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The Impact of Capital Structure and Liquidity on Corporate Returns in Nigeria: Evidence from Manufacturing Firms

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Abstract

The importance of capital structure to corporate financial stability, growth and adequate returns and liquidity cannot be undermined most especially in the midst of recent global financial crises has led to urgent need to embark on this study. The paper used microdata sourced from the financial statements of 10 selected firms covering 2002 - 2006 to pursue its investigations. The data were arranged in a cross-sectional time series fashion. Specifically, the microdata were analyzed using OLS methodology that included log-linear least squares application to conduct its tests and analyses. We found negative and significant influence of value of long-term debt, ratios of long-term debt to total liability, and ratios of short-term debt to total liability, and ratios of short-term debt to total liability; and equity capital to total liability, on returns; and positive and significant effects of domestic liquidity rate, ratios of long-term debt to equity capital and value of short-term debt, on profitability. Overall, results showed that long-term debt values lead profits under normal OLS function, followed by ratios of long-term debt to equity; short-term debt to total liability, and long-term debt to total liability in descending order of magnitude. Under log-linear function, domestic liquidity leads returns on equity, closely followed by ratios of long-term debt to total liability, and long-term debt values ranked third. It is therefore recommended that corporate firms in Nigeria (including other African countries) should strive to always maintain a balanced proportion of long-term debts in their capital structure mix; and that both the financial system (including economic system) and the corporate enterprises should always endeavor to uphold a policy of maintaining an adequate domestic liquidity rating for there to be sustained increases in corporate growth and profitability in the years ahead.

Keywords: Capital Structure, Liquidity, Long-Term Debt, Short-Term Debt, Profitability, Corporate Returns, Interest Rates, Inflation Rate, Reserves

Introduction

The capital structure of a company is such a vital factor that it enhances its operations. As a result, the relevance of capital to the company's operations and performance, many studies have previously been undertaken to determine and possibly develop theories that will enhance the capital mix (i.e. the adequate capital structure) suitable for corporate organizations to apply in order to maximize shareholder value (see Czarnitzki and Kraft, 2004, Hovakimian and Tehranian, 2002; Chiarella, et al, 1991; Schiantarelli and Sembenelli, 1997 and Efobi, 2008).

The capital of a company, according to Akinsulire (2002), is "a stock of money, possessed by a person or a business firm, that could be invested, from time to time, in order to earn income, but for which it is intended not to diminish." Uremadu (2004) sees the capital of an organization as "those pool of funds that the company commits to its fixed assets, to inventories, to account receivables, and to cash or marketable securities" to lead to corporate growth. An economist views capital as any material or item which can be consumed in the production process to create wealth. These materials or items are said to be factors of production which are usually grouped into man, machine and money (including information as the fourth category) (see Efobi, 2008). The pertinence of the subject in hand in an enterprise has warranted divers discourses on this subject of research based on the views of various authors as it has been expressed above. Hence, capital is an important aspect in any business establishment.

For its capital to be well structured and effectively utilized, a business firm must be able to devise various ways for selecting the best components of its capital which would be used in the company's operation to raise its productivity and or achieve performance. This process should be based on the criteria well drawn up by the finance manager after making a careful financial planning and control for the company (Uremadu, 2004). The ability of the company to effectively choose adequate sources of capital to finance its operations will differentiate a good capital structure management and a poorly managed capital structure (Efobi, 2008).

The concept of capital structure therefore has also been defined by many authors in different ways through several body of literature, some of which shall be adequately addressed in subsequent discussions in this paper. But in brief, capital structure is the relationship which exists between the various classes of capital used by the firm in financing its operations (Uremadu, 2004). Besides, it is the interaction between the firm's internal reserve, the debt capital and the equity capital and preferred stock, to ascertain what capital mix the business organization will adopt in financing its operations.

Furthermore, the present study poses a number of questions that should be addressed by it such as:

(1) Does the choice of the capital structure adopted by a company affect its profitability profile? It seems all big and profitable firms are quoted on the stock exchanges based on capital structure they used and this seriously indicates that it then becomes a yardstick for assessing the strength and profitability of the company,

(2) Has there been any observable significant effects of the choice of the capital structure on a company's profits? This also becomes a pertinent issue of necessity to look into.

(3) Does equity financing have more effects on a firm's profits than its debt financing capital?

(4) How does inclusion of more ploughed back funds (retained earnings or reserves) influence corporate overall performance in terms of maintaining both adequate returns and or liquidity due to

(the nature of) its capital structure composition? These are some of the relevant questions that will be addressed in the present study.

