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Determinants of Financial Structure: Evidence from Nigerian Quoted Firms

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Abstract
In a developing economy such as Nigeria's, financial markets lack the capacity to meet the financial requirements of business firms. Firms utilize loans, leases and other interest-bearing financial obligations as sources of debt financing. Consequent upon the foregoing, we analyze the determinants of financial structure of Nigerian quoted firms during the period spanning 1999-2012. The study adopted two theoretical frameworks: Pecking order and Static Trade-off Theories captured in a panel regression model. A sample of 25 firms was selected based on data quality and availability to address the requirements of the variables in the regression model. The results of the regression indicate that profitability, tangibility, volatility (operating risk), growth opportunities and firm size are important factors influencing the choice of financial mix among Nigerian firms. Our findings are corroborative of theoretical predictions and empirical evidence. Therefore, we provide useful recommendations for leverage decisions for managers of Nigerian firms and the management of the Nigerian stock market.
Keywords: determinants, financial structure, capital structure, Nigerian firms, pecking order and static trade - off theories.

1. Introduction
The capital of any business firm is the foundation upon which the business operates.

It absorbs costs and losses, multiplies fixed assets and in all, enhances growth through mergers and acquisitions. In some countries, governments often provide financial assistance to business firms to enable them kick-start and sustain their operations and overcome teething problems. Such assistance may take pre-eminence during economic recession which is often characterized by low demand for goods and services occasioned by low level of income; falling gross domestic product (GDP); business failure and loss of jobs. The reasons for governments' policy direction are legion: to prevent corporate failure and its contagious effects on the economy; maintain a desired level of employment and price stability and above all, encourage entrepreneurial development.

Studying the capital composition of firms in developing countries like Nigeria will enable financial managers, the governments and other stakeholders incorporate sectors prevent corporate failure, hence its attendant consequences on the economy.

According to Owolabi and Inyang (2012), developing countries such as Nigeria often times grapple with the twin problems of a weak and political instability. This has direct effect on foreign investments a major source of capital for Nigerian firms.

Dagogo and Ollor (2009), observed that the failure of previous financial policies of government to achieve desirable economic growth was a concern that demands restructuring of the Nigerian system, especially in the glare of an ailing economy. Thus, the introduction of the Structural Adjustment Programme (SAP) in 1986 and the privatisation programme in 1989 were in response to failed institutional measures to promote growth in the industrial sector. Uche (2000), was of the view thatt SAP was designed to achieve balance of payment viability by altering and restructuring the production and consumption patterns of the economy, eliminating price distortions, reducing the heavy dependence on consumer goods, imports and crude oil exports, enhancing the non-oil export base, rationalising the role of the public sector, accelerating the growth potential of the private sector and achieving sustainable growth. To achieve these objectives, the main strategies of the programme were the adoption of a market exchange rate for the Naira, the deregulation of external trade and balance of payment arrangements, reduction in the price and administrative control and more reliance on market forces as a major determinant of economic activity. In the same vein, Ojo (1991) pointed out that government's reasons for deregulation of the economy were legion: stagnant growth, rising inflation, unemployment, food shortage and mounting external debt.

Nevertheless business firms are catalysts operating in the corporate sector which is the engine room of growth and development in an economy.

Abor (2008) observed that corporate sector growth is vital to economic development. Therefore, it is imperative for firms in developing countries to be able to finance their activities and grow overtime if they are

ever to play an increasing and prominent role in proving employment as well as income in terms of profits, dividends and wages/salaries to households. Firms earn economic gains of rents from strategic assets provide a firm with as ource of steady stream of rents so that it gains a sustained competitive advantage over its rivals. Thus, it is the stock of a strategic asset that is important in determining a firm's profitability level (Kochair, 1997).

According to William (1991), the financing structures of debt and equity can be compared with respect to the characteristics of control and property rights. The debt instrument carries fixed rules and conventions that usually monitor the lending process. The repayment schedule of the principal loan amount and the interest payment are stipulated in the contract with debt holders having primary claim over the firm's cash flows from the assets. The firm is often required to meet liquidity tests to ensure that lender's investment is not in jeopardy. Equity owners on the other hand, have a residual claimant status over the cash flows from assets earnings and liquidation (William, 1991). Therefore, debt increases creditor's claims and equity increases when a firm issues shares to raise capital or pay dividends in form of bonus shares. On the other hand, the creditor's claims increase when a firm borrows on both short and long terms.

The aim of determining financial structure is to distinguish structure of financial fund in order to minimize shareholders' wealth (Akparpour and Aghabeygzadeh, 2011).

The decisio to combine equity, long-term and short-term debts as the capital mix is called financial structure. When financing their activities, firms, especially those with limited liabilities, combine debt and equity. Equity capital includes common and preference shares while debt includes such instruments as long-term loan stock, mortgage and debenture bonds. The combination of long-term interest bearing obligations and equity is referred to as capital structure. This work is not centered on capital structure decision. However, attempts have been made to explain the concept – capital structure. It refers to the mix of long-term sources of funds, such as debentures, long-term debts, preference share capital and equity share capital including reserves and surpluses (i.e. retained earnings) [Pandey, 2000]. Teker *et al* (2009) explained that the capital structure of a company consists of a particular combination of debt and equity issues to relieve potential pressures on its long-term financing. To examine such issues, many theories have been developed in the literature and they generally focus upon what determinants are likely to influence the so-called leverage decisions of the firms. Among these, the Modigliani and Miller (MM) theory, trade-off theory, pecking order theory or signally theory have been said to mainly play a crucial role in identifying and testing the various properties of the leverage decisions (Teker, *et al* 2009).

