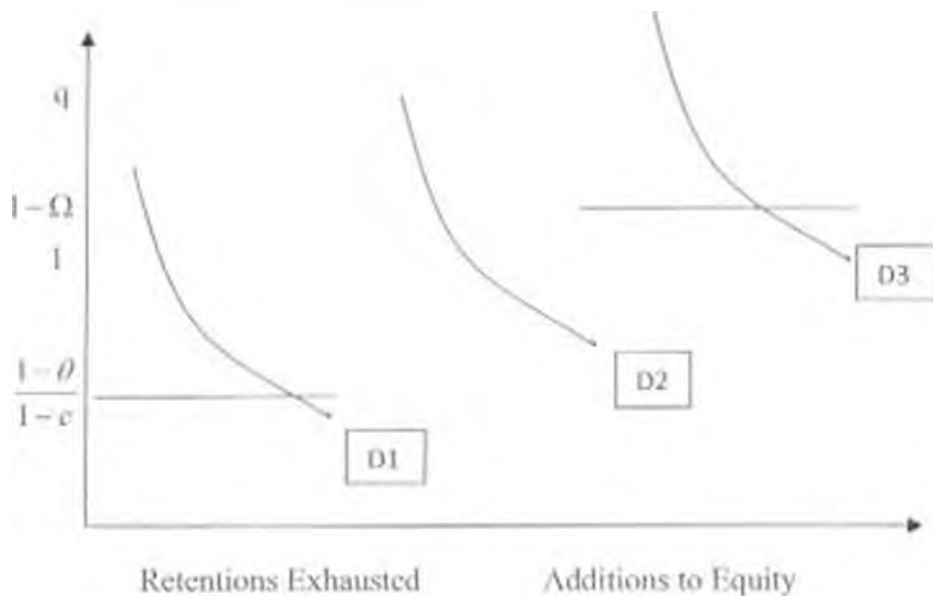
$$a_1 = -1 - \Omega,$$

With the lemons discount, the firm issues new shares when

$$q > (1 + \Omega)(1 - \delta).$$

Hence the supply of funds schedule facing the firm has a discontinuity at the point where retentions are exhausted, as depicted in Figure 4.1. Internal finance constrains investment spending for firms that do not pay dividends and face an investment demand schedule in figure 4.1. When q is sufficiently high, new share are issued and movement in q will lead to movement in investment.

Figure 4.1: Tobin's q and Financing Decisions in constrained Firms.



Under imperfect markets the firms strives to maximize their value as follows

$$V = \sum_{t=0}^{\infty} (1 + \frac{r}{1-c})^{-t} \left[c \frac{1-\theta}{1-c} D_{t+1} - (1 + \Omega_c) D_{t+1} \right]$$

where D_t represents the dividend payments by the firm, V_t is the value of the firms equity, the whole equation has uncertainty factored into it. The lemons premium is Ω per shilling of new equity issued. This Ω represents the value that new investors demand from good firms to compensate them in case they fund lemons

The firm maximizes its value above subject to a capital accumulation constraint

$$K_t = (1 - \delta)K_{t-1} + I_t$$

where K_t is the capital stock at the beginning of the period t , I_t represent investment, and δ represents constant rate of depreciation. Sources of funds for the firm include earnings after tax, $(1-\tau)(K_t)$, where τ is the corporate income tax rate, new share issues (V_t^N) and net borrowings

The firm issues one period debt B_t at the beginning of the period, paying an interest rate of i_t at the end of the period. These funds are used by the firm to pay dividends, pay debts and invest.

This means that the effective price of investment will depend on the values of investment tax credits, and the current values of depreciation tax deductions.

Given that the sources equal the uses, then,

$$(1-\tau)(K_t + V_t^N + B_t - B_{t-1}) = D_t + (1-\tau)U_t + B_{t-1} + I_t$$

Summers (1981) specified the cost of adjustment of capital per unit of investment, $\alpha(I/K)$, where adjusted costs are assumed to be expensed for tax purposes

$$\lambda_t + \alpha_u(1 - b_u + \phi(1-\tau) + \phi(1-\tau)\frac{I_t}{K_t}) = 0$$

rewritten equation for firm i in period t . With the absence of financing constraints, he linked the shadow price to the market value of existing capital. Here assuming constant adjustment costs across firms, the above equation was rewritten as

$$\left(\frac{I}{K}\right)_t = \mu_1 + \mu_2 Q_t + \mu_3$$

where I represents investment during the period, k is the replacement value of the capital stock at the beginning of the period, μ_1 is the normal value of $(I/K)_t$, and μ_3 is the white noise. Q_t represents the value of Tobin's q at the beginning of the period (defined as the sum of value of equity and debt less the value of inventories divided by the replacement cost of the capital stock), adjusted for taxes.

Some firms in the study seem not to have sufficient access to funds in the Kenyan capital market. To the extent that the firms are constrained in their ability to raise funds externally, investment spending may be sensitive to the availability of internal finance

4.2 Model specification

In order to examine the effects of capital market imperfections, variables that measure financing constraints are added to the basic reduced form equation of investment. Investments are only sensitive to internal funds if there are financing constraints, it is common to include a measure of internal sources. The standard measure used in the empirical literature is cash flow (CF). The Tobin's q model is used very often with financial variables such as cash flow added to the q model of investment to pick up capital market imperfections. Moreover, cash flow can be thought of as a proxy for firms' internal net worth.

