Corporate Debt Financing and Portfolio Investment Decisions: Evidence from Quoted Industrial Goods Manufacturing Firms in Nigeria

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Abstract

This study examined the effect of corporate debt financing on the portfolio investment of quoted industrial goods manufacturing firms in Nigeria. Secondary data obtained from 15 quoted industrial goods manufacturing firms from 2012 - 2021 obtained from the Nigerian Stock Exchange Fact book and annual reports of the quoted industrial goods manufacturing firms. The study modeled portfolio investment as the function of long term debt as percentage of total assets, long term debt as percentage of total capital, long term debt as percentage of total equity capital, short term debt as percentage of total assets, short term debt as percentage of total capital and short term debt as percentage of total equity capital. Panel data methodology is employed while the fixed effects model is used as estimation technique at 5% level of significance. Fixed effects, random effects and pooled estimates were tested while the Hausman test was used to determine the best fit. The study found that 51 percent changes in the value of portfolio investment of the quoted industrial goods manufacturing firms were traced to changes in long term debt financing variables as modeled in the regression model. long term debt to total assets and long term debt to total equity are negatively related to portfolio investment while long term debt total capital have positive effect on portfolio investment of the quoted industrial goods manufacturing firms. 40.5 percent changes in the value of portfolio investment of the quoted industrial goods manufacturing firms were traced to changes in long short term debt financing variables as modeled in the regression model. short term debt to total assets and long term debt to total equity are negatively related to portfolio investment while short term debt total capital have positive effect on portfolio investment of the quoted industrial goods manufacturing firms, there is no significant relationship between long term debt and the portfolio investment, no significant relationship between long term debt and the portfolio investment and no significant relationship between long term debt and the portfolio investment of quoted industrial goods manufacturing firms in Nigeria. From the findings, the study conclude that long term debt have greater explained effect on portfolio investment than short term debt. The study recommends more application of long term debt in corporate financial structure.

Keywords: Corporate Debt Financing, Portfolio Investment Decisions, Quoted Industrial Goods Manufacturing Firms, Nigeria

INTRODUCTION

One of the key issues in corporate finance is whether financing mix has any impact on investment policy. The corporate world is considered by numerous market imperfections, because of transaction costs, institutional restrictions and asymmetric information. The connections between management, shareholders and debt holders will make resistances owing to agency problems and that may result in under-investment or over-investment incentives. Whenever we refer to investment, it is needed to differentiate between over- investment and under-investment. Financing mix are various instruments available for corporate organizations in financing Investment. These decisions are of great significance for the organization's financial well-being. it pertaining to expenditure management, day-to-day capital management, assets management, raising funds, investment. The assets and liabilities of the organization are affected by financial decisions (Maina & Kondongo, 2020). Undertaking efficient financial decisions can lead to immense revenue over a long term period. Investment decisions are significantly immense decisions. Besides this, financing and dividend are also essential aspects of financial decisions.

The periodic payment of debt servicing charges and principal amount to creditors make managers more cautious regarding taking inefficient decisions that negatively affect profitability of firms. Modigliani-Miller theorem was based on assumption that probability distribution of cash flows to firm is independent of the capital structure. Deducing from the pecking order theory, it is recognized that, existence of positive costs associated with bankruptcy and presence of tax subsidies on corporate interest payments invalidate the irrelevance theorem because the probability distribution of future cash flows changes as the probability of occurrence of the bankruptcy costs changes with ratio of debt to equity rises. The existence of agency costs provides stronger reasons for arguing that the probability distribution of future cash flows is not independent of the capital or ownership structure. The counter argument to the monitoring role and value enhancing effect of debt is that firms easily meet their interest payments and principal repayments on their debt obligations and rely on internal financing (Allen & Gale, 2010).

Long-term debt may actually help lower a company's total cost of capital and hence, increase investment growth. This is because borrowing terms are stipulated independent of a company's future business and financial performance. If a company turns out to be highly profitable, it does not need to pay the lender anything more than the borrowing interest rate. This has a tendency to drive profitability upwards. This is expected to be so because providers of long-term interest debt subject the firm to monitoring which exert pressure on managers to run the business in a less costly and efficient manner and this should translate into higher investment growth. Therefore, it is important for manufacturing firms in Nigeria to know the financing variables that corporate portfolio investment of quoted firms in emerging financial market like Nigeria.

The finance management function is critical and determines the survival, growth and failure of any corporate organization. Financing variables and portfolio investment decision involve two finance management functions of corporate financing and capital allocation. Over the years, researchers in corporate finance have long been interested in how capital structures affect and influence corporate investment. Myers (1977) argued that if a company has a high-risk debt, stockholders are encouraged to invest less in future growth opportunities while Jensen and Meckling (1976)

argued that there are situations in which owners encourage excessive investment in future investment opportunities. Since corporate losing is less trivial than the optimal investment incentive, the important question is how financial contracts have developed to reduce conflict-based investment policies. The above divergences among scholars require a study of the relationship between debt financing and portfolio investment decisions of quoted firms in Nigeria.