Pandey (2000) argued that it is being increasingly realized that a company should plan its capital structure to minimise the use of the funds in order to adapt more easily to the changing macroeconomic conditions surrounding businesses.

In the developing economies such as Nigeria, financial structure decisions are taken based on the level of development of the domestic markets. Amjed (2008) observed that financial markets are complete almost perfect in developed counties. Therefore, parameters for making financial structure decisions are mainly the cost benefits of a particular source of financing these countries. Whereas in developing countries, financial markets are not fully capable of meeting the financial needs of the corporate sector. Non conventional securities particularly debt securities are not warmly welcomed by the markets. Therefore, firms rely on the commercial bank loans and lease financing as source of debt.

With this challenge, the firms in developing economies have to balance their capital structure in such a way that short term sources of financing are inclusive.

Financial structure decisions are one of the most contentious areas in corporate finance. The issue in contention revolves around the optimal financial mix. There are two schools of thought in this regard. One school of thought called the traditional theory advocates for optimal financial structure and the other opposes it. The former school argues that judicious use of debt and equity capital can maximise the value of the firm. The latter school of thought led by Modigliani and Miller (1958) contended that financing decision does not affect the value of the firm because the value of the firm depends on the underlying profitability and investment risk. That is, under the perfect capital market assumption of no bankruptcy cost and frictionless capital markets; if no taxes, the firm's value is independent of the financial structure.

In developing countries such as Nigeria, financing decisions are taken based on the level of development of the domestic markets.

Firms in developing countries rely on commercial bank loans and lease financing as major sources of debt. Therefore, this paper analyses the determinants of financial structure, taking into cognisance the peculiarities of the under developed Nigerian financial market..

2.0 Review of Related Literature

2.1 Capital /financial Structure: Conceptual Definition

The combination of debt and equity in financing a firm's operation is called capital structure. According to

Pandey (2000) capital structure refers to the mix of long-term sources of funds, such as debentures, long-term debts, preference share capital and equity share capital including reserves and surpluses (i.e. retained earnings). In the words of Abor (2008) capital structure is defined as the specific mix of debt and equity a firm uses to finance its operations.

Teker *et al* (2009) explained that the capital structure of a company consists of a particular combination of debt and equity issues to relieve potential pressures on its long term financing.

A firm's capital structure refers to the mix of its financial liabilities (Kochhar, 1997). It refers to a mixture of a variety of long term sources of funds and equity shares including reserves and surpluses of an enterprise (Pratheepkparth, 2011). Chou and Lee (2010) explained that capital structure includes mixture of debt and equity financing. Whether or not an optimal capital structure exists in one of the most important and complex issues in corporate finance.

Financial structure on the other hand is the use of long-term and short-term debts and equity in financing a firm's activity. Firms have choices to raise their capital by various means including internally generated fund, new equity issue or various types of debts. The decision to select sources of finance is referred to as financial structure decision.

A process which leads to final decision is called financial structure determining methods. Methods of determining financial structure should be chosen with particular attention to the main features of securities influenced by internal factors within the firm or other external factors (Esfahani, 2006).

2.2 Theories of Capital Structure

Capital structure decision can affect the value of the firm either by changing the expected earnings or the cost of capital or both. Leverage cannot change the total expected earnings of the firm, but it can affect the residue earnings of the shareholder. The effect of leverage on the cost of capital is not very clear. Conflicting opinions have been expressed on this issue (Pandey, 2000).

In the words of Kochhar (1997) "the financing decision –mix of debt and equity – represents a fundamental issue faced by financial managers of a firm. The study of capital structure has traditionally been carried out by finance researchers.

Modigliani and Miller were the first to raise the question of the relevance of capital structure of a firm (Robins, 1992).

Chou and Lee (2010) observed that the theory of capital structure originated from the path breaking contribution of Modigliani and Miller in 1958; under the perfect capital market assumption that if there is no bankruptcy cost and capital markets are frictionless if without taxes, the firm's value is independent of the capital structure. This is known as M-M Proposition I. in 1967, under considering the corporate taxes, Modigliani and Miller modified the conclusion to recognise tax shield, because debt can reduce the tax to pay, so the best capital structure of enterprises should be 100% of debt. But this is unreasonable in the real world (Chou and Lee, 2010).

The existence of an optimum capital structure is not accepted by all. There exists two extreme views and a middle position (Pandey, 2000).

2.2.1 The Modigliani – Miller Hypotheses

In their path-breaking paper in 1958 Nobel Laureates, Merton Miller and Franco Modigliani provided the formal proof of the famous M&M irrelevance theory. They argued that under a perfect capital market a firm's market value is independent of the capital structure. The underlying rationale for the Modigliani-Miller theory is that the value of the firm is determined solely by the left hand side of the balance sheet which reflects the company's investments policy (Drobez and Fix, 2003). The theory suggests that the value of the firm tends to be independent of the debt balance of the company and instead, it is mainly affected by the presence of a number of project investments with positive not present value.

