



The Effect of Capital Structure on Firm Performance: Evidence from Non-Deposit Financial Institutions in Nigeria

ANYAM, Ngutor; JATO, T.P.J; KWAHAR, Nguwasen; Prof. AYATSE, F.O.A &
ANYAM, David Iordoo

Department of Business Administration, Joseph Sarwuan Tarka University, Makurdi, Benue
State, Nigeria

Abstract: The study investigated the effect of capital structure on the performance of selected non-deposit financial institutions (also known as Development Finance Institutions, DFIs) in Nigeria. The study specifically examined the effect of Short-Term Debt to Total Assets (STDTA) on performance of selected of non-deposit financial institutions in Nigeria; and ascertained the effect of Total Debt to Total Equity (TDTE) on performance of selected non-deposit financial institutions in Nigeria. The study adopted an ex-post facto research design and data were collected from published annual financial records of the selected DFIs on both STDTA and TDTE, the independent variables; and Earnings per Share (EPS) and Return on Assets (ROA), the dependent variables, for a period of ten (10) years (2013-2022). The population of the study composed of seven (7) national DFIs: Central Bank of Nigeria (CBN), Bank of Agriculture (BOA), Bank of Industry (BOI), and Development Bank of Nigeria (DBN), Federal Mortgage Bank of Nigeria (FMBN), Nigeria-Export-Import Bank (NEXIM) and the Infrastructure Bank Plc (IBN). The study sampled four (4) national DFIs using a purposive sampling technique, including CBN, BOI, FMBN and NEXIM. Computation of the relevant ratios were done for the independent variables (STDTA and TDTE); and the dependent variables (EPS and ROA). Data analysis was done using multiple regression and the econometric technique of Dynamic Ordinary Least Squares (DOLS) with the aid of E-Views Version 13. The study found that STDTA has a positive and significant effect on EPS and ROA, indicating that a percentage change in STDTA leads to an increase in EPS and ROA by 1.165987 and 0.001258 respectively; while TDTE has a negative but significant effect on EPS by -0.595635 and a positive and significant effect on ROA, showing that a percentage change in TDTE will significantly increase ROA by 0.001696. The study concluded that the investigated DFIs have low equity capital which seems to hinder their ability to attract large loans for operations. The study recommended, amongst others that DFIs should maintain a balanced total debt to total assets (TDTE) and ensure the regular monitoring of the debt-to-asset ratio to ensure it remains within a healthy range which will help maintain a balance between leverage and risk.

Keywords: Capital Structure, Earnings per Share, Firm Performance, Return on Assets, Short-Term Debt to Total Assets, Total Debt to Total Equity.

1.0 INTRODUCTION

1.1 Background to the Study

Firms adopt various strategies to achieve optimal performance, one of which is capital structuring. Globally, capital serves as an engine in establishing and promoting businesses. The primary objective behind capital structure decisions is to identify the right level of financial leverage that maximizes the firm's value while simultaneously minimizing the weighted average cost of capital (WACC). Capital structure influences the growth, development and long-term sustainability of firms. It encompasses all sources of financing that organizations utilize to fund their operations, including both debt and equity. Capital structure is therefore a critical element of a firm's financing policy, significantly impacting

performance. This is more so, for non-deposit financial institutions like development banks, which operate better with higher capital structures (Ogunsola & Ogheneoparabo, 2022).

Development banks (DB), also known as Development Finance Institutions (DFIs), play a vital role in bolstering both public and private sector initiatives, especially in developing nations. DFIs are established and owned by governments and philanthropic entities to provide low-interest funding for capital projects. The Britton Woods Institutions, such as the World Bank (WB), is a predecessor DFI owned by 187 countries. DFIs include social and impact investing criteria into their mandates. They provide equity investments, guarantees and long-term loans, for economic development project, usually on non-commercial basis (Alem & Madeira, 2015; and Massa, *et. al.*, 2016). Further, Marbuah, *et. al.* (2022), report that DFIs provide capital that is related to the design and implementation of reforms and capacity building programmes in developing economies. As stakeholders are interested in the performance of a firm, managers of DFIs need to carefully consider capital structure decisions, as an incorrect combination of debt and equity can negatively impact performance (Shaqqour, 2016). In this regard, Attridge, *et. al.*, (2019), informed that multilateral, bilateral and regional DFI have large capital bases and tend to engage where the market fails to invest sufficiently, thus delivering on expected performance.