Firms that are constrained cannot respond to variations in q hence, the need for an alternative model. According to Fazzari (1988), investment was constrained by cash flows in firms that retained all their earnings, but little access to external funds.

$$\text{so that } \left(\frac{I}{K}\right)_t = f\left(\frac{CF}{K}\right)_t$$

Therefore we estimate a model that combines the above two equations so that both q and cash flows influence investment. Our model should also reflect the impact of external funds on these constrained firms. Our external funds came from commercial papers, corporate bonds, bank loans and IPOs.

$$\left(\frac{I}{K}\right)_t = \beta + \mu_1 Q_t + \mu_2 \left(\frac{CF}{K}\right)_t + \mu_3 \left(\frac{B}{K}\right)_t + \mu_4$$

where: I_t is gross investment expenditures on plant, machinery and equipment, K_{it} is the beginning of period capital stock, measured as equals net replacement value of plant and equipment, plus the value of investment in shares of other companies, land, buildings and properties, intangibles, plus the value of inventories, Q_{it} is the beginning period Tobin's q deflated by capital stock, CF is cash flow which is the income after interest and taxes, plus all non-cash deductions from income (depreciation allowances and amortization) and μ_{it} is an error term. B is the total firm debt, μ_{it} is an error term. The parameters to be estimated are μ_1 , μ_2 and μ_3 . This investment function will be tested on the two groups

The dependent variable is corporate investment (I/K) and the independent variables in the investment function are Tobin's q , (q/K) , cash flow (CF/K), q (q/K) is defined as the end of the year market value of the firm (market value of equity plus book value of debt) deflated by K . In calculating the denominator of q , we will sum fixed assets with inventory. Cash flow (CF/K) defined as income after tax and extraordinary items plus adjustment for items that does not involve the movement of cash especially depreciation.

Furthermore, using q as a measure of investment opportunities may be a poor proxy because of a breakdown traceable to efficient markets or capital market imperfections. However, cash flow variable, when added to q -model of investment is expected to pick up capital market imperfections. We shall make comparisons between the two groups of firms using the results. This model is estimated and analyzed from 2000 to 2008, for the two groups of firms. Summary statistics of the firm year observations in the sample that are used for the empirical analysis of the link between financing constraints and investment behavior will be presented, where we will tabulate average investment to capital ratio for all firms, cash flow to capital ratio, average Tobin's q (q/k), average debt measured as ratio of debt to market value of the firms.

4.3 Expectations

Financing imperfections may prevent firms from accessing external finance, rendering firms unable to invest unless internal finance is available. It is therefore important to study the extent to which financing constraints matter for firms' investment decisions. This line of inquiry is also relevant for other areas of research, such as the literature on the role of internal capital markets and banks, as well as the macro literature on the financial accelerator.

Starting with Fazzari, et al. (1988), several studies investigate the presence of financing constraints by estimating the Q model of investment with cash flow included as an explanatory variable. They argue informally that under certain conditions, and in the absence of financing frictions, Tobin's average Q is equal to marginal q , and is a sufficient statistic for firm investment (Hayashi, 1982). It follows that conditional on Q , cash flow should affect only the investment of financially constrained firms.

According to Ralph and Allen (1998), differences in cash flow coefficients between firm classes that were judged a priori to be more and less constrained were taken as evidence of credit constraints. Firms with higher asset levels are expected to have larger credit access than smaller firms because larger firms have more collateral to offer potential lenders. During boom or recovery, credit should be more available and hence firms would be much less reliant on internal funds because both cash flows and assets are increasing. The period between the years 2000 and 2008 falls into the recovery category as the country had a renewed confidence and began to grow. The coefficients of q should be positive in both large and small firms. The magnitude should differ because small firms which should be the more aggressive investors should have higher q coefficients.

The coefficients of cash flows in both large and small firms should differ. The first group consists of those firms that have a low net worth, and therefore would face a high cost on external finance. These firms will have a higher sensitivity investment to cash flows than those large firms who are expected to face a lesser cost of external finance. The coefficients of cash flows should be positive for both types of firms. The coefficient of cash flow for small firms should be greater than those of large firms. Debt coefficients should be positive for both groups of firms. This because during this period in Kenya, the debt market began to develop, where firms had at least more than one source of funds other than the traditional bank debt. Magnitude should differ though with smaller firms expected to have a higher coefficient.

4.4 Measurement of Variables

Market value of equity:

This is the value of shares at the beginning of the fiscal year as per the capital market annual reports. Ordinary shares are simply the number of shares outstanding times the beginning-of-period share price. The share price is measured at the beginning of the period because we assume the manager assesses possible investment incentives at the beginning of the period, prior to making any capital budgeting decisions. For preference shares, their market value equal book value.

Market value of Debt

We use the book value of debt. This is because not all firms in the bourse have a bond rating. We also do not want to arbitrarily choose a debt maturity period. Both short term and long term debts are combined.

Replacement value of capital stock

The reported level of inventories equals the market value of inventories. Most researchers recommend this method where it is assumed that all firms use LIFO method. It is important to note that it is difficult to correctly measure the replacement value of assets.

Market value of inventories N

This is the market value of inventories, and is subtracted from the market value of the firm.

Cash flow

It is picked from the reported and audited accounts of the listed

4.5 Data

We investigate the impact of capital market imperfection on corporate investment in Kenya's listed firms. We would like to know how financing constraints affect investment behavior.

The study sample comprises 16 out of the 31 firm in the main investment section quoted on the Nairobi Stock Exchange (NSE) from 2000 to 2008. This accounts for 52 percent of the relevant population of firms according to NSE's classification. Data used in this study are mainly from secondary sources, which include the Nairobi Stock Exchange Fact Books, annual reports of companies, and Capital Market annual reports.

The NSE is a reliable source of data of quoted companies because the companies are mandatorily required to submit their financial reports to the NSE quarterly and biannually. Company annual reports are also reliable because they are statutorily required to be audited by recognized auditing firms before publication. Previous studies have sorted firms in groups based on *a priori* measures such as dividend pay-out, size, and group affiliation among others.