Modigliani-Miller (1958) assumes that investors have the same financial information about a firm with that of the managers, which can be referral to as systematic informatics but in practice, it is more convenient to assume that manager are likely to have insider information which is simply called asymmetric information (Teker, et al, 2009). Myers and Majiluf (1984) confirmed that mangers of form have superior information about the actual value of the firms.

2.2.2 Trade-Off Theory

This theory holds that a firm's capital composition of debt and equity is determined by taxes and costs of financial distress. Interest payment has benefits since it is tax deductible.

Wolfgang and Roger (2003) pointed out that the trade-off theory of the capital structure suggests that a firm's target leverage is driven by three competing forces of taxes, costs of financial distress (bankruptcy costs), and agency conflicts. Adding debt to a firm's capital structure lowers its (corporate) tax liability and increase the after tax cash flow available to the provider of capital. Thus, there is a positive relationship between the (corporate) tax shield and the value of the firm.

Gupta *et al* (2010) suggested that the firm's optimal capital structure will involve the trade-off among the effects of corporate and personal taxes, bankruptcy costs, agency costs, etc. agency costs arose from separation of ownership and control and conflicts of interest between categories of agents. One of the problems that cause conflict between managers and shareholders is free cash flows.

2.2.3 Pecking Order Theory

The major prediction of Pecking Order theory according to Adesola (2009), is that firms will not have a target optimal capital structure, but will instead follow a pecking order of incremental financing choices that places internally generated funds at the top of the order, followed by debt issues and finally when the firm reach its debt capacity. Therefore, this theory holds that a firm will finance its operation following a sequence of internally generated funds (retained earnings), debt financing and equity issue.

In the words of Welch (2006), overtime, the pecking order has acquired an identification with a number of related phenomena.

Consequently, these phenomena include;

- **The Pecking Order:** the preference to find new projects with more senior claims.
- **Averse Selection:** the fact that insiders know more than potential new investors.
- **Financial Slack:** An internal cash reserve that firms can top.
- **The Financing Pyramid:** capital structure that contains more senior than junior claims. A pecking order can arise in any trade-off theory in which issuing junior claims is more expensive than issue senior claims. It can be introduced not only through adverse selection costs to equity (the traditional method), but also through agency costs to equity (Morellec, 2004).

2.3 The Determinants of Capital/financial Structure

The capital structure of affirm is determined by internal and external factors. The external factors are the macro economic variables which include tax policy of government, inflation rate and capital market condition. The characteristics of an individual firm, which termed microeconomic factors, include size of a firm, growth rate, profitability, debt servicing capacity and operating leverage [Baral, 2004]. Teker, *et al* (2009) identified the determinants of capital structure of firms to include tangibility, size, growth opportunities, profitability and non-debt tax shields.

The determination of capital structure in practice according to Pandey (2000) involves additional considerations in addition to the concerns about EPS – earnings per share, value and cash fow attitude of managers with regards to financing decisions are quite often influenced by their desire, not to lose control, to maintain operating flexibility and to have convenient and cheap means of raising funds. He argued that the most important considerations are: concern for dilution of control; desire to maintain operating flexibility; ease of marketing capital inexpensively; capacity for economies of scale; and agency costs.

Abor (2008) in his study of the determinants of the capital structure of Ghanaian firms identified the following factors to be responsible for leverage decisions among Ghanaian firms (both quoted are unquoted firms): age of the firm, size of the firm, asset structure, profitability, growth opportunities, dividends anticipated, risk, tax benefit and managerial ownership. These factors influence both long-term and short-term leverage ratios. In a pooled regression analysis Wolfgang and Roger (2003) identified tangibility, size, growth, profitability, volatility, non-debt tax shield and uniqueness as the major determinants of capital structure. Similarly, Harris and Raviv (1992) summarised the results of central papers on theory capital structure. After the famous work Modigliani and Miller in 50,s, a great number of capital structures have been conducted in a wide variety of countries. These studies according to Güven *et al* (2006) concentrated on factors such as volatility, bankruptcy probability, fixed assets, non-debt tax shields, profitability, growth opportunities, size, and free cost flows.

Beven and Denbolt (2004) tested the inconsistency of the determinants of capital structure in British firms, comparing the results of a pooled OLS regression with the results of application of models considering fixed non-observable individual effects. The authors, using as determinants of various types of debt according to its maturity and origin, size, level of security, profitability and opportunity for growth.

2.4 Empirical Review of the Determinants of Capital/Financial Structures

In this selection, the results of previous research and the associated theoretical models are x-rayed to give the reader an insight. Following these theoretical standpoints, a number of empirical studies have identified firm-level characteristics that affect the capital structure of firms. Among these characteristics are age of the firm, asset structure, profitability, growth, firm risk, tax and ownership structure (Abor, 2008). Since these factors according to Harris and Raviv (1991) cause leverage to increase, we shall discuss them in turn.