Firm performance reflects the ability of organizations to achieve pre-determined goals, by using available resources in both an efficient and effective manner (Taouab & Issor, 2019). Gutterman (2023), notes that firm performance can be measured by profitability, return on assets (ROA), return on equity (EPS), market share, sales growth, operational efficiency, amongst others; which indicators are also influenced by the nature of capital structure. Taouab & Issor (2019) see the concept of firm performance as generic and dynamic, changing from decade to decade. Selvem, *et. al.* (2016), suggests that the definition of performance in the 21st century should focus on how firms make efficient use of resources to consistently improve capabilities and abilities to achieve goals on a sustainable basis. Indeed, the growing importance of sustainability has led to the inclusion of non-financial measures such as: employee morale, customer loyalty and corporate social responsibility (CSR), as indicators of performance. In this study, Earnings per Share (EPS) and Return on assets (ROA) are used as a measures of firm performance.

1.2 Statement of the Problem

Capital structure is a mixture of a company's debt (long-term and short-term), common equity and preferred equity; is related to the ability to fulfil the needs of various stakeholders; and represents the major claims to a firm's assets (Baker & Martin, 2014; and Ogunsola & Ogheneoparabo, 2022). Prior studies have demonstrated a significant relationship between capital structure and firm performance (Gharaibeh, 2015; Siddik, *et. al.*, 2017; Ayomitunde, *et. al.*, 2019; Ogunsola & Ogheneoparabo, 2022). However, there are mixed results illustrating the nature of the relationship between capital structure and performance. In Nigeria, DFIs are apparently not too effective and efficient in their functions. Maimako & Oladele (2015) stated that poor management, lack of transparency and accountability as well as the tendency for DFIs to engage in window dressing financial statements hinders the attainment of corporate objectives and economic growth. Empirical research has relied on generalised statements from performance of listed firms and other highly regulated financial institutions (such as deposit banks) which do not represent a true picture of DFIs (Maimako & Oladele, 2015). To fill the gap in literature, this study is motivated to

examine the effect of capital structure on the performance of non-deposit financial institutions (DFIs) in Nigeria.

1.3 Objectives of the Study

The main objective of the study is to investigate the effect of capital structure on firm performance of selected non-deposit financial institutions (DFIs) in Nigeria. Specifically, the study is carried out to:

- i. determine the effect of Short-Term Debt to Total Assets (STDTA) on performance (proxied by EPS and ROA) of selected DFIs in Nigeria.
- ii. ascertain the effect of Total Debt to Total Equity (TDTE) on performance (proxied by EPS and ROA) of selected DFIs in Nigeria.

2.0

REVIEW OF RELATED LITERATURE

2.1 Capital Structure

A firm's capital structure refers to the combination of its financial liabilities. Suardi & Noor (2015), posit that capital structure is basically a firm's financial framework: a combination of debt and equity (100% to 0% or any combination thereof) capital maintained by a firm; and a mixture of various long-term sources of funds and equity shares including reserves and surpluses of an enterprise. Dada & Ghazali (2016), describe capital structure as a system in which equity as well as debts are employed for funding the firm's activities to yield optimum returns for the stakeholders, given a level of risk. Etale & Ekpulu (2019), affirmed that capital structure embodies the financial framework of corporate entities which comprise of the debt and equity employed to finance the firm assets and overall operations. The decision on capital composition is a continuous process, mostly when the need for financing new projects emanate. From the above definitions of capital structure provided, this study adopts Habimana (2014), who defined capital structure as the proportion of debts (which include long term debt, short term debt) as well as equities that a business uses to finance its operations.

2.1.1 Dimensions of Capital Structure

Dahiru (2016); and Siddik, *et. al.* (2017) inform that the dimensions of capital structure include Long Term Debt to Total Assets (LTDTA), Short Term Debt to Total Assets (STDTA), Total Debt to Total Assets (TDTA) and Total Debt to Total Equity (TDTE). This study however, used Short-Term Debt to Total Assets (STDTA) and Total Debt to Total Equity (TDTE) as the dimensions of capital structure.

i. Short Term Debt to Total Assets (STDTA)

Short-term debt to total assets (STDTA) are generally defined to be those items that will be used, liquidated, mature or paid off within one year. Dahiru (2016), state that STDTA is an item in a firm's capital structure that affects its financial performance, either negatively or positively. STDTA measures the relative ability of a firm to meet its financial obligation over the accounting period. Some scholars argue that the shorter the debt the better the firm is in improving its performance (Forte and Tavares, 2019). In line with the above, the study aligned with the definition by Akinyomi (2013), that short term debt to total assets is a measurement representing the percentage showing how the total assets of a firm are financed by the short-term debt within a period of twelve (12) months.

iii. Total Debt to Total Equity (TDTE)

Total debt to total equity (TDTE) refers to the ratio of debt-to-equity capital of a company. Nukala & Rao (2021) defined TDTE as a measure of how much a firm uses equity and debt.