The more severe the information and agency problems faced by a firm, the higher the cost of external finance, and the greater the sensitivity of the firm's investment to cash flow.

We shall base our study on two sizes, small and large. The firm capitalization as on 30th June 2009 will form the basis for categorization. Firms above Sh. 10 billion are treated as large firms. These are KenGen, Kenya Power and Lighting Company, Nation Media Group, Kenya Airways, British America Tobacco, Mumias Sugar Company, Total and East African Breweries. Firms with below sh 10 billion are Athi River Mining, Sasim, Standard group, East African Cables, Crown Berger, IPS Serena, and East African Portland. The choice of firms is informed by availability of relevant information in the financial statements of each firm in the sample. It is important to note that the above companies are distributed in the number of options they use with majority of the small companies having few options (Look at Table 2.2). Investment is a flow concept; hence we look at the flow of funds. We have to depend on the balance sheet information of the publicly traded companies. In any business year the source must equal the use. This means it is possible to ascertain how the funds were spent, and how much directly increased the physical assets. From the prior motivation study, we realized that some funds end up in accumulation of financial assets, rather than physical assets

It means we have to identify financing which is associated with increased physical investment. Hence we only look at the funds used to buy property, plant and machinery. The period 2000 to 2008, was good for the NSF since it experienced phenomenal growth buoyed by expectations of better governance and political stability. The period should not be too long such that firms constrained by finance mature. Most of the required data is available during this period

The data set has a few distinctive advantages. First, there is a breakdown of investment expenditure between several asset types, which makes it possible for the study to carry out an explicit aggregation of capital goods. Second, unlike most western countries, mergers and acquisitions were infrequent in Kenya during the sample period, so there is very little attrition in our data set

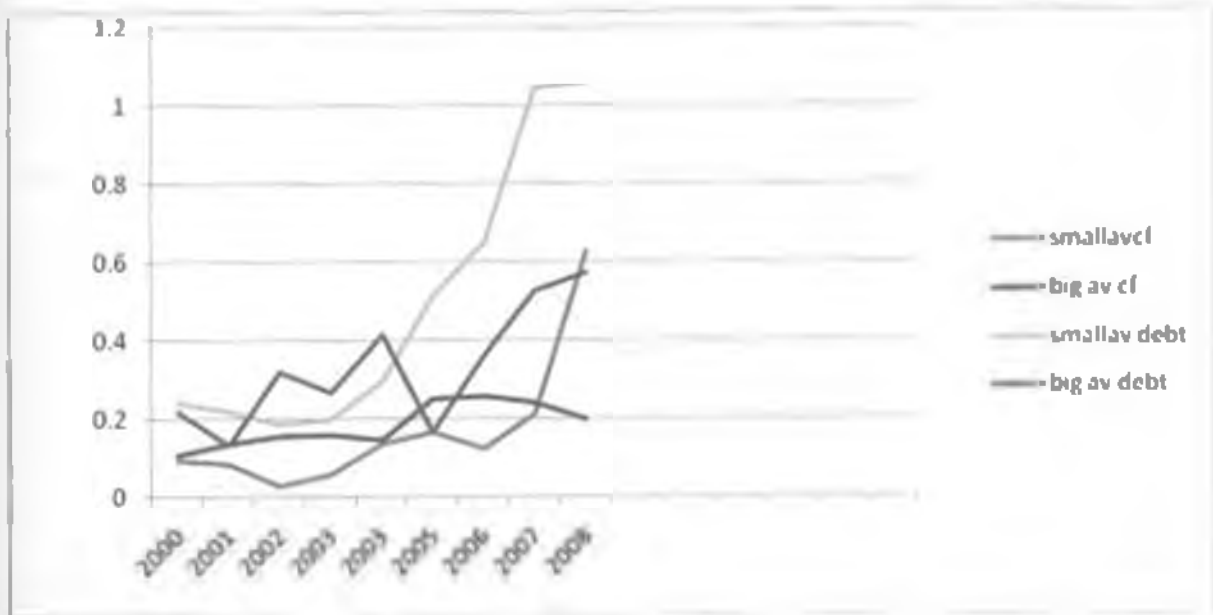
4.6 Analysis

Descriptive statistics of the data will be analyzed, where tables on ratios of debt and cash flows as a percentage of total assets will be drawn. We shall summarize the total sources of firms' investment funds (both internal and external). We shall also present tables on amounts of equity and debt financing that the sample firms have used during the period. Trends of cash flow, debt and investment of the two groups of firms will also be drawn for comparison. We shall also compare the means and standard deviations of both groups. The Lagrangian Multiplier Test will be conducted to compare the pooled and random effects estimates, and Hausman test will compare between the random and fixed effects estimates.