In particular, and in consideration of our country's peculiarities, can the capital structure behavior of the Nigerian manufacturing sector be adequately understood and possibly restructured or manipulated towards achieving expected domestic growth? Finally, how do these firms finance their operations as depending solely on equity financing might not be to their best interest following the most recent global financial or credit crunch as well as the bearish dispositions of the global stock (capital) markets in the times? Understanding these mind bugging issues and the underlying principles as well as concepts behind them would, no doubt, aid the companies in question diversify their sources of capital base into other profitable sources rather than to dogmatically sticking to a trend that has been used over and over again.

In justifying the basis for the present research, there will be a study of the relationships which exist between capital structure of a firm and its corporate profitability (Almeida and Campello, 2007). But these relationships vary according to the sources of finance. For instance, Almeida and Campello (2007) find that there exists a negative relationship between profits and external financing, which includes debt capital. On the contrary, some other school of thought believes that more profitable firms should rely on external funds like debt to finance their investments because of tax shields advantage which they stand to derive from interest repayment on debt (see Graham, 2000). These arguments predicate the need for this study.

Efobi and Uremadu (2009) examine impact of capital structure on corporate profitability among companies listed on the Nigerian Stock Exchange. In their study they excluded retained earnings (reserves) which supposed to be a *vital* component of corporate capital structure in their model building. The reason for its non-inclusion, according to them, is that "most firms do not fully rely on internal finances like retained earnings (R.Es)" and so this was not used as part of the capital structure indicators. This exclusion of an important component of the capital structure mix may have created some doubts on both results and robustness of their established model; hence, a vacuum that needed to be filled in the capital structure literature has existed presently in this part of the globe. Therefore the need for the present research is to further examine the effect of reserves (R.Es) as a vital part of the capital structure mix on corporate profits considerations in Nigeria. By the time this study is completed a clearer picture would have emerged on the significant impact a balanced corporate capital structure would have had on company profits among the Nigerian manufacturing industries of the Sub-Saharan Africa (SSA).

This study is therefore executed to empirically examine the inverse (or otherwise) relationships that exist between corporate profits and the various capital structure mix. It will further determine effect of capital structure components on corporate profitability in the Nigerian manufacturing sector.

Literature Review and the Theoretical Concept

In this section of the paper we shall dwell on review of the related literature and establish theoretical underpinnings on which the study shall lean. Specifically, literature shall cover composition of corporate capital structure, choice of capital structure, capital structure and company profit, and other issues relevant to the study in hand.

Theoretical Underpinning

This study is built on the theoretical framework that corporate capital structure affects a firm's profitability, and that the extent or degree of that effect depends on the capital structure policy adopted by the company. The major capital structure policy adopted by a firm includes debt, total equity, mix of debt and equity, reserves, and most firms do not fully rely on internal finances like retained earnings (Efobi, 2008). However, in the present study we shall include retained earnings (reserves) as a component of capital structure indicators. Any of these mix adopted will, more or less, affect the structure of the company's capital and consequently the size of its profitability.

Capital structure, in other words, refers to the various financing options of the asset by a firm. A business concern can go for different levels of the mixture of equity, debt and other financial facilities with equity having the emphasis on maximizing the firm's market value. Capital structure affects the liquidity and profitability of a firm (Rahemen, Zulfiquar and Mustafa, 2007).

However, not all business firms use a standardized capital structure hence they differ in their financial decisions under various terms and conditions. It is therefore a difficult situation for these firms to determine the capital structure in which risk and costs are minimum and that can raise the value of shareholder wealth and or maximize profits (Raheman, Zulfiquar and Mustafa, 2007). This difference of choices about the financing decisions gives rise to various capital structure theories.

These theories try to justify and explain the differences of the capital structure across regions and times. Most empirical studies dealing with capital structure theories are not recent (Taggart, 1997, Marsh, 1982; Jalivand and Harris, 1984; Titman and Wessels, 1988 and Okafor and Harmon, 2005). The latter authors made a significant contribution in formulating and testing the determinants of capital structure as identified by theory. There are still other studies which have addressed the nature of capital structure decisions (Marsh, 1982; Hariris and Raviv, 1991; Rajan and Zingales, 1995; Chinuko and Singha, 2000; Frank and Goyal, 2003; and Raheman, Zulfiquar and Mustafa, 2007). Two outstanding theories emerge and present a clear direction and firm behavior about debt and capital structure. These are trade-off theory and pecking order theory.

According to trade off theory propounded by Modigliani and Miller (1958), if firms are more profitable they prefer debt financing as compared to equity for the sake of profit. This posture is driven by three forces (Raheman, Zulfiquar and Mustapha, 2007):

(1) More debt in a firm's capital structure allows for more tax benefits as their tax liabilities become lower and even in some cases it is waved off. Some firms having more profits go for more debts rather than equity.

