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Financial Factors and Corporate Investment: Further Evidence from Listed Non-Financial Firms in Nigeria

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Structured Abstract:

Purpose: This study assessed the effect of financial factors on corporate investment of listed non-financial firms in Nigeria.

Methodology: Annual data from 2002-2012 on cash flow, sales, stock of liquid asset leverage, Tobin's Q, capital stock, investment were sourced from annual reports and statement of accounts of 54 non-financial firms. Data collected were analyzed using fixed and random effect estimation of panel data analysis.

Findings: The results showed that cash flow, stock of liquid assets and sales exerted positive influence on corporate investment, while Leverage, Tobin's Q had negative, but insignificant effect on investment. Also, the result indicated that internal fund impacted significantly and positively on the investment of small sized firms, large sized firms, highly retained firms, lowly retained firms, highly leveraged firms and lowly leveraged firms. It was evidenced that financial factors had significant effects on co-operate investment in Nigeria.

Research Limitations / Implications: The study did not consider financial firms in the sample of fifty-four firms used.

Practical implication: The study proved the relevance of firm size, level of leverage and the usefulness of internal fund coupled with other financial factors as important determining factors in co-operate investment decision in a country.

Originality / Value: Studies on the relationship between corporate investment and finance in Nigeria are very scanty. The little ones identified focused on aggregate investment. The findings from the studies failed to provide information on how various levels of firms were affected by financial factors. This present study fills this gap by examining how financial factors affect various levels of firms in Nigeria.

Keywords: Financial factors, Tobin-Q, panel data, investment, Nigeria.

Paper Type: Empirical Research paper.

Introduction

Corporate investment is the amount of capital spent on increasing the total assets of firm (Jangili & Kumar, 2010). These investments could be financed either by internal sources of funds, such as, retained earnings, accumulated profits in the form of various reserves, depreciation provision, or by external sources of funds, such as debt and equity. A conversional knowledge will believe that corporate investments can be determined by financial factors such as leverages (debt), cash flow (retained earnings), sales, and stock of Liquid assets. Meanwhile, financial factors play a limited role in traditional theory of investment. For example, in the neoclassical theory of investment, financial factors enter through the cost of capital which, in turn, is independent of the way the firm finances itself. This independence arises because capital markets are assumed to be perfect.

From Modigliani and Miller's irrelevance theorem, it was stated that under certain market price process, in the absence of taxes, where there were no transaction cost, no asymmetric information coupled with other principles of a perfect market, the cost of capital and the value of the firm are not affected by the change in capital structure. The firm's value is determined by its real assets, not by the securities it issues. By implications, financial factors are irrelevant as long as the firm's investment decisions are taken as given (see Modigliani & Miller, 1958).

However, study (e.g., Hu & Schiantarelli, 1998) suggests that, in an imperfect capital market, internal and external capitals 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 (Leverage), new equity finance, or the functioning of particular credit markets. A firm's internal cash flow may affect investment spending because of a financing hierarchy in which internal funds have a cost advantage over new debt or equity finance. Under these circumstances, firms' investment and financing decisions are interdependent. 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.

Unlike in 1980's where corporate investment is increasing and, highly encouraged, current trend shows that investment opportunities in Nigeria are stifled by the increasing levels of uncertainties in the macroeconomic environment. Nigerian business environment has moved backwards in terms of investor protection and the ease of starting a business. It was reported

by World Bank (2013) that Nigeria is currently ranked 131st out of 185 countries in *doing business 2013* The level of technical know-how is nothing to write home about, supply of basic infrastructural facilities remains grossly inadequate with the few available being very epileptic in nature. These affect level of cash flows (retained earnings) available to firms thereby subjecting firms to external source of fund (Debt or equity). The Nigeria capital market has exhibited different forms of imperfections; these include imposition of price caps on share price movement, regulation of interest rates, presence of asymmetric information, agency costs and political instability which resulted in thinness of trading, low market capitalization and low percentage of turnover level among others (Adelegan & Ariyo, 2008). As a result of difficulties in assessing credit in Nigeria the cost of external finance to borrowers is often so prohibitive as to compel them to resort to internal and informal finance to fund productive investments (Inanga, 1999).

Studies examined the influence of financial factors on firms' investment decision offered conflicting forecasts on the role of financial factors and corporate investment (see Bhunia, 2012; Yuan *et al.,* 2012; Inessa & Zicchino, 2006 among others). They argued that financial factors such as cash flow and leverages have positively influenced corporate investment in their various countries while others (e.g., Bhagat & Obreja*,* 2013) showed a negative relationship between cash flow uncertainty and corporate investment in both tangible and intangible assets. Studies on the relationship between corporate investment and finance in Nigeria are very scanty. The little ones identified focused on aggregate investment (e.g., Bakare, 2011; Atoyebi *et al*., 2012). One study that is very similar to this current study is the one carried out by Adelegan and Ariyo (2008). The findings from the studies failed to provide information on how various firms were affected by financial factors.

The present study contributes to the existing literature in the following ways. Firstly, firms are categorized in terms of size, leverage, retention ratio, and their responses to corporate investment. This firms' segmentation gives us a clear indication of how these different levels of firms respond to financial factors. We also examine whether firms are uniformly affected or not by financial factors. Unlike other studies (e.g., Adelegan & Ariyo, 2008), our study also examines the differential impact of financial factors on the various categories of firms in the market. In addition, we explores the link between financial factors and corporate investment in a fifty-four sample size of listed non-financial Quoted firms in Nigeria from 2002-2012. We include the different companies ranging from manufacturing, conglomerate, oil companies among others which serves as an improvement on the previous study.

The remaining of this paper is sectioned into 4 parts. Next part discussed the literature review, followed by methodology, results and discussion while conclusion ends the paper.

