

# “Capital structure and profitability: the case of Nigerian deposit money banks”

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# CAPITAL STRUCTURE AND PROFITABILITY: THE CASE OF NIGERIAN DEPOSIT MONEY BANKS

## Abstract

This paper aimed to empirically examine the extent to which capital structure impacts the profitability of Nigerian Deposit Money Banks considering the profitability of eight Nigerian Deposit Money Banks from 2003 to 2018 (16 years). A descriptive research design was adopted for this study, and data were analyzed using regression. The study used secondary data obtained from published annual reports of selected Nigerian Deposit Money Banks on the Nigerian Stock Exchange (NSE) for four years (2003–2018). The study concluded that the indicators used to measure capital structure (debt-equity ratio and leverage ratio) and profitability (returns on equity) had a negative relationship. This means that the use of debts mixed with equity (debt-equity ratio and leverage ratio) in improper proportion as financing methods can negatively affect profitability. Hence, there is a need to identify the optimal mix of capital structure (debts mixed with equity) that maximizes profitability, as well as firm and shareholder value with minimum agency costs as suggested by the trade-off theory and agency theory, respectively. The alternative is to give preference to retained earnings (internal source of finance) as funding source.

## Keywords

agency theory, debt, equity, leverage ratio, return on equity

## JEL Classification

G21, G32, M41

## INTRODUCTION

The diverse methods of financing a firm are what is referred to as capital structure (CS); that is, the connection between obligation and value. Researchers generally believe that organizations should adopt the best combination of debt and equity (DE). Some firms do not design their CS; instead, they create them from money-related choices taken by the managers without appropriate planning and control (Pandey, 2004; Otekunrin et al., 2018). Organizations that do not appropriately design their CS will find it hard to raise funds to back their activities (Otekunrin, Olowookere et al., 2019). The factors affecting the corporate organizations' CS are both internal and external. Misappropriation of finance can severely affect the business enterprise's performance and survival. This has been proved as a primary cause of business failure. Researchers generally believe that organizations should adopt the best combination of debt and equity. Financial structure influences the capital price of a company and, therefore, profitability (Uwuigbe & Olayinka, 2012). The decision on financing the operation of a firm is crucial and critical as managers often encounter problems in finding the best DE ratio. This study empirically examines the extent to which the DE financing (CS) has affected the profitability of companies, and conducts research exploring eight Nigerian Deposit Money Banks from 2003 to 2018 (16 years) to improve the analysis.

# 1. LITERATURE REVIEW

## 1.1. Capital structure

Miller and Modigliani pioneered the issue of CS in 1958, arguing that CS was unrelated in determining a company's value and future performance. CS has to do with the sources in which a company receives the essential long-term capital. CS research attempts to clarify the combination of securities and financing sources used by companies to fund asset (Myers, 2001). Singh and Hamid (1992) used data in their research on the biggest firms in developing countries and revealed that companies in developing nations used debt financing to fund their activities than those in developed countries. Generally, CS is designed to serve equity investors' interest. This includes equity, preferential capital, retained earnings, and borrowed funds like debentures, bonds, and loans from shareholders. The primary financing class of every organization are DE (Joshua, 2017). The CS is characterized as a mixture of DE used by the firm in its operation and a mixture of various securities (Abor, 2005). To this end, these variables were adapted to carry out this study to measure the CS (DE ratio and Leverage ratio) of Nigerian Deposit Money Banks to find out the relationship between CS and profitability (proxy by ROE).

## 1.2. Profitability

The performance of a business can be evaluated based on its level of profitability (Pandey, 2004). The amount of debt indicates the growing requirement for exterior resources by the company and, consequently, the amount of profit that the company will use to settle the principal debt and the accumulated interest on them (Myers, 2001). Hence, the importance of profitability and the use of shareholders fund or equity fund cannot be overemphasized. This is because the company will not have to pay interest to any exterior resources provider for using the company funds (i.e., shareholders fund or equity fund) to finance its operating activities. A company or organization's fundamental CS will affect its profit-earning capacity (Reddy, 2012) and profit maximization is a required prerequisite for any firm that wants to sustain its going concern status, to the delight of its investors, administrators and promoters. It is for this reason that this study has

selected the profitability spectrum to measure companies' performance. Many measures are used to evaluate a business: profitability, liquidity, turnover ratio and other essential measurements. The profitability also can be measured using different financial ratios such as return on investment (ROI), ROE, cash ratio, return on assets and other ratios. This study decided to use ROE as a proxy and performance indicator for the profitability variable. This is because ROE is the portion of the profit for the accounting period that belongs to the real owner of the company (i.e. the ordinary shareholders).