- **Age of the firm**

  Age of the firm is a standard measure of reputation in capital structure models. As a firm continues longer in business it establishes itself as an ongoing business, it establishes itself as an ongoing business and therefore

increases its capacity to take on more debt; hence age is positively related to debt. Before granting a loan, banks tend to evaluate the credit worthiness of entrepreneurs as these are generally believed to pin high hopes on very risky projects promising high profitability rates (Abor, 2008). Highly indebted companies appear to be gambling with their creditors' money. If the investment for which credit is sought is profitable, shareholders will collect a significant share of the earnings, but if the project fails, then the creditors have to bear the consequences (Myers, 1977). Hall *et al* (2004) agreed that age is positively related to long-term debt but negatively related to short-term debt. Baral (2004) found positive and significant correlation between capital structure and age of firm. Esperanca *et al* (2003), however, found that age is negatively related to both long-term and short-term debt. Green, Murinde and Suppakitjarak (2002) also found that age has a negative influence on the probability of incurring debt in the initial capital equation, and no impact in the additional capital equation.

Consider Abor (2008) equations which borrow extensively from the above models: $y_{it} = \alpha + \beta x_{it} + e_{it}$.....(1) where subscript i denotes the cross-sectional dimension and t represents the time-series dimension. The left-hand variable, y_{it}, represents the dependent variable in the model, which is the debt ratio of the firm. x_{it} contains the set of explanatory variable in the estimation model, α is the constant and β represents the coefficients, hence the slope and the intercept respectively.

- **Size**

The effect of size on leverage according to Wolfgang and Roger (2003) is ambiguous. They argued that according to the trade-off theory, an inverse relationship exist between size and probability of bankruptcy, i.e. a positive relationship between size and leverage. Titman and Wessel (1988) measured size as the natural logarithm of net sales. The logarithmic transformation accounts for the conjecture that small firms are particularly affected by a size effect.

It is generally believed that there are economies of scale in bankruptcy costs: larger firms face lower limit costs of bankruptcy than smaller firms, as shown in Prasad *et al* (2001). Baral (200) established a strong correlation between capital structure and size of a firm.

Cosh and Hughes (1994) added that if operational risk is inversely related to firm size, this should rather predispose smaller firms to be relatively less debt.

Empirical evidence or the relationship between size and capital structure supports a positive relationship. Several works show a positive relationship between firm size and leverage. See for instance, Barclay and Smith (1996). Cassar and Holmes (2003), Esperance *et al* (2003), and Hall *et al* (2004) found a positive relationship between firm size and long-term debt ratio, but a negative relationship between firm size and short-term debt ratio. Some studies also support a negative relationship between size and short-term debt ratio, example, Michaelsd *et al (*1999) and Chilterden *et al* (1996)

- **Tangibility**

This is also referred to as asset structure. Abor (2008) found a negative correlation between asset structure and capital structure. He argued that the asset structure of a firm plays a significant role in determining its capital structure. The degree to which the firm's assets are tangible should result in the firm having greater liquidation value (Harris and Raviv, 1991). Empirical evidence suggests a positive relationship consistent with theoretical argument between asset structure and leverage for the firms. (Styam-Sunder and Myers, 1999 and Hovakimian *et al*, 2000) other studies specifically suggest a positive relationship between asset structure and both long-term and short-term debt. See for example, Jordan *et al*, 1998; Micheals *et al*, 1999; Cassar and Holmes, 2003; Hall *et al*, 2004). Esperance *et al* (2003) found positive relationships between asset structure and both long-term and short-term debt. Teker *et al* (2009) found that the return on assets and tangibility of assets have a positive and statistically significant impact on the firm's leverage ratio.

Positive relation between tangibility and leverage is also found in Deesomsak *et al* (2004), Aktar (2005), Supanvanij (2006) and Aktar and Oliver (2009).

- **Profitability**

In this trade-off theory, agency costs, faxes and bankruptcy push more profitable firms towards higher book leverage. First, expected bankruptcy cost decline when profitability increases. Second, the deductibility of corporate interest payments induces more profitable firms to finance with debt (Wolfgang and Roger, 2003).

The relationship between firm profitability capital structures can be explained by the Pecking Order theory (POT) discussed above, which holds that firms prefer internal sources of finance to external sources. The order of the preference is from the one that is least sensitive (and least risky to the one that is most sensitive (and most risky). That arises because of asymmetric information between corporate insiders and less well-informed market participants (Meyers, 1984).

Several empirical evidence from previous studies corroborates the Pecking order theory. Most studies found a negative relationship between profitability and capital structure. (See Shyam –Sunder and Myers, 1999; Mishra and McConaughy 1999; Michaelas *et al* 1999). Cabar and Holmes (2003), Esperance *et al* (2003), and Hall *et al (2004)* also suggested negative relationship between profitability and both long-term debt and

short-term debt ratios. Peterson and Rajan (1994), however, found a significantly positive association between profitability and debt ratio.