CHAPTER FIVE: DATA ANALYSIS EMPIRICAL FINDINGS

5.1 Descriptive trends

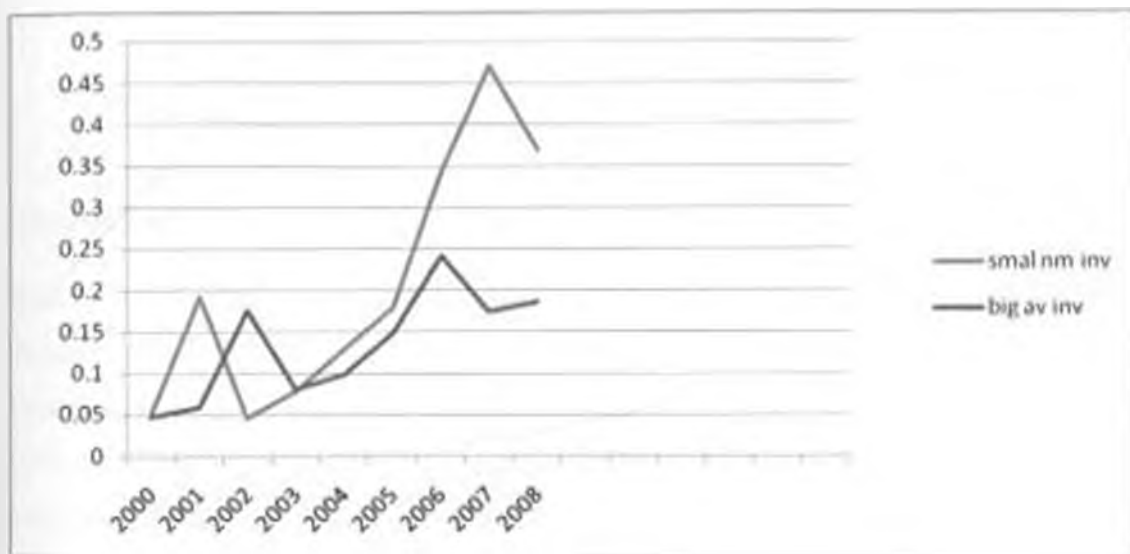
Figure 5.1: Trends of Cash flow and Debt



Annual means for cash flows and debt are illustrated in the figure above. Cash flows and debts are normalized by the beginning period total assets. The figure reveals important characteristics of the time series aspects of the data. The cash flows for smaller firms tend to be U shaped beginning relatively high in the first three years before a gentle rise, and a very steep rise at the end of the period. The converse is true for large firms with a dome shaped cash flow trend. The larger firms' cash flows were relatively higher for most of the period. Smaller firms experienced an upsurge of cash flows during the last three years, overtaking the large firms in 2007. Most of the small firms were busy issuing bonds and commercial papers and more bank debt at the end. They could borrow as the debt market was developing faster during the last four years. The general picture is painted in appendix 2.

The debt level for small firms was J shaped bottoming out in 2002-2003 before rising steeply in the following years. In the last two years the ratio was greater than one meaning that the total debt was higher than total firm assets. All these firms were expanding as evidenced by the high uptake of debt. For large firms, there was a fluctuation in trend, where most firms only used debts in some years while completely reducing in the next. These large firms seem to have grown and only procure debt to finance a project. In the last five years, the big firms debt began rising though at a slower rate than for the smaller ones. Although the debt- to- asset ratio were similar, the ratio for small firms was significantly higher and steeper. At 0.489, the mean ratio for smaller firms was higher than the 0.33 for the larger ones. The average for the period 2000-2008 is depicted in appendix 3. The high debt firms most likely place a high priority on expansion.

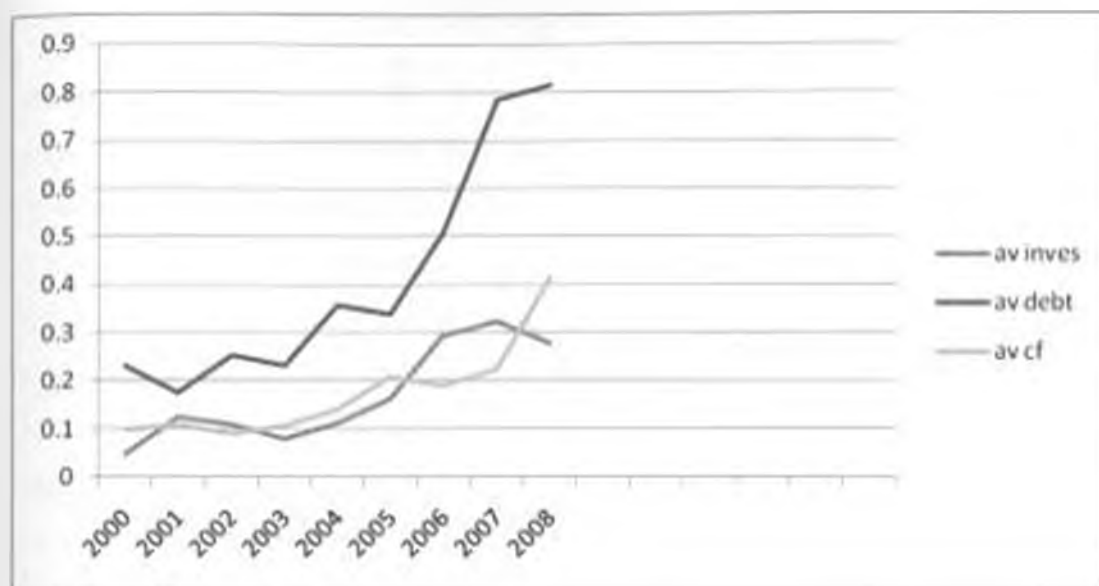
Figure 5.2: Investment levels normalized with total assets for small and big firms



Investment here represents funds used to buy new property, plant and equipment. The investment levels of small firms are jerky, rising and falling sharply at every turn. The investment levels of bigger firms fluctuate but more evenly, compared to the former. For larger firms, as the debt levels were increasing, the investment levels also rose in tandem. It means most of the debt was used to buy new equipment plant and machinery, and not pay salaries. For smaller firm, the same trend was noted although it was more instant. Initially, the stock of equipment was declining, implying that there was a pay down of debt.

From the figure, the mean stock of physical capital fell slightly between the years 2002 to 2003, before rising steeply till 2007 when it declined again. General debt levels continued to rise during disinvestment.

