

Capital Structure and Performance Evaluation in Manufacturing Sector: A Case Study of Selected Quoted Companies in the Nigeria Stock Exchange (NSE)

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Abstract

This study examines the relationship between capital structure and performance value of capitalized manufacturing firms in Nigeria. The annual financial statement of seven (7) manufacturing firms listed in the Nigeria Stock Exchange, covering a period of ten (10) years i.e. 2001-2010 was used in this study. Multiple regression analysis was used to determine the relationship between performance indicators such as return on equity (ROE), return on asset (ROA) and profit margin (PM) as well as the explanatory variables which consist of Total Asset (TA), Corporate Tax (CT), Annual interest rate (AIR) and Debt-Equity Ratio (TDER) which served as capital structure. Three models were developed for the purpose of determining the relationship which exist between capital structure (TDER) and the various performance indicators (ROE, ROA & PM). The result showed a negative significant relationship in model one and insignificant in models two and three. The work concludes that there is a negative significant relationship between capital structure and Return on Equity (ROE) and insignificant relationship between capital structure and Return on Asset (ROA) and Profit Margin (PM). The study concludes that management of firms should exercise caution while choosing the amount of debt to use in their capital structure as it affects firms' performance negatively.

Introduction

Traditionally, short-term borrowings are excluded from the list of methods of financing the firm's capital expenditure as such, long-term claims are said to form the capital structure of the enterprise. Firms that are in need of finances exchange their financial securities (shares, debentures, etc) for funds provided by (individual and institutional) investors. Capital structure is therefore a combination of debt and equity to finance the assets of a firm. Capital structure decision is concerned with the ratio of debt to equity that will maximize the returns of the firm. Debt is a source of finance which has several advantages. First of all is that interest paid on it, is tax deductible which lowers the effective cost of debt. Secondly, debt holders get a fixed return; so stockholders do not have to share their profits if business is extremely successful. Debt also has disadvantages. First, the higher a company's interest rate ratio, the higher its interest rate. Secondly, if a company falls on hard times and operating income is not sufficient to cover interest changes, stockholders will have to cover the shortfall; and if they cannot, bankruptcy will result (Eugene, 2009).

OBJECTIVE OF THE STUDY

This researcher seeks to achieve the following objectives:

- Know if there is significant relationship between capital structure and return on equity of a capitalized manufacturing firm
- Know if there is significant relationship between capital structure and return on assets of a capitalized manufacturing firm.
- Know if there is a significant relationship between capital structure and profit margin of a capitalized manufacturing firm.

CAPITAL STRUCTURE RELEVANCE THEORY

Capital structure relevance theory is of the view that changes in capital structure affects the nature of the firm. There are two approaches to the relevance of capital structure. These are net income approach and traditional approach.

NET INCOME APPROACH

Net income approach is of the view that leverage affects the overall cost of capital (K_0) where the overall value of the firm varies with leverage. This school of thought argues that an increase in leverage causes K_0 (firms cost

of capital) to fall and the value of the firm to rise. This approach makes the following assumptions;

- i. The cost of debt (K_d) and the cost of equity (K_e) remain constant with an increase in leverage.
- ii. The cost of debt is less than the cost of equity. Olowe, (2008).

THE TRADITIONAL APPROACH

Olowe, (2008) described the argument or views of the traditionalist into three stages which is as follows;

- a. The cost of equity is assumed to be constant or rise slightly with an increase in debt or leverage. The cost of debt is constant and cheaper than the cost of equity. Because of the cheap cost of debt, the cost of capital falls as leverage increases. The value of the firm will also increase. Pandey in his book referred to this stage as the “first stage: increase value”.
- b. After reaching a certain degree of leverage, the cost of equity because of added financial risk, will increase in a way that offsets the advantage of cheap debt finance. Within this range or at a specific point, the firm attains optimum capital structure. This is the optimum value stage as presented by Pandey, (2005).
- c. Beyond a certain limit of leverage, investors perceive a higher degree of financial risks. The increase in cost of equity will more than offset the cheap debt finance. At this level, the weighted average cost of capital will begin to increase as added financial risks results to increased cost of debt at that level of leverage, thereby causing decline in the value of the firm.

CAPITAL STRUCTURE IRRELEVANCE

The capital structure irrelevance principle or theory, which is often called the Modigliani and Miller theorem, do not agree with the traditional view. They argue that the value of the firm depends on the earnings and not the risk of its assets (business risk) rather than the way in which the assets have been financed Pandey, (2005). This school of thought adopted the net operating income approach. This approach holds that financial leverage or capital structure changes do not affect the market value of the firm or the weighted average cost of capital (WACC). This approach, values the firm by discounting the net operating income with the firm's opportunity cost of capital, which depends on the business risk. The cost of debt here is constant and cheaper than the cost of equity. The cost of equity is assumed in this approach to increase linearly with leverage.