(2) If a firm has a low profit than there exists greater chances of bankruptcy. So if the firm takes more debts there are chances that it is bankrupt and as a result of this, investors cannot have trust on it. On the other hand, if a firm has more profits than exists less chances of bankruptcy so that investors' trust rises and the firm tends to earn more profits.

(3) The agency cost which has to be borne by investors is a cost in form of interest rate because creditors always check the position of the company and monitor the management. So, if a firm has a good image that it can get loan at a lower cost because creditors are not worried about bankruptcy and their agency cost is very low, it can acquire more debts.

On the other hand, the pecking order theory articulated by Myers and Majluf (1984) and Myers (1984), state that firms having high profits tend to attain low debt profile because when firms are more profitable their first priority is to generate financing through retained earnings (R.Es) because they maximize the value of the existing shareholders. If retained earnings are not sufficient, the firms

can then go for debt and if further financing is required they issue new equity. The retained earning is preferred because it almost has no cost, but if the external resources are used for financing like issuance of new shares it may take very high costs. The pecking order theory is as a result of information asymmetries existing between insiders of the firm and outsiders (Rahaman, Zulfiqar and Mustafa, 2007). The model leads to managers to adopt their financing policy to minimize these associated costs. It means that they will prefer internal financing to external financing and very risky debt to equity.

Amidst all these different shades of conceptual views on the effect of capital mix on corporate performance, therefore, the central issue before a financial manager is to determine the appropriate mix between equity and debt for his firm. The mix of debt and equity is known as the firm's capital structure. A financial manager must strive to achieve an optimum mix or the optimal capital structure for his or her firm; that is, the capital structure which would maximize the market value of the firm's shares and at the same time assure adequate liquidity (Uremadu, 2009). The use of debt affects firm's return and risk to shareholders; it may increase the return to equity funds but (it) always increases its risk. Therefore a proper balance has to be struck between the need for return and the danger of risk. When the shareholder's return is maximized and risk is minimized, the market value per share will be considered optimum (Okafor and Harmon, 2005).

This study is an attempt to establish the relationship between corporate capital structure and profitability profile of listed companies in the Nigerian manufacturing sector, and to ascertain to what direction the impact has been on the profitability of these firms, within the period covered by the study. Although there exists a number of studies on the determinants of capital structure of corporate enterprises globally, a few empirical studies have been advanced at home front. Except for the works of Efobi (2008); Uremadu (2009); Efobi and Uremadu (2009), and most probably one or two other superficial studies here and there in Nigeria, no other serious researches on the subject in hand, to our knowledge, have been done thereby necessitating the need for the present study. At the end of the study, we would be able to determine the direction of impact.

The Composition of the Capital Structure of a Company

The capital structure of a firm comprises of both the long-term sources of finance which include debt and equity financing, and the short-term sources of finance, for example, cash, reserves (R.Es) etc. Myers (1984) in his study, which developed the pecking order theory, identifies that the capital structure of firms range from internal financing to external financing. He identified internal financing to include retained earnings (R.Es) while the external financing include debt financing and equity financing. Jansen (2004), in line with Myers (1984)'s model argues that the capital structure of a company ranges from share capital, retained earnings and debt financing. In similar vein, Hovakimian, Hovakimian and Tehranian (2002) and Frank and Goyal (2003) concur that the capital structure of a firm ranges from internal finance, which include retained earnings to external finances, that is, debt and equity capital.

Zoppa and McMahon (2002) identify a more comprehensive capital structure composition, based on their study of Australian small and medium scale businesses capital structure behavior. Consequently, they identified that a company's capital structure should include the following;

1. Reinvested profits (R.Es);
2. Short-term debt financing like trade credit;
3. Long-term debt financing like debentures and long-term debts etc.

4. New equity capital injections from existing owners and owner managers;
5. New equity capital from uninvolved parties like outside investors, venture capitalists etc.

They therefore printed out that the sources of corporate capital comprise more than just debt capital and equity capital. Though these two are broad classifications of the composition of the capital structure of a company, the capital structure of a company should not be limited to them only.

Akinsulire (2002) opines that the capital structure of a firm refers to how the company finances its operations. According to him, the "how" is usually made up of three sources, which include the ordinary share capital, the preference share capital and the debt capital. This is in relation with Uremadu (2004) which posits that the capital structure of the company comprises of debentures, preference share capital (which includes reserves and surpluses and or retained earnings).

