FINANCIAL CONSTRAINTS AND INVESTMENT CASH FLOW SENSITIVITY AMONG NON-FINANCIAL FIRMS LISTED AT THE NAIROBI SECURITIES EXCHANGE

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Abstract

Purpose: *The purpose of the study was to establish the effect of financial constraints on the investment cash flow sensitivity of non-financial firms listed at the Nairobi Securities Exchange.*

Methodology: *The study employed descriptive and longitudinal research design and secondary data to study a population of 33 non-financial firms operating in Kenya and are listed at the Nairobi Securities Exchange. The data collected was analyzed through descriptive and inferential statistics.*

Findings*: The study findings pointed to a statistically significant positive relationship between profitability as an indicator of financial constraints and firm investment cash flow sensitivity. Firm liquidity and leverage as indicators of financial constraints were also positively related to investment cash flow sensitivity though the relationships were not statistically significant.*

Implications*: The overall conclusion was that financial constraints positively influence the investment cash flow sensitivity of the non-financial firms. Specifically, firm managers rely on profitability to finance investments possibly because of financial market financing obstacles that include cost, access and information asymmetry. The positive effect of leverage and liquidity is a pointer to existence of pecking order preference in working capital and capital structure decisions.*

Value*: The study contributes to managerial policy in suggesting that corporate managers should increase the use of internally generated funds especially from profits and debt capital when financing their firm investment and operations in order to maximize the tax shield benefits available to their firms.*

Key words: *financial Constraints, Investment Cash flow Sensitivity, Non-Financial Firms*

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1.1 Introduction

Investment cash flow sensitivity changes proportionately with the level of a firm's financial constraint as noted in Fazzari, Hubbard and Peterson (2000), Hoshi, Kashyap and Scharfstein (1991) and Agca and Mozumdar (2012). Kaplan and Zingales (1997) however show that investment cash flow sensitivity can be high for firms which are financially unconstrained creating a puzzle on the actual relationship between the two variables.

This study is underpinned by the Agency, Trade off and Pecking order theories.The agency theory by Jensen and Meckling (1976) is based on the assumption of separation of corporate ownership and control where decision making authority is delegated to the agent including financing and investment decisions. Pecking order theory as advanced by Myers and Majluf (1984) is premised on the idea that order of resources prevails over their size. Thus, the preference expressed by companies for financing their new projects mainly through self-financing, followed by debt and finally by share issues constitutes the pecking order, under asymmetric information conditions. The trade-off theory advanced by Jensen (1986) and Myers (1984) indicate that firms define their optimal financial structure by balancing the benefits and costs of taking on additional debt financing. Trade-off theory postulates that a firm will borrow up to the point where the marginal value of the tax advantage of debt is balanced by the increase in the present value of bankruptcy costs. Trade-off theory assumes a target ratio of long term sources of finance by establishing a balance between costs and benefits associated with using debts in capital structure.

Globally, Pindado, Requejo, and De la Torre (2011) observe that in many cases, companies either invest beyond the level that would maximize shareholders' wealth (they overinvest), or they forgo some good investment projects unless they have sufficient cash flow to undertake them (they underinvest). In Kenya, literature reveals that new investments by the listed firms are mainly financed through bank loans and overdraft facilities, which poses very high financial risks in terms of bankruptcy costs from the view of both the managers and investors. Further, Okumu (2014) proves that firms listed in NSE have high cash flow sensitivities, dependent on size, liquidity and institutional ownership. Elie (2013) argues that manufacturing firms in Sub-

Saharan Africa to which Kenya belongs, experience severe financial constraints due to strong information asymmetry between lenders and borrowers. Wale (2014) concluded that African firms are highly financially constrained and hence have high investment cash flow sensitivities.

1.1.1 Financial Constraints

A firm is said to be financially constrained if its investment is limited by its generation of internal funds because it is unable to obtain sufficient external funds (Mulier, Schoors and Merlevede, 2016). Silva and Carreira (2012) define financial constraints as the inability of a firm or a group of firms to raise necessary amount to finance their optimal path of growth. Lamont et al., (2001) defines financial constraint as a financial friction that prevents a firm from funding all its desired investments. Kaplan and Zingales (1997) define financial constraint as a wedge between internal and external costs of funds.

Financial constraint is caused by inability to borrow, credit constraint, inability to issue bonds, dependent on bank loans and inadequate or intangibility of assets (Kaplan and Zingales, 1997). Okumu (2014) posit that a financially constrained firm is one that has limited access to external capital, and hence its ability to undertake new viable investments is restricted. The degree of financial constraints depends on the level of market imperfections which determines information asymmetry. The information asymmetry determines the wedge between cost of internal finance and external finance. This is wholly defined by the level of capital market development.