REVIEW OF EMPIRICAL STUDIES

Many researchers have conducted studies and research is on-going on what Pandey (2005) termed the capital structure controversy”. Modigliani and Miller (1963) suggests that capital structure of companies should be formed completely of debt because interest payments results in lower tax. This assertion may be valid in theory but practically, the costs of bankruptcy are proportional to the company's debt. Hence, optimal capital structure may only be accomplished if tax benefits are equal to bankruptcy costs. In this scenario, the duty of managers is to recognize the achievement of optimal capital structure and then maintain it. It is the only appropriate point where cost of financing and weighted average cost of capital are reduced resulting in enhanced performance and cooperate value.

By exercising theoretical models, management teams are quite capable of developing optimal capital structure (Simerly and Li, 2010). They argue that financial performance of a company is not interrelated to the salary of a manager. Hence, managers prefer huge benefits instead of sharing company profits (dividends) with shareholders. Thus, shareholders are faced with the task of ensuring that managers are working with the target of maximizing firm value. Shareholders are required to look for ways of settling principal-agent problems.

Meziane (2007) explains that two main compensations of debt financing are taxation and discipline. He contends that, interests are paid before tax payments but dividends are paid after taxation, so the cost of debt is significantly less than that of equity. Normally, due to bankruptcy, managers remain cautious and issue a given amount of debt that will not lead the company into problems of default in payment of interest. External equity also has its shortcomings. Although, dividend declaration and payment is not mandatory, it is an incentive to potential investors and may lead to increase in share price. However, it has the problem of dilution of ownership and principal-agency conflicts.

Based on empirical evidence, options have been made available on how a firm could finance its operations. Fluck (2009) reveals that the preliminary and following decisions of financing should follow a pattern: companies will float external equity and bonds initially and afterwards, use retained earnings, long term debts and external equity for subsequent financial requirements. Stenbacka and Tombak (2008) largely agree with Fluck's assertion but not the other of financing. They recommend that small companies should issue debt first to generate retained earnings and as it accumulates, managers should concurrently obtain both debt and new equity. Meziane (2007) postulates a slightly different view: start ups should be financed with owners' capital, expanding companies with venture capital or private equity while mature companies should use internal financing, more debt and equity. These options are suggested but managers should choose which one to follow in accordance with prevailing circumstances in their companies.

Capital structure literature has shown conflicting results among researchers. Some studies have shown that capital structure has significant impact on firm performance while others have shown no impact. Generally,

researchers argue that an association between capital structure and firm performance exist (Hung, et. Al. 2002). While some studies have concluded that the relationship between capital structure and firm performance is both positive and negative (Abor, 2005;). Yet, other studies have documented a positive relationship (Aman, 2011; Chowdhury and Chowdhury, 2010; Akintoye, 2008).

With these mixed and conflicting results, the quest for examining the relationship between capital structure and firm performance has remained a puzzle and empirical study continues.

RESEARCH DESIGN

According to Kerlinger (2010), it is the plan, structure and strategy of investigation conceived so as to obtain answers to research questions and to control variance. In view of the above, the researcher adopted the ex –post facto design. A sample of seven (7) manufacturing firms was selected from the manufacturing sector of the Nigerian stock exchange. These companies are: Nestle Nigeria Plc, Cadbury Nigeria Plc, UTC Nigeria Plc, 7-up bottling company Plc, Guinness Nigeria Plc, Northern Nigeria flour mills Plc and Cement company of Northern Nigeria.

The researcher was limited to these numbers of firms due to access to data and time constraint.

POPULATION AND SAMPLE SIZE

The population of this research work consists of all the manufacturing firms on the Nigerian stock Exchange from 2001 to 2010. The sample size consists of seven (7) selected Manufacturing firms from the manufacturing sector of the Nigerian stock Exchange.

METHOD OF DATA COLLECTION

Data for this research work was sourced from financial statement of capitalized manufacturing firms mentioned above and completely based on secondary data of the period under review (2001-2010).

TECHNIQUES FOR DATA ANALYSIS

Based on the literature review on the relationship between capital structure and firm’s performance, the software package used for this analysis is the statistical packages for the social science (SPSS) version 17. This package was selected due to its popularity and availability. The regression analysis tool performs linear regression analysis using the least square method to fit a line through a set observation. It is used to investigate the nature of relationship which exists between two or more variable. This tool was selected and considered appropriate for this study based on previous works as cited in the empirical framework of the literature review.