To further elaborate on capital structure, it becomes pertinent to elaborate on the meaning of the forms or elements of the firm's capital structure. Debt financing is a kind of finance that becomes a commitment for the company to repay back interest and principal at the end of a particular period. These interests are tax deductible and the tax authorities make an allowance for these expenses. The inability of the company to repay this commitment and the interest accruable to this commitment would attract distress for the company and this may ultimately lead to bankruptcy. This form of capital is different from equity financing. Equity financing entails the ability of the firm to raise its external funds from the public and at the same time, issue out a part of the firm's ownership right evidenced by share certificate. The equity holders are part owners of the firm. At the end of the financial period, the firm rewards the equity stockholders with dividend from the profit made by the company.

How do Firms choose their Capital Structure?

Capital structure decisions are so important and sensitive that it is of necessity that firms should know this before deciding its mix. Benito (2003) posits that the capital structure decisions of firms have serious implications on both the macro and micro-levels of the economy. On the micro level, the capital structure decisions of companies cost them a lot of time and money in searching out and ascertaining the best capital structure policy to adopt and this has been evidenced amongst firms (Harris and Raviv, 1991). Similarly, at the macroeconomic level, the capital structure decisions have great implications. Warner (1976, 1977) posits that a rise in corporate debts tends to increase the vulnerability of an economy to a downturn.

Eugene, Gapenski and Ehrhardt (2001) believe that it occurs due to the risk associated with corporate debt in terms of bankruptcy and liquidity caused by the inability to pay back debts and its accrued interest. They further noted that bankruptcy related problems become rampant when firms have a lot of debts in their capital structure. Jarsulie (1989) also opines that debt has a great consequence on the macro economy of a society. He argues that when the debt burden in an economy is large enough, it will make the economy become vulnerable to downward revisions to expectations and such revisions will reduce effective demand in the domestic economy, hence could stimulate financial crisis.

In deciding the capital structure of firms, Benito (2003) argues that firms should determine their capital structure based on applying the trade-off theory or the pecking order theory. He argues that in applying the trade-off theory, firms will settle for the capital structure at that margin where firms trade-off the benefits of an additional debt against the costs. The benefits of additional debt include reduced agency cost of deriving the debt, tax cover as a result of interest payable on the debt; and

the costs of debt include bankruptcy cost as a result of non-re-payment of debt (see Benito, 2003; Eugene, Gapenski and Ehrhardt, 2001; Brealey and Myers, 2000; Hovakimian, Hovakimian and Tehranian, 2002; Frank and Goyal, 2003).

In addition, Hovakimian, Hovakimian and Tebranian (2002) state that most researchers have related the determinants of capital structure of firms empirically with studies of corporate debt ratios and studies on the issuing of firm's debt versus equity financing choice. Based on these studies, several other factors affecting a firm's capital structure choices have been discovered. Some of these factors as identified by these authorities (Titman and Wessels, 1988; Rajan and Zingales, 1995; Graham, 1996; Marsh, 1982; Jalivand and Harris, 1984) include firm's characteristics such as firm's size, intensity of firm's R & D, stocks return, asset tangibility, profitability, marginal tax rates and the market-to-book ratios of firm's assets.

The choice of the capital structure of a firm can equally be viewed from the management and the ownership structure of the company (Du and Dai, 2002). Pindado and Torre (2004) posit that the capital structure of a firm is determined by the incentives and goals of those who are in control of the firm. They argued that as a result of managerial entrenchment and rent expropriation phenomena; self interested agents in terms of entrenched management or controlling owners would choose their capital structure according to the debt ratios that would protect their self interest. When the owners who have a high stake in organization is in control of capital structure policy, they would prefer debt financing to equity capital because debt capital would act as a good check on the managers appointed to run the organization. This is so because the managers would want to do all their best to ensure they perform and pay off the debt. At the same time, these controlling owners would not want to dilute their ownership control by selling their stake to new shareholders who would want to invest in the company. Hence, there is a discouragement from engaging equity finance in financing the operation of the company. Therefore when shareholders are in control of the capital structure policy, they would prefer debt financing. But when managers are in control, they would play less on debt capital because of the risk and the disciplinary role debt plays. Pindado and Torre (2004); Czernitzki and Kraft (2004), further state that the best way to control managerial discretion and effective management control of the firm is through debt financing. Jansen and Meckling (1976) and Myers and Majluf (1984) opine that the use of debt capital tend to align the interest of managers with those of shareholders. They further said that the use of debt financing tend to reduce the costs associated with the agency problem due to the fact that use of debt would cause the managers to subject their actions to public scrutiny as a result of juxtaposing the covenant requirement from the debt and the financing reporting requirements of the regulatory authorities. Frank and Goyal (2000) in a related study also identified that the agency theory can be applicable to using debt financing to curb the tendency managers may have in overspending their free cash flows. Eugene, Gapenski and Ehrhardt (2000), view the use of debt analogically as using a dagger to direct a car driver on how to drive effectively. This implies that debt financing actually motivates the managers to effectively manage the affairs of the company. Ritter (2003) reports that Heaton (2002) supports the argument that the choice of the capital structure decisions of a firm is determined by the management in control of the company. This is because they argued that most managers are usually over optimistic about their ability and because of this belief, they will be resentful to issuing equity interests due to the fact that they feel that the more equity capital that is being issued, the more the value of their firm is being undervalued. This is because most shareholders are skeptical about the credibility of the

