Firm-specific, and institutional determinants of corporate investments in Nigeria

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Abstract

We examined the effect of institutional quality and firm-specific factors on corporate investment in Nigeria using fifty-four (54) quoted non-financial firms within the period of 2002–2012. We applied dynamic panel estimator proposed by Arellano–Bond (1991). The results showed that regulatory quality, corruption, political stability and control of corruption have insignificant effect in determining corporate investments in Nigeria. Our results also confirmed that firms' firm-specific factors influenced corporate investment in Nigeria. While firms' cash flow displayed positive and significant effect on investment other factors had negative effects on investment.Our results showed that investment is constrained to internally generated fund, despite the existence of capital market. In addition, the spillover effect of tightening monetary policy during the period of study had increased the cost of borrowing thereby having a negative effect on investment in the real sector. We recommended that when the monetary authorities are focusing on inflation targeting, they should also not lose sight of its impact on corporate investment and other productivity growth of firms; which is the source of long term sustainable growth and development of economies.

1. Introduction

Firms often face the problem of financing in every worthwhile investment decision making. Corporate investments could be funded either internally, such as retained earnings, accumulated profits in the form of various reserves, depreciation provision, or externally, which include but not limited to debt/external loan. In finance literature, studies show that corporate investments can be affected by firm-specific or financial factors such as leverages (debt), cash flow (retained earnings), sales, and stock of Liquid assets (Adelegan Ariyo, 2008; Inessa Zicchino, 2006). These authors state the roles played by financial factors on corporate investment and express different conclusion. While some debunk the view of the neoclassicists (Modigliani Miller, 1958) of irrelevance financial factors (e.g. Bhagat Obreja, 2013) other authors express that, in an imperfect capital market, internal and external capitals are not perfect substitutes (Hu Schiantarelli, 1998). Meanwhile, those authors that debunk neoclassicists' views, empirically, come up with mixed results. Some authors affirm that financial factors have positive effect on investment; others confirm negative relationship (Bhagat Obreja, 2013). The neoclassicists state that financial factors enter through the cost of

capital which, in turn, is independent of the way the firm finances growth and investments. This independence arises because capital markets are assumed to be perfect which may not be true in the modern capital market system.

Of recent, another trend of empirical studies emerges which analyzes institutional factors as another constraint and relate these factors to many finance and economic variables. For instance, Scholars (e.g Sarkar Hasan, 2001) believe that the level of institutional quality (in terms of corruption, rule of law and political stability) varies across economies, industries and regions. On this basis, the effect of institution also differs among industrial setting. Studies relate institutional quality with variables such as growth, foreign direct investment and domestic investment. While on the nexus between institution quality (such as control of corruption) and investment, the available evidences provide mixed results as well (Mauro, 1995; Tanzi Davoodi, 1997). Some show that a corrupt institution does not deter investment to expand and grow (e.g, Tanzi Davoodi, 1997), other studies take the opposite view by emphasizing that corruption deters investment (Mauro, 1995; O'Toole Tarp, 2014). Tanzi and Davoodi (1997) states that corruption increases public investment but inefficient productivity arises (also see Asiedu Freeman, 2009 for the nexus). Wheeler and Mody (1992) show that institutional quality has no significant effect after using US-firm level data. We note that most of these studies are cross-countries studies focusing on developed and emerging economies while studies on sub-Saharan Africa and/or a single country study is largely absent. Specifically, little or nothing is known about sub-Saharan African countries despite the fact that the effect of institutional quality may vary across regions and countries. Our study fill this gap by examine the effect of institutional and financing constraints on corporate investment in Nigeria. This study is a single country study using Nigeria as a case study.