To study the role of financial constraints in firm behavior, researchers are often in need of a measure of the severity of these constraints. Bushman, Smith and Zhang (2011) classify firms as financially constrained and unconstrained by using the Clearys Z_{fc} index. Firms with high Z_{fc} values are expected to be less financially constrained and should have no or less investment cash flow sensitivities and vice versa. The literature suggests other possibilities, including investment-cash flow sensitivities (Fazzari et al. 2000), the Kaplan and Zingales (KZ) index of constraints (Lamont et al. 2001), the Whited and Wu (WW) index of constraints (Whited and Wu, 2006).

1.1.2 Investment Cash Flow Sensitivity

Investment cash flow sensitivity, as defined by Fazzari, Hubbard and Peterson (1988), refers to a coefficient that measures the changes of capital investment decisions due to changes in internally generated cash flows. Investment cash flow sensitivity is the extent to which investment decisions rely on internally generated cash flows. The investment-cash flow sensitivity has been applied in some studies to measure the degree of firms' financial constraints. Consistent with the interpretation of cash flow sensitivity, firms with positive cash flow sensitivity are those that are more likely to face higher costs of external capital as compared to cash flow insensitive firms. These firms are significantly smaller and younger, pay lower dividends are less likely to have bond rating and have lower asset tangibility.

Fazzari et al. (1998) interpret that investment cash flow sensitivity reflects the higher costs of external financing relative to internal financing, which may occur due to information asymmetries as discussed by Myers and Majluf (1984) and Greenwald, Stiglitz, and Weiss (1984), or agency problems, as discussed by Jensen and Meckling (1976), Grossman and Hart (1982), and Jensen (1986). Firms with positive investment cash flow sensitivity as proposed by Fazzari et al. (1998) are those that are more likely to face higher costs of external capital as compared to cash flow insensitive firms. The characteristics of firms classified as having negative cash flow sensitivity suggest that they are even more likely to be liquidity constrained than firms with positive cash flow sensitivity.

Investment cash flow sensitivity is measured by regressing investment on cash flow; controlling for investment opportunities with Tobin's q. Erickson and Whited (2000), and Alti (2003) argue that measurement problems associated with Tobin's Q affect the sensitivity of investments to the availability of internal funds.

1.1.3 Financial Constraints and Investment Cash flow Sensitivity

The relationship between investment and cash flows has had a turbulent history. It was widely studied in the 1950s and 1960s (Meyer and Kuh, 1957; Kuh, 1963). Subsequently, cash flows disappeared from the investment literature until its revival in the 1980s following the development of models of asymmetric information, and an empirical breakthrough in 1988 by

Fazzari, Hubbard, and Petersen (FHP). Since FHP (1988), several studies have been conducted on financial constraints and investment cash flow sensitivities the world over.

FHP (1988) established that higher investment cash flow sensitivity us influenced by higher levels of financial constraints, a position that was supported by many subsequent studies including Hoshi, Kashyap and Scharfstein (1991), Fazzari, Hubbard and Peterson (2000), Hassett and Oliner (2006) and Agca and Mozumdar (2012). On the other hand, several other studies including Kaplan and Zingales (1997) and Cummins, Hasset and Oliner (2012) prove, on the contrary, that there is no relationship between financial constraints and investment cash flow sensitivities.

1.1.4 Non-financial Firms Listed at the Nairobi Securities Exchange

The firms that are listed at the Nairobi Securities Exchange (NSE) play a major role in providing services and commodities to Kenya's population. Owido, Onyuma and Owuor (2003) illustrate that the Nairobi Securities Exchange is not perfect, and existing imperfections introduce a wedge between the costs of external and internal funds. Firms facing higher informational imperfections experience a wider wedge, and therefore are more financially constrained.

Existing literature shows that firms operating in Africa constantly face external financial constraints at different levels (Wale, 2014; Eli, 2014). Studies show that firms listed in NSE are small and face external financial constraints. Maina and Ishmail (2014) points out that firms use more of short term borrowing than long term, probably due to inability to borrow long term funds.

1.2 Research Problem

The relationship between financial constraints and investment cash flow sensitivities is one of the most widely studied and unresolved areas in corporate finance since the seminal work of Fazzari, Hubbard and Peterson (1988). Past studies show that there is a correlation between financial constraints and investment cash flow sensitivity. However, subsequent empirical studies show contradicting results on the nature of the relationship between the two variables.

Financial markets in Sub-Saharan Africa, to which NSE belongs, are described as highly imperfect hence characterized with agency problems caused by information asymmetry, transaction costs and contracting costs (Eli, 2014). Firms listed at the NSE raise funds to finance new investments in form of equity and, or bonds (Kayo & Kimura, 2011). Lack of adequate and relevant legal and regulatory framework to enforce financial contracts has led to credit rationing and high collateralization which leads to financial constraints, hence under investment (Wale, 2014).