information displayed to them by the management of the company in question as they would want to present their company as performing well, while it may, in fact, be not so.

Even when a company decides to settle for the choice of debt capital in its capital structure, disparity still exists in the choice of the type of debt to use in financing the firms operations. Should it be short-term debt financing or long-term debt financing. Schiantarella and Sembenelli (1997) find that in deciding on what maturity to settle for in choosing capital source, firms will tend to match their assets against their liabilities. They conclude that more profitable firms settle for longer-term debt capital than shorter-term debt capital because of the fear of liquidation and loss of control associated with short-term debts. Longer-term debt will grant the company time to trade effectively with the debt and be able to recoup enough funds to pay back the debt. They opined that their conclusions are inconsistent with the hypothesis that the shorter-term debt boosts efficiency and growth through effective monitoring. The maturity of the debt is also a consideration to be properly made before choosing a corporate capital structure to adopt.

Capital Structure and Company Profit

Hovakimian, Hovakimian and Tehranian (2002) find that capital structure decisions of a firm are not dependent on any other factor but on the company's market or book ratio. They went further to argue that the company's profitability has no direct relationship with the company's target leverage. They still argued that a less profitable company will issue more equity so as to offset their debt level and on the flip side, a profitable firm will not issue equity to finance their operations and perhaps, they may not issue debt because the company will be most interested in internally generated funds.

Coyle (2000) says that when a company's only source of finance becomes equity financing, this implies that such a company is financially weak and has a low credit rating. This connotes that equity financing has a negative correlation with profitability (Efobi, 2008).

Valvona and Sloan (1988) study capital structure of a company and its profitability profile to discover that investors primarily require high returns from the company's activities. They require that the company should make a high return, which would compel them to commit their funds to the company. As more investors are willing to commit their funds, the company's value would positively increase because there become more funds for the company to do its activities with, thereby causing the share price of the company's stock to rise. However, there is a danger in this argument especially for companies that do not intend expanding their stake to so many people. This absorption of investors' fund in the running of the affairs of the company would cause the company to have more shareholders to be responsible and accountable to in terms of dividends to be paid out and high level of expectations in terms of performance (Efobi, 2008). These expectations would make the management of the company so conscious of their activities that they may tend to constantly fabricate their financial statements to suit the expectations of the numerous shareholders in the company's performance.

Eldomiaty, Choi and Cheng (2007) identify that the company should put into consideration its profits as well as other factors in selecting its capital structure. This becomes pertinent because of the signaling effects the choice of the capital structure of a company would have on the public perception of the firm as earlier identified by Eugene and Joel (2001). Eugene and Joel (2001) identify that the public generally views a company issuing new equity to raise funds for their operations as unprofitable and they undervalue such companies.

Almeida and Campello (2007) further restate this argument while analyzing the substitution effect existing between internal and external financing. They concluded that more profitable firms would depend more on internal financing than they would depend on external financing. This implies that more profitable firms would issue less of external finance (debt capital) and would depend more on internal finance (equity capital); while the less profitable firms would have no option, but to depend on external finance, which varies from debt financing to equity financing.

Myers (1984) posits that the capital structure adopted by a company would depend solely on the firm's profitability and ability to generate funds internally and if not appropriate, the company would seek for external funds as an alternative. In contrast to Almeida and Campello (2007), they still argued that more profitable firms would depend on internal financing firstly and then if not appropriate, would depend on debt financing before seeking for external financing.

Generally, the profitability of the company would actually determine what kind of capital structure to be adopted by it. A profitable firm would want to finance its operations internally and owe less debt and or have less debt to settle. It would at the same time rather prefer debt financing to equity due to its ability to settle the debt as well as enjoy the benefits which debt financing will offer.