- **Growth Opportunities**
  The predictions for book leverage carry over to market leverage is evident in Fama and French (2000). The trade-off theory predicts a negative relationship between leverage and investment opportunities. Since the market grows at least in proportion with investment outlays the relationship between growth opportunities and market leverage is also negative (Wolfgang and Roger, 2003).
  Growth is likely to occur with greater demand on literally generated funds and push the firm into borrowing (Hall *et al*, 2004). In the case of small firms with more concentrated ownership, it is expected that high growth firms will require more external financing ad should display higher leverage (Heshmati, 2001). Baral (2004) found that capital structures and growth opportunities are positively correlated.
  Some scholars as well as researchers found positive relationships between sales growth and leverage (see Titman and Wessel, 1988 and Barton *et al*, 1989).
  Other evidence suggests that higher growth firms use less debt (see Roden and Lewellen, 1995 and Al-sakran, 2001). Michaelas *et al* (1999) found future growth to be positively related to leverage and long-term debt. Cassar and Holmes (2003) and Hall *et al* (2004) showed positive associations between growth and both long-term debt and short-term debt ratios, while Chitterden *et al* (1996), Jordan *et al* (1992), and Esperance *et al* (2003) found mixed evidence. However, Teker *et al (2009)* found that profit margin on sales a representing growth opportunity have some negative and significant impacts of firms' leverage degree.
- **Firm Risk**
  In some works, firm risk is regarded as volatility. This variable measures risks as the variability in earnings and cash flows. Bradley *et al* (1984) measured variability as the standard deviation of the first difference in annual earnings, scaled by the averaged value of the firm's total assets overtime.
  Higher volatility of earnings increases the probability of financial distress since firms may not have enough revenue to fulfil their debt obligations. This suggest a negative relation between volatility and leverage as indicated in Alker and Oliver (2009), Banchuenijit (2010) found a positive relation between leverage and volatility.
  The level of risk is said to be one of the determinants of a firm's capital structure (kale *et al*, 1991). Despite the broad consensus that firm risk is an important determinant of corporate debt policy, empirical investigation has led to contradictory results (Agbor, 2008). A number of studies have indicated on inverse relationship between risk and debt ratio (see Kale *et al*, 1991) and kim *et al, 1998).* Other studies suggest a positive relationship (Jordan *et al* , 1998, Michaelas *et al*, 1999). Esperanca *et al (2003)* also found positive associations between firm risk and both long-term and short-term debt.
- **Taxation**
  Many empirical studies have identified the impact of taxation on corporate leverage decisions. In Ghanaian firms, Abor (2008) found that taxes have a statistically significant positive relationship to short-term debt ratio among SMEs. This suggests that SMEs in the high tax rates rely more on short term debt. He also reported assignment and negative relationship between tax and long-term debt ratios of quoted firms. The relationship could be attributable to the special tax rebate for quoted firms. Firms that go public tend to enjoy tax reduction compared to unquoted firms.
  Graham (1999) concludes that in general, taxes do affect corporate financial decisions, but the magnitude of the effect is mostly not large. However, de Angelo and Masulis (1980) showed that there are other alternative tax shield such as depreciation, research and development expenses, investment deductions, etc, that could substitute fiscal role of debt. Empirically, this substitution effect is difficult to measure, as finding an accurate proxy for tax reduction that excludes the effect of economic depreciation and expenses is tedious (Titman and Wessels, 1998).

3.0 Methodology

The study utilized pooled ordinary least squares (OLS) multiple regression which provided an unbiased estimation of the linear relationship among the variables. The panel data pooled observations on a cross-section of units over several time periods. The model of the determinants of financial structure combines the usual Static-Trade-off Theory and Pecking Order Theory which are deeply rooted in Modigliani and Miller (1958) and (1963). The empirical investigation of the determinants of financial structure in Nigeria sampled firms quoted on the Nigerian Stock Exchange (NSE) during the period 1999-2012. Secondary data were collated from the annual reports and statement of accounts of the affected firms. A total of 157 firms constituted the population. A sample of 25 firms was selected based on data quality and availability to address the variables specified in the model.

Description of Research Variables

FSR_{it} = Financial Leverage ratio i.e. (total debt)/(equity + total debt) for firm I in term t

TAN_{it} = This is the asset structure derived as tangible fixed assets divided by total assets for firm i in

time t

GRW_{it} = The rate of growth in sales also called growth opportunities for firm i in time t. This variable is also measured as growth rate in fixed assets over time.

PR_{it}= Profitability expressed as the ratio of earnings before interest and taxes (EBIT) to total assets for firm i in time t.

OPR = Operating Risk (volatility), this is a measure of variation in profits or earnings.

FS = The size of the firm (log of total assets) for firm i in time t.

e_i = Stochastic error term

α_o ,α_1, α_2,…… α_6 = Regression parameters

3.5 Theoretical Model of the Determinants of Financial Structure

Our model followed the footsteps of modern researchers who combined Static Trade-off Theory (STT) and Pecking Order Theory (POT). See for example

Cassar and Holmes (2003), Esperance *et al* (2003),Wolfgang and Roger (2003), Hall *et al* (2004), Abor (2008), Teker *et al* (2009) , Baral (2004), Bas *et al* (2010), Bartholdy and Mateus (2008), Bas et al (2009), Amjed(2010), Akbarpour and Aghabeygzadeh (2011) and Zoppa and McMahon (2009).

Thus, FSR = f(PR, TAN, GRW, OPR, FS).