Several studies have been conducted on financial constraints and investment cash flow sensitivities both in developed and developing economies. Deveraux and Schiantarelli (1990) note that literature that investigate effect of financial constraints on investment behavior categorize firms in accordance with characteristics that include; possibility of getting financially constrained, size, capital structure and dividend payouts. Gilchrist and Himmelberg (1999) advance that financially constrained firms have the highest sensitivities to cash flows. Fazarri et al (1988) observed that investment cash flow sensitivities are higher among firms with lower dividends while Oliner and Rudebusch (1992) illustrate that the sensitivity is higher among younger firms. Kaplan and Zingales (1997) modify the firm classification characteristic into three categories as; not financially constrained, possibly financially constrained and financially constrained. Bond and Cummins (2001) apply the modified classification by Kaplan and Zingales (1997) to conclude that financially constrained firms have lowest sensitivity of corporate investment to cash flow. The foregoing studies therefore arrive at no conclusive finding on the exact relationships.

1.3 Research Objectives

The main objective of this study was to determine the effect of financial constraint on investment cash flow sensitivity of listed firms in Kenya.

2.1 Literature Review

The study is based on these three theories; agency theory, pecking order theory and trade off theory.

2.2 Empirical Review

FHP (1988) conducted a survey of ICFS on 500 U.S manufacturing firms between 1970 - 1984. These firms were classified into two groups: financially constrained and financially unconstrained firms. Size and dividend pay-out rate were also used as the bases of classification. The Proxy for investment demands were represented by Tobin's Q in the study which concluded that higher investment cash flow sensitivity is influenced by higher levels of financial constraints.

Cleary (1999) classified 1317 U.S firms according to their beginning-of-year financial constraint index. Firm classification was allowed to change every year to reflect the fact that financial status changes continuously. The index is determined using multiple discriminant analysis, similar to Altman's Z factor. An advantage of this approach is that it considers an entire profile of characteristics shared by a particular firm and transforms them into a univariate statistic. The study concludes that financially constrained firms have relatively lower ICFS as compared to less financially constrained ones, contrary to the findings of FHP (1988). This finding is in line with the findings of Kaplan and Zingales (1999).

Almeida and Campello (2001) opine that a key assumption in the studies on firm financial constraints is that such constraints translate entirely into higher costs of funds. The approach poses two types of difficulties to the research on financial constraints. Foremost, it inadvertently narrows the understanding about financial constraints since, in practice, firms often face credit rationing. Secondly, it is a matter of debate whether such an approach can deliver unambiguous implications for corporate investment. The study shows that when firms' investments and use of external finance are endogenously related, investment cash flow sensitivities increase as credit constraints are relaxed.

Huang (2002) used a large sample of US listed companies to illustrate that the relationship between financial constraints and investment cash flow sensitivity is nonlinear. The author argues that the difference in findings can be explained by sample selection problems. The study shows that when using actual level of investment in the regression analysis, as in the standard investment literature, the coefficient on cash flow cannot be an accurate measure of financial

constraints. The study argues that the monotonic and positive relationship between financial constraints and investment cash flow sensitivity is not robust in large sample studies using detailed classification schemes.

Allayanis and Mozumdar (2002) examine the impact of negative cash flows on investment cash flows sensitivity. The authors opine that when firms are in bad shape (incurring cash losses), investment cannot respond to cash flows. Thus, the results from Cleary (1999) can be explained by the negative cash flows. The results as noted in Kaplan and Zingales (1999) on another hand can be explained by influential observations in a small sample.

Pawlina and Renneboog (2005) investigated the investment cash flow sensitivity of a large sample of the UK listed firms and confirmed that investment is strongly cash flow sensitive. The authors further analyze if the sensitivity is a result of agency problems when managers with high discretion overinvest, or it is a result of asymmetric information when managers owning equity are underinvesting if the market (erroneously) demands too high a risk premium? The study finds that investment cash flow sensitivity results mainly from the agency costs of free cash flow. The magnitude of the relationship depends on insider ownership. Furthermore, the study obtain that outside block holders, such as financial institutions, the government, and industrial firms (only at high control levels), reduce the cash flow sensitivity of investment through effective monitoring. Finally, financial institutions appear to play a role in mitigating informational asymmetries between firms and capital markets.

Brown and Petersen (2009) sought to investigate why investment cash flow sensitivity has declined sharply over time. The authors reckon that literature has largely ignored how rising Research and development investment and developments in equity markets have impacted Investment cash flow Sensitivity estimates. The study shows that for the time period 1970 to 2006, investment cash flow sensitivity foremost largely disappears for physical investment. Secondly, ICF remains comparatively strong for research and development. And, thirdly, ICFS declines, but does not disappear, for total investment. The findings are largely explained by the

changing composition of investment and the rising importance of public equity as a source of funds, particularly for firms with persistent negative cash flows. .