This study deviates from other studies in a number of ways. Firstly, we study institutional quality along with other variables specifically financial factors that determine corporate investment. Our choice of Nigeria is based on the fact that the country is experiencing high rate of deficiencies in terms of institutional quality. Corruption as at high rate, political instability coupled with terrorism problems (e.g Bokoharam) are perceived to be some of the disturbing phenomena in the country. Our study period spanned from 2002–2012; this is because the trend of Nigerian corporate investment has changed drastically. Before year 2000; corporate investments continuously increasing and highly encouraged; however, the current trend shows that investment opportunities in Nigeria have stifled by the increasing levels of uncertainties in the macroeconomic environment coupled with high poor institution. Nigerian business environment has moved backwards in terms of investor protection and the ease of starting a business (Nigeria was rated 133rd out of 183 countries in *doing business, see* World Bank, 2012). The capital market exhibits various level 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). In our analysis, we include fifty four (54), listed non-financial firms in Nigeria capital market ranging from manufacturing, conglomerate, oil companies to mention, but few. The remainder 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.

2. Literature review

2.1. Institutional quality and investment

The links between institutional quality and investment have been highlighted in the theoretical and empirical literature. The evidence that country-level factors (such as institutional quality) can impact on capital investment implies that regulators and policymakers could influence capital structure and investment decision, and hence cost of capital and firm value, through control of corruption, regulation quality and rule of laws. Therefore, regulators and policymakers, through their influence on capital structure of firms, could impact on quality of corporate governance at firm level (Lemma Negash, 2013). Theoretically, it has been opined that the impact of institutional quality on firm's level investment is unclear. Some authors, for example, are of the opinion that corruption weakens the structure of institutional environment and it raises operational cost, creates uncertainty and thereby deterring investment (Shleifer Vishny, 1993; Wei, 1997).

Institutional quality could be a determinant of Investment because good governance is associated with higher economic growth and development, which has the tendency to attract more investment. Poor and weak institutions would enable corruption among others to add to investment costs and reduce profits which is likely increase the sunk cost of doing business makes investors highly sensitive to uncertainty, including the political uncertainty that arises

from poor institutions. However, empirical results document mixed results on the nexus between the two variables. The work of Wheeler and Mody (1992) show that regulatory framework, bureaucratic hurdles and red tape, judicial transparency, and the extent of corruption in the host country are found to be insignificant in the firm-level data. Wei (2000) finds that corruption significantly adds to firm costs and impedes investment inflows. Similarly, Political stability could be a key factor in corporate investment decision making, but empirical evidences are to some extent mixed in the literature. The work of Wheeler and Mody (1992) find that political risk and administrative efficiency are insignificant in determining the production location decisions of firms while Root and Ahmed (1979) study aggregate investment flows into developing economies in the late 1960s find that political instability significantly affects direct investment inflows (see also Schneider Frey, 1985).

Sarkar and Hasan (2001) hinted that corruption distorts the efficient allocation of investible resources by diverting resources from productive sectors to unproductive sectors and thereby reducing output capacity of sectoral investment. Hence, investments are made not on the basis of their rates of return but on the capacity of the entrepreneur to pay bribes. In addition, bribes which are often the major part in any act of corruption increase the cost of production which ultimately gets reflected in a higher output price increase, reduction in demand and the eventual reduction in the incremental output capital ratio for the activity (Rose-Ackerman, 1996). From a modified version of the Holmstrom and Tirole (1996)' model, a simple model was proposed by Braun and DiTella (2000) where agents can inflate the price that owners pay for goods needed to start an investment project. They assumed that high and variable inflation can increase the cost of monitoring the agent. It was shown that this could lead to higher corruption and lower investment in equilibrium. They documented a positive nexus between corruption and inflation variability in a sample of 75 countries over 14 years. The paper highlighted a new channel through which inflation reduces investment and growth, and they proved also that political competition reduces corruption and that corruption is pro-cyclical. Meanwhile, a positive correlation may exist between corruption and firm growth and investment. This is because of the tendency of firms to pay bribes and the time that is wasted on bureaucratic procedures (Kaufmann Wei, 1999).