Dahiru (2016) explained that the total debt to total equity is expected to have an influence on a firm's performance. Total debt to total equity ratios measures the proportion of creditors fund in relation to shareholder's fund. Creditors would like this ratio to be lower; because the lower the ratio the higher the level of a firm's financing that is being provided by shareholders and the larger the cushion (margin of protection) in the event of shrinking asset values or outright losses. In view of the above, therefore, this study adopts the definition of TDTE provided by Sawir (2014) as a ratio that describes the debt and equity incorporated in a funding structure and shows the ability of the company's own capital to meet its obligations.

2.1.2 Firm Performance

Firm performance is the ability of a business enterprise to make good use of its current assets to meet the objectives of the organization. It measures the outcome of a firm's activities over time, which include financial and non-financial performance. Agbonrha-Oghoye & Umoru (2022), define performance as profit: the excess of income generated over expenses incurred in a given period; being the "raison d'etre" of business or what it is set up to accomplish. Performance is a sign of the (financial) stability for a given period of time for a firm, and can be used to compare firms in the same line of operations or to compare industries or sectors in total to enable a business plan on how they can improve the conditions at stake with an aim to achieve the business objectives. Firm performance, measured by financial indicators such as EPS and ROA shows how well a firm can use assets from its primary mode of business to generate revenues. It is also used as an overall measure of a company's financial health over a particular period of time (Gharaibeh, 2015; Almagtone & Abbas, 2020; and Choiriyah, *et. al.*, 2021). Mutegi (2016) stated that financial performance is how current assets of a firm can be utilized optimally in the course of normal business activities and raise income for the business. It provides a guideline that allow for future decisions relating to business developments, assets acquisitions and managerial control.

2.1.3 Measures of Financial Performance

Siddik, *et.al.* (2017), argue that the dimensions applied in measuring firm performance (financial) include the Return on Equity (ROE), Returns on Asset (ROA) and Earnings Per Share (EPS) and Net Profit Margin (NPM). In this study, only EPS and ROA are used as a measure of firm performance.

i. Earnings per share (EPS)

Earnings per share (EPS), is a financial ratio which measures potential profit on investment in company's shares. Islam, *et. al.* (2014), inform that EPS is considered the most important factor to determine share price, firm value and performance. It is important for both investors who count on a profitable dividend as well as those who expect an increased market value of shares resulting from, for example, the increasing profit. For investors, it is a crucial indicator used to build investment strategies and portfolio (Ohlson and Juettner-Nauroth, 2015). It is also a basis for calculating other capital market ratios such as Price Earnings Ratio (PER) or Dividend Per Share (DPS). EPS is reliable provided that it is calculated using the same principles, and thus enabling comparisons between different reporting periods and different entities. Nowadays, however, joint-stock companies can issue various types of shares which differ, such as, ordinary and preferences shares. Moreover, as a result of a dynamic development of the financial market, a wide range of instruments has emerged which under specific conditions can be converted into shares (options, convertible bonds), and hence can increase the number of shares and affect the EPS value (Islam, *et. al.*, 2014).

ii. Returns on Asset (ROA)

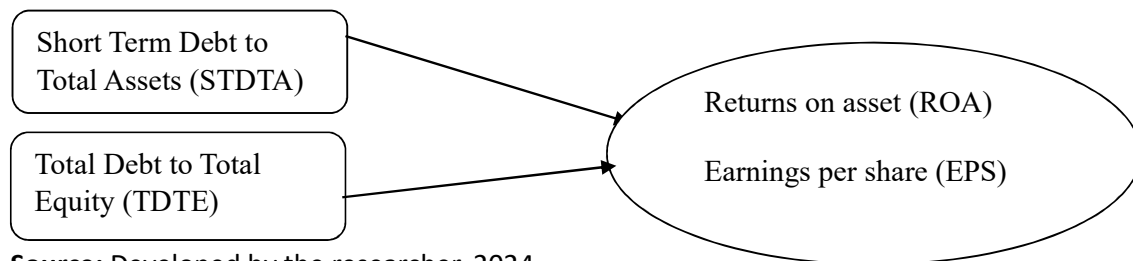
Return on asset (ROA) is a return on investment return (ROI) of sort (Lakshmi, 2019). It gives information about the amount of money returned to an investor for every Naira invested in a business or DFI. ROA demonstrates the capacity of a business to produce profits utilizing its assets. In some sectors, ROA is greater than others because the amount of capital invested in assets varies (Gharaibeh, 2015). The company’s operational efficiency is affected by the use of resources, which is seen in the net profit margin. Success and failure are not necessarily tied to high and low profit margins (Shahfira & Hasanuh, 2021). A business may have low margins yet still be successful if it is creating a high return on its investments and assets. The two factors used to calculate a company’s total operational efficiency are combined in ROA index. Asset turnover calculates how well an organization utilizes its assets, while net profit margin evaluates how profitable the company’s sales are (Shahnia, *et. al.*, 2020).