LITERATURE REVIEW

Debt Capital

The debt capital in a firm's capital structure refers to the long-term bonds the firm use in financing its investment decisions because the firm has years, if not decades, to come up with the principal, while paying interest only in the meantime. The cost of debt capital in the capital structure depends on the health of the firm's statement of financial position. Debt restructuring refers to a firm changing its debt structure by either increasing or decreasing leverage. In practice, borrowers might make more new loan contracts (increase leverage) or renew debt. Debt restructuring usually means the injection of high levels of debt to increase the leverage of the company and thereby reduces the likelihood that the firm will be a takeover candidate (Rock and Rock, 1990). On the other hand, a firm decides to negotiate creditors for interest lowering or maturity extent (Sudarsanam and Lai, 2001; Kam, Citron, and Muradoglu, 2008; Yawson, 2008). Debt can be restructured to benefit the business by refinancing existing loans or obtaining new ones secured by real property, equipment, receivables or in select cases, future cash flows. This process effectively reduces the cost of the debt in the long term and increases cash flow for the business. The increased cash flow can be reinvested in the company in a variety of ways that influence growth for the future. If an influx of capital is needed, a new commercial or business loan can provide for growth. This is considered capital restructuring as new leveraged debt capital is added to the company balance sheet.

The Long Term Debt Benefits

Long-term debt is financing that has a repayment or maturity term of more than one year or that companies use between 20 and 30 years to buy assets, such as equipment and buildings, which are mostly considered as loan guarantees. The guarantee against debt or long-term loans is made through assets and is often associated with the low cost of loans, especially through central banks or Federal Reserves, which they maintain low loan rates to support the housing market and the growth of businesses. It also has relatively low financing costs, that is, the interest paid for the assets acquired for the business is generally tax deductible and further reduces the total cost of loans with long-term debt

.Capital financing involves financing by investors in exchange for partial ownership of the companies, where shareholders and owners often prefer to maintain ownership and control of the company through the support of the company. After paying the debt with interest, they still have their ownership or control of the bank and, in general, they are considered an alternative to debt as a long-term source of capital funds for business growth. Stability rate: the long-term debt is mostly structured and stable over time, with the payment time of the loan and the interest rate often remains constant during the repayment of the loan or before maturity in comparison with short-

term credit accounts or capital investment. The financing must consider the interests of the investors and maintain records of the distributions of income, as well as of the shareholders, before changes can be made.

With short-term financing, debt is used to cover inventory costs and other short-term supply needs; long-term debt is used for the company's operational and infrastructure growth, including tangible assets as the acquisition of new office buildings or equipment. Chen and others, 2014, in their study that determined the capital structure in China, pointed out that large companies favor debt financing, but profitable companies depend more on internal capital accumulation. In addition, they observe a strong industrial and property effect, in which real estate firms borrow much more, but the utilities and manufacturing industries use more long-term debt compared to commercial firms. State companies tend to borrow more, while companies with foreign companies choose more capital financing.

The choice of debt policy or capital structure is one of the most important decisions for companies within the corporate finance sector, given that this is a fundamental decision, related to the impact it can have on the value of the organization. In general, the capital structure represents the combination of third-party capital and social capital used to finance the operations of a particular company or firm. There are several possibilities to build a capital structure, this includes ways to measure these diverse possibilities of capital structure in long-term debt, which consists of an indicator of the capital structure used in the financial analysis and expresses the relationship between long-term debt and total debt (Abor, 2007).

The theoretical and empirical analysis of the financing of companies has mainly emphasized the choice of debt in shares (internal or external). There is the decision of debt against equity (capital structure) and also the decision on the structure of the debt. Capital structure refers tothe way a company finances its assets through a combination of equity and debt, but the structure ofthe debt can include short-term debt and long-term debt. Although the idea of debt as a homogeneous source of funds is a solid theoretical construction and a useful first step, going beyond the decision of leveraging and investigating other dimensions of the choice of debt is a useful part of the step. In particular, the nature of the debt and its incentive properties may differ accordingly, for example, at maturity (long and short) and to suppliers (banks or markets). The alternative way of raising additional funds to meet the daily needs of many different organizations has been a debt that refers to the funds of borrowed funds with expectations of payment.

Short Term Debt

The matching principle of finance is the standard theory used to explain the amount of short-term debt financing and other current liabilities that a firm has on its balance sheet. Briefly, the theory states that firms should finance their short-term assets with short-term liabilities. This implies that the amount of short-term debt financing that a firm uses depends on the amount of the firm's short-term assets and its other sources of short-term financing. However, since short-term debt has characteristics that are similar to the characteristics of long-term debt, the factors that have been shown to affect the amount of long-term debt financing that a firm uses may also affect the amount of short-term debt financing a firm employs. These factors include firm size, profitability and market-to-book ratio. The purpose of this study is to determine whether the matching principle

fully explains the amount of short-term debt financing that a firm employs or if factors that affect the amount of long-term debt financing that a firm uses also affect the amount of short-term debt financing that a firm employs.