Methodology of Research

The methodology deals with model specification, data requirements and sources of data. Two analytical tools were used in this work, via: descriptive statistics and multiple regression analytical models. Multiple analytical models will be used to estimate the relationship (or otherwise) between level of corporate profit (proxies by return on equity) and the identified components of capital structure such as short-term debt, long-term debt, total liability (made up of equity capital and reserves), and corporate liquidity rates, etc. The descriptive statistics will be used to conduct economy analysis on these capital structure components mostly made up of indices of gearing (i.e. debt and equity). Empirical implementation of the model will make use of a cross-sectional time series data covering 2002–2006 to determine the influence of capital structure variables on corporate profits among firms quoted in the Nigerian Stock Exchange. The study will apply data on an ordinary least squares (OLS) approach to conduct our investigations and analysis.

Model Specification

Following models of Efobi (2008) and Raheman, Zulfiqar and Mustafa (2007) in determining the impact of capital structure on corporate profitability, we specifically adopted and modified Efobi (2008)'s model to include three additional variables, via: value of short-term debts, value of long-term debts, and domestic liquidity ratio (mirror for corporate liquidity ratio i.e. reserves or R.Es). In our model we wanted to establish if quantum of short-term debt, long-term debt, and corporate liquidity profile will have significant influence on corporate profits in Nigeria. Therefore the need for the modification in our model. Thus the models for the study are specified as a regression function as follows:

$$\text{Profit} = f(\text{Capital Structure}) \quad (1)$$

$$ROE = a_0 + \sum_{i=1}^n \beta_i X_{it} + e \quad (2)$$

Where:

ROE = the measure of profitability which is return on equity capital employed;

a_0 = the regression constant (i.e. intercept of equation);

β_i = the change coefficient for X_{it} variables;

X_{it} = the different independent variables for profitability or liquidity of the corporate firms i and t ;

t = is the time period for the series;

e = the random error term which captures other explanatory variables not explicitly included in the model.

The general list squares equation (2) above will now be restated with the specified variables thus below;

$$ROE = f(RSDTL, RLDTL, RECTL, RLDTEC, VSTD, VLTD, DLQR) \quad (3)$$

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Where:

ROE = return on equity is the independent variable. It is a measure of corporate performance.

RSDTL = ratio of short-term debt to total liability;

RLDTL = ratio of long-term debt to total liability;

RECTL = ratio of equity capital to total liability;

RLDTEC = ratio of long-term debt to equity capital;

VSTD = value of short-term debt;

VLTD = value of long-term debt;

DLQR = domestic liquidity ratio (it is given)

i.e. proxy for corporate liquidity ratio = $\frac{\text{Cash} + \text{all reserves}}{\text{Current Liabilities}} \times 100$.

The final equation to be estimated from equation 3 is:

$$ROE = a_0 - b_1 RSDTL - b_2 RLDTL - b_3 RECTL + b_4 RLDTEC - b_5 VSTD + b_6 VLTD + b_7 DLQR + e \quad (4)$$

Further, we shall transform model equation (4) to the natural logarithmic function to have model equation (5) as follows:

$$\text{LNROE} = a_0 - b_1 \text{LN}RSDTL - b_2 \text{LN}RLDTL - b_3 \text{LN}RECTL + b_4 \text{LN}RLDTEC - b_5 \text{LN}VSTD + b_6 \text{LN}VLTD + b_7 \text{LN}DLQR \quad (5)$$

The transformed log-linear equation 5, will also be extracted using the OLS regression method. The objective is to improve the validity of estimates and conclusions based on them. This is in line with Ekpo (1997) that the use of log-linear equations aim at reducing, if not completely removing, the hetrosdasticity, which may result from uscaled magnitudes on both sides of the equations.

Data Requirements and Sources

The study samples are firms listed on the Nigerian Stock Exchange. Ten companies were selected covering the manufacturing industry. They include companies in the printing and publishing sector; the automobile sector; breweries and producers of building materials, chemical paints, food and beverages, packaging and textiles. The data used for the study include annual reports and statement of accounts of ten manufacturing firms for the years 2002 – 2006, retrieved and completed by Efobi (2008) from *The Nigerian Stock Exchange FactBook* (2006) published by the Nigerian Stock Exchange, and *Central Bank of Nigeria Statistical Bulletin Vol. 17* (December, 2006), published by the Central Bank of Nigeria Research Department (2006). These form the secondary data for the study, which were generated from balance sheets and income and profit and loss accounts of these companies. This period was chosen because of accessibility to the financial statements (see Efobi, 2008).

Estimation of Results and Discussions

The results of descriptive and quantitative analysis from regression of model equation 4 are presented in Table 1 below.