## 1.3. Theoretical review

Theories that were explored to pinpoint the extent to which the CS has influenced the performance of firms in this study are now considered.

### 1.3.1. Capital structure irrelevancy theory

Capital structure is a mixture of DE and decision on which blend of DE will maximize the profit of the firm, as the firm and shareholder value is a significant problem encountered by a company's economic executives (Kochhar, 1997). Four theories were used to clarify the CS choices. The theory suggests that the company's value has a propensity to be independent of the company's debt and is primarily influenced by the presence of several favorable, net present value project investments. Modigliani and Miller (1958) opined that investors have the same business-related economic data as managers that can be called "systematic computing", but in fact, it is more convenient to think that managers are likely to have asymmetrical data (Tekler et al., 2009). Modigliani and Miller's (1963, p. 439) study indicates: "...firms are unresponsive concerning the method of funding (that is the mix of both debt and equity are good a well) in cases where taxes are not charged, Value Added Tax by way of corporate taxes, firms should be financed with nearly all debt; however, the M&M model assumes many factors that can imply that a precise balance of debt and financing is but for a given firm. If we want to draw a decision of MM analysis, this can be done by giving the following two summarized results of the same, the only benefit of debt financing (relative to equity financing) is the reduction in corporate income taxes due to the tax-deductibility of debt interest, there are no shortcomings of debt financing relative to equity funding". Based

on the fact that this theory is based on the relevancy of a mixture of DE only when taxes are charged, it is not adopted in this study.

### 1.3.2. Trade-off theory (TOT)

This theory developed by Modigliani and Miller (1965) explained that a favorable level of financial structure could be achieved using debt financing profits and costs. The theory argues that financial distress taxes and costs determine the capital composition of DE of a company. Payment of interest has advantages, as any amount paid as interest on the debt will be eliminated from profit before arriving at taxable income. Hence companies are inspired to include debt in financing their activities. TOT also considered bankruptcy cost and presumed marginal cost and benefit of tax rebate equal at optimal debt level about bankruptcy caused by leverage. Consequently, there is a favorable connection between the corporate tax shield and the value of the firm (Stiglitz, 1969). Also, discarding the hypothesis of no agency costs gives theoretical subsistence of an optimal CS.

Agency costs arise and affect finance (capital structure), due to shareholders' interest conflicting with management' interest. The conflict of interest is the consequent of separation of ownership of the firm (the principal, i.e. shareholders who are the owner of the firm but they do not control daily activities and decisions of the firm) and control of firm' activities that is in care of a manager (the agent employed by the shareholder to decide on their behalf on daily activities of a firm) (Jensen & Meckling, 1976). Bankruptcy gives room to conflicts of interest between creditors and shareholders. This is because creditors have priority over shareholders if the company runs bankrupt. TOT presumed that at minimum agency costs, the debt ratio is at an optimal level (Brennan & Schwartz, 1984; Jensen, 1986; Jensen & Meckling, 1976; Kane et al., 1984). It is for this reason TOT is adopted in this study. Researchers divided the concepts of trade-off into two primary groups (static trade-off theory and dynamic trade-off theory), but this study is not focusing on these divisions.

### 1.3.3. Pecking order theory (POT)

Pecking order theory is based on the assumption that there are three sources of financing, which

is in form funds generated from operations (retained profit), debt issue and equity issue. The theory is based on the fact that the companies should finance themselves first on their internally generated cash, then on the debt issue and lastly on the equity issue. The theory makes this lead to the fact of asymmetric information meaning that an investor cannot have the same information with the managers because the managers work in the company and can have information about all the investment and project showing the actual values of the firm. The theory also states that there is a signaling effect that because of the information the managers have, he can undervalue the stock, so it is always preferable to issue debt than equity. In contrast to the trade-off theory, the pecking order theory insists that there is no optimal amount of debt and it's always preferable that the companies should finance themselves from retained earnings. Moreover, it argues that the D/E ratio shows the internal financing capability, as well as new investment opportunities of firms. Profitable firms that have fewer investment opportunities will have a low D/E ratio. In comparison, firms with more investment opportunities but restricted internal funding will have a high D/E ratio.