George, Kabir and Qian (2010) conducted a survey on ICFS and financial constraints using panel data obtained from corporate firms trading in Bombay Stock Exchange for the period 1997-2000. Firms were grouped as those affiliated to investment groups and those which were not. Both Tobins's Q and Euler equation models were used in the study. However, Tobin's Q is adjusted to include the availability of internal funds as an additional determinant of investment, as used in Agca and Mozumdar (2008). The study concludes that firms which have investment groupings have lower financial constraints and low ICFS. The study disregards other factors that may affect ICFS such as firm size and economic growth.

Chen and Chen (2010) analysed investment cash flow sensitivity on 1294 firms in Compustat data set during 1967 - 2009 period. Size and dividend pay-out rates were used to classify firms into their distinct characteristics. Taken together, three tests were performed to provide time series evidence against ICFS as a valid measure of financial constraint. The study notes that if one believes that financial constraints have not disappeared, then investment cash flow sensitivity cannot be a good measure of financial constraints. The decline and disappearance are robust to considerations of research and development and cash reserves, and across groups of firms.

Bushman, Smith and Zhang (2012) studied 841 firms that traded in US between 1971 and 2006. These firms had a SIC code between 2000 and 3999. They argued that ICFS reflects related investment decisions. Farre-mensa and Ljungqvist (2013) studied 10,112 US firms trading in NYSE in fiscal years 1989-2011 and concluded that financial constraint is not reflected by ICFS.

As explained in Mulier, Schoors and Merlevede (2016), previous studies interpret investment cash flow sensitivities as an indication of existence of firm level financial constraints. However, the literature is yet to clarify whether the high sensitivities reflect any three possibilities. First, an unsatisfied demand for external funds by the firm referred to as supply effect. Secondly, the preference for internal funds over external funds for a variety of underlying reasons referred to as the demand effect. Or thirdly, the fact that investment and cash flow are both correlated with an omitted variable such as investment opportunities. The empirical challenge in further studies in

this topic is thus to disentangle these three effects of the investment cash flow financial constraints relationships.

3.1 Methodology

The study adopted the descriptive and longitudinal research designs. Descriptive research design enabled the researcher to ascertain and describe the characteristics of the variables of interest in a situation as explained in Mugenda and Mugenda (2003). Longitudinal design as explained in Irungu (2007) helped the researcher to determine the relationships between the study variables over a period of time among the 33 non-financial listed firms that constituted the population of the study.

4.1 Findings, Conclusions and Recommendations

Trend analysis was undertaken which revealed the variations of the study variables namely; ICFS and financial constraints proxied by Leverage, Liquidity and Profitability within the span of ten years. The outcome of analysis of the time series changes of the variables was presented using graphical models.

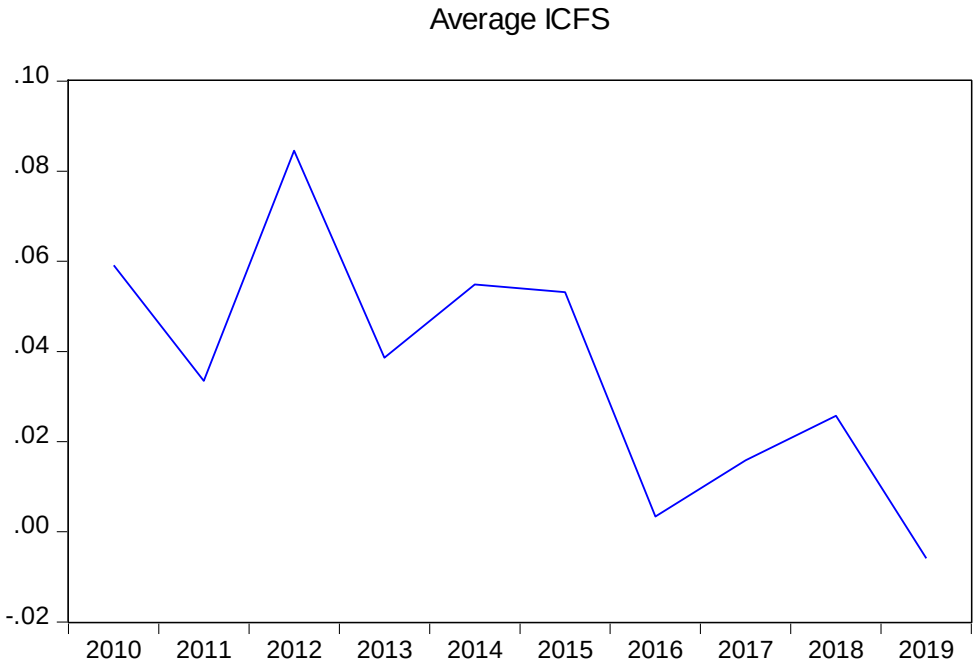

Figure One: Trend of ICFS for the year 2009 – 2019

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Figure one above indicates that the mean value of ICFS variable for the firms listed at the NSE had a decreasing trend between year 2009 and 2019 in general. The general trend was made up of short term up and down periodical movements. The trend was uprising in 2012, 2014, 2015 and 2018 after which they are followed by a drop in subsequent years.