Hence, $FSR_{it} = a_0 + a_1PR_{it\,1} + \alpha_2TAN_{it\,2} + a_3GRW_{it3} + \alpha_4OPR_{t4} + \alpha_5FS_{t5} + e_i$

Where FSR = Financial structure ratio (Financial structure)

PR = Profitability

TAN = Tangibility of assets

GRW = Growth opportunities

OPR = Operating risk called volatility

FS = Size of firm in the industry

4.0 Results and Discussions

Regression results

Dependent Variable: FSR

Method: Ordinary Least Squares (Pooled data)

Sample: 1999 2012

Included observations: 1984 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.532622	1.843211	2.314591	0.0012
TAN	0.554688	0.788843	-3.703166	0.0049
TAN(-1)	0.041578	0.982314	2.156722	0.0723
TAN(-2)	-1.094562	1.990021	1.998212	0.1517
PRE	-0.709768	3.080587	2.230400	0.0029
PRE(-1)	0.258919	0.783462	1.023491	0.2347
PRE(-2)	2.221834	1.903400	0.979605	0.8763
GRW	-1.033170	2.437902	-0.423795	0.6833
GRW(-1)	4.098122	0.657981	3.089047	0.0008
GRW(-2)	5.908213	3.907809	0.871234	1.0976
OPR	-1.083182	1.249827	-0.866666	0.4086
OPR(-1)	-0.435671	0.321761	4.319233	0.0783
OPR(-2)	-0.019376	0.937809	2.998048	0.0005
FST	0.194611	0.113908	1.708491	0.1217
FST(-1)	0.342172	1.191132	4.765006	0.0072
FST(-2)	1.812579	2.008567	3.412321	0.1354

R-squared	0.889957	Mean dependent var	1989.204
Adjusted R-squared	0.758951	S.D. dependent var	16.18013
S.E. of regression	16.72865	Akaike info criterion	8.744576
Sum squared resid	2518.630	Schwarz criterion	8.972811
Log likelihood	-56.21203	Durbin-Watson stat	1.869939
F-Statistic	65.98318	Prob(F-Statistic)	0.000031

Tangibility

There is a positive and significant relationship between tangibility of the firms in our analysis and their financial structure. The result shows that a one percentage point increase or appreciation in the tangibility of the firms improves financial structure by 0.55 percentage points in the current year. When tangibility improves by one percent, it brings a 0.041 percentage improvement in the first year lag period and a deterioration of 1.09 percent in the second year lag period. In both periods, there is a strong relationship between the variables (t-statistic of 2.15 and 1.99 respectively).This implies that there is a strong positive relationship between the asset position of the firms under study and the financial position. The greater the asset in the firms employ, the stronger will be its financial state given that other things are held constant. This is line with our a priori expectation and most reported empirical literature and theories such as Agency and Trade-off theories.

Profitability

Our result shows that there is a negative relationship between current year profitability and the financial structure of the firms and this relationship is statistically significant (t value of 3.08). From the above table, a one percentage point decrease in profitability results in a 0.70 percentage deterioration of the financial structure of the firm. However, in the first and second year lag periods, there exists a positive and insignificant relationship between profitability and financial structure (t-values of 1.02 and 0.97 respectively). The results shows that profitability in the current period conforms to the pecking order and Trade-off theories while the positive relationship between the variables in the first and second year lag periods validates the dilution of ownership structure theory.

Growth opportunities

There exists a negative relationship between the rate of growth of sales in the current year and financial structure and this relationship is statistically insignificant while in the first and second year lag periods, the relationship is positive. However while the relationship is significant in the first year lag period (t= 3.09), it is insignificant in the second year lag period (t= 0.87). A one percentage point increase in the rate of growth of sales of the firms under study results in 1.03 percentage deterioration in the financial structure in the current period. This trend is however reversed in the lag period as a one percentage point increase in the rate of growth of sales results in 4.09 and 5.90 percentage increases in the financial structure of the firm in the first and second year lags. This implies that an increase in the growth rate of sales improves financial structure of firms in our analysis but the positive change has to take at least two years to be effective. The result in the current period conforms to our expected theoretic expectation even though we cannot say for sure that this relation would hold for certain given the insignificant statistical relationship

Operating risk (volatility)

There is a negative relationship between operating risk and financial structure in the current, first and second year lag periods however while this relationship is insignificant in the current year (t = 0.87), it is significant in the first and second year lag periods (t = 4.32 and 2.99 respectively). From the results, a one percentage point increase in volatility brings about a 1.08 decrease in the financial structure of the firm in the current year, a 0.44 percentage decline in the first year lag and a 0.02 percentage decline in the second year lag period. This shows that volatility has a harmful effect on the financial structure of firms as shown in the result.

Firm size

The FST which is firm size has a positive relationship with financial structure in the current, first and second year lag period, however while there is insignificant relationship in the current year (t = 1.708), there is a statistically significant relationship in the first and second year lag periods (t = 4.77 and 3.44 respectively). A one percentage point increase in firm size brings about a 0.19, 0.34 and 1.82 percentage improvement in the financial structure of the firm. The result supports our expected theoretic expectation and is in consonance with most results as reported in the literature. This means that the larger the firm size, the more formidable the financial structure of that firm and vice versa.

Adjusted R-squared

The co-efficient of multiple determinations which is the R^2adjusted is 0.75. This means that the regression model captures as much as 75% of the total variation in financial structure. Tangibility, profitability, rate of growth of sales, volatility and firm size account for 75% change in financial structure and this shows a good fit between these variables and financial structure.

F-statistics

The F-statistic which is the joint test of significance of all the parameter estimates shows that it is significant at both the five percent and one percent levels i.e calculated (65.98) is greater than tabulated. This implication of this is that the R^2 is statistically significant and the population from which the samples are drawn do differ significantly.

Durbin Watson test

The Durbin Watson statistic also show that we are justified in carrying out a test of significance and our results are reliable since the result show that there is no autocorrelation (with a DW of 1.8).