Weaken Institutions may limit the operation of the rule of law and limit the control of corruption which could increase growth and development, mainly because illegal practices and payments as 'speed money' could surpass bureaucratic delays; the acceptance of bribes in government employees could work as an incentive and increase their efficiency (Acemoglu Verdier, 1998, 2000; Huntington, 1968; Leff, 1964). This is consistent with the "speed money" hypothesis. The study of Wang and You (2012) showed that corruption appears not to be a vital constraint on firm growth if financial markets are underdeveloped. This suggests that the good corruption component in a country can be used as quick money, which could promote firm growth by overcoming the less efficient regulations and bureaucratic problems. Wang and You (2012) found that corruption is likely to contribute to firms' growth.

Sarkar and Hasan (2001) confirmed that the presence of corruption result from poor institution can impose substantial economic costs on an economy through two channels, firstly, it can reduce both the volume and efficiency of investment and thus growth. Therefore, identifying a simple concept of the macroeconomic efficiency of investment, would establish between them. The efficiency of investment variable was computed and Corruption Perception Indices were used to measure corruption in a country. It was concluded that substantial gains in terms of economic growth could be achieved if corruption is reduced. This view is consistent with the submission of Ajisafe (2016) who opined that negative implication of corruption on the life of the citizens is a major disaster in the economy and harmful to the growth and development. A model of the relationship between corruption and firms stating that corruption is antithetical to competition was estimated by Emerson (2006). It was hypothesized that a government agent that controls access to a formal market has self-interest in demanding a bribe payment which can deter the number of firms. This corrupt official would also be subject to a detection technology which is a function of the amount of the bribe payment and the number of firms that pay it. Under quite normal assumptions about the shape of the graph of the detection function, multiple equilibria can arise where one equilibrium is characterized by high corruption and low competition, and another is characterized by low corruption and high competition. The results support the main hypothesis that competition and corruption are negatively related. Corruption can impact the mode of entry and volume of inward foreign direct investment. It can present two simultaneous effects, thus; a reduction in the volume of foreign investment and a shift in the ownership structure. Corruption makes local bureaucracy less transparent and hence acts as a tax on foreign investors. It may also affect the decision to take on a local partner. It increases the value of using a local partner to cut through the bureaucratic network. It can decrease the effective protection of investor's intangible assets and lowers the probability that disputes between foreign and

domestic partners will be adjudicated fairly, which reduces the value of having a local partner (see Javorcik Wei, 2009).

Firms may engage in corrupt practices in an attempt to promote their short-term growth by facilitating transactions in the bureaucratic process. Studies showed that higher corruption occurs in economies with trade barriers, where domestic businesses are less exposed to global competition, or where there are only few dominant businesses (see for example, Ades Di Tella, 1999). Podobnik, Shao, Njavro, Ivanov, and Stanley (2013) examined the influence of corruption on growth rate and investment in order to investigate whether government regulations against corruption can affect the growth of a country for the period 1999–2004 on average for all countries in the world, they found that an increase of corruption index (CPI) by one unit leads to an increase of the annual GDP per capita by 1.7%. By estimating only European transition countries, they found that $\Delta CPI = 1$ generates increase of the annual GDP per capita by 2.4%. Also, they examined the relation between foreign direct investments received by different countries and CPI, and they found a statistically significant power-law functional dependence between foreign direct investment per capita and the country corruption level measured by the CPI. Using firm-level data on investment and measures of corruption at the firm and country level, and allowed the effect of corruption to vary by region. While the dependent variable is firms' investment growth and employed six measures of corruption from four different sources: two firm-level measures and four country-level measures. Asiedu and Freeman (2009) found that the effect of corruption on investments varied significantly across regions: corruption has a negative and significant effect on investment growth for firms in Transition countries but has no significant impact for firms in Latin America and Sub-Saharan Africa. Ayaydin and Hayaloglu (2014) estimated the relationship between firm growth and corruption, they analyzed a sample of 41 firms from manufacturing firms in Turkey, covering the period from 2008 to 2011 by using static panel techniques. The study found evidence that the effect of corruption level, profitability and financial leverage on the growth of the firms is significantly positive in all case, but financial risk rating is negative. They found a significantly positive relation between the growth of private firms and corruption level. This means that corruption could increase economic development, mainly because illegal practices and payments as 'speed money' could surpass bureaucratic delays; the acceptance of bribes in government employees could work as an incentive and increase their efficiency and because corruption is possibly the price people are forced to pay as a result of market failures. The results of this study provide managerial implications for industrial companies. Company managers should increase profitability, should reach economies of scale, an optimal capital structure level and reach the optimal level of working capital level due to profitable firms grow faster than other companies. Ayaydin and Hayaloglu (2014) suggested that policy-makers should improve in public governance quality and the leveling of the playing field for firms in all business sectors to reduce corruption level because firms tend to pay bribes and the time that is wasted on bureaucratic procedures and engage in corrupt practices in an attempt to promote their short-term growth by facilitating transactions in the bureaucratic process. Fisman and Svensson (2007) found that bribery payments work similarly to taxes on firms, and a one-percentage point increase in the bribery rate is associated with a reduction in firm growth of three percentage points. Bribery payment reduces the efficiency of capital investment. The cost of informal bribe payments distorts the efficient allocation of capital by reducing the marginal return per unit investment. O'Toole and Tarp (2014) confirmed that this negative effect is strongest for domestic small and medium enterprises.