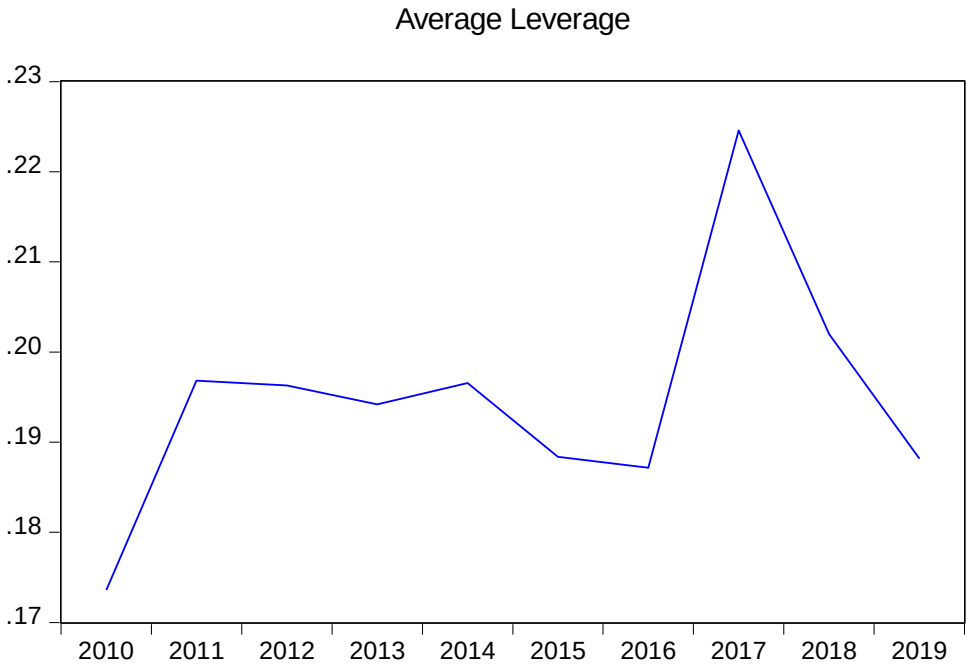

Figure Two: Trend of Leverage for the year 2009 – 2019

Figure two above indicate that the mean value of leverage for the 33 non-financial firms listed at the NSE had short term minimal up and down periodical movements between year 2009 and 2019. The general trend was made up of short term up in 2011 followed by a near constant trend till 2014 when it slightly declined till 2016. There is a short term up in 2017 that is subsequently followed by a short term decline.

As presented in Figure three below, the mean value of liquidity for the 33 non-financial firms listed at the NSE had an increasing trend between 2009 and 2019 with short term minimal up and down periodical movements. The general trend was made up of short term up between 2009 and 2013 followed by a short term down between 2014 and 2017 and short term up in 2018.

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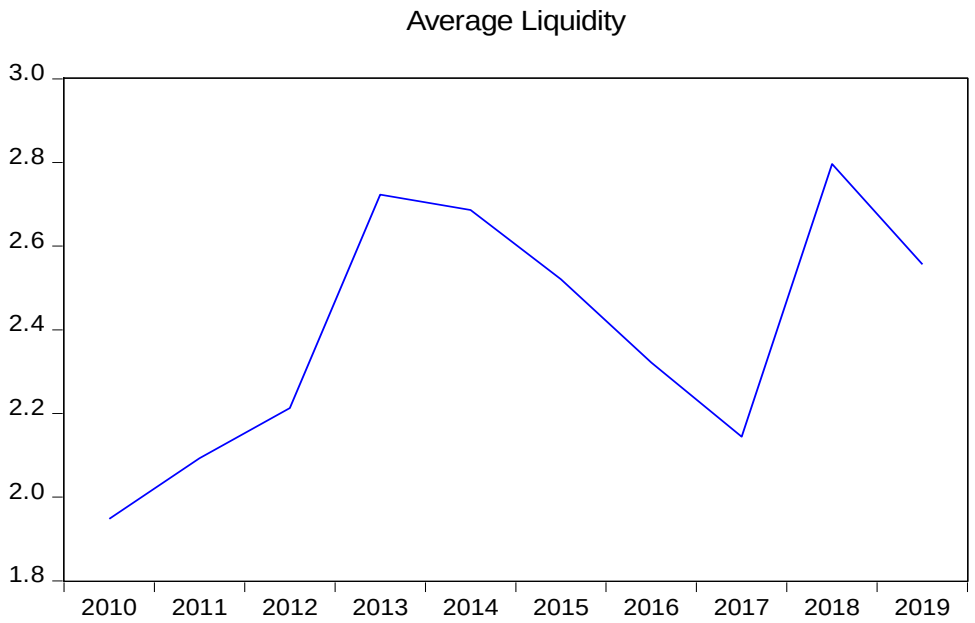

Figure Three: Trend of Liquidity for the year 2009 – 2019

Figure four below presents that the mean value of profitability for the 33 non-financial firms listed at the NSE.