Literature Review

In the 'General Theory', John Maynard Keynes (1936) emphasized the central role of investment in the theory of aggregate output and employment. Keynes found some support for financial influences on investment through significant effects of Liquidity or profits in a variety of empirical investment functions. These ideas, however, have been much debated. In particular, economists working primarily in the neoclassical tradition have questioned whether purely financial factors can have an impact on a "real" phenomenon like investment. Such a result seems to contradict the optimizing foundations for microeconomic decision-making that characterizes the neoclassical perspective. The most prominent work on this approach is associated with Dale Jorgenson and his collaborators. Jorgenson bases his results on the Miller-Modigliani theorem that shows the independence of real and financial decisions under some conditions. Jorgenson's work also dismisses the financial effects found in other empirical research as the result of correlations between financial variables and neoclassical determinants of investment. James Tobin formulated an investment theory based on financial markets. Tobin argued that firms' investment level should depend on the ratio of the present value of installed capital to the replacement cost of capital. This ratio is Tobin's Q. The Q theory of investment argues that firms will want to increase their capital when $Q > 1$ and decrease their capital stock when $Q < 1$. If $Q > 1$, a firm can buy one dollar's worth of capital (at replacement cost) and earns profits that have present value in excess of one dollar.

Putting the idea of Cash Flow theory forward, Kaplan and Zingales (2000) suggest that under certain assumptions investment-cash flow sensitivities may increase as financing constraints are relaxed and that investment-cash flow sensitivities are not necessarily monotonic in the degree of financing constraints. Pecking order theory (also referred to as the information asymmetry theory) was proposed by Myers (1984). Myers opines that firms prefer to finance new investment, first internally with retained earnings, then with debt, and finally with an issue of new equity. Myers (1984) argues that an optimal capital structure is difficult to define as equity appears at the top and the bottom of the 'pecking order'. Internal funds incur no flotation costs and require no disclosure of the firm's proprietary financial information that may include firm's potential investment opportunities and gains that are expected to accrue as a result of undertaking such investments.

However, the Q-theory of investment was adopted in this study because it has a number of theoretical advantages over other models. Unlike neoclassical model, it focuses on the future market valuation of the firm's assets rather than based on lags of past variables, it also 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 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 (Hubbard, 1998). 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.

Empirically, several authors have studied the impact of financial factors on investment. They reached conflicting conclusions using various approaches. Modigliani and Miller (1958) argued that the investment policy of a firm should be based only on those factors that would increase the profitability, cash flow or net worth of a firm. Many empirical literatures have challenged financial factors irrelevance theorem of Modigliani and Miller (1958). Having examined a large sample of non financial United State firms using cross-sectional data to analyze U.S. listed companies in 1976, 1986 and 1988, Mc Connell *et al*., (1995) find that enterprise value was negatively correlated with the debt ratio of companies with high growth opportunities. Lang *et al*., (1996) used US and Canadian data shows that leverage is negatively related to investment and that this negative effect is significantly stronger for firms with low growth opportunities than those with high growth opportunities. Whited (1992) finds that firms with higher leverage and higher ratio of interest expenses to cash flow have higher investment-cash flow sensitivity. Alti (2003) also shows that investment can be sensitive to changes in cash flow in the benchmark case where financing is frictionless.

Carpenter and Guariglia (2003) showed that when Q and the firm's contracted capital expenditure variable were both included in the regressions, the explanatory power of cash flow fell for large firms, but remained unchanged for small firms this suggest that the significance of cash flow in investment equations stems from its role in alleviating credit frictions. Also as a result of the presence of asymmetric information, gaps are likely to exist between the information sets of the firm's insiders and outsiders, Q is an imperfect measure of the firm's investment opportunities, as it only captures the equity market participants' (outsiders') evaluation of these opportunities. To improve the measurement of investment opportunities, firm's contractual obligations for future new investment projects as an

additional proxy was included. This variable is important as it captures information about opportunities available only to insiders and thus not measured in Q. Aivazian *et al*., (2005) found a negative relationship between investment and leverage and that the relationship is higher for low growth firms rather than high growth firms. Cleary (2006) finds that the financial constraints are presents in seven world largest economies: Australia, Canada, France, Germany, Japan, the United Kingdom and the United States. Kadapakkam *et al*., (1998) find that there is a significant relationship between investment and internal fund availability after testing for six OECD (Organization for Economic Cooperation and Development) countries comprising of the United States, Canada, Germany, United Kingdom, France and Japan. The results show that the cash flow variable contributes significantly to the explanatory power of the regression in all countries, except Japan. Also, the work of Carmen and Ferrando (2008) shows that financial position is important to explain capital expenditures, as financial pressure appears relevant in explaining investment dynamics when it is proxied by cash flow, indebtedness and debt burden.

The recent study of Bhajat and Obreja (2013) investigated the link between employment, corporate investment and cash flow uncertainty in United States using panel data. The author reported that cash flow uncertainty has a significantly negative impact on employment and corporate investment in both tangible and intangible assets. The empirical evidence on the impact of leverage on investment is less extensive than that focusing on the sensitivity of investment to cash flow variations. Spaliara (2009) examined the significance of financial factors as it affect capital-labour ratio in UK, using First-Differenced GMM concludes that distressed firms exhibit lower investment-cash flow sensitivities than non-distressed firms.

In Nigeria, studies of corporate investment and financing decisions in Nigeria are few and somewhat inconclusive; they made significant steps forward in the identification of the determinants of investment behavior of firms in Nigeria. Adelegan and Ariyo (2008) investigated the impact of capital market imperfections on corporate investment behavior using panel data for Nigerian manufacturing firms from 1984-2000. The study employs both static and dynamic misspecification problems using an endogenous switching regression model. They find that financial factors have a significant effect on the investment behavior of Nigerian firms, but the extent and impact of financing constraints were not uniformly distributed. Variables that capture firms' credit worthiness, asymmetric information, agency problems and size increased the probability of a firm being in the high premium regime. The

likelihood of being in either a low or high regime varies over the business cycle in line with general macroeconomic conditions.