Figure 5.3: Normalized means of investments, cash flows, and debt for all firms.



Summary of data and trends

Small firms have lower collateral than large firms and hence their investments are less likely to depend on external debt. These firms in our case are Sasini, East African Portland, Standard Group, Crown Berger, and ARM. Debt trend did not have any direction at all with their levels of investment for the entire period. Investment was generally determined by the levels of cash flows and inventories. Theory postulates that smaller firm tends to face relatively large barriers to using external finance for investment. Some of them use short term instruments e.g. commercial papers which are relatively more expensive than bank debts or corporate bonds. These firms could be suffering from lack of a good rapport with popular suppliers of finance.

On the other hand, larger firms for example KPLC, Ken Gen, and Kenya Airways have their investments solely determined by external finance. Government plays a major role in negotiating for credit from international lenders to these firms. These are older strategic firms that are not left to the forces of demand and supply.

Inventory investment is greater in smaller firms, with a major part of investment correlated with the level of inventories as compared to the larger firms. But overall inventories and not cash flows actually determine investment for most firms in the sample. See appendix 1

Some firms such as FABI uses retentions extensively for its investment needs. This is because it is not expanding but is enjoying economies of scale. Most of its investment needs is held in inventories. This means profits determine the following year's investment function.

Summary statistics

Summary statistics of the firm year observations in the sample that are used for the regression analysis of the link between financing and investment behaviour are presented in Table 1. From Table 1, the mean investment-to-capital ratio (I/K) is 19 percent; large firms have an investment-to-capital ratio that is as higher than that of small firms. The average cash flow-to-capital replacement ratio (CF/K) is 29%. This ratio shows a large disparity where smaller firms have it at 18% while larger firms have the ratio at 39%. The average Tobin's q is 2.59. Tobin's q signifies market evaluation of future profit prospects and the benchmark is 1. It also shows that on average the market value of the firms exceeds the value of their capital replacement cost. Q for larger firms is larger than the mean q for smaller firms as expected. The stock of debt measured as debt-replacement stock of capital is about 6 percent on the average.

Table 5.1: Descriptive Statistics of 134 Firm-year Observations from 2000-2008

variable	All firms		Large firms		Small firms	
	mean	sd	mean	sd	mean	sd
Cash flow/K	0.2937	0.3444	0.3909	0.3906	0.1827	0.24124
q/K	2.5971	3.0606	2.7465	3.3226	2.3852	2.73666
Debt/K	0.6058	0.8866	0.7388	1.1260	0.4538	0.45043
Investment/K	0.1933	0.2162	0.1939	0.2160	0.1926	0.21828
No. of firms	15		8		7	
observations	134		72		63	

We start with these statistics because many researchers have assessed the quality of a proxy for q by whether its mean or median is close to unity. The reasoning comes directly from Tobin (1969), who stated that a firm should invest only if Tobin's q is greater than one. This statement implies that the equilibrium value for Tobin's q is, in fact, one. In fact, however, the mean of average q should be greater than one for several reasons

The first is the presence of adjustment and installation costs in the investment process. Because of these costs, even though the firm starts to invest when its average q rises, adjustment costs prevent instantaneous capital accumulation, and q moves back down to unity slowly. The second is sample selection within the capital market. Specifically, unprofitable firms with very low average q 's exit, and we only observe the profitable firms with higher average q 's. We investigate the differences in investment behavior between large firms and small firms. We would like to see whether there exists a difference in the way firms finance their investment

5.2 Regression Results

We therefore estimate this equation,

$$\left(\frac{I}{K}\right)_it = \mu_i + \mu_1(Q)_it + \mu_2\left(\frac{CF}{K}\right)_it + \mu_3\left(\frac{B}{K}\right)_it + \mu_4$$

Table 5.1 shows the econometric results of the whole sample. Standard errors are shown in brackets. The dependent variable is corporate investment (I/K) and the independent variables in the investment equation are q (q/K) and cash flow (CF/K) and debt (B/K).

Two statistical tests are used in order to identify which methodology is appropriate. First, to compare the pooled estimates and random effect estimate, the Lagrangian Multiplier Test is performed. With a large chi-square test, indicative of a low p-value, we reject the null that the pooled estimate is appropriate. Second, to compare the random effect estimates with the fixed effect estimates, the Hausman test is performed. But it is inapplicable because of the use of robust standard errors.

The null hypothesis of the one-way random group effect model is that variances of groups are zero. If the null hypothesis is not rejected, the pooled regression model is appropriate. With the large chi-squared, we reject the null hypothesis in favour of the random group effect model. With firms fixed, the chi-square is 5.33 whereas when time is fixed, the chi-square is 1.63. The two way random effects model has the null hypothesis that variance components for groups and time are all zero. The LM statistic with one degrees of freedom is 1.60 ($p < 0.005$). Thus, we reject the null that the appropriate model is a pooled regression. After all I have reason to believe that, differences across firms should have some influence on investment. The random effect assumes that the error term is uncorrelated with the dependent variable. However, this is not the case when using the fixed effect method. The estimates have been corrected for heteroscedasticity.

The random effects effect estimation produces a within R^2 and a between R^2 of 0.12 and 0.2383 respectively. The overall R^2 is 0.1537, consistent with studies found in Ralph and Allen (1998), Robert and Bruce C (2002).

Q is positively related with investment and is statistically significant at 1%. A one unit increase in q leads to a 1.5% increase in investment. That is, as q increase, firms happily increase investment. The regression coefficient of debt is 0.59 which is statistically significant at 1% and positively related with investment. It is good to note that a high investment firm requires a large pool of capital and hence debt surely comes in positively.