2.2. Firm-specific factors and corporate investments

The evidence that firm-level factors influence capital investment decisions of sample firms suggests that corporate (financial) managers have some controls over capital structure, and hence cost of capital and value. 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 (1995) 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 opine that firms prefer to finance new investment, first internally with retained earnings, then with debt, and finally with an issue of new equity. 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, Hubbard and Petersen (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. 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. McConnell and Servaes (1995) find that enterprise value was negatively correlated with the debt ratio of companies with high growth opportunities. Aivazian, Ge and Qiu (2005) found a negative relationship between investment and leverage Lang, Ofek and Stulz (1996) also, find 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, meanwhile, 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) showed 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. Kadapakkam, Kumar and Riddick (1998) find that there is a significant relationship between investment and internal fund availability. Also, the work of Carmen and Farrando (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 Bhagat 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. Adelegan and Ariyo (2008) investigated the impact of capital market imperfections on corporate investment. They find that financial factors have a significant effect on the investment behavior of Nigerian firms. Obembe (2005) examined Financial Constraints and Productivity Growth of Listed Non-financial Firms, he 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.

3. Methodology

The main objective of this study is to examine the effect of institutional quality and firm-specific factors on corporate investment in Nigeria. Our sample selection is limited to listed non financial firms in Nigerian stock exchange market. We employ a variant of the Q model of investment. The Q-theory of investment was introduced by Keynes (1936) and expanded by other authors (e.g. Mills, Morling and Tease, 1994; Tobin, 1969). The basic Tobin

average Q model is

$$I_{it} = \alpha + \beta_o Q_{it} + \mu_{it} \tag{1}$$

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 are being constrained by deficiencies in institutional quality and whether those firms are being affected by other constraints such as financial constraint, we modified the model of Mills et al. (1994). Q model was augmented with Leverage, Cash flows, Stock of Liquid financial asset, Sales, institutional quality variables. The equation is

$$
\begin{aligned}
I_{it} \quad = \quad & \alpha + \beta_0 Q_{it} + \beta_1 LV_{it} + \beta_2 CA_{it} + \beta_3 LQ_{xit} \\
& + \beta_4 S_{it} + \beta_5 IQ_{it} + \mu_{it}
\end{aligned}
\tag{2}
$$

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

$$
\begin{aligned}
I_{it} \quad = \quad & \alpha + \beta_0 Q_{it-1} + \beta_1 LV_{Vit-1} + \beta_2 CA_{it} + \beta_3 LQ_{it-1} \\
& + \beta_4 S_{it} + \beta_5 IQ_{it} + \mu_{it}
\end{aligned}
\tag{3}
$$