According to the matching principle of finance, short-term assets should be financed with short-term liabilities and long-term assets should be financed with long-term liabilities. Short-term assets and liabilities are generally defined to be those items that will be used, liquidated, mature or paid off within one year (Guin (2011)). A firm's current assets (including cash, inventories, accounts receivable) are generally considered short-term assets while plant and equipment are generally considered long-term assets. Nevertheless, current assets can be long-term if they are not completely used or liquidated during the year.

On the other side of the balance sheet, current liabilities (accounts payable, short-term debt) are usually considered short-term liabilities while long-term debt (debt with a maturity of more than one year) and equity capital are considered long-term liabilities. However, current liabilities can be a source of long-term financing if they are not completely paid off during the year. For example, assume a firm periodically receives and pays off short-term loans in such a way that the firm's short-term loan balance varies between $300 and $500 during the year. The $300 minimum loan balance is effectively a long-term source of financing while the difference between the maximum and minimum loan balances ($200) is short-term financing that is paid off during the year.

A second source of change in a firm's short-term debt financing may exist if short-term debt and other current liabilities are substitute forms of short-term financing. Holding current assets constant, if the amount of a firm's spontaneous current liabilities increases the firm will have less need for short-term debt financing to finance its short-term assets. Conversely, if spontaneous short-term financing decreases the firm will need to increase the amount of its short-term debt financing. This will be called the substitution effect and implies an inverse relation between short-term debt financing and other current liabilities. In a regression with short-term debt as the dependent variable and current assets and other current liabilities as explanatory variables, the size effect implies that the coefficient of current assets should be positive while the substitution effect implies the coefficient of other current liabilities should be negative.

 Additionally, short-term debt could be used as permanent source of financing if the debt is continually refinanced as it matures. One reason to use short-term debt as a permanent source of financing is to take advantage of an upward sloping yield curve to reduce the firm's interest expense. When the yield curve is upward sloping, as it usually is, the interest rate on short-term debt is lower than the interest rate on long-term debt. Thus, using short-term debt as a long-term source of debt capital financing should reduce the firm's interest expense. There are, however, at least two sources of risk associated with continually refinancing short-term debt. One is default risk. If for one reason or another, lenders do not wish to refinance the firm's debt when it matures, the firm will be in peril of default if sufficient capital is not available to retire the debt.

The other risk is the risk that the interest rate charged on the refinanced debt will rise and cause the firm's interest expense to rise. Both the default risk and the interest rate risk are continuing risks that a firm faces every time it refinances its short-term debt. The sum of these two risks will be called refinancing risk. If the firm feels that the interest expense savings are large enough to

compensate for the refinancing risk incurred the firm may be willing to use continually refinanced short-term debt as a permanent source of financing. If not, long-term debt could be used to finance a firm's permanent current assets. That is, if a firm found the refinancing risk associated with rolling over its short-term debt unacceptably high, they could reduce the risk by substituting long-term debt financing for the continuously refinanced short-term debt. The disadvantage of doing so would be to increase the firm's interest expense.

The second theory of short-term debt determination tested here is that the factors that have been shown to affect the amount of long-term debt financing that a firm employs also affect the amount of short-term debt financing a firm uses. For example, the interest paid on both short-term and long-term debt is a tax deductible expense that generates a tax saving (interest tax shield) for the firm. Other tax shields that can reduce the value of the interest tax shield, like depreciation and amortization expense, have been shown to reduce the amount of long-term debt financing that a firm uses. Since depreciation and amortization expense would also reduce the value of the interest tax shield generated by short-term debt, they might also affect the amount of a firm's short-term financing. Other factors that have been shown to affect the amount of long-term debt financing that a firm employs will be discussed below.

Long- Term Debt

Leland and Toft (1991) stated that, the value of a firm is the value of its assets plus the value of tax benefits enjoyed as a result of debt minus the value of bankruptcy cost associated with debt. Modigliani (1980) points out that, the value of the firm is the sum of its debt and equity and this depends only on the income stream generated by its assets. The value of the firm's equity is the discounted value of its shareholders earnings called net income. That is, the net income divided by the equity capitalization rate or expected rate of return on equity.

The net income is obtained by subtracting interest on debt from net operating income. On the other hand, the value of debt is the discounted value of interest on debt. Jensen (1986) suggests that, when firms have more internally generated funds than positive net present value (NPV) projects, debt forces the managers to pay out funds that might otherwise have been invested in negative net present value projects. This over-investment problem can be lessened if managers are forced to pay out excess funds for servicing debt, therefore enhancing the firms' value. Myers (1993) suggests that, a firm with outstanding debt may have the incentive to reject projects that have positive NPV if the benefits from accepting the project accrue to the bondholders without also increasing shareholders wealth. McConnell and Servas (1995) posit that, seeds of under-investment problem lie in the solution of over- investment of U.S firms. They discovered that for firms with high P/E ratios or for high-growth firms, value is negatively related to leverage and those firms with low P/E ratios or for low- growth firms, value is positively related to leverage. Their evidence supports the contentions that for low-growth firms, leverage acts as a monitoring mechanism to enhance firm value. Whereas for high growth firms, leverage cause under investment and destroys the value of the firm. The above empirical studies show that there is a relationship between debt and firms' value.