MODEL SPECIFICATION

The following model was adopted by the researcher with a little adjustment in order to test the hypothesis of this research work.

Using multiple regression analysis, the model can be built as follows:

$$PERF = b_0 + b_1TDE + b_2TAX + b_3INT + b_4SIZE + e$$

Where:

PERF = Performance (proxied by ROE, ROA PM)

ROE = Return on Equity

ROA = Return on Equity

PM = Profit Margin

CS = Capital Structure

TDE = Debt-Equity ratio (proxy for capital structure)

TAX = Corporate Tax

INT = Annual interest rate

SIZE = Size of firm (measured as the total asset of the given firm).

B_0 = constant, b_1 , b_2 , b_3 and b_4 are regression coefficient for the independent variables.

e = Stochastic error term.

ANALYSIS OF DATA FOR RETURN ON EQUITY (ROE)

The regression result for data on Return on Equity (ROE) is presented in tables 4.1 and 4.2.

Table 4.1: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.972 ^a	.944	.941	1.33437	1.423

a. Predictors: (Constant), Total Asset, Annual Interest rate, Total Debt Equity Ratio, Corporate Tax

b. Dependent Variable: Return on Equity

Table 4.2: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.466	.603		.773	.442
Total Debt Equity Ratio	-.180	.005	-.969	-32.831	.000
Corporate Tax	1.291E-7	.000	.041	.903	.370
Annual Interest rate	-.089	.958	-.003	-.093	.926
Total Asset	2.724E-8	.000	.073	1.633	.107

a. Dependent Variable: Return on Equity

From table 4.1 above, R^2 is 94 percent which indicates highly significant relationship between the explanatory variables as only 6 percent of the variation is attributable to factors outside this study. It is an indication of a predictive power which is very high. It shows the model is well fitted. The Durbin- Watson value of 1.423 shows a mild presence of autocorrelation.

Table 4.2 also shows the relationship between TA, TDER, AIR, CT and ROE. It shows that a negative relationship exist between TDER, AIR and ROE. While a positive relationship exists between TA, CT and ROE. This means an increase in TDER and AIR by one unit will reduce ROE by 96.9 percent and 3 percent respectively. While a unit change in CT and TA will increase ROE by 4.1 percent and 7.3 percent respectively. The table also shows the level of significance for the various explanatory variables. It shows that TDER is the only significant independent variable though it is negatively related given by its significant value of $0.000 < 0.01$ (significant at 99%).

ANALYSIS OF DATA ON RETURN ON ASSET.

Table 4.3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.613 ^a	.376	.338	.14293	1.454

a. Predictors: (Constant), Total Asset, Annual Interest rate, Total Debt Equity Ratio, Corporate Tax

b. Dependent Variable: Return on Asset

From table 4.3 above, R^2 is 38% which indicates weak predictive relationship between the explanatory variables as 62% of the variation is attributable to factors outside the study.

Table 4.4 Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	.073	.065		1.127	.264
Total Debt Equity Ratio	-.001	.001	-.172	-1.740	.087
Corporate Tax	-7.284E-8	.000	-.720	-4.757	.000
Annual Interest rate	.013	.103	.012	.124	.902
Total Asset	-2.803E-9	.000	-.235	-1.568	.122

a. Dependent Variable: Return on Asset

Table 4.4 below shows that it is only corporate tax that is significant at $0.000 < 0.01$ (significant at 99%) with t-value at -4.757. other explanatory variable considered in this work such as TDER, AIR & TA had -1.740, 0.124, and -1.568 as its t-value with t-significant value at 8.7, 90.2 and 12.2 percent significance. They are thus not relevant as they exceed the 5 percent level of significance.

ANALYSIS OF DATA ON PROFIT MARGIN (PM)

Table 4.5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.367 ^a	.135	.082	.25435	1.524

a. Predictors: (Constant), Total Asset, Annual Interest rate, Total Debt Equity Ratio, Corporate Tax

b. Dependent Variable: Profit Margin

Table 4.6 Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	-.072	.115		-.629	.532
Total Debt Equity Ratio	-.001	.001	-.148	-1.271	.208
Corporate Tax	-3.656E-8	.000	-.239	-1.342	.184
Annual Interest rate	.059	.183	.038	.323	.748
Total Asset	1.607E-9	.000	.089	.505	.615

a. Dependent Variable: Profit Margin

Table 4.5 is the model summary for profit margin. The model is abysmally weak, very poor with 14% predictive power and 86% variation from external factors. Although there is the presence of mild autocorrelation, the independent variables considered reflected a poor relationship between them and profit margin as a measure of accessing performance.