Profitability had a negative and no significant impact on financial structure (coefficient = 0.71, t= 2.23). This result is in line with empirical evidence in finance literature. For instance, Shyam-Sunder and Myers, 1999; Mistra and McConaughty, 1999; Michaelas etc 1999; Cabar and Holmes, 2003; Esperance *et al*, 2003; and Hall *et al,* 2004 also suggested negative relationship between profitability and both long-term debt and short term debt ratios. However, Peterson and Rajan (1994), found a significantly positive association between profitability and debt ratio. Several empirical evidence from previous studies corroborates the Pecking Order theory.

Tangibility had a positive and significant correlation with financial structure. Abor(2008) found a negative correlation between asset structure and capital structure. The author argued that asset structure of a firm plays a significant role in determining its capital structure.

Most empirical evidence suggests a positive relationship consistent with theoretical argument between asset structure and leverage for the firms (Shyam-Sunder and Myers, 1999 and Hovakimian *et al,* 2000). Other studies specifically suggest a positive relationship between asset structure and both long-term and short term debt. See also for example, Jordan *et al*, 1998; Michaels *et al,* 1999; Cassar and Holmes, 2003; Hall *et al*, 2004. Positive relationship between tangibility and leverage is also found in Deesoomsak *et al* (2004), Aktar (2005), Supanvanij (2006) and Aktar and Oliver (2009).

Growth opportunities had a negative and no significant relationship with financial structure. The trade-off theory predicts a negative relationship between leverage and investment opportunities. Since the market grows atleast in proportion with investment outlays the relationship between growth opportunities and market leverage is also negative (Wolfgang and Roger, 2003).

Growth is likely to occur with greater demand on literally generated funds and push the firm into borrowing (Hall *et al,* 2004). In the case of small firms with more concentrated ownership, it is expected that high growth firms will require more external financing and should display higher leverage (Heshmati, 2001). Baral (2004) found that capital structures and growth opportunities are positively correlated.

Cassar and Holmes (2003) and Hall *et al* (2004) showed positive associations between growth and both long-term debt and short-term debt ratios.

Operating risk (volatility) had a negative relationship with financial structure, higher volatility of earnings increases the probability of financial distress since firms may not have enough revenue to fulfil their debt obligations. This suggests a negative relationship between volatility and leverage as indicated in Alker and Oliver (2009), Banchuenijit (2010) found a positive relationship between leverage and volatility.

The level of risk is said to be one of the determinants of a firm's capital structure (Kale *et al*, 1991). Despite the broad consensus that firm risk is an important determinant of corporate debt policy, empirical investigation has led to contradictory results (Agbor, 2008). A number of studies have indicated on inverse relationship between risk and debt ratio (see Kale *et al*, 1991 and Kim *et al*, 1998). Other studies suggest a positive relationship (Jordan *et al,* 1998, Michaels *et al*, 1999).

Esperanca *et al (*2003) also found positive associations between firm risk and both long-term and short-term debt.

Firm size had a positive and significant correlation with financial structure. The effect of size on leverage according to Wolfgang and Roger (2003) is ambiguous. They argued that according to the trade-off-theory, an inverse relationship exist between size and probability of bankruptcy that is a positive relationship between size and leverage.

Empirical evidence on the relationship between size and capital structure supports a positive firm size and leverage. See for instance, Barday and Smith (1996), Cassar and Holmes (2003), Esperance *et al* (2003) and Hall *et al* (2004) found a positive relationship between firm size and long-term debt ratio, but a negative relationship between firm size and short-term debt ratio.

5.0 Conclusion and Recommendations

Determinants of financial structure among Nigerian firms provide empirical evidence to support existing theories and the existing empirical literature. Noticeable in the work are pecking order theory and trade-off theory. Pecking order theory suggests that:

Firms prefer internal finance.

1. They adapt their target dividend payout ratios to their investment opportunities, although dividends are sticky and target payout ratios are only gradually adjusted to shifts in the extent of valuable investment opportunities.
2. Sticky dividend policies, plus unpredictable fluctuations in profitability and investment opportunities, mean that internally generated cash-flow may be more or less than investment outlays. If it is less, the firm first draws down its cash balance or marketable securities portfolio.
3. If external finance is required, firms issue the safest security first. That is, they start with dept, then possibly hybrid securities such as convertible bonds, then perhaps equity as a last resort. In this story, is no well-

defined target debt-equity mix, because there are two kinds of equity, internal and external, one at the top of the Pecking order and one at the bottom. Each firm's observed debt ratio reflects its cumulative requirements for external finance.

A firm's optimal financial mix will involve trade-off among the effects of corporate and personal taxes, bankruptcy costs, etc. Agency costs arose from separation of ownership and control and conflicts of interest between categories of agents, conflict arise free cash flow conflict between managers and share holders arises due to free cash flow. Therefore debt is used as a tool to discipline managers and enhance performance thus creating wealth for the equity holders.