Cash flows are negatively related with investment and have a coefficient of -0.059. It is not statistically significant. This is contrary to earlier predictions. It means cash flows do not have any overall impact on overall firm investment at the NSF.

Table 5.2: Correlation among variables (small firms)

	CPT	DEBT	q
CPT	1.0000		
DEBT	0.1479	1.0000	
q	0.3118	-0.2121	1.0000

Table 5.2 shows the correlation among independent variables. We note very low positive correlation between cash flow and Tobin's q and between cash flow and debt (0.1479 and 0.3119 respectively). Debt and q are negatively correlated, but this correlation is not severe enough to affect the estimates

Table 5.3: Regression Results for small firms.

```
. xtreg inv q ch1 debt, re robust
```

Random-effects GLS regression number of obs = 63
Group variable: id number of groups = 7

R-sq: within = 0.1596 obs per group: min = 9
 between = 0.3565 avg = 9.0
 overall = 0.2087 max = 9

Random effects u_i ~ Gaussian Wald chi2(3) = 21.92
corr(u_1, x) = 0 (assumed) Prob > chi2 > 0.0001

(Std. Err. adjusted for clustering on id)

	inv	Coef.	robust Std. Err.	z	P> z	[95% Conf. Interval]
	q	.0289894	.0101301	2.86	0.004	.0091348 .0488441
	CF1	-.0853027	.0701671	-0.93	0.352	-.2028777 .0722222
	DEBT	.0653463	.0293089	2.23	0.026	.0079027 .1227907
	LOSS	.1037709	.0188676	5.48	0.000	.0666357 .1409061
	sigma_u	.1188427				
	sigma_e	.1811696				
	rho	.2962482	(fraction of variance due to u_i)			

Standard errors are shown in italics. The Hausman test was not conducted since we use robust standard errors.

Table 5.4: LM test

```
. xttest0
```

Breusch and Pagan Lagrangian multiplier test for random effects

inv(id,t) = xb + u[id] + e[id,t]

ESTIMATED RESULTS:

	Var	sd = sqrt(Var)
inv	.0476466	.218321
u	.0335511	.1831696
e	.0111233	.1054435

Test: var(u) = 0 chi2(1) = 4.11
 Prob > chi2 = 0.0427

The LM test gives a chi2 of 4.11 and a low (p value = 0.05), meaning that random effects model is appropriate. That means we do not run both time fixed effects and fixed effects. The random effects model has overall R-sq as 21% while R-sq between as 35.65%.

The q coefficient is 0.0289 and is statistically significant at 1%. This gives an indication of further growth opportunities. The interpretation is that, for small firms, the higher their expected future prospects, the higher are they likely to increase investment. Cash flows have no impact on small firms' investment since the coefficient (-0.0653) on cash flows is not statistically significant. It means listed small firms do not alter their investment plans on internal sources. The investment behaviour of these small firms is not sensitive to current cash flow because corporate investment is a capital stock, which is planned in advance. Corporate investment these firms does not respond to current cash flow, which is a flow measure of liquidity, but responds to market fundamentals as reflected by q . When q is low, small firms increase their investment. This will ultimately increase their future q values. We expected a positive sign on the cash flow coefficient.

Debt has a positive impact on investment with a coefficient of 0.0653 significant at 3%. The logic is that debt has a big effect for firms whose investment opportunities are recognized by the capital market that is high growth firms. These firms can obtain funds easily from the capital market and does not depend only on cash flows to boost their investments

Table 5.5: Correlation among variables (large firms)

	CFI	DEBT	q
CFI	1.0000		
DEBT	0.0384	1.0000	
q	-0.0527	0.7419	1.0000

Table 5.5 shows the correlation among independent variables normalized by capital stock. We note negative low correlation between cash flow and debt i.e. -0.0384. We also observe relatively higher positive correlation between debt and q . However, it is not severe enough to affect the estimates. q and cash flows are negatively correlated.

Table 5.6: Regression results for large firms

Comparing the fixed and random model, the random model seems to have more explanatory power.

estimates table fixed random, star stats(N r2 r2_a)

variable	fixed	random
q	.00701659	.00573333
CFI	-.01874307	-.0295323
DEBT	.02301526	.05201431**
cons	.1648148**	.25137563***
N	72	72
r2	.01403413	
r2_a	.02946417	

Legend: * p<0.05, ** p<0.01; *** p<0.001

In this case the random effects model is as follows:

Table 5.7: Regression estimates for large firms.

```
xtreg inv q cfi debt, re robust
```

Random effects GLS regression	Number of obs	=	72
Group variable: id	Number of groups	=	8
R-sq: within = 0.0181	obs per group: min	=	9
between = 0.5720	avg	=	9.0
overall = 0.0776	max	=	9
Random effects u_1 ~ Gaussian	wald chi2(1)	=	19.40
corr(u_1, x) = 0 (assumed)	Prob > chi2	=	0.0007

(Std. Err. adjusted for clustering on id)

inv	coef.	Robust Std. Err.	z	P> z	[95% conf. interval]	
q	.0057333	.004231	1.36	0.175	-.0025594 .014026	
CFI	-.0295323	.0468144	-0.63	0.528	-.1212868 .0622272	
DEBT	.0520144	.0176186	2.95	0.003	.0174825 .0865462	
_cons	.2513756	.0450133	5.36	0.001	.0611032 .2395501	
sigma_u	.03781887					
sigma_e	.21137407					
rho	.0110524	(fraction of variance due to u_1)				

The R-sq is very low at 8% meaning that these variables do not entirely explain the investment behaviour of large firms. Debt is significant at 1% with a coefficient of 0.052, meaning that investment by large firms is positively dependent on the debt levels. Although q bears the expected positive sign, it is statistically insignificant. An increase in q should increase investment.