Obembe (2011) examined Financial Constraints and Productivity Growth of Listed Non-financial Firms in Nigeria using data for 76 listed non-financial firms from 1997 to 2007 and analyzed with GMM econometric method, the study emphasized that even though the bank channel was weak, the impact of tightening monetary control in Nigeria can still be felt especially by bank dependent firms.

In conclusion, the empirical considerations on the impact of financial factors on corporate investment in other countries indicate that there is no consensus on the significance of financial factors in determining corporate investment. However, in Nigeria, the only work that can be identified in this regard is the work of Adelegan and Ariyo (2008) who investigated the impact of capital market imperfections on corporate investment behavior using switching regression model for Nigerian manufacturing firms from 1984-2000. However, this present study intends to look at; the importance of financial factor in determining corporate investment of listed non financial firms in Nigeria and to know if this importance varies across firms depending on their financial structure, size or dividend payout and also to examine the trend of corporate investment of listed non financial firms in Nigeria. It is expected that the findings of this study would shed more understanding on the linkages between financial factors and corporate investment thereby contributing to the existing literature and also serve as empirical foundation for future policy making in Nigeria.

Methodology

To examine the effect of financial factors on corporate investment of listed non financial firms in Nigeria, we employ a variant of the Q model of investment. The Q-theory of investment was introduced by Keynes (1936) and expanded by Tobin (1969), Matthias and Abraham (2001) adopted by Mills *et al.,* (1994). In this theory a forward looking firm faced with costs in adjusting its capital stock will have its investment expenditures determined by marginal Q, the ratio of the discounted future revenues from an additional unit of capital to its purchasing price. In the absence of taxes and capital market imperfection, value-maximizing firm will invest as long as the shadow price of an additional unit of capital, marginal Q, exceeds unity. Since Marginal Q is unobservable, empirical studies employ Tobin's average Q, which is defined as the market value of the firm to the replacement cost of its existing

capital stock. Tobin's average Q therefore incorporates information about future conditions and how these are likely to affects firm's investment. The basic Tobin average Q model is

$$\boldsymbol{I_{it} = \alpha + \beta_o Q_{it} + \mu} \qquad (1)$$

Where the dependent variable is investment, α is the shift parameter, β_0 and μ are the slope and error term respectively. To examine whether the sample firms face these financing constraint we follow the studies of Mills *et al.,* (1994) which used the following Q model augmented by Leverage ,Cash flows, Stock of Liquid financial asset and Sales. The estimating equation is

$$\boldsymbol{I_{it} = \alpha + \beta_0 Q_{it} + \beta_1 L_{it} + \beta_2 C_{it} + \beta_3 ST_{xit} + \beta_4 S_{it} + \mu} \qquad (2)$$

From equation (2) Cash flow and Sales terms in equation (3) are contemporaneous – like investment, these are flows. They reflect current availability of internal funds and current demand pressures. Re-stating equation (2)

$$\boldsymbol{I_{it} = \alpha + \beta_0 Q_{it-1} + \beta_1 L_{it-1} + \beta_2 C_{it} + \beta_3 ST_{it-1} + \beta_4 S_{it} + \mu} \qquad (3)$$

Cash flows and Sales in equation (3) are flow variables like investment therefore other terms in equation (3) are lagged one period - these terms are stocks and are measured at the end of the period. The lagged value of the firms' financial variables has been employed since several studies have uncovered lagged effects of monetary policy on firms' activities (Romer & Romer, (1990). Using lag values also enables to minimize the endogeneity problem; it also avoids some of the problems associated with possible simultaneity in investment and capital structure decisions. Following the studies of Mills *et al*., (1994), Tobin Q and Leverage in equation (3) are in ratio, the other variables in nominal terms will be standardised by capital stock in other to avoid the normality. Re-stating equation (3)

$$\boldsymbol{\frac{I_{it}}{K_{it-1}} = \alpha + \beta_0 Q_{it-1} + \beta_1 L_{it-1} + \beta_2 \left(\frac{C_{it}}{K_{it-1}}\right) + \beta_3 \left(\frac{ST_{it-1}}{K_{it-2}}\right) + \beta_4 \left(\frac{S_{it}}{K_{it-1}}\right) + \mu} \qquad (4)$$

Where, $\alpha_=$ Constant or Intercept, β_{0-4}= Represent co-efficient of explanatory variables, μ = Error term representing other explanatory variables that were not captured, I= Investment, Q= Tobin's Q, K= Capital stock, L= Leverage, C= Cash flows, ST= Stock of Liquid financial assets, S= Sales.

Data sources and Measurement of Variables

In order to examine the effect of financial factor on corporate investment of listed non financial firms in Nigeria this study uses company data from the Nigerian Stock Exchange over the period of 2002-2012 containing six variables these include: Investment, Tobin's Q', Leverages, Cash flows, Stock of Liquid financial assets, and Sales. Annual data on all variables under study was sourced from the annual reports and statement of account of 54 listed non-financial firms as obtained from the Nigerian Stock Exchange, the websites of the various companies and the African financials websites (www.africanfinancials.com).