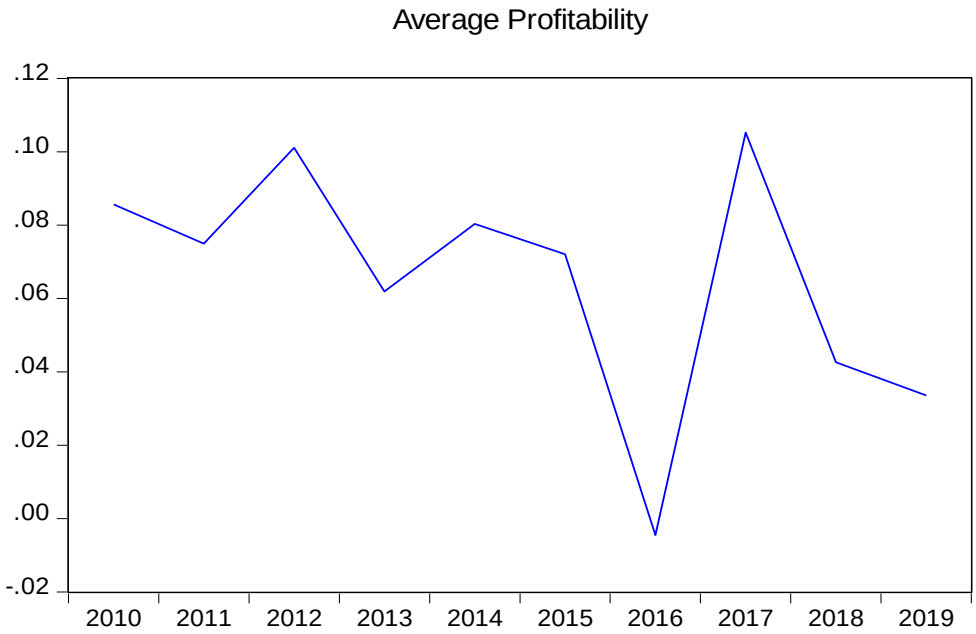

Figure Four: Trend of Profitability for the year 2009 – 2019

The trend presented shows that they had a generally decreasing trend between 2009 and 2019 with short term minimal up and down periodical movements. The general trend was made up of short term ups in 2012, 2014 and 2017 followed by short term downs in subsequent years.

Table one below presents the regression analysis results which illustrate that 5.6% of variations in Investment Cash flow sensitivity is explained by the variations in the financial constraint variables namely Liquidity, Leverage and Profitability and the estimate model is statistically significant ($R^2 = 0.056$).

Table One: Regression Analysis on ICFS and FC

Dependent Variable: ICFS_IT_K_T_1_
Method: Panel Least Squares
Date: 07/25/20 Time: 17:21
Sample: 1 330
Periods included: 33
Cross-sections included: 10
Total panel (unbalanced) observations: 329

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LEVERAGE_LTD_TA	0.074440	0.052184	1.426496	0.1547
LIQUIDITY_CA_CL	0.004255	0.003429	1.240746	0.2156
PROFITABILITY_ROA	0.300750	0.067524	4.453946	0.0000
C	-0.005991	0.017588	-0.340607	0.7336

R-squared	0.064684	Mean dependent var	0.038500
Adjusted R-squared	0.056050	S.D. dependent var	0.171854
S.E. of regression	0.166968	Akaike info criterion	-0.729946
Sum squared resid	9.060452	Schwarz criterion	-0.683793
Log likelihood	124.0761	Hannan-Quinn criter.	-0.711534
F-statistic	7.492039	Durbin-Watson stat	2.091273
Prob(F-statistic)	0.000073		

As presented in Table one above, there is a positive relationship between leverage and investment cash flow sensitivity which is not statistically significant ($\beta=0.074$, $t=1.426$, $p>0.05$) implying that for every unit increase in leverage, there is an expected increase in investment cash flow sensitivity by 0.074 units. Since leverage is a proxy for financial constraints, the findings are consistent with arguments of Kaplan and Zingales (1997) and Cummins, Hasset and Oliner (2012) who position that there is no relationship between financial constraints and investment

cash flow sensitivities. This implies that capital structure decisions especially debt composition for the NSE listed firms is dependent on other factors as well and not the investment needs.