2.1.4 Nexus between Capital Structure and Firm Performance (EPS and ROA)

Various studies conducted on capital structure and firm performance in developed and developing countries have found a significant and positive relationship between capital structure and firm performance (Adesina, *et. al.*, 2015; Dinh & Cuong, 2020; David, *et. al.*, 2020; and Evbayiro-Osagie & Enadeghe, 2022) while others have found a negative association between capital structure and firm performance (Kasasbah, 2021; Ogunsola & Ogheneoparobo, 2022; Michael & Babajide, 2022; and Tesema, 2024). Also, some studies reported a mixed relationship between the variables (Marigu & Gerald, 2020; Ihejirika, *et. al.*, 2020; Sani, *et. al.*, 2021; and Eyong, *et. al.*, 2021). It is reported that a high STDTA and TDTE indicates a company's increased reliance on debt financing, which can lead to decreased EPS and ROA. Contrarily, a low STDTA and TDTE suggest that an organization has a more conservative financing approach, potentially leading to higher EPS and ROA. Eyong, *et. al.*, (2021); Sani, *et.al.* (2021); and Olowookere, *et. al.*, 2022, found that STDTA has positive and significant influence on firm performance (ROA and EPS in emerging markets; ROA; and EPS respectively). Meanwhile, Olayemi and Fakayode (2021); and Abdulkadir and Sayilir (2015), found a negative but significant effect of STDTA on ROA; while Julius and Lucky (202) revealed that STDTA has a negative and insignificant effect on ROA. Related, Aliyu and Eliphus (2022); Evbayiro-Osagie and Enadeghe (2022); and Julius and Lucky (2020), established that TDTE is a good predictor and significantly affect performance (ROA) of organizations studied. Meanwhile, Sani, *et. al.* (2021), reported a weak negative correlation between TDTE and ROA.

Conceptual framework

The Conceptual framework of the relationship between the variables is as in the illustration below:



Source: Developed by the researcher, 2024.

Figure 1: The relationship between the independent and the dependent variables, as conceived in this study.

The relationship depicts the direction of flow of impact from the capital structure factors to firm performance.

2.2 Theoretical Framework

This study is anchored on the Pecking order theory and Traditional theory of capital.

2.2.1 Pecking order theory

The theory was developed by Donaldson (1961) and modified by Meyers & Majluf (1984). The theory states that companies prioritize their sources of financing (from internal financing to equity) according to the cost of financing, preferring to raise equity as a financing means of last resort. Internal funds are used first, and when that is depleted, debt is issued, and when it is not sensible to issue any more debt, equity is issued. The theory assumes a perfect capital market where shares are issued to raise equity. The theory assumes that there is information asymmetry between managers (insiders) and external investors and managers have better information about the true value and prospects of the firm compared to external parties. As a result, managers prefer internal capital, followed by loans and avoid external financing, such as issuing new equity, to prevent the release of negative signals to the market. Secondly, managers act in the best interest of shareholders. Thirdly, obtaining and conveying information about a firm's financial condition can be costly. External financing, especially equity issuance, is seen as costly due to potential signalling effects. This assumption implies that firms prefer to use internal funds and debt, which are perceived as less costly in terms of signalling and information asymmetry (Nguyen & Nguyen, 2020). Fourth, firms prefer financial stability. By relying on internal funds and debt, firms aim to maintain a stable financial structure without signalling adverse information to the market. Lastly, a hierarchy or pecking order of financing sources show that internal funds do not send negative signals, while debt is considered less costly than equity in terms of signalling and adverse selection. Pecking order theory is relevant to this study because capital structure is a mix of debt and equity, with managers preferring a higher ratio of debt to equity as a general rule, as shown in this study.

2.2.2 Traditional theory of capital structure

The theory was propounded in 1950 by an Austrian economist Eugen von Böhm-Bawerk. The theory states that when the weighted average cost of capital (WACC) is minimized, and the market value of assets is maximized, an optimal structure of capital exists. The theory assumes that: the cost of capital depends upon the degree of leverage (for example, where there are only debt and equity financing available for the firm, the firm pays all of its earnings as a dividend); the firm's total assets and revenues are fixed and do not change; the firm's financing is fixed and does not change; investors behave rationally; and there are no taxes. Optimal capital structure is achieved by utilizing a mix of both debt and equity capital. This point occurs where the marginal cost of debt and the marginal cost of equity are equated, and any other mix of debt and equity financing where the two are not equated allows an opportunity to increase firm value by increasing or decreasing the firm's leverage. Böhm-Bawerk (1950), articulates that for any company or investment there is an optimal mix of debt and equity