The dependent variable is ratio of investment to capital stock I_{it}/K_{it-1} is investment in plant, equipment, and long-term investment. We focus on spending on fixed assets and long term assets as these reflect management deliberate decision to use corporate resources. Capital stock (K_{it-1}) is the beginning of period capital stock, defined as the net book value of plant, equipment, land, buildings and other fixed assets. Cash Flow is group net profit after tax, plus depreciation. Sales are sales or trading revenue (excluding other income). Leverage is calculated as the ratio of total liability to total assets. Total liability is the sum of both long and short term debts which include secured and unsecured loans, mortgages, leases, bills payable liability while total asset is the sum of both current and fixed asset. Cash and Liquids are cash and its equivalent, including cash on hand, cash at bank, and short-term deposits. Tobin's 'Q' is defined as the market value of the firm to the replacement cost of its existing capital stock. Market value is the sum of market value of outstanding common equity, book value of long term and preferred stock. Q is included to control for future investment opportunities, which is suggested to be a crucial determinant of corporate liquidity (see Kim, Mauer, & Sherman, 1998; Opler, Stulz & Williamson, 1999).

Estimation Technique

In an attempt to achieve objective of this study, panel data using fixed effect approach was used to determine the significance of cash flow, leverage, sales, cash and Liquids and Tobin's average Q on corporate investment of listed non-financial firm of Nigeria. The test shows alternative hypothesis of correlation between the explanatory variables and residual was accepted judging by its chi-square value of 10.357 and p-value of 0.06 at 10 percent level of significance, thus there exist enough statistical evidence to accept fixed effect rather than the random effect, in views of this the fixed effect was used to estimate equation one, which Hausman test shows to more efficient in explaining the behaviour of the variables as regards the firm's investment.

Results and Discussion

Descriptive Statistics of Data

This study covers 11-year sample period between 2002 and 2012 inclusive for 54 Quoted non-financial firms. These premises form the basis for a balanced panel data setting with 594 firm-year observations. Tables 1.1 and 1.2 provide comprehensive information on the descriptive statistics of investment of firms to show the details of needed information to give background hints on the trend of corporate investment of listed firms between 2002 to 2012.

The average value of investment in 2002 was ₦576, 806, 000 million but rose to ₦ 800,677,000 million in 2003 this represent 38.81% increase in the growth rate before plummeted to ₦700, 541,000 million in 2004 which represent 12.5% decrease in growth rate as compared to the previous years. The average level of investments of these sampled firms later increased to ₦891, 238,000 million in 2005 with growth rate of 27.22%, but marginally increases again to ₦ 988,194,000 in 2006 with 10.88% growth rate. There was however, a sharp decline in average level of investment of firms in 2007 to ₦ 621, 260,000 million which represent a negative growth rate of 37.13%. Corporate investment of these listed firms peak in 2010 with ₦ 13,635,164,000 billion representing 385.46% increase after an initial increase in 2008 (₦2, 329,215billion) and 2009 (₦2, 808,714billion) with a growth of 274.9% and 20.59% respectively but later decline to ₦9, 477,526billion and ₦ 4,314,785billion in 2011 and 2012 respectively (Figure 1). The descriptive statistics shows the trend of corporate investment in Nigeria from 2002-2012, this buttressed the fact that corporate investments have not been consistence over time, and there is a need for policy makers to look into this because of the role of productive private sector in sustainable economic growth and poverty reduction. The JarQue-Bera test for normality shows that the series is normally distributed (Table 1.1 and Table 1.2).

Influence of Financial Factors on Corporate Investment

The result of estimating equation (4) was reported in Table 1.3. The results provide support for the standard investment models which shows the significance of financial factors on corporate investment. The fixed effect model shows that value of Cash flows and Sales are positive and significant at 5 percent. This shows that using internally generated funds (which is highly correlated with profits), will leads to an increase in investment activities of firms; especially firms that are more sensitive to cash flow. The coefficient of leverage is negative (i.e. the more firms resort to external source of finance, the less the level of their investment

activities) and not statistically significant at 5% and 10% level, this shows that a greater portion of firms' cash flows must be used to meet interest payments on debt. Should cash flows fall, firms may not be able to meet these obligations. To do so, they may need to curtail investment and employment. Higher leverage can discourage investment by, for example, raising the cost of obtaining further external finance; higher cash flows will boost investment by providing more, relatively cheap, internal funds and increasing the collateral backing of firms.

The co-efficient of Tobin Q is negative, while stock of Liquid assets is positive though both were statistically significant at 10% level of significance. The results support the hypothesis that financial factors influence corporate investment. The inverse relationship between Tobin Q (investment opportunities) and corporate investment could be traced to the dwindling fortunes of some Quoted firms in Nigeria capital markets within the period examined. The F-statistic yields 19.4665 with P-value of 0.0000 this further strengthens the overall reliability of the model estimated. The coefficients of cash flow and of the sales have the expected signs and are significant. These coefficients, when interpreted in conjunction with the scale of the variables, indicate that cash flow and sales have an important influence on corporate investment of these firms. This result shows that corporate investment of these firm depend solely on internally generated funds i.e. the main variable driving investment of these firms is cash flow i.e. the higher the cash flow the higher the investment and vice-versa. If investment is conditioned on retained earning there may be some investment opportunities which firms may not be able to take up if these investment opportunities are outside cash flow. More so, if these opportunities are not well harnessed it could hampered the growth of corporate investment in Nigeria.

Despite the existence of capital market for external source of funds, leverage exhibits a negative impact on investment. The result indicate the spillover effect of tightening monetary policy which has increased the cost of borrowing thereby having a negative effect on investment in the real sector, reducing income, increasing unemployment and poverty rate. This shows that the monetary policy of mobbing excess Liquidity contradicts the expansion of the economy. Economy will only expand if investment expand and since investment is only constrained to internally generated fund is unlikely for investment to expand. Hence, when the monetary authorities are focused on inflation targeting, they should also not lose sight of its impact on productivity growth of firms which is the source of long term sustainable growth and development of economies. This result supports Lang *et al.,* (1996)

and Aivazian *et al*., (2005), using US and Canadian data respectively, they show that leverage is negatively related to investment and that this negative effect is significantly stronger for firms with low growth opportunities than those with high growth opportunities.