Table one also presents a positive relationship between liquidity and investment cash flow sensitivity which is not statistically significant (β=0.004, t =1.240, p>0.05) implying that for every unit increase in liquidity, there is an expected increase in investment cash flow sensitivity by 0.004 units. Since liquidity is a proxy for financial constraints, the findings are consistent with arguments of Kaplan and Zingales (1997) and Cummins, Hasset and Oliner (2012) who advanced that there is no relationship between financial constraints and investment cash flow sensitivities. The finding is a departure from Okumu (2014) assertion that liquidity has a definite influence on the investment cash flow sensitivity for the firms listed at the NSE. The finding confirms the argument that firm liquidity especially working capital management is influenced by several other factors and not necessarily available investment opportunities.

Table one above also presents a statistically significant positive relationship between profitability and investment cash flow sensitivity (β=0.300, t = 4.453, p<0.05) implying that for every unit increase in profitability, there is an expected increase in investment cash flow sensitivity by 0.300 units. The finding of a statistically significant positive relationship between profitability and ICFS is consistent with arguments in pecking order theory that internal funds are used to finance future investments and when external funds are hard to obtain, firms over rely on internal cash flows represented in their overall profitability hence exhibiting high investment cash flow sensitivities. Since profitability is a proxy for financial constraints in the study, the findings are consistent with arguments in Fazzari, Hubbard and Petersen (1988), Hoshi, Kashyap and Scharfstein (1991), Fazzari, Hubbard and Peterson (2000), Hassett and Oliner (2006) and Agca and Mozumdar (2012) that investment cash flow sensitivity is an appropriate measure of financial constraints. The finding implies that managers of the firms listed at NSE prioritise funding investments from internal reserves mostly because of external cost of debt and possibly market information asymmetries that make external capital costly.

From the foregoing findings, the study concludes that financial constraints as measured by firm's liquidity, leverage and profitability of non-financial firms listed at the NSE have varied significant effects. Profitability has a statistically significant effect on investment cash flow sensitivity. Profitability has a statistically significant positive relationship with the investment cash flow sensitivity of non-financial firms listed at the Nairobi Securities Exchange. Although liquidity and leverage have a positive relationship with the dependent variable, their relationship is not statistically significant. The finding thus confirms that NSE listed firms rely on their retained profits as a priority to finance their investment opportunities.

As a contribution, the study reckon that though various indicators including leverage, liquidity and profitability have been used in studies to operationalize financial constraints, results of panel data analysis actually indicate that firms are relying more on profitability and debt with the pecking order being profitability and leverage/debts. Managerial policy contribution suggests that corporate managers should increase the use of internally generated funds especially from profits and debt capital when financing their firm investment and operations in order to maximize the tax shield benefits available to their firms.

The study suggests that further studies should evaluate the influence of financial constraints on investment cash flow sensitivity on companies not listed at the Securities exchange and draw comparable inferences or differences thereon. These studies can further be disaggregated by industry to offer more in-depth insight and should not presume linear relationships.

References

Ağca, Ş., & Mozumdar, A. (2008). The impact of capital market imperfections on investment–cash flow sensitivity. *Journal of Banking & Finance*, *32*(2), 207-216.

Allayannis, G. & Mozumdar, A. (2004). The impact of negative cash flow and influential observations on investment-cash flow sensitivity estimates. *Journal of Banking and Finance* 28, 901–930.

Almeida, H., & Campello, M. (2001, December). Financial constraints and investment-cash flow sensitivities: New research directions. In *Twelfth Annual Utah Winter Finance Conference*.

Alti, A. (2003). How sensitive is investment to cash flow when financing is frictionless?. *The journal of finance*, *58*(2), 707-722.

Bond, S., & Van Reenen, J. (2007). Microeconometric models of investment and employment. *Handbook of econometrics*, *6*, 4417-4498.

Brown, J. R., & Petersen, B. C. (2009). Why has the investment-cash flow sensitivity declined so sharply? Rising R&D and equity market developments. *Journal of Banking & Finance*, *33*(5), 971-984.

Bushman, R. M., Smith, A. J., & Zhang, F. (2011). Investment cash flow sensitivities really reflect related investment decisions. *Available at SSRN 842085*.

Chen, H. J., & Chen, S. J. (2012). Investment-cash flow sensitivity cannot be a good measure of financial constraints: Evidence from the time series. *Journal of Financial Economics*, *103*(2), 393-410.

Cleary, S. (1999). The relationship between firm investment and financial status. *The Journal of Finance*, *54*(2), 673-692.

Cummins, J. G., Hassett, K. A., & Oliner, S. D. (2006). Investment behavior, observable expectations, and internal funds. *American Economic Review*, *96*(3), 796-810.

Devereux, M., & Schiantarelli, F. (1989). *Investment, finacial factors and cash flow: Evidence from UK panel data* (No. w3116). National Bureau of Economic Research.