Table 1. Modeling ROE by OLS (with 47 observations included after adjustments)

Variables	Coefficient	Std Error	t - Statistic	Prob.
C(intercept)	1.659594	0.675798	2.455754*	0.0186
RSDDL	-1.95475	0.746735	-2.61773*	0.0125
RLDDL	-1.1626	0.64786	-1.79452**	0.0805
RECTL	-0.24529	0.273229	-0.89775	0.3748
RLDTEC	0.034124	0.012723	2.682012*	0.0107
VSTD	0.900205	0.457007	1.969785**	0.056
VLTD	-3.29227	1.005324	-3.27483*	0.0022
DLQR	0.002723	0.003258	0.835783	0.4084

Source: Authors' computations

Key:* Significant at 1% level; ** Significant at 5% level.

$R^2 = 36.88\%$; $Adj R^2 = 25.55\%$; Durbin-Watson Stat = 1.84;

F - Statistic = 3.255323; Prob(F-Stat) = 0.008091

Structural Analysis

Looking at the results from Table 1 above, shows that value of long-term debt had the greatest significant and negative impact on profitability and therefore leads corporate profits in Nigeria, followed by ratio of long-term debt to equity capital as 2nd, ratio of short-term debt to total liability as 3rd; value of short-term debt as 4th, and the ratio of long-term debt to total liability as 5th, in descending order of their magnitude. Results also revealed that three of the variables (RLDTEC, VSTD, DLQR) were positively signed, out of which we (VSTD) was wrongly signed. Four variables (RSDDL, RLDDL, RECTL, VLTD) were negatively signed, out of which two (RSDDL, RECTL) were rightly signed and

remaining two (RDTL, VLTD) were wrongly signed. In general, the descriptive statistics for this model (R^2 , F-Stat, and DW-Stat) are within acceptable bounds. Further, results of the diagnostic tests indicate absence of error of auto-correlation and conditional heteroscedasticity as value of DW-test is tending to 2, hence errors are normally distributed.

Specifically, the negative and high significant influence of long-term debt on corporate profits in Nigeria shows that high corporate interest rate regimes in Nigerian corporate environment combined with prevailing high rate of inflation have not enabled firms to maximize profitability over the period covered. The tax shield advantages (allowances) gainable via long-term debts have not been able to counter effects of high interest charges and high inflationary pressure faced by the investors in the Nigerian business environment over the years.

However, the positive and significant effect of ratio of long-term debt to equity capital is very revealing and encouraging. It shows increasing proportion of long-term debt compared to equity in the capital structure of a Nigerian firm will contribute to increases in corporate profits of Nigerian companies.

Again, the negative and significant impacts of both ratios of short-term debt to total liability and long-term debt to total liability on profitability *show that increasing rates of both short-term and long-term debts on the overall liability of the firm reduces corporate profitability*. The plausible reason could be as a result of high interest rate charges demanded by the creditors (lenders) since they view their position as very risky. It is in line with this general belief that if a firm takes more debts there are chances that it is bankrupt and consequently, investors cannot have trust on it (Raheman, Zalfiqar and Mustafa, 2007).

Finally, the positive and insignificant influence exhibited by domestic liquidity rate (proxy for R.Es) on profits shows that availability of liquidity (excess cash) in our corporate environment has not been adequately utilized to rise returns and growth among corporate firms in Nigeria.

We now turn to Table 2 showing results of log-linear function by OLS regression analysis.

Table 2. Modeling LROE by OLS Function (with 42 observations included after adjustments)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C(intercept)	-10.7675	2.50001	-4.30698*	0.0001
LNRSDTL	-1.6934	1.36147	-1.2438	0.2221
LNRLDTL	-0.50465	0.199905	-2.52443*	0.0164
LNRECTL	-0.15372	0.275571	-0.5578	0.5806
LNLDETC	0.235235	0.305981	0.76879	0.4473
LNVSTD	-0.0178	0.573308	-0.03106	0.9034
LNVLTD	-0.82031	0.479339	-1.71133**	0.0961
LNDLQR	1.294668	0.478132	2.70761*	0.0105

Source: Authors' computations

Key: *Significant at 1% level; ** Significant at 5% level

$R^2 = 38.38\%$; $Adj.R^2 = 25.69\%$; Durbin Watson Stat = 1.29

F - Statistic = 3.025131; Prob(F-Stat) = 0.013919

Comparing Table 2 with Table 1 above, results of model equation 4 under log-linear function, reveal that the descriptive statistics (R^2 , F-Statistic and DW-Statistic) significantly appreciated in values with Durbin-Watson value becoming very robust. The model attests to be free from error of multicollinearity. Quantitatively the estimates of six variables (LNRSDDL, LNRLDTL, LNRECTL, LNLDTL, LNVSTD, LNDLQR) bear right signs while one (LNVLTD) exhibited wrong sign and the model itself is highly explanatory.