Cash flows and Sales in Eq. (3) are flow variables like investment therefore other terms in Eq. (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 Eq. (3) are in ratio, the other variables in nominal terms will be standardised by capital stock in order to avoid the normality problem. Re-stating Eq. (3)

$$
\begin{aligned}
\frac{I_{it}}{K_{it-1}} \quad = \quad & \alpha + \beta_0 Q_{it-1} + \beta_1 LV_{it-1} + \beta_2 \left(\frac{CA_{it}}{K_{it-1}} \right) \\
& + \beta_3 \left(\frac{LQ_{it-1}}{K_{it-2}} \right) + \beta_4 \left(\frac{S_{it}}{K_{it-1}} \right) + \beta_5 IQ_{it} + \mu_{it}
\end{aligned}
\tag{4}
$$

The study of this kind is dynamic by nature. We re-specify Eq. (4) to include the lag value of the dependent variable and all variables are in their first difference as shown in Eq. (5).

$$
\begin{aligned}
\frac{\Delta I_{it}}{\Delta K_{it-1}} \quad = \quad & \beta_0 \frac{\Delta I_{it-1}}{\Delta K_{it-2}} + \beta_1 \Delta Q_{it-1} + \beta_2 \Delta LV_{it-1} \\
& + \beta_3 \left(\frac{\Delta CA_{it}}{\Delta K_{it-1}} \right) + \beta_4 \left(\frac{\Delta LQ_{it-1}}{\Delta K_{it-2}} \right) + \beta_5 \left(\frac{\Delta S_{it}}{\Delta K_{it-1}} \right) \\
& + \beta_6 \Delta IQ_{it} + \mu_{it}
\end{aligned}
\tag{5}
$$

High level of bank concentration can serve as a constraint to corporate investment because little or no competition is a barrier when obtaining loan from bank. Investors would be induced to bribe bank officers (this happens when there is weak institution); which serves as an incentive for quick accessibility of investible fund. It is believed that weak institution may affect free entry in an industry (Di Tella, 1997). If the degree of bank competition increases it can lower overheard cost, but the presence of competition in an industry may not improve the institutions. Following this assertion, we also include a measure of bank competition variable (HHI) and the interaction term (IQ*HHI) in our model as shown in Eq. (6).

$$
\begin{aligned}
\frac{\Delta I_{it}}{\Delta K_{it-1}} \quad = \quad & \beta_0 \frac{\Delta I_{it-1}}{\Delta K_{it-2}} + \beta_1 \Delta Q_{it-1} + \beta_2 \Delta LV_{it-1} \\
& + \beta_3 \left(\frac{\Delta CA_{it}}{\Delta K_{it-1}} \right) + \beta_4 \left(\frac{\Delta LQ_{it-1}}{\Delta K_{it-2}} \right) + \beta_5 \left(\frac{\Delta S_{it}}{\Delta K_{it-1}} \right) \\
& + \beta_6 \Delta Cor_{it} + \beta_7 \Delta HHI_{it} + \beta_8 \Delta IQ * HHI_{it} \\
& + \mu_{it}
\end{aligned}
\tag{6}
$$

where, β_{0-8} = 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, LV = Leverage ratio, CA = Cash flows, LQ = Stock of Liquid financial assets, S = Sales, IQ = measure to examine the efficiency of Institutional Quality (such as perceived corruption, political stability, regulatory quality, and control of corruption), HHI = Bank competition.

3.1. Data sources and measurement of variables

This study uses company data of non-financial firms listed in the Nigerian Stock Exchange. These data were sourced from the annual reports and statement of account of 54 listed non-financial firms obtained from the Nigerian Stock Exchange. Other sources data used in this study are: Transparency International (2012) and Worldwide Governance Indicators Also, data sourced from Nigerian banking firms were used to calculate the bank competition/concentration variable (namely; Herfindhal-Hirschman Index using loan granted to firms, *HHI*). These data were used in their percentage forms. HHI is defined as the sum of the squared market shares of all banks in the market. HHI takes market shares as weights, and stress the importance of large banks by assigning them a greater weight than smaller banks. The HHI can be computed as follows:

$$HHI = \sum_{i=1}^{n} (MS_i)^2$$

where *MS* is the market share of the ith firm and n is number of firms in the market. *HHI* has the advantage of including information of the distribution of market share as well as the number of firms which take part in the industry.