Differential Impact of Financial Factors on Corporate Investments

Large Firms vs. Small Firms

Following Gilchrist and Himmelberg (1995), Almeida *et al*., (2004), firms were divided into two groups based on their median book value of assets, firms that were below the median were classified as small firms and firms above the median range were classified as large firms. The Hausman test showed a null hypothesis of no correlation between the explanatory variables and residual was accepted judging by its chi-square value of 6.49717 and p-value of 0.2608 thus there exists enough statistical evidence to accept random effect rather than the fixed effect.

The result presented in Table 1.4 and 1.5 shows that random effect is the most appropriate model in estimating the relationship between explanatory variables and corporate investment, owing to the results of the Hausman test, which show that fixed effect will not efficiently capture the true behavior of the model. The cash flow is significant for both large and small sized firms at 5% and positively influence corporate investment of these firms; this implies that both segmented firms may be more reliant on internal sources of funding that is: any disruption to cash flow will thus have a larger impact on investment, income and employment although the coefficient of cash flow for large firms is greater than medium firms. The positive significance of cash flow for small firms indicates the presence of external financing constraint on investment of small firms. The negative relationship between cash flow and investment of large firms showed that large firms have limited growth rate of investment. Stock of Liquid assets is significant at 10% level for large firms but insignificant at both 5% and 10% level for small firms, there was however a positive relationship between stock of Liquid assets and investment of large and small firms. This result also buttressed the fact that both large and medium sized firms are sensitive to internally generate funds. A sale is significant at 5% and 10% for small firms and large size firm respectively. The investment opportunities (Tobin Q) of both segmented firms were negative and not statistically significant. Leverages for both segmented firms were not statistically significant at both 5% and 10% level, while there was negative relationship between leverage and investment of big sized firms, there was however positive relationship between leverages and investment of

small firms. This implies that leverage has no impact in large firm's investment decision; hence large sized firms are making investment decision based on the internal financial resources. This result indicates that corporate investment for large firms are highly sensitive to financial factors and any distortion in this factor could affect investment, income, employment and expansion of the economy.

High Retention Ratio vs. Low Retention Ratio

In Table 1.6 and 1.7, we present the results of the estimation of equation (4) following Fazzari, Hubbard and Petersen (1988), we classified firms according to retention ratio. The full sample of firms was split into two according to the median retention ratio over the period, the first comprised firms with higher retention ratios. The second comprised firms that have lower retention ratios. The basic idea of multiple discriminate analysis was to utilize a set of firm-specific variables to establish a function which best distinguishes between companies in two mutually exclusive groups. The fixed and random effect were used owing to the result of Hausman test to estimate the model for low and high retention firms respectively.

Fazzari *et al*., (1988) argued that firms' facing higher level of financial constraints tends to choose lower dividend payout ratios in order to raise external funds in future periods. One reason for this is that firms may pay low dividends if their demand for investment finance exceeds the amount of internal funds available. Oliner and Rudebusch (1989) argued that investment by firms with high retention ratios would be expected to be more sensitive to cash flows under this hypothesis higher cash flows would facilitate increased investment without recourse to expensive external funds; lower cash flows would constrain investment. These results support this assertion. From the result it can be shown that the cash flow of the firms with high retention ratios display a positive and statistically significant at 5%, this shows that firms who did not payout dividends have incentives to save up cash out of cash inflows. Also firms with low retention ratio, the sign of the cash flow is positive as expected and significant at 5% which shows that these firms are financially constrained. The result shows that both high and low retention firms have limited growth rate of investment opportunities because investment of these firms are conditioned to internally generated funds alone. Leverage is not significant at 5% and 10% level and negatively influenced the investment of firms with high retention ratio; the same scenario repeated itself in firms with low retention which shows a negative and insignificant relationship. Stock of Liquid assets is positive and insignificant at 5% level in low dividend payout firms while it is positive and significant at 5% for firms with high retention ratio. The relationship between Tobin's Q and investment of firms with low

retention ratio is negative and insignificant, while it's negative and significant for firms with high retention ratio.

Higher Leveraged Firms vs. Lower Leveraged Firms

To test for the possibility of differential impact of financial factors on corporate investment of highly leverage firms and lowly leverage firms, the study will assuming the existence of fixed effect, owing to the results of the Hausman test. Following Mills *et al.,* (1995) the sample was split into two subsamples based on firms' median leverage over the period and the behaviour of higher-leveraged firms relative to those with lower leverage was examined. The results were presented in Table 1.8 and 1.9 higher geared companies might be expected to be more sensitive to cash flow, and stock of Liquid assets to service debt. Table 1.9 shows the result of how financial factors affect corporate investment of highly leveraged and lowly leverage firms. From the results cash flow is significant at 5 percent for both segmented firms and positively influenced corporate investments of both high and low leverage firms. The results suggest that both segmented firms are more sensitive to availability of cash flows to service debt this shows that investment is highly constrained in lowly leverage firms than highly leverages firms as indicated by the size of coefficient of cash flow. Higher leverage means that a greater portion of firms' cash flows must be used to meet interest payments on debt. Should cash flows fall, firms may not be easily able to meet these obligations. To do so, they may need to curtail investment and employment. Financial factors seem to be more economically important influence on investment for firms with lower leverage. The results support this assertion. For firms with lower leverage cash flow and sales were significant at 5% level and positively influenced investment. For firms with higher leverage, sales, stock of Liquid assets were significant at 5% and 10% respectively and positively influenced investment. This result shows that financial factors seem to have more economic as well as statistical important influence on investment for firms with lower leverage.