Table 4.6 indicates that none of the parameter index of the independent variable is significant as they all exceed the 5% level of significance. TDER and CT have a negative coefficient of 14.8% & 23.9% respectively while Annual Interest Rate (AIR) & Total Asset (TA) has a positive coefficient of 2.8% & 8.9% respectively. This indicates that an increase in TDER & CT by one unit will reduce PM by 14.8% & 23.9% respectively but an increase in AIR & TA by same unit will increase PM by 3.8% and 68.9% respectively.

However none of the independent variables are significant as TDER, CT, AIR & TA have t-significant at 20.8%, 18.4%, 74.8%, 61.3% respectively. These figures exceed the allowed significant level of 5% upon which this research work was based.

TEST OF HYPOTHESIS

Hypothesis 1

Ho: There is no significant relationship between capital structure and return on equity of a capitalized manufacturing firm.

From the result in table 4.2 the calculated t-value for the capital structure variable (TDER) is -32.837 while the critical t-value at the 5 percent significant level is 1.960.

Decision Rule: The calculated t-value of -32.831 is greater than the 5 percent significance level of 1.960. Thus we accept the alternative hypothesis and reject the null hypothesis. This implies that a significant (negative) relationship exists between firms capital structure and return on equity.

Hypothesis II

Ho: There is no significant relationship between capital structure and return on Asset of a capitalized manufacturing firm.

From table 4.4, the calculated t-value for the capital structure variable (TDER) is -1.740 while the critical t-value is 1.960 at 5 percent level of significance.

Decision Rule: The calculated t-value is -1.740 and it is less than the 5 percent critical value of 1.960. This shows that there is a negative insignificant relationship which exists between firms capital structure and return on asset of a capitalized manufacturing firm. Thus we reject the alternate hypothesis and accept the null hypothesis. This implies that return on asset, does not have a significant relationship with firms capital structure. Although there is a significant relationship between return on asset and corporate tax, corporate tax is not the proxy for considering capital structure in this research work.

Hypothesis III

Ho: There is no significant relationship between capital structure and profit margin of a capitalized manufacturing firm. .

From the result in table 4.6, the calculated t-value is -1.271 it is less than the 5 percent critical t-value of 1.960.

Decision Rule: The calculated t-value is -1.271 and it is less than the 5 percent critical t-value of 1.960. This implies that there is a negative insignificant relationship which exists between capital structure and profit margin of a capitalized manufacturing firm. Thus, we reject the alternate hypothesis and accept the null hypothesis. This means that there is no significant relationship between capital structure and profit margin of a capitalized manufacturing firm.

DISCUSSION OF FINDINGS

The study examined the relationship between capital structure and performance value of capitalized manufacturing firms. Seven capitalized manufacturing firms made up the sample size. Capital structure indicator (TDER) with some other explanatory variables was considered with Return on Equity (ROE), Return on Asset (ROA) and Profit Margin (PM) as performance indicators. The following findings were made in the course of

this research work.

That there is a negative significant relationship between capital structure (TDER) and performance value (ROE) of a firm. Thus higher debt equity ratio, tends to dampen efficiency in managers handling of shareholders fund.

That firm's leverage (TDER) has an insignificant and negative impact on firms Return on Asset. As the capital structure shifts in favour of debt in capital formation, the Return on Asset of the firm tends to reduce.

That firms' leverage (TDER) has an insignificant and negative impact on the Profit Margin of the firm. This indicates that an increase in favour of debt reduces the profit margin of the firm.

That model 1 is well fitted for the assessment of the explanatory variables considered in this research work when determining the relationship between capital structure (TDER) and performance value of a firm (ROE) when compared to other models (2 & 3) considered for assessing performance (ROA & PM) in this research work.

RECOMMENDATIONS

Based on the findings made in the cause of this study, the following recommendations are made.

- a. Policy should be made in firms pegging the use of debt at a given percentage as a change in capital structure composition in favour of equity can increase the performance of a firm.
- b. Firms should devise means through which they can utilize debt to form optimal capital structure so as to maximize the wealth of shareholders.
- c. Firms should try to finance their activities with retained earnings and use debt as a last option as supported by Pecking Order theory
- d. Investors should avoid investing in firms with high debt profile as it can affect returns due to them as investors.
- e. Finally, return on asset (ROE) and profit margin are not good assessment variables in determining the relationship between capital structure and performance value; as such its use should be discarded.

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