Portfolio Investment

Portfolio investments are investments made in a group of assets such as equity, debt, mutual funds, derivatives, or even bit coins instead of a single asset to earn returns commensurate with the investor's risk profile. Portfolio investments might vary from a small segment of one industry to a wide-ranging entire market. A portfolio investment is a passive investment of securities in a portfolio made with the expectation of earning a return. The returns earned are directly proportional to the risk involved. There are additional return calculations, such as money-weighted returns. Portfolio Investment refers to the process of investing funds in a collection of different financial assets such as stocks, mutual fund, bonds, and other securities. The goal of an Investment Portfolio is to create a diversified portfolio of assets that can help investors to reduce investment risks and maximize returns. This diversification can be across various sectors and industries of different regions. It helps investors to build and manage wealth from particular sectors swiftly and generate incomes. The Portfolio Investment strategies can vary depending on the investor's risk tolerance, investment objectives, or long-term financial conditions.

Issuance of treasury bills is another potential approach to finance firm restructuring, but this has at least one major downside. Government was Janus-faced with the requirement for frequent refinancing of this short debt. Use of longer-term debt defers the refinancing needs, and provides time for some of the debt to be retired either from the proceeds of the next sale of the firm equity purchased by government, or from recoveries on the firm assets purchased (Lawal,2010). Even if it's possible to fulfil the expense from general government revenues and finance activities, as discussed below there are reasons why it could be fascinating to produce recapitalized firms with bonds instead of money. Special recapitalization bonds fall into three broad classes. The most common category consists of bonds issued by the govt., but not like a additional usual government bond supply sold to a good vary of purchasers, recapitalization bonds are placed directly with the firms to be recapitalized, usually as payment for an equity investment or to purchase distressed assets. The two alternative approaches involve the employment of centre, such as the deposit insurer, AMC, or firm restructuring authority, to issue the bonds and hold the government investment in firms (Bentler, 2014).

Empirical Review

Hoque, Sultana, and Thalil (2016) examined the credit rationing of SMEs in the city of Chittagong, Bangladesh using a sample of 200 SMEs. The Bangladesh government established an SME Foundation (SMEF) in 2007, to support in promoting the financing of SMEs to grow to their full potential (Hoque *et al.,* 2016). The Central Bank of Bangladesh encourages lending to SMEs through a refinancing window for business directly involved in the SME sector (Hoque *et al.,* 2016). The outcome of the study revealed that 89% of the SMEs obtained loans from microfinance institutions, while 60 % obtained credits from the banks, and 48% obtained less than desired to obtain (Hoque *et al.,* 2016).Taiwo, Yewande, Edwin, and Benson (2016) explored the roles of microfinance banks on SMEs and the benefit derived from the credit scheme of microfinance banks.

Taiwo *et al.* (2016) interviewed 15 SMEs leaders across Lagos state in Nigeria. They indicated that the recapitalization of microfinance banks in Nigeria would improve the capacity to granting credit to SME for growth and development. Hoque *et al.* (2016) noted that improving the accessibility of credit facility to SMEs was significant to the development of SMEs in Bangladesh. Popa and Ciobanu (2014) examined the financial factors that affected the functionality and profitability of SMEs in Romania, taking into consideration the financial indicators from 2009 to 2012 on investment capital and profitability. The SMEs contributed significantly to the developments of the SME sector and the economy, which characterized about 99% of all businesses in Romania, provided around 50% of GDP and approximately 65% of employment (Neagu, 2016; Popa & Ciobanu, 2014).

Kumarand Rao (2015) examined the funding preferences of SMEs and what influences the financing decisions of SMEs in India. The inadequate finance faced by SMEs was a result of demand and supply gap (Kumar & Rao, 2015). There was also a lack of information on the accessibility to sources of finance and the unwillingness of financial institutions to provide SMEs with funding (Kumar & Rao, 2015). Kumar and Raoproposed a conceptual framework that could analyze the financing preferences of SMEs, through incorporating the fundamentals of capital structure theories elements.

Kraemer-Eis and Passaris (2015) examined the importance of securitization in financing SMEs in Europe. Kraemer-Eis and Passaris (2015) noted that the European securitization market grew progressively in the preceding years until the outburst of the financial crisis in 2008. In the first three-quarters of 2014 overall SME securitization grew in Europe with France having a market share of 29%, UK 19%, the Netherlands 13%, Italy 9%, and Germany 9% (Kraemer-Eis&Passaris, 2015). Hong and Zhou (2013) reviewed the policy of collateral provisions including guarantee fee rates, risk consortium; capital assurance requirements and supporting organizations in China. The findings indicated that only under certain conditions can third party's guarantee provisions tackle the financing problems of SMEs (Hong & Zhou, 2013). The most significant way was the efficient control by collateral agencies, primarily when the agency would benefit from the lending (Hong & Zhou, 2013).