Another glaring observation from Table 2 is that only ratio of long-term debt to equity capital (LNRLDTEC) and domestic liquidity rate (LNDLQR) attained positive signs in influencing corporate profits in Nigeria.

Under log-linear function, domestic liquidity rate leads corporate profits as it is positive and very highly significant in influencing profitability in Nigeria. It is closely followed by ratio of long-term debt to total liability (LNRLDTL), which exhibited negative and significant influence on profits as 2nd, while quantum (value) of long-term debts (LNVLTD) was 3rd in their descending order of magnitude. It also shows that value of long-term debts assumed a negative but wrong sign against our apriori expectation implying plausibly that either inadequate long-term debt have been mobilized by corporate entities in Nigeria or serious distortions may have existed in the economic and financial systems of the domestic economy.

Findings and Recommendations

In this section, we shall summarize major findings of the paper and simultaneously make recommendations on each of the findings immediately it is stated.

(1) Study established that high corporate income tax regimes combined with high inflation rates in Nigerian business environment may not have enabled firms to optimize use of long-term debts to maximize profitability over the years covered. It is therefore recommended that government pursues relevant monetary policies that will reduce interest rates paid on long-term debts as well as tame high inflationary pressures prevalent in the country.

(2) We also discovered that increasing proportion of long-term debts compared to equity in the capital structure mix of Nigerian firms will contribute to increases in corporate profits of companies. It is, here and now, recommended that corporate management should adopt policy of increasing proportion of long-term debts in the capital structure of Nigerian firms to raise profitability.

(3) It was also ascertained from the study that increasing proportion of both short-term debts and long-term debts on the overall liability of the firm reduces corporate profitability. Hence there is a limit to which debt capital can be introduced into the firm to maximize its value beyond which it will assume a decreasing effect on its performance (see Uremadu, 2004). This limit is that at some point on the scale, the proportion of debt will become sufficiently large for it to become significantly risky to lend more to the business. The rule we are left with is that a rational company will employ as much debt as it can without impairing the safety of the company's future. Therefore we recommend this rule to corporate financial managers and investors in Nigeria.

(4) Study further found out that availability of liquidity (excess cash or reserves) in our corporate environment has not been adequately utilized to rise returns and growth among corporate firms in Nigeria. It is therefore recommended that government should henceforth pursue policies that will make firms optimize available liquidity in the domestic economy. Firms should invest excess

cash (R.Es) in investments and endeavour to efficiently manage their working capital (reserves) to maximize their profitability (see Uremadu, Egbide and Enyi, 2012).

(5) Findings from the results of log-linear function also established that domestic liquidity rate positively and significantly led corporate returns in Nigeria. Following this discovery, we shall also recommend that, in addition to, greater use of long-term debts to finance Nigerian firms, proper management and utilization of domestic liquidity (cash and R.Es) for the optimization of corporate performance and growth in the country.

(6) Finally, we equally discovered from the results of our log-linear analysis that value of long-term debts assumed a negative but wrong sign against our *a priori* expectation. The implication of this is that either inadequate long-term debts were mobilized by corporate entities in Nigeria or serious distortions may have existed in the economic and financial systems of the economy within the period under review. We thus recommend that there is therefore need to encourage companies to utilize adequate long-term debts in their capital structure, and government should ensure that distortions do not exist in the financial system of the domestic economy in order not to negatively affect use of long-term debt capital by corporate firms to raise profitability and growth in the years ahead.

Conclusions

In conclusion, it should come to the knowledge of the policy makers, and economic agents (individual investors and firms) that the profitability and performance of firms in Nigeria depend on proper management and composition of their capital structure. Findings from results of our study established, in the main, that profitability of Nigerian firms depend on these capital structure components; high proportion of long-term debts compared to equity; moderate use of short-term debts compared to total liability; efficient management of working capital (excess cash) within the firm; effective domestic liquidity management by the monetary authorities and stabilization of high inflationary pressures prevalent in the economy. Consequently to ameliorate the situation, we have already recommended lowering of interest rate charges on corporate lending by banks, use of high proportion of long-term debts compared to equity in firm's capital structure policy, effective management of short-term debts and other working capital items in firm's balance sheet, proper maintenance and investment of excess cash in the firm's till, stabilizing high inflationary pressures which combine with high interest rate charges on lending to discourage use of adequate long-term debts to fund firms in order to engender desired high corporate profitability and growth of the domestic economy. These are our convictions.

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