We use four variables to proxy the institutional quality. Firstly, we capture institutional corruption *(COR)* level using corruption perception index in its absolute form over the period of 2002–2012 sourced from Transparency International (2012). We further employ three other measures commonly use to measure institutional quality namely: Political Stability and Absence of Violence/Terrorism (*PS*), Regulatory Quality *(RQ)*, and Control of Corruption *(CC)*. Data of these variables are sourced from Worldwide governance indicators (www.govindcators.org.).

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 divided by capital stock. Sales are sales or trading revenue (excluding other income) divided by capital stock. 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 divided by capital stock.

Tobin's 'Q' is defined as the ratio of 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 (Kim, Mauer Sherman, 1998; Opler, Pinkowitz, Stulz Williamson, 1999).

3.2. Method of analysis

This study is based on balanced panel data analysis. It covers 11-year sample period(T) between 2002 and 2012 inclusive for 54 Quoted non-financial firms (N) in Nigeria. Since T is less than N (that is, T = 11 < N = 54), we apply dynamic panel data within the framework of Generalized Method of Moment. Specifically, we employ dynamic panel model estimator of the Arellano and Bond (1991) difference GMM estimator first proposed by Holtz-Eakin, Newey and Rosen (1988). One of the advantages of this dynamic panel data is that it allows researchers to better understand the dynamics of adjustment characterized by the presence of a lagged dependent variable among the regressors.

4. Results and discussion

The descriptive statistics of Table 1 shows that the mean value of ratio of investment to capital is 1.13 while the level of volatility is 32.67. Also, the leverage ratio is 0.82 on average with volatility of 1.416. The mean of Tobin-Q is 1.71 with maximum of 96.1 and the results show that the minimum value is -32.9. The average value of corruption perception index is 2.15 with low volatility rate of 0.44. This reflects the high level of corruption in the country. The average of the Herfindhal-Hirschman Index is 0.055. It means the level of bank competition is low in Nigeria, although, the industry is highly regulated. It reflects maximum of 0.097 and minimum of 0.009. The level of volatile is 0.023.

Table 2 reports the results of the estimated equation. It gives evidence to support the standard investment models. It shows how significance is the firm-specific factors influence corporate investment in Nigeria. The model 1, 2 3 show that value of Cash flows and Sales are significant at 1%. This shows that using internally generated funds (which is highly correlated with profits), will improve the investment activities of firms; especially firms that are more sensitive to cash flow. The coefficient of leverage is negative. It implies that the more firms resort to external source of finance, the lower their investment activity level and not statistically significant. 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.

As the results shows, Tobin-Q co-efficient and stock of Liquid assets coefficient are negative though both were statistically significant at 5% level of significance. The results support the hypothesis that financial factors or firm-specific factors influence corporate investment. The inverse relationship between Tobin Q (investment opportunities) and corporate investment could be traced to the dwindling fortunes of some listed firms in Nigeria capital markets within the period examined.

Table 1
Variable descriptive statistics.
Source: Author's computation

	I	Q	CA	LQ	LV	S	COR	HHI
Mean	1.133396	1.70846	2.305037	2.083523	0.821135	7.548191	2.145455	0.055091
Median	0.090652	0.668	0.766555	0.342807	0.6315	2.977046	2.2	0.063
Maximum	791.4096	96.107	816.165	863.9653	29.595	1000	2.7	0.097
Minimum	-78.32984	-32.867	-343.25	-257.2055	0	-1000	1.4	0.009
Std. Dev.	32.67844	5.494185	36.96728	37.07469	1.416292	60.49534	0.435973	0.023485
Observations	594	594	594	594	594	594	594	594

I,Q,CA,LQ,LV,S,COR,HHI stand for corporate investment,Tobin-Q,Cashflow,Stock of Liquid asset.
Leverage ratio,Sales, Corruption,Herfindahl-Hirschman Index(loan).