Imad (2015) examined the impact of the leverage on the firms' value utilizing unbalanced pooled Ordinary Least Square (OLS) cross-sectional time series panel data regression approach to all listed companies in Amman Stock Exchange (ASE) during the period 2000-2013 after excluding the financial sector and services sector, due to their own characteristics. F-test was used to test the hypothesis that the changes in the firms' leverage level significantly explain the changes in the firms' value. The results shows that the firms' leverage level affect the firms' value for the Jordanian listed companies included in the sample test, this result inconsistent with the result of Rajan and Zingales (1995) who find inverse association between debt and performance.

Taiwo Adewale Muritala (2015) examined the optimum level of capital structure through which a firm can increase its financial performance using annual data of ten firms spanning a five-year period. The results from Pesaran and Shine unit root test show that all the variables were non-stationary at level. The study hypothesized negative relationship between capital structure and operational firm performance. However, the results from Panel Least Square (PLS) confirm that

asset turnover, size, firm's age and firm's asset tangibility are positively related to firm's performance. Findings provide evidence of a negative and significant relationship between asset tangibility and ROA as a measure of performance in the model. The implication of this is that the sampled firms were not able to utilize the fixed asset composition of their total assets judiciously to impact positively on their firms' performance. Hence, this study recommends that asset tangibility should be a driven factor to capital structure because firms with more tangible assets are less likely to be financially constrained.

Amarjit, Manjeet, Neil and Harvinder (2014) investigated the relationship between changes in operational efficiency and changes in future performance (value) of Indian manufacturing firms applying a correlational research design. A sample of 244 firms were selected from the top 500 companies listed on the Bombay Stock Exchange (BSE) for a period of five years (from 2008–2012). Findings showed that an increase in the cash conversion cycle has a negative impact on the future performance of the firms. A positive change in the total debt to total assets ratio improved the future performance of the Indian manufacturing firms. Ahmad, Fida and Zakaria (2013) examined the co-determinants of capital structure and stock values for the period 2006-2010 by employing a panel dataset for 100 non-financial firms listed on the Kingdom of Saudi Arabia Stock Exchange. Generalized Method of Moments was employed to analyze the data. The statistical result of the study showed that stock values and leverage affect each other, but, the effect of leverage (positive effect) on stock values is greater than the effect of stock values (negative effect) on leverage.

Ayako and Wamalwa (2015) analyzed the determinants of firm value of commercial banks listed at the Nairobi Securities Exchange (NSE) based on secondary panel data of 46 commercial banks over the period 2002 to 2012. Data were analyzed by means of random effect regression model. The estimation results showed that although the relationship between leverage and firm value is positive, it was not significant. This finding is robust even under different measures of firm value. Because the study is Kenya-based, the result may not be the same when applied to the Nigerian.

Literature Gap
Kumarand Rao (2015) examined the funding preferences of SMEs and what influences the financing decisions of SMEs in India. Kraemer-Eis and Passaris (2015) examined the importance of securitization in financing SMEs in Europe. Hong and Zhou (2013) reviewed the policy of collateral provisions including guarantee fee rates, risk consortium; capital assurance requirements and supporting organizations in China. Imad (2015) examined the impact of the leverage on the firms' value utilizing unbalanced pooled Ordinary Least Square (OLS) cross-sectional time series panel data regression approach to all listed companies in Amman Stock Exchange (ASE) during the period 2000-2013 after excluding the financial sector and services sector, due to their own characteristics. The above studies dealt with the problem of capital structure and its effect on performance of quoted firms, this study examined the effect of debt financing on portfolio investment of quoted industrial goods manufacturing firms in Nigeria.

METHODOLOGY

Quasi-experimental research design will be used to study whether this relationship exists between debt financing   and portfolio investment of industrial goods manufacturing firms listed on the Nigeria Stock Exchange. According to Kothari (2004) research design is concerned with determining cause and effect relationship and to understand dependent and independent variables. It aimed to explore the relationship between financing variables   and portfolio investment of industrial goods manufacturing firms explaining the empirical evidences that help address the research objectives which should be clearly stated in a research proposal. The population and the sample size of interest constitute15 industrial goods manufacturing firms quoted on the Nigeria Stock Exchange for the period of ten years from 2013 to 2022. The study used Secondary data extracted from annual financial reports of the listed industrial goods manufacturing firms for the period of 2013 to 2022. The Financial reports were obtained from the Nigeria Stock Exchange Reports firm's publications and websites.