### 1.3.4. Agency theory

Agency theory is concerned with the relationship between shareholders and agents, usually the company's managers. In this theory, shareholders are the actual owners of the company, and the job of the agent is limited to making sure that the shareholders' values are fully maximized. Agency costs arise and affect finance (CS) due to shareholders' interest conflicting with management' interest (Eluyela et al., 2019). The conflict of interest is the consequence of the separation of ownership of the firm (the principal, i.e. shareholders who are the owner of the firm but they do not control daily activities and decisions of the firm) and control of firm' activities that is in care of a manager (the agent employed by the shareholder to decide on their behalf on the daily activities of a firm) (Jensen & Meckling, 1976). Bankruptcy gives room to conflicts of interest between creditors and shareholders. This is because creditors have priority over shareholders if the company runs bankrupt. Trade-off theory (TOT) presumed that at minimum agency costs, the debt the ratio is at an

optimal level (Brennan & Schwartz, 1984; Jensen, 1986; Jensen & Meckling, 1976; Kane et al., 1984). It is for this reason that agency theory is adopted in this study.

## 2. HYPOTHESES DEVELOPMENT

Based on the literature review, empirical evidences and to fill the gap in knowledge this study empirically examines how capital structure influences profitability. For example, extant studies in this area display mixed results. Studies found that profitability was positively related to the capital structure (Deping & Yongsheng, 2011; Masulis, 1983; Jordan et al., 1998; Frank & Goyal, 2003; Simerly & Li, 2000) and some extant studies found that profitability was negatively related to the capital structure (Rao et al., 2007; Chakraborty, 2010; Majumdar & Chhibber, 2004), while some extant studies found no association between the dependent variable (profitability) and the independent variable (capital structure) (Amah & Chimara, 2016). The mixed results have been the source of encouragement for continuous research on the subject matter. Hence, the following hypotheses in their null form are developed:

- H<sub>1</sub>: Debt/Equity ratio (capital structure) and ROE (profitability) are not significantly related.*
- H<sub>2</sub>: Leverage ratio (capital structure) and ROE (profitability) are not significantly related.*

## 3. METHODOLOGY

This study examined the influence of capital structure on the profitability of companies; eight Nigerian Deposit Money Banks were considered from 2003 to 2018 in line with Otekunrin et al. (2018) using descriptive research design. The financial data of these companies have been extracted from the database of the Nigeria Stock Exchange (NSE). All the 17(100%) Nigerian Deposit Money Banks on NSE form the population of the study out of which eight (47%) Nigerian Deposit Money Banks on NSE were randomly selected based on the availability of companies' annual reports from

2003 to 2018. The sample size of 47% is supported by Law (2012) that presumed that 30% of the population could fairly represent the population.

### 3.1. Model specification

This examination dictates a simple regression model. This model is designed to explore the association between the corporate capital structure and profitability. A direct condition has been received by Koech (2013) to look at the connection between these two. Capital market instruments and benefit are the two builds included. In this manner, the regression equation was figured as:

$$ROE = \beta_0 + \beta_1 DE + \beta_2 LR + l_j, \quad (1)$$

where *ROE* = Equity return used as a profitability measure, *DE* = D/E Ratio = [Total Debts / (EQUITY FUND)]·100%, *LR* = Leverage Ratio = [(LTD+ PREF. SHR) / (EQUITY FUND)]·100%, and *l<sub>j</sub>* = Random error.

## 4. RESULTS AND DISCUSSION

### 4.1. Descriptive statistics

ROE measures profitability, while the Leverage Ratio and the Debt to Equity Ratio estimate CS, a variable that estimates benefit. Table 1 shows the investigation using descriptive analysis of ROE, Leverage Ratio (LR) and D/E Ratio (DE).

**Table 1.** Descriptive statistics of variables for the empirical model

Source: Researcher's computations.