Table 2
Effect of corruption and firm-specific factors on corporate investment.
Source: Author's computation

Dependent Variable: Corporate investment(I)

	Model 1		Model 2		Model 3	
Variable	β	S.E	β	S. E.	β	S.E.
Lagged Investemtnt[I(-1)]	0.616153**	0.309562	0.631929**	0.30247	0.598882***	0.298802
Tobin-Q	-2.269612**	0.877717	-1.977213**	0.896358	-1.792001**	0.834572
Cashflow[CA]	2.007921*	0.574446	2.051389*	0.561904	1.9093*	0.566553
Stock of Liq. Asset[LQ]	-1.508571**	0.64619	-1.598186**	0.641633	-1.559394**	0.626548
Leverage [LV]	1.334753	2.732744	1.301386	2.692398	1.47775	2.637381
Sales[S]	-0.841309*	0.160876	-0.836889*	0.155188	-0.773223*	0.171145
Corruption[COR]	-10.64258	9.478971	-7.171542	10.22535	-6.704229	14.65917
Competition[HHI]			-29.86506	42.37577	-396.0601	723.3808
Interaction term[COR*HHI]					141.4319	288.2653
instrument rank	22		23		24	
J-statistic	10.24292		10.05228		11.04152	
Prob(J-stat)	0.804187		0.816438		0.749646	
AR(1)/P-val	0.0199		0.0205		0.0288	
AR(2)/P-val	0.6233		0.4691		0.4118	

*,**,*** mean sig @ 1%,5% and 10%.

Table 3

Further considerations of other institutional variables.

Source: Author's computation

Dependent Variable: Corporate investment(I)

Variable	Model 4		Model 5		Model 6		Model 7		Model 8		Model 9		Model 10	
	β	S.E	β	S. E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.
Lagged Investemtnt[I(-1)]	0.57989**	0.288853	0.589332**	0.290512	0.477093	0.319551	0.425218	0.295815	0.62356**	0.290311	0.60887**	0.290718	0.61609**	0.290582
Tobin-Q	-2.068642*	0.794017	-1.990692**	0.813188	-2.34118*	0.849606	-2.2022**	0.858836	-1.751515**	0.820192	-1.67908**	0.837305	-1.8191**	0.815076
Cashflow[CA]	1.841557*	0.522063	1.855333*	0.530888	1.698999*	0.573931	1.56441**	0.529178	1.986843*	0.531126	1.97508*	0.529846	1.952437*	0.531904
Stock of Liq. Asset[LQ]	-1.375619	0.601974	-1.395211	0.598839	-1.372231**	0.643459	-1.11384**	0.578026	-1.582267**	0.620598	-1.61341*	0.6229	-1.52246**	0.61413
Leverage [LV]	1.668175	2.549186	1.569819	2.556704	0.592128	2.821222	1.141661	2.600191	1.508974	2.609344	1.375629	2.635624	1.452408	2.581333
Sales[S]	-0.816467*	0.150657	-0.821296*	0.153193	-0.68144*	0.182788	-0.734499*	0.171044	-0.81687*	0.14719	-0.78948*	0.149098	-0.82458*	0.148616
Political stab[PS]	-0.644705	10.7996					-9.089288	8.740358						
Regulatory Quality[RQ]			-3.45269	14.33619			6.121054	17.57266						
Control of Corruption(CC)					-24.78097	15.99553	-15.02388	14.52939						
Interaction term[PS*HHI]									21.28742	20.5084				
Interaction term[RQ*HHI]											94.16494	62.74364		
Interaction term[CC*HHI]													24.91811	31.28403
instrument rank	22		22		22		24		22		22		22	
J-statistic	12.9474		13.67803		8.795627		12.37524		11.38242		10.16096		12.0707	
Prob(J-stat)	0.606361		0.550075		0.887959		0.650433		0.725044		0.809495		0.67367	
AR(1)/P-val	0.0141		0.0145		0.0599		0.0229		0.0164		0.0151		0.0154	
AR(2)/P-val	0.5971		0.5424		0.815		0.778		0.3621		0.3404		0.4198	

*,**,*** mean sig @ 1%,5% and 10%.