Discussion of Findings

From the analysis above, our results provide useful insights into business investment decisions of Quoted non- financial firms in Nigeria and how monetary policy will affect those decisions. The results shows that, cash flows, stock of Liquids asset and sales have expected sign and the econometric results shows that they are statistically significant which indicate that financial factors and real investment decisions are not independent. These results further strengthen the significance of financial factors in determining corporate investment of listed

non financial firms in Nigeria. The extent to which these factors influence investment does, however, appear to vary between firms. The results suggest that internal sources of fund are more important for both large and small sized firms i.e. higher cash flows will boost investment by providing more, relatively cheap internal funds and increasing income and employment opportunities. The results also show that lowly leverage firms are more sensitive to internal sources of finance than highly leverage firms this shows that financial factors seem to have economic important influence on investment for firms with lower leverage. Higher leverage means that a greater portion of firms' cash flows must be used to meet interest payments on debt. Should cash flows fall, firms may not be easily able to meet these obligations. To do so, they may need to curtail investment and employment.

This result also shows that both high and low retention firms have limited growth rate of investment opportunities because investment in both firms are majorly tied to internal sources of finance. These results have a number of important implications for monetary policy. First, the importance of cash flows as a determinant of investment suggests that monetary policy will influence investment through cash flow as well as through influencing the discount rate applied to investment projects and to overall economic conditions. Secondly, since investment of these firms are highly sensitive to internally generated funds and there is a negative relationship between borrowing and corporate investment of these firms, any attempt to tightening monetary policy with the aim of combating inflation which might leads to increase in cost of borrowing which could hampered corporate investment. Thirdly the impact of monetary policy will fall unevenly across the corporate sector. Smaller firms, firms with higher leverage and firms more reliant on cash flows as a source of funding are likely to be more sensitive to changes in monetary policy than others also monetary policy contraction lowers investment, particularly for highly leverage firms.

Conclusion

This study investigates the effect of financial factors on corporate investment of listed 54 non-financial firms in Nigeria covering the period 2002-2012 using fixed and random effect of panel data techniques. The results showed that, the coefficient of cash flow is positively signed and significant while leverage is negatively signed and significant. These coefficients, when interpreted in conjunction with the scale of the variables, indicate that cash flow, leverage and sales have an important influence on investment of these firms. This shows that financial factors influence corporate investment of these firms. Although financial factors like leverage, Cash flow and sales affect corporate investment of the sampled firms, the impacts

of these factors are not uniformly distributed among the firms for instance cash flows, stock of Liquid assets and sales are significant for large firms, only cash flows is significant for small sized firms. This shows that both large and small sized firms tends to depend on internal sources of fund to finance their investment. Financial factors seem to have more economic important influence on investment for firms with lower leverage than higher leverage firms because the results also show that lower leverage firms are more sensitive to financial factors than higher leverage firms.

We conclude firstly, that both empirical and statistical evidence on the significance of financial factors on corporate investment shows that financial factor such as Leverages, Cash flow have significant effect on corporate investment. This means that external sources of funds such as leverages and the availability of adequate internal sources such as cash flows influence the investment decisions of the sampled firms. Secondly, the statistical evidence shows that the extent to which financial factors influence investment does, however, appear to vary between firms. The results suggest that internal sources of fund are more important for both large and small sized firms i.e., higher cash flows will boost investment by providing more, relatively cheap internal funds and increasing income and employment opportunities. The results also show that higher leverage firms are more sensitive to internal sources of finance than lowly leverage firms this shows that financial factors seem to have economic important influence on investment for firms with higher leverage. Higher leverage means that a greater portion of firms' cash flows must be used to meet interest payments on debt. Should cash flows fall, firms may not be easily able to meet these obligations. To do so, they may need to curtail investment and employment. In addition, this result shows that both high and low retention firms have limited growth rate of investment opportunities because financial factors appeared to have a negligible influence on investment with coefficients of cash flow negatively signed for low retention ratio and not significant for high retention ratio. These results provide useful insights into business investment decisions and how monetary policy will affect those decisions.

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Table 1.1

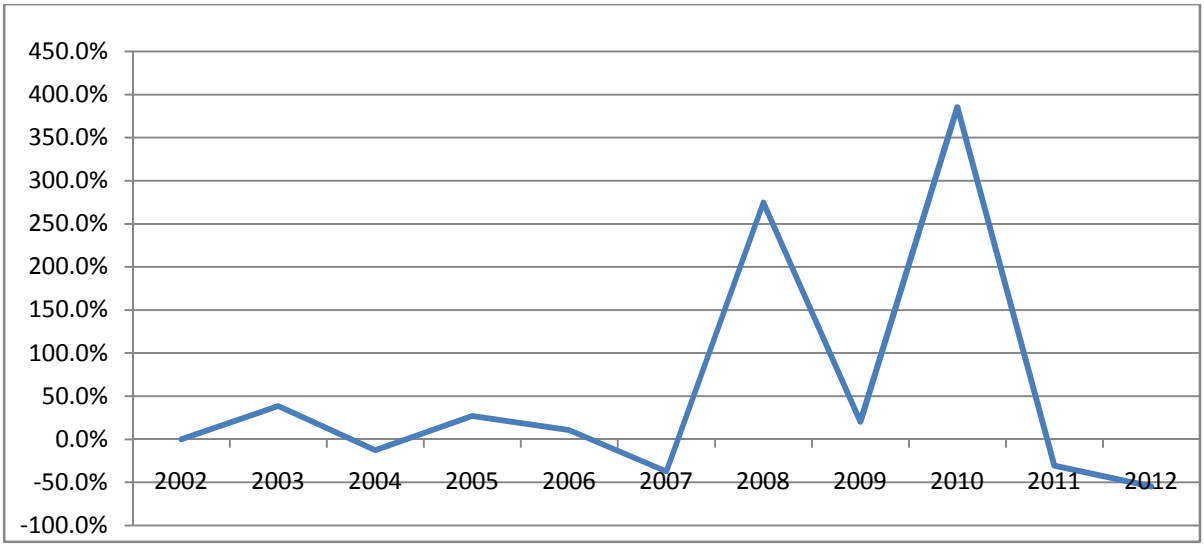
Descriptive Statistics (Growth Rate of Investment of Firms)