Pooled regression model specification

$$PI \; = \; \beta_0 + \beta_1 LTD/TA_{it} + \beta_2 LTD/TC_{it} + \beta_3 LTD/EC_{it\,it} + \; \mu_{it} \tag{1}$$

$$PI \; = \; \beta_0 + \beta_1 STD/TA_{it} + \beta_2 STD/TC_{it} + \beta_3 STD/EC_{it\,it} + \; \mu_{it} \tag{2}$$

Fixed Effect Model Specification

$$PI = \alpha_0 + \alpha_1 LTE/TA + \alpha2 LTE/TC + \alpha_3 LTE/EC + \sum_i^9 = 1\alpha_i idum\varepsilon 1_{it} \tag{3}$$

$$PI = \alpha_0 + \alpha_1 STE/TA + \alpha2 STE/TC + \alpha_3 STE/EC + \sum_i^9 = 1\alpha_i idum\varepsilon 1_{it} \tag{4}$$

Random effect model specification

$$PI = \alpha_0 + \alpha_1 LTE/TA + \alpha2 LTE/TC + \alpha_3 LTE/EC + \mu i + \varepsilon 1_{it} \tag{5}$$

$$PI = \alpha_0 + \alpha_1 STE/TA + \alpha2 STE/TC + \alpha_3 STE/EC + \mu i + \varepsilon 1_{it} \tag{6}$$

Where
PI = Portfolio investment as percentage of total investment
LTD/TA = long term debt as percentage of total assets
LTD/TC = long term debt as percentage of total capital
LTD/EC = long term debt as percentage of total equity capital
STD/TA = short term debt as percentage of total assets
STD/TC = short term debt as percentage of total capital
STD/EC = short term debt as percentage of total equity capital
$\varepsilon 1$ = Stochastic or disturbance/error term.
t = Time dimension of the variables
$\alpha 0$ = Constant or intercept.

Prior Expectation of the Result

The a-priori expectation of the variables that an increase in the explanatory variables lead to increase in the dependent variables portfolio investment, therefore it can be mathematical stated as follows:- $a_1, a_2, a_3\ a_4. > 0$.

Technique for Data Analysis

In analyzing the data, both the inferential and descriptive statistics will be adopted. Descriptive statistics will be used to summarize the basic characteristics of the data. The statistics included mean, median, minimum and maximum. Also, correlation matrix was used to explain the relationship between each of the firm characteristics and firm value. Panel data regression will be considered appropriate in view of the fact that it helps in establishing relationship, cause and effect between the variables.

In order to determine the best choice of analysis technique, the study run three types of regression; Ordinary Least Square (OLS), Fixed Effect and Random Effect regression. All these method have various assumptions and conditions that must be fulfilled in order to achieve efficient estimates. However, the best techniques will be decided by the Hausman Specification test (either fixed effect or random effect regression) and Lagrangian Multiplier Test (either random effect or OLS). The random effect has the advantage of accounting for the panel effect in the data as opposed to OLS, which pools the data and treats it as if it were obtained from a single entity.

In order to achieve reliability of the result, robustness tests like Multicolinearity test, Hausman test, Lagrangian multiplier test for random effect and Heteroscedasticity test will be conducted(Gujirati, 2003).

T-test The t-test was used to test the hypothesis that a particular coefficient is significantly different from zero or whether the estimated coefficient value occurred by chance in equation (2). The tests were performed at both 95% and 99% levels of confidence.

F-test The F-statistic is important to test the hypothesis that the whole relationship provided by the equation (2) is significantly different from zero, i.e. whether the independent variables' characteristics scores explain the variation in growth indicators for each of the individual firms. The test will be performed at both 95% and 99% levels of confidence.

R2 - Change The R-squared (R^2) value ranging from '0' to '1' or the 'corrected R-squared' (R2) which is adjusted for degrees of freedom indicates the explanatory power (goodness of fit) of the model.

ANALYSIS AND DISCUSSION OF FINDINGS
Table 1 Presentation of Regression Results: Long debt and portfolio investment

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LTD_TA	-1.477115	1.107209	-1.334088	0.1845
LTD_T	0.296397	0.100406	2.951996	0.0038
LTD_EC	-0.177474	0.260935	-0.680146	0.4976
C	47.62379	17.24873	2.761004	0.0066
ECM(-1)	0.666211	0.069065	9.646103	0.0000
R-squared	0.440051	Mean dependent var		33.99000
Adjusted R-squared	0.422553	S.D. dependent var		19.10371

S.E. of regression	14.51689	Akaike info criterion		8.225372
Sum squared resid	26974.75	Schwarz criterion		8.334032
Log likelihood	-541.9873	Hannan-Quinn criter.		8.269528
F-statistic	25.14810	Durbin-Watson stat		2.097840
Prob(F-statistic)	0.000000			
LTD_TA	-1.167448	1.023701	-1.140419	0.2565
LTD_T	0.063687	0.189178	0.336651	0.7370
LTD_EC	-0.112509	0.240420	-0.467968	0.6407
C	48.43991	16.60526	2.917143	0.0043
ECM(-1)	0.265976	0.095361	2.789138	0.0062

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.577624	Mean dependent var	33.99000
Adjusted R-squared	0.510933	S.D. dependent var	19.10371
S.E. of regression	13.35986	Akaike info criterion	8.153950
Sum squared resid	20347.39	Schwarz criterion	8.566857
Log likelihood	-523.2377	Hannan-Quinn criter.	8.321740
F-statistic	8.661196	Durbin-Watson stat	1.890563
Prob(F-statistic)	0.000000		