As seen in Table 2, we first include corruption index and competition index in the model and, estimate along with firm-specific factors, the coefficients of corruption and bank competition are negative and not significant in the determination of corporate investment. The insignificant relationship between corruption and investment supports the view of Wang and You (2012) who start that corruption appears not to be a vital constraint on firm growth and investment if financial markets are underdeveloped. Low bank competition makes credit accessibility difficult (Emerson, 2006). Also, when the two institutional variables (i.e. corruption and bank competition) are interacted, the result shows positive relationship with investment. It means investments are made not on the basis of their rates of return but on the capacity of the entrepreneur to pay bribes for the purpose of getting loan in the banking industry.

Table 3 shows the inclusion of other institutional quality variables (regulatory quality, political stability and control of corruption) in the model along with firm-specific factors. We further confirm that institutional quality is insignificant in investment decision of firms. The most paramount factors are the financial factors. Our study is consistent with work of Wheeler and Mody (1992) who show that regulatory framework, bureaucratic hurdles and red tape, judicial transparency, and the extent of corruption are insignificant in investment decisions. The coefficients of Tobin-Q, cash flow, stock of liquid asset, and that of sales are all significant. This indicates that financial factors influence corporate investment of firms. This result shows that corporate investment of these firms depend solely on internally generated funds (i.e. the main variable driving investment of these firms is cash flow). 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 hamper the growth of corporate investment in Nigeria.

The lagged value of the dependent variable (corporate investment) is positive and statistically significant at 5%. This further proves that we have employed the appropriate technique for the study. Also, to show the validity of the instruments used in the GMM technique, we report J-statistic results. The J-statistic tests the null hypothesis of correct model specification and validity of the instruments. The J-statistic test is the most commonly used diagnostic test in GMM estimation for assessment of the appropriateness of the model The result shows that the J-statistic test of over-identifying restrictions does accept the null hypothesis at any level of significance. This implies that the model has valid instrumentation. Dynamic panel analysis is known for the problem of heteroskedasticity of data and at the same time can be controlled (Baltagi, 2008). In addition, the GMM approach assumes linearity and states that the error terms are not auto-correlated. The study applies the most imperative method in testing the statistical properties of this model which requires testing for the presence of first- and second- order autocorrelation in the disturbance term. Following the work of Arellano and Bond (1991), GMM estimator requires that there is first-order serial correlation but there is no second-order serial correlation in the residual. Our results confirm this assertion. Hence we reject the null hypothesis of no first order serial correlation and accept the null hypothesis of there is no second order serial correlation.

Therefore, we conclude that there is no second-order serial correlation in the result since the null hypothesis of no second-order serial correlation is accepted based on the fact that the calculated z-value is not statistically significance at 5% level. These results support the validity of our model specification.

5. Conclusion and policy implications

The study investigates the effect of institutional and firm-specific factors on corporate investment in Nigeria using quoted non-financial firm within the period of 2002–2012. We apply dynamic panel estimation in order to account for dynamic adjustments within the variables. The results show that institutional quality has no significant effect on corporate investment. Also, like other previous studies, our results confirm that firm-specific factors influence corporate investment in Nigeria.

Despite the existence of financial market for external source of funds, leverage exhibits a negative impact on investment while cash flow as an internally generated fund displays positive relation with corporate investment. 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. The results 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 would only expand if investment expand and since investment is only constrained to internally generated fund is unlikely for investment to expand. When the monetary authorities are focused on inflation targeting, they should also not lose sight of its impact on investment and other productivity growth of firms which is the source of long term sustainable growth and development of economies.

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