Years	al Investment(₦	Growth Rate (%)
2002	31,147,523	0.00%
2003	43,236,538	38.81%
2004	37,829,193	-12.51%
2005	48,126,853	27.22%
2006	53,362,453	10.88%
2007	33,548,055	-37.13%
2008	125,777,597	274.92%
2009	151,670,547	20.59%
2010	736,298,877	385.46%
2011	511,786,415	-30.49%
2012	232,998,366	-54.47%

Source: Author's Computation but data from annual report and accounts of firms.

Figure 1

Growth Rate of Firms



Source: Author's Computation (using excel) but data from annual report and accounts of firms.

Table 1.2

Descriptive statistics (Yearly Investment of Firms)

Years	Mean (₦'m)	Median (₦'m)	Minimum (₦'m)	Maximum (₦'m)	Standard Dev.(₦'m)
2002	576,806	83,352	3,523,190	9,590,171	1,952,179
2003	800,677	107,890	357,395	5,696,434	1,385,897
2004	700,541	96,252	341,275	8,810,296	1,442,416
2005	891,238	72,797	872,985	7,278,502	1,859,143
2006	988,194	241,220	894,378	7,187,969	1,885,539
2007	621,260	231,133	27,744,820	26,529,859	5,554,193
2008	2,329,215	244,614	3,396,370	49,584,575	7,720,794
2009	2,808,714	91,685	16,531,494	41,809,883	9,652,165
2010	13,635,164	59,126	15,273,717	637,922,928	86,841,973
2011	9,477,526	146,290	683,068,012	1,073,200,025	174,650,832
2012	4,314,785	8,328	28,982,533	90,166,333	16,421,505

Source: Author's Computation (using excel) but data from annual report and accounts of firms.

JarQue-Bera Test for Normality 5.021197
Probability 0.081220

Table 1.3

Results of the Influence of Financial Factors on Corporate Investment of Listed Non Financial Firms.

Corporate Investment	OLS	Fixed Effect	Random Effect
Tobin's Q	-0.00613 (0.6537)	-0.018614** (0.1556)	-0.012347 (0.3275)
Leverages	-0.10792 (0.2962)	-0.052618 0.6286	0.453013 (0.4748)
Cash Flow	0.53361* (0.0000)	0.287902* (0.0005)	0.417871* (0.0000)
Stock of Liquid Asset	0.03215 (0.6704)	0.123197** (0.1605)	0.116205 (0.1444)
Sales	0.44401* (0.0000)	0.383691* (0.0004)	0.453013* (0.0000)
C	-2.5303* (0.0000)	0.71348 (0.6594)	-1.687239 (0.0710)
R^2	0.53592	0.67849	0.296974
Adjusted R^2	0.53197	0.64364	0.290996
f-statistics	135.805*	19.4665*	49.67*
Prob (f-statistics)	0.00000	0.000000	0.00000
Durbin Watson	1.128495	1.59834	1.4505
No. of observation	594	594	594
Hausman Test	10.3575 (0.0657)		

Source: *Authors computation using E-view 7.*

*Note *and ** indicates variables which are significant at 5% and 10% level of significance respectively. P-value in bracket*

Table 1.4

Estimation Results (Size Groupings)-Small Firms

Corporate Investment	OLS	Fixed Effect	Random Effect
Tobin's Q	-0.193274* (0.0017)	-0.07834 (0.2603)	-0.123380* (0.053)
Leverages	-0.039973 (0.7118)	0.02109 (0.8479)	0.001587 (0.9880)
Cash Flow	0.312884* (0.0022)	0.22034** (0.0512)	0.25763* (0.0144)
Stock of Liquid Asset	0.05797 (0.5909)	0.11053 (0.4280)	0.09017 (0.4463)
Sales	0.44621* (0.0001)	0.41877 (0.7058)	0.43481* (0.0004)
C	-0.01559 (0.98883)	0.79218 (0.7058)	0.38631 (0.7856)
R^2	0.29442	0.463904	0.18143
Adjusted R^2	0.2823	0.401191	0.16737
f-statistics	24.285*	7.39725*	12.900*
Prob (f-statistics)	0.00000	0.00000	0.00000
Durbin Watson	1.2868	1.6687	1.51647
No. of observation	297	297	297
Hausman Test	6.49717 0.2608		

Source: *Authors computation using E-view 7.*

*Note *and ** indicates variables which are significant at 5% and 10% level of significance respectively. P-value in bracket*

Table 1.5

Large Firms

Corporate Investment	OLS	Fixed Effect	Random Effect
Tobin's Q	-0.00408 (0.7795)	-0.0121 (0.6272)	-0.0111 (0.4306)
Leverages	-0.09868 (0.4594)	-0.1591* (0.042)	-0.1359 (0.3070)
Cash Flow	0.56153* (0.0000)	0.4380* (0.000)	-0.4839* (0.0002)
Stock of Liquid Asset	0.07264 (0.5191)	0.2666* (0.022)	0.18766** (0.150)
Sales	0.22261** (0.0955)	0.2959* (0.036)	0.2348** (0.1429)
C	0.431310 (0.7543)	-1.7290 (0.1828)	-0.25200 (0.8970)
R^2	0.2822	0.4588	0.1856
Adjusted R^2	0.2698	0.3955	0.1716
f-statistics	22.884*	7.2481*	13.26*
Prob (f-statistics)	0.00000	0.00000	0.00000
Durbin Watson	1.2088	1.6038	1.457
No. of observation	297	297	297
Hausman Test	4.7056 (0.4529)		