LTD_TA	-1.477115	1.018962	-1.449627	0.1496
LTD_T	0.296397	0.092403	3.207654	0.0017
LTD_EC	-0.177474	0.240138	-0.739050	0.4612
C	47.62379	15.87396	3.000121	0.0032
ECM(-1)	0.666211	0.063561	10.48151	0.0000

Effects Specification

	S.D.	Rho
Cross-section random	0.000000	0.0000
Idiosyncratic random	13.35986	1.0000

Weighted Statistics

R-squared	0.440051	Mean dependent var	33.99000
Adjusted R-squared	0.422553	S.D. dependent var	19.10371
S.E. of regression	14.51689	Sum squared resid	26974.75
F-statistic	25.14810	Durbin-Watson stat	2.097840
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.440051	Mean dependent var	33.99000
Sum squared resid	26974.75	Durbin-Watson stat	2.097840

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	32.184765	4	0.0000

Source: E-view 9.0

Table 1 presents the result of the Hausman test. Meanwhile, the result shows the chi-square value of 32.184765alongside the probability value of 0.0000 which implies that there isa enough evidence to reject the null hypothesis of random effect model and accept the alternative hypothesis of fixed effect model as appropriate. From the foregoing, it thus stands that among the two estimators (fixed effect model and random effect model) used for analysis in this study, fixed effect estimates presented is most efficient and consistent estimate that can track the true nature of the nexus between financing variables and portfolio investment of the quoted industrial goods manufacturing firms.

From the fixed effect model, the study found that 51 percent changes in the value of portfolio investment of the quoted industrial goods manufacturing firms were traced to changes in long term debt financing variables as modeled in the regression model. The model is statistically significant when valuated using f-test and probability, the D.W statistical proved the absence of serial auto correlation. However the study indicated that long term debt to total assets and long term debt to total equity are negatively related to portfolio investment while long term debt total capital have positive effect on portfolio investment of the quoted industrial goods manufacturing firms.

Table 2: Presentation of Regression Results: Short term debt and portfolio investment

Variable	Coefficient	Std. Error	t-Statistic	Prob.
STD_TA	-0.295423	0.221442	-1.334088	0.1845
STD_T	0.296397	0.100406	2.951996	0.0038
STD_EC	-0.177474	0.260935	-0.680146	0.4976
C	47.62379	17.24873	2.761004	0.0066
ECM(-1)	0.666211	0.069065	9.646103	0.0000
R-squared	0.440051	Mean dependent var		33.99000
Adjusted R-squared	0.422553	S.D. dependent var		19.10371
S.E. of regression	14.51689	Akaike info criterion		8.225372
Sum squared resid	26974.75	Schwarz criterion		8.334032
Log likelihood	-541.9873	Hannan-Quinn criter.		8.269528
F-statistic	25.14810	Durbin-Watson stat		2.097840
Prob(F-statistic)	0.000000			
STD_TA	-0.233490	0.204740	-1.140419	0.2565
STD_T	0.063687	0.189178	0.336651	0.7370
STD_EC	-0.112509	0.240420	-0.467968	0.6407
C	48.43991	16.60526	2.917143	0.0043
ECM(-1)	0.265976	0.095361	2.789138	0.0062

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.577624	Mean dependent var		33.99000
Adjusted R-squared	0.510933	S.D. dependent var		19.10371
S.E. of regression	13.35986	Akaike info criterion		8.153950
Sum squared resid	20347.39	Schwarz criterion		8.566857

Log likelihood	-523.2377	Hannan-Quinn criter.			8.321740
F-statistic	8.661196	Durbin-Watson stat			1.890563
Prob(F-statistic)	0.000000				
STD_TA(-1)	-0.259867	0.185834	-1.398382		0.1644
STD_T(-1)	0.207398	0.093200	2.225301		0.0278
STD_EC(-1)	-0.071005	0.254172	-0.279358		0.7804
C	44.79859	14.91607	3.003378		0.0032
ECM(-1)	0.657966	0.062685	10.49633		0.0000

Effects Specification

				S.D.	Rho
Cross-section random				0.000000	0.0000
Idiosyncratic random				13.30763	1.0000

Weighted Statistics

R-squared	0.423661	Mean dependent var	34.13463
Adjusted R-squared	0.405790	S.D. dependent var	19.10525
S.E. of regression	14.72729	Sum squared resid	27979.20
F-statistic	23.70662	Durbin-Watson stat	2.100442
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.423661	Mean dependent var	34.13463
Sum squared resid	27979.20	Durbin-Watson stat	2.100442

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	34.738032	4	0.0000

Source: E-view 9.0

Table 2 presents the result of the Hausman test. Meanwhile, the result shows the chi-square value of 32.184765alongside the probability value of 0.0000 which implies that there isa enough evidence to reject the null hypothesis of random effect model and accept the alternative hypothesis of fixed effect model as appropriate. From the foregoing, it thus stands that among the two estimators (fixed effect model and random effect model) used for analysis in this study, fixed effect estimates presented is most efficient and consistent estimate that can track the true nature of the nexus between financing variables and portfolio investment of the quoted industrial goods manufacturing firms.