Variable	ROE	DE	LR
Mean	1,673.134	-2.482362	25.01894
Median	12.03000	0.210000	30.53000
Maximum	329,637.0	16.22000	89.17000
Minimum	-775.9400	-582.2800	-344.1200
Std. dev	23,366.39	41.33100	48.61653
Skewness	13.99975	-13.97666	-4.916713
Kurtosis	196.9971	196.5737	32.78063
Jarque-Bera	318,556.3	317174.2	8,155.534
Probability	0.000000	0.000000	0.000000
Sum	332,953.6	-493.9900	4,978.770
Sum Sq. dev	1.08E+11	338,233.8	467,986.3
Observations	128	128	128

ROE was used to measure profitability. The positive kurtosis demonstrates that the factors were emphatically slanted to one side. All factors were typically dispersed, dependent on the Jarque-Bera measurement. The estimations of Jarque-Bera are huge, and their relating probabilities have uncovered that the relapse factors are regularly circulated. The mean estimation of *DE* is  $-2.482362$ , and the mean esteem is  $0.210000$ , while the standard deviation is high after some time. The base esteem is  $-582.2800$ , while  $16.22000$  is the highest esteem. The mean *LR* esteem is  $25.01894$ , and the mean esteem is  $30.53000$ , while the *LR* standard deviation is  $48.61653$ , which suggests a high standard deviation over time. The base esteem is  $-344.1200$  and  $89.17000$  is the highest esteem.

## 4.2. Regression analysis

Regression Analysis using the generalized method of moments (GMM) was used in this section to study the impact of capital structure on the profitability of eight Nigerian Deposit Money Banks from 2003 to 2018.

**Table 2.** Regression analysis results for the empirical model

Source: Researcher's computations.

Variable	Coefficient	Std. error	t-statistic	Prob.
	2,613,162	6,061,640	4.310982	0.0000
DE	-5,650,692	1,304,318	-433.2295	0.0000
LR	-6,364,176	1,108,857	-1.728424	0.0029
R-squared	0.798958			
Adjusted R-squared	0.775548			
F-statistic	93,970.97			
Prob. (F-statistic)	0.000000			
Durbin-Watson stat	1.897022			

Note: ROE signifies return on equity, DE signifies the debt-equity ratio, and PR signifies the leverage ratio.

Table 2 demonstrates that there is a negative relationship between *DE* (for example, intermediary for CS) and *ROE* (for example, intermediary for benefit) of recorded organizations in Nigeria with t-Statistic of  $-433.2295$  and p-value  $0.0000$ . This does not correlate the examination's apriori desire, as it does not indicate the significant positive connection between *DE* and *ROE*. It demonstrates that the lower the company's *DE*, the higher the company's *ROE*, and the other way around. The R-squared,  $0.798958$  assurance coefficient is high. The  $1.897022$  measurements from Durbin-Watson are under two, but higher than the R-square. The F-measurements were additionally  $93,970.97$ , and the probability (F-statistic) was  $0.00000$ .

As Table 2 shows, where the estimation of the coefficient is  $-5,650,692$ , the t-measurement is  $-433.2295$  with an estimation of  $0.000$ . The outcomes show a noteworthy negative relationship between *DE* and Profitability (proxied by *ROE*) for eight Nigerian Deposit Money Banks from 2003 to 2018. The noteworthy negative relationship between Debt to Equity Ratio and Profitability (*ROE*) is also consistent with the conclusion drawn by Salim and Yadar (2012), who revealed a negative relationship between *DE* and productivity. In this way, this null hypothesis is rejected:

$H_1$ : Debt/Equity ratio (capital structure) and *ROE* (profitability) are not significantly related.

The *LR* results demonstrate that the Leverage ratio and *ROE* are negatively related as appeared by the negative coefficient of  $-6,364,176$  and the t-statistic estimation of  $-1.728424$  and the p-estimation of  $0.0029$  individually. This is similar to Al-Najjar and Taylor's (2008) results.

Therefore, the null hypothesis is rejected:

$H_2$ : Leverage ratio (capital structure) and *ROE* (profitability) are not significantly related.

## CONCLUSION

Many organizations believe that the combination of debt and equity (capital structure) is the best measure to adopt as it influences their overall performance. The study concluded that the indicators used to

measure capital structure (debt-equity ratio and leverage ratio) and profitability (ROE) had a negative relationship. This implies that use of debt and mixed equity (debt-equity ratio and leverage ratio) as financing methods will negatively affect the profitability of the organization. Hence, there is a need to identify the optimal mix of capital structure that maximizes profitability, as well as firm' and shareholder' value with minimum agency costs as suggested by trade-off theory and agency theory, respectively. An alternative is to give preference to retained earnings (internal source of finance) as a source of funding when the firm needs money, and if there is not enough money, the firm can issue debt, and the least preferred source of funding is to issue new equity as supported by the pecking order theory.

## AUTHOR CONTRIBUTIONS

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