It means that for Kenya's large listed firms, investment is not sensitive to their market valuation of their future growth prospects. When the above variables were lagged still, the q was insignificant. It is imperative to note that the ratio of investment to capital replacement ratio was alike, and thus these large firms could be investing relatively less than small firms. This is because they are mature and hence are a bit conservative in purchase of new property, plant or equipment.

Cash flows coefficient was also insignificant statistically (at -0.0029). It also has a negative sign. These results can be explained within the context of the Kenyan economy. Cash flow reflects firms' liquidity position. Market value of the firm (numerator of q) is a measure of market fundamentals while cash flow is also a proxy for market fundamentals and financing constraints and managers and entrepreneurs may respond to market fundamentals. The joint insignificance of q and cash flow for firms with a strong balance sheet position shows that their investment behaviour does not respond to market fundamentals and liquidity positions.

CHAPTER SIX: CONCLUSIONS, CHALLENGES AND POLICY RECOMMENDATIONS

6.1 Conclusions

Our goal has been to shed light on the question of how listed firms finance their investment. We also wanted to know investment funding options available for these firms, and whether these options contributed to their investment decisions. The results of this study show that financial factors affect the investment behaviour of Kenyan firms. Our approach emphasized on the manner in which two groups of firms finance investment in the Kenyan capital market. Like most studies we used Tobin's q to control for differences in investment opportunities.

Most of the existing studies estimate the coefficient on q to be between 0.003 and 0.010. Salinger and Summers (1983) provide estimates of 0.004 to 0.006; Fazzari, Hubbard, and Petersen (1988) of 0.004; 19 Hayashi and Inoue (1989) of 0.004; Hoshi and Kashyap (1987) of 0.009; and Blundell et al (1987) of 0.005. These estimates imply highly convex adjustment costs and very slow adjustment. Most of these studies find coefficients on q that imply extremely slow adjustment, just as have been found in aggregate time-series studies. This range is well within our study. Tobin's q plays a significant role in corporate investment behaviour of small firms. The coefficient of Tobin's q is positive and statistically significant at the 1 per cent level of significance for small firms. It is not statistically significant even at the 10 per cent level of significance for larger firms. This indicates that an increase in market evaluation of investment opportunities and future profit prospects captured by Tobin's q results in an increase in corporate investments of small firms.

On the other hand, cash flow is insignificantly associated with corporate investment in both regimes. Both cash flow coefficients are also negative. The coefficient of cash flow for smaller firms is larger than that of larger firms-as expected. Smaller firms should be more sensitive to internal funds as compared to larger firms. When cash flow lag is included in the estimation equation, its coefficient is still insignificant. This means that for both types of firms, though they have positive sensitivity to internal funds, it does not affect investment behaviour.

This means the corporate investment of firms in both groups do not respond to market fundamentals and liquidity position. Hennessy (2004) also encounters the same negative cash flows coefficients. Large firms have their investment function sensitive to debt. The coefficient of debt though is higher for smaller firms than for the bigger one, meaning that debt has a greater impact on smaller firms' investment decisions. However, the low r^2 indicates that there are other factors that determine large firm investment, apart from the three variables.

This paper finds support for an explanation of the observed negative relationship between investment and cash flows based upon the corporate life cycle hypothesis. Specifically, to a great extent, the negative relationship seems to be driven by the fact that over their lifetime, the cash flows and capital expenditures of firms classified as negative cash flow sensitive follow trends in opposite directions in response to changes in the firms' set of growth opportunities. In particular, these firms start their lives as public companies with a valuable set of investment opportunities but very low earnings.

The fact that they are able to raise considerable amounts of debt and equity implies that despite the very low current cash flows, the expected profitability of their investment projects is perceived as very high by the market. Also, the fact that they start with very low cash flows implies that timing investments to high-cash-flow periods is not a feasible alternative for them. First, given the very low starting levels, it should, theoretically, take a long time until cash flows become high enough to serve as a considerable source of financing. Second, without current investments, higher cash flows in the future may not materialize. Thus, firms invest most when their cash flows are lowest using primarily external financing. However, consistent with the corporate life cycle hypothesis, as they become more mature, their past investments start generating higher cash flows. Meanwhile, their investment rates slow down as investment opportunities become less and less attractive. These simultaneous trends in cash flows and investment rates translate into a negative empirical relationship between investment and cash flow.

6.2 Challenges and Policy Recommendations

Macro shocks also affect firms' access to credit. During the period under review, the government depended on internal funds to finance its growing budget. Sorting out of firms apriori could have affected results. Investment function should be endogenously determined. We also need to add more variables in the model since the r-sq were too low, meaning that investment function in Kenya is multifaceted. Debt, cash flows and Tobin's' q have been found not to explain totally the investment behaviour of firms.

Corporate investments and their financing can also be stimulated by the favorable legal and institutional framework, ensuring the enforcement of legal rights, creditors' protection, effective bankruptcy proceedings etc. An appropriate level of interest rates should be established by the monetary and fiscal policy. too high interest rates would reduce corporate profits, whereas too low interest rates would reduce the savings in commercial banks and would not be attractive for foreign investors. The banking system should also function properly, so that interest spreads are reduced and banks are more willing to provide long-term investment credits.

The Kenyan debt market should be expanded further to improve access of firms to cheap credit, and expand their options.