Erickson, T., & Whited, T. M. (2000). Measurement error and the relationship between investment and q. *Journal of political economy*, *108*(5), 1027-1057.

Farre-Mensa, J., & Ljungqvist, A. (2013). Do measures of financial constraints measure financial constraints. *Review of Financial Studies*, *29*(2), 271-308.

Fazzari, S. M., Hubbard, R. G., & Petersen, B. C. (2000). Investment-cash flow sensitivities are useful: A comment on Kaplan and Zingales. *The Quarterly Journal of Economics*, *115*(2), 695-705.

Fazzari, S., Hubbard, R. G., & Petersen, B. C. (1987). *Financing constraints and corporate investment* (No. w2387). National Bureau of Economic Research.

George, R., Kabir, R., & Qian, J. (2011). Investment–cash flow sensitivity and financing constraints: new evidence from Indian business group firms. *Journal of multinational financial management*, *21*(2), 69-88.

Gilchrist, S., & Himmelberg, C. P. (1995). Evidence on the role of cash flow for investment. *Journal of monetary Economics*, *36*(3), 541-572.

Greenwald, B. C., Stiglitz, J. E., & Weiss, A. (1984). *Informational imperfections in the capital market and macro-economic fluctuations* (No. w1335). National Bureau of Economic Research.

Hoshi, T., Kashyap, A., & Scharfstein, D. (1991). Corporate structure, liquidity, and investment: Evidence from Japanese industrial groups. *The Quarterly Journal of Economics*, *106*(1), 33-60.

Huang, Z. (2002, February). Financial constraints and investment-cash flow sensitivity. In *EFA 2002 Berlin Meetings Presented Paper*.

Irungu, S. M. (2007). The effect of top management teams on the performance of publicly quoted companies in Kenya. *Unpublished PhD Thesis, University of Nairobi, Kenya*.

Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *The American economic review*, *76*(2), 323-329.

Jensen, M. C., & Meckling, W. H. (1979). Theory of the firm: Managerial behavior, agency costs, and ownership structure. In *Economics social institutions* (pp. 163-231). Springer, Dordrecht.

Kaplan, S. N., & Zingales, L. (1997). Do investment-cash flow sensitivities provide useful measures of financing constraints?. *The quarterly journal of economics*, *112*(1), 169-215.

Kaplan, S. N., & Zingales, L. (2000). Investment-cash flow sensitivities are not valid measures of financing constraints. *The Quarterly Journal of Economics*, *115*(2), 707-712.

Kayo, E. K., & Kimura, H. (2011). Hierarchical determinants of capital structure. *Journal of Banking & Finance*, *35*(2), 358-371.

Lamont, O., Polk, C., & Saaá-Requejo, J. (2001). Financial constraints and stock returns. *The review of financial studies*, *14*(2), 529-554.

Maina, L., & Ishmail, M. (2014). Capital structure and financial performance in Kenya: Evidence from firms listed at the Nairobi Securities Exchange. *International Journal of Social Sciences and Entrepreneurship*, *1*(11), 209-223.

Myers, S. C. (1984). The capital structure puzzle. *The journal of finance*, *39*(3), 574-592.

Myers, S. C., & Majluf, N. S. (1984). *Corporate financing and investment decisions when firms have information that investors do not have* (No. w1396). National Bureau of Economic Research.

Okumu, O. S. (2014). Effect of Capital Market Imperfection on ICFS of Firms listed at the NSE. *Master Thesis, UoN, School of Business Administration.*

Oliner, S. D., & Rudebusch, G. D. (1992). Sources of the financing hierarchy for business investment. *The Review of Economics and Statistics*, 643-654.

Owido, P. K., Onyuma, S. O., & Owuor, G. (2013). A GARCH approach to measuring efficiency: a case study of Nairobi securities exchange. *Research Journal of Finance and Accounting*, *4*(4), 1-16.

Pawlina, G., & Renneboog, L. (2005). Is investment-cash flow sensitivity caused by agency costs or asymmetric information? Evidence from the UK. *European Financial Management*, *11*(4), 483-513.

Pindado, J., Requejo, I., & de la Torre, C. (2011). Family control and investment–cash flow sensitivity: Empirical evidence from the Euro zone. *Journal of Corporate Finance*, *17*(5), 1389-1409.

Silva, F. & Carreira, C. (2012). Measuring firms' financial constraints: A rough guide. *Notas Económicas*, 36, 23–46.

Wale, L. E. (2014). Investment cash flow sensitivity as a measure of financing constraints: evidence from selected African countries. *Journal of Economics and Behavioral Studies*, *6*(8), 647-657.

Whited, T. M., & Wu, G. (2006). Financial constraints risk. *The Review of Financial Studies*, *19*(2), 531-559.