Mangers of firms-quoted and unquoted firms:

1. Should reduce the amount of debt in their financial structure especially where there are signs of financial deterioration which is usually associated with high cost of debt. This will enhance profitability and sustenance of operations.
2. The use of debt should be contingent upon the size and growth of the firm.
3. Increase debt in the financial structure of firms when profits are high; cost of equity capital are high and benefits of tax shield are high.
4. Use long-term debts to finance fixed tangible assets while short-term debts should be used to finance short-term obligations.
5. Should incorporate risk in their profit planning or capital budgeting since business firms operate in volatile environment.
6. Should apply the Pecking Order theory of utilising internally generated funds (retained earnings), followed by debt issue where there exist growth opportunities, and later equity issues.
7. Government policies should be directed at improving the information environment for Nigerian firms since information asymmetry influences a firm's choice of debt financing.
8. Subsidising floatation cost and reducing listing requirements to encourage small firms gain access to the capital market.

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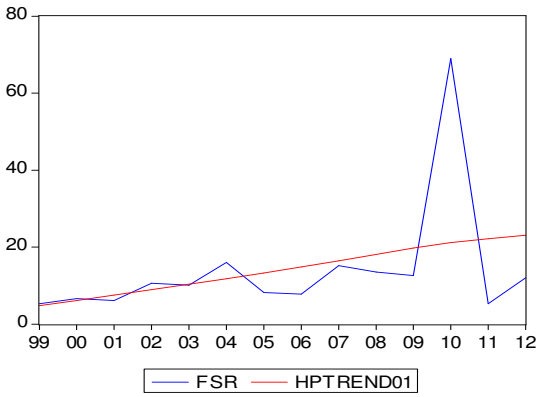
Appendices

Appendix 1

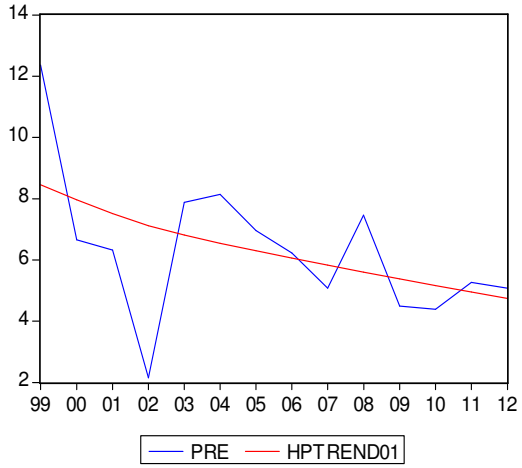
Group Descriptive Statistics: Common Sample

	FSR	TAN	PRE	GRE	OPR	FST
Mean	14.20204	20.14181	6.319171	6.483036	3.023029	158.8722
Median	10.44505	19.88055	6.271600	6.469900	2.701900	155.4998
Maximum	69.03190	36.09740	12.36510	9.632100	9.525500	172.6807
Minimum	5.320000	10.67900	2.149400	2.076000	-8.121200	144.1367
Std. Dev.	16.18013	8.153175	2.366234	2.036693	4.333201	10.41896
Skewness	3.050777	0.436384	0.855083	-0.460017	-1.098514	0.124673
Kurtosis	10.95225	2.007741	4.460918	2.716567	4.369712	1.352755
Jarque-Bera	58.60591	1.018677	2.951055	0.540631	3.910106	1.619093
Probability	0.000000	0.600893	0.228658	0.763139	0.141557	0.445060
Observations	14	14	14	14	14	14

Hodrick-Prescot trend for FSR

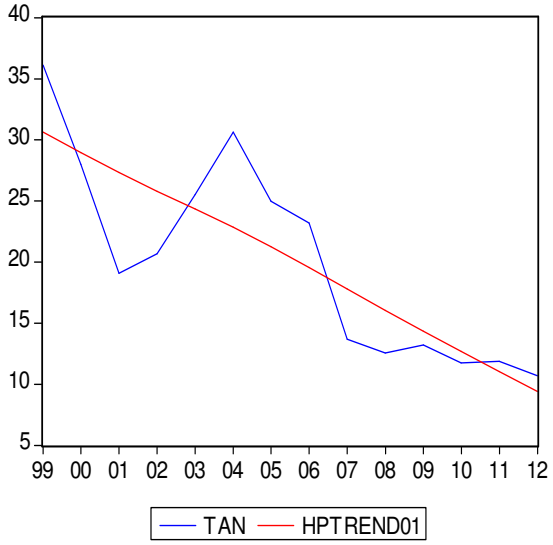


Hodrick-Presot trend for PRE



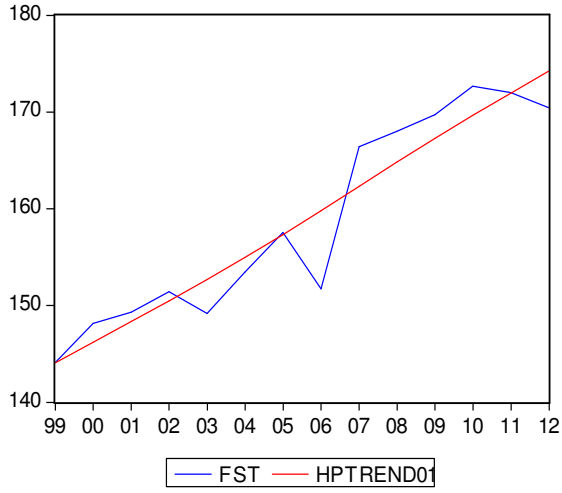
Hodrick-Prescot trend for GRE

Hodrick-Prescot trend for TAN



Hodrick-Prescot trend for OPR

Hodrick-Prescot trend for FST



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