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APPENDICES

Appendix 1: Stylized Facts of Listed Companies as on 30 June 2009

Company	IPO	Bonds	Comm. Paper	Rights Issue	Bank	Others
Kakuzi	√			√	√	
Rea Vipingo				√	√	
Sasini		√		√	√	
Access Kenya				√	√	
Car & Gen (k)				√		
CMC Holdings			√			
Hutchings Biemer						√
Kenya Airways					√	√
Nutton Media Group			√			√
Safaricom Ltd	√	√			√	√
Scan Group	√					
Standard Group				√	√	
TPS Serena			√			
Uchumi Supermarket				√		
Barclays		√				√
CFC Stanbic		√			√	√
Diamond Trust Bank				√		√
Equity Bank	√					√
Housing Finance Co of K						√
Jubilee Housing						√
Kenya Commercial Bank				√		√
NIC Bank		√		√		√
Holdings				√	√	√
Pan African Insurance	√					√
Stanchart Bank						√
Cooperative Bank	√					√
Atli River Mining		√	√		√	√

B.O.C Kenya									✓
Bamburi Cement									✓
BAT Kenya									✓
Carbacid Investment									✓
Crown Berger									
EA Cables									✓
EA Portland									✓
FA Breweries									✓
Eveready East Africa									✓
Kenya Oil									
KPLC									✓
Kengen	✓	✓							✓
Mumias Sugar	✓								✓
Sameer Africa									
Total Kenya									✓
Unga Group									
A Hauman & Company									✓
City Trust									✓
Eaagads									✓
Express Limited									✓
Williamson Tea									✓
Kapchorua Tea									✓
Kenya Orchards									✓
Limuru Tea									✓

Summary of the way listed firms raised their funds for investment from the capital market and other sources during the nine year period (2000 to 2008). The tick indicates the option the firm used

Appendix 2: Ratio of the means for the period 2000-2008

Firm	(cash flows)/ (total assets)	(Inventories)/ (total assets)	(Retained earnings) / (Total assets)	(Debt) (total assets)
Large Firms				
East African Breweries	27.2	22.2	26.1	8.9
BAT Kenya	40.5	27	36.6	21.7
Kenya Airways	18.2	2.1	18.84	46.6
Nation Media Group	19.1	8.9	51.3	3.4
Mumias Sugar	11	12	27.2	5.3
Ken Gen	6.9	12.7	1.2	60.4
KPI C	6.9	8.7	4.9	14.4
Total Ltd	8.4	31.6	1.7	29.7
Averages	17.28	15.65	20.92	23.8
Small Firms				
Standard Group	12.8	10.9	6.5	26.8
East African Cables	10.2	39.1	17.5	56.32
Crown Berger	9.1	35	2.2	16.9
TPS Serena	8.7	3.8	11.3	25.1
Athi River Mining	8.7	10.7	14.8	32.2
E. A Portland	8.9	8.3	26.7	47
Sasini	1.8	3.7	34.5	0.75
Average	8.542	15.93	16.21	29.18

Appendix 3: Equity financing (in '000 shillings)

Firms	IPO	Rights issue	Bonus issue	Preference shares
East African Breweries			Twice (05,06)	
Athi River Mining				
Nation Media Group			Thrice(02,06,08)	
Crown Berger			(2004)	
IPS Serena			(2008)	
BAT Kenya				
East African Cables				
Kenya Airways				
Mumias Sugar	(2001) 1,875,000		(2007) (2006)	
Standard Group		(2002) 305,793.1		
Ken Gen	(2006) 7,848,000			
KPLC				(2004)
Total Ltd		(2002) 1,,260.154.7		
E. A Portland				
Sasini				

Years are in brackets

Appendix 4: Debt Financing (in '000 shillings)

Firms	Corporate bond	Commercial papers	Bank loan
East African Breweries			9,968,888
Nation Media Group		53,100(01,02)	628,700
KPLC		2,153,000(01,03)	18,767,708
Total Ltd			45,870
BAT Kenya			9,967,270
Mumias Sugar			4,973,986
Kenya Airways			59,044,000
Ken Gen			2,444,379
Crown Berger		700,000(04,06,08)	258,000
IPS Serena			6,296,986
East African Cables			2,053,074
Standard Group			480,546
Athi River Mining	800,000(2005)	803,250(01,02,03,04,07)	54,875
E. A Portland			125,484
Sasini	600,000(2007)		162,959

Appendix 5: Summary of sources of finance for the listed companies (2000 to 2008) (in sh.'000).

Firms	Internal sources	External sources	Total
East African Breweries	38,847,980	9,968,888	48,816,868
Nation Media Group	7,593,548	628,700	8,222,248
BAI Kenya	15,765,571	114,765	1,588,336
Kenya Airways	17,636,000	59,044,000	17,695,044
Ken Gen	9,619,079	23,649,937	33,269,016
Mumias Sugar	8,667,136	480,546	13,641,122
KPLC	16,207,501	18,767,708	34,975,209
Total Ltd	2,920,118,708	45,870	2,920,210,448
Athi River Mining	385,074	1,658,125	2,043,199
Crown Berger	244,315	958,000	1,202,315
IPS Serena	3,893,624	6,296,986	10,190,610
East African Cables	1,440,252	2,053,074	3,493,326
Standard Group	461,489	4,973,986	5,435,475
E. A Portland	2,415,426	125,484	2,540,910
Sasini	1,120,668	762,959	1,883,627

Definitions

Corporate Bond: debt instrument indicating that a corporation has borrowed a certain amount of money and promises to repay in future under clearly defined terms. It pays interest semiannually.

Commercial Paper: it is a short-term debt instrument issued by well known credit worthy firms, issued at a discount. The instrument does not pay coupon payments.

Rights Issue: used by quoted companies to raise new capital, in exchange for shares. New shares are offered in proportion to the existing shares to existing shareholders at a discount

Initial Public Offer: non-exclusive sale of securities to the general public, done with the help of a security firm that provides investment banking services.