From the fixed effect model, the study found that 40.5 percent changes in the value of portfolio investment of the quoted industrial goods manufacturing firms were traced to changes in long short term debt financing variables as modeled in the regression model. The model is statistically significant when valuated using f-test and probability, the D.W statistical proved the absence of serial auto correlation. However the study indicated that short term debt to total assets and long term debt to total equity are negatively related to portfolio investment while short term debt total

capital have positive effect on portfolio investment of the quoted industrial goods manufacturing firms.

Long Term Debt Financing Mix and Portfolio Investment Decisions of Quoted Industrial Goods Manufacturing Firms in Nigeria

From the fixed effect model, the study found that 51 percent changes in the value of portfolio investment of the quoted industrial goods manufacturing firms were traced to changes in long term debt financing mix as modeled in the regression model. The model is statistically significant when valuated using f-test and probability, the D.W statistical proved the absence of serial auto correlation. However the study indicated that long term debt to total assets and long term debt to total equity are negatively related to portfolio investment while long term debt total capital have positive effect on portfolio investment of the quoted industrial goods manufacturing firms. The positive effect of the variables confirms the a-priori expectations of the study and in line with the opinion of Gordon that capital structure is relevant. The negative effect of the variables shows that capital structure is irrelevant which is in line with the argument of Modigliani and Miller (1958). The finding confirms the pecking order theory that advocated for internal fundings. Empirically the findings of the study contradict the findings of Ahmad, Fida and Zakaria (2013) that stock values and leverage affect each other, but, the effect of leverage (positive effect) on stock values is greater than the effect of stock values (negative effect) on leverage and Ayako and Wamalwa (2015) that although the relationship between leverage and firm value is positive, it was not significant. The positive effect of short term debt on market capitalization value confirms our a-priori expectation and in line with the opinions of Gordon that capital structure is relevant. The findings confirm the empirical findings listed above.

Short term debt financing mix and portfolio investment decisions of quoted industrial goods manufacturing firms in Nigeria

The study indicated that short term debt to total assets and long term debt to total equity are negatively related to portfolio investment while short term debt total capital have positive effect on portfolio investment of the quoted industrial goods manufacturing firms. Findings from the results proved that there is positive and significant relationship between debt equity ratio and portfolio investment of the quoted firms but positive and no significant relationship between debt equity ratio and portfolio investment. The implication from the coefficient of the variable is that if short term debt equity ratio is increased by one unit, portfolio investment firm's increases by 0.6 percent. The positive effect of the variable on the portfolio investment of the quoted firms confirms our a-priori expectations. The positive effect of the variables shows that capital structure is relevant which is in line with the argument of Gordon (1956). The finding also contradicts the pecking order theory that advocated for internal fundings. Empirically the findings of the study contradict the findings of Ahmad, Fida and Zakaria (2013) that stock values and leverage affect each other, but, the effect of leverage (positive effect) on stock values is greater than the effect of stock values (negative effect) on leverage and Ayako and Wamalwa (2015) that although the relationship between leverage and firm value is positive, it was not significant.

CONCLUSION AND RECOMMENDATIONS

Conclusion

This study focused on the effect of debt financing variables and portfolio investment of quoted industrial goods manufacturing firms in Nigeria. From the fixed effect model, the study found that 51 percent changes in the value of portfolio investment of the quoted industrial goods manufacturing firms were traced to changes in long term debt financing variables as modeled in the regression model. However the study indicated that long term debt to total assets and long term debt to total equity are negatively related to portfolio investment while long term debt total capital have positive effect on portfolio investment of the quoted industrial goods manufacturing firms. The study found that 40.5 percent changes in the value of portfolio investment of the quoted industrial goods manufacturing firms were traced to changes in long short term debt financing variables as modeled in the regression model. The study indicated that short term debt to total assets and long term debt to total equity are negatively related to portfolio investment while short term debt total capital have positive effect on portfolio investment of the quoted industrial goods manufacturing firms. That there is no significant relationship between long term debt and the portfolio investment of quoted industrial goods manufacturing firms in Nigeria. That there is no significant relationship between long term debt and the portfolio investment of quoted industrial goods manufacturing firms in Nigeria. That there is no significant relationship between long term debt and the portfolio investment of quoted industrial goods manufacturing firms in Nigeria.

Recommendations

i. The study found that short term debt have positive but significant relationship with portfolio investment but negative relationship with portfolio investment of the quoted firms, we recommend that he firms should formulate capital structure policy that will reduce the use of short term debt.

ii. The study recommends that corporate managers should endeavor to manage long term debt of the firms. The management of the quoted manufacturing firms should appraise long term debt of the firms properly before contracting the debt. There is need for the quoted manufacturing firms optimize financing decision in line with dividend policy.

iii. The study found that short term debt have positive but significant relationship with portfolio investment we recommend that he firms should formulate capital structure policy that will reduce the use of short term debt. Management should consider revisiting the corporate funding policy of the firms.

iv. Management of the quoted manufacturing firms should endeavor to integrate internal and external factor that enhance optimal capital policy as the study validated the debt equity ratio importance in determining portfolio investment.

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