Source: *Authors' computation using E-view 7.*

*Note *and ** indicates variables which are significant at 5% and 10% level of significance respectively. P-value in bracket*

Table 1.6

Estimation Results (Retention Groupings) Low

Corporate Investment	OLS	Fixed Effect	Random Effect
Tobin's Q	-0.02441 (0.1600)	-0.00047 (0.97792)	0.0101 (0.7613)
Leverages	-0.097734 (0.3853)	-0.03408 (0.7474)	-0.05107 (0.6989)
Cash Flow	0.60702 (0.0000)	0.28033* (0.0044)	0.40345 (0.0000)
Stock of Liquid Asset	-0.15044 (0.1935)	0.03810 (0.8177)	0.01535 (0.8908)
Sales	0.49355 (0.0000)	0.32870* (0.0201)	0.4529 (0.000)
C	1.9263 (0.0257)	2.8742* (0.1985)	-0.61172 (0.4359)
R^2	0.5169	0.6824	0.2553
Adjusted R^2	0.5086	0.6453	0.2425
f-statistics	62.283	18.372	19.96
Prob (f-statistics)	0.00000	0.00000	0.00000
Durbin Watson	1.045	1.5259	1.367
No. of observation	297	297	297
Hausman Test	12.019 (0.0345)		

Source: *Authors computation using E-view 7.*

*Note *and ** indicates variables which are significant at 5% and 10% level of significance respectively. P-value in bracket*

Table 1.7

Estimation Results (Retention Groupings) High

Corporate Investment	OLS	Fixed Effect	Random Effect
Tobin's Q	-0.0567* (0.0081)	-0.04401* (0.0315)	-0.0496* (0.0153)
Leverages	-0.1756 (0.2897)	-0.1616 (0.2612)	-0.1834 (0.3226)
Cash Flow	0.56293* (0.0000)	0.2839* (0.0026)	0.39596* (0.0001)
Stock of Liquid Asset	0.12822 (0.2066)	0.19337* (0.0471)	0.1660 (0.1216)
Sales	0.37107* (0.0025)	0.12914* (0.0000)	0.4857* (0.0006)
C	-3.1377* (0.0002)	-3.2237* (0.0000)	-3.05860* (0.0208)
R^2	0.5705	0.6869	0.3471
Adjusted R^2	0.5631	0.6502	0.3359
f-statistics	77.313*	18.7553*	30.94*
Prob (f-statistics)	0.00000	0.00000	0.00000
Durbin Watson	1.2780	1.752	1.5966
No. of observation	297	297	297
Hausman Test	3.7615 (0.5842)		

Source: *Authors computation using E-view 7.*

*Note *and ** indicates variables which are significant at 5% and 10% level of significance respectively. P-value in bracket*

Table 1.8

Estimation Results (Leverage Groupings) Lowly

Corporate Investment	OLS	Fixed Effect	Random Effect
Tobin's Q	-0.0543* (0.0087)	-0.04475* (0.0169)	-0.0505* (0.0065)
Leverages	-0.2891* (0.0349)	-0.1698* (0.025)	-0.2345* (0.0047)
Cash Flow	0.63281* (0.0000)	0.42357* (0.0000)	0.55324* (0.0000)
Stock of Liquid Flow	0.20122 (0.1038)	0.05976 (0.6267)	0.13272 (0.3548)
Sales	0.24560** (0.0576)	0.49824* (0.0000)	0.36790 (0.0074)
C	-3.2229* (0.00016)	-2.1638* (0.0055)	-3.02113* (0.0003)
R^2	0.4906	0.5931	0.3620
Adjusted R^2	0.4816	0.5452	0.3507
f-statistics	53.953*	12.3919*	31.78*
Prob (f-statistics)	0.00000	0.00000	0.00000
Durbin Watson	1.3173	1.6310	1.4590
No. of observation	286	286	286
Hausman Test	10.8308 (0.0548)		

Source: *Authors computation using E-view 7.*

*Note *and ** indicates variables which are significant at 5% and 10% level of significance respectively. P-value in bracket*

Table 1.9

Estimation Results (Leverage Groupings) Highly

Corporate Investment	OLS	Fixed Effect	Random Effect
Tobin's Q	0.04186* (0.0138)	0.0058 (0.6987)	0.0185 (0.5731)
Leverages	0.05056 (0.6326)	0.02033 (0.8287)	0.03966 (0.7004)
Cash Flow	0.3944* (0.0000)	0.1793* (0.0532)	0.2512* (0.0078)
Stock of Liquid Flow	-0.09412* (0.0000)	0.14215 (0.1878)	0.10920 (0.2108)
Sales	0.67052* (0.0000)	0.3427* (0.0110)	0.53079* (0.0000)
C	-2.4941* (0.0004)	2.5457** (0.1892)	-0.97141 (0.1786)
R^2	0.6149	0.7724	0.3121
Adjusted R^2	0.6082	0.7457	0.3002
f-statistics	92.6240*	28.908*	31.78*
Prob (f-statistics)	0.00000	0.00000	0.00000
Durbin Watson	0.9271	1.4988	1.3262
No. of observation	296	296	296
Hausman Test	16.1103 (0.0065)		

Source: *Authors computation using E-view 7.*

*Note *and ** indicates variables which are significant at 5% and 10% level of significance respectively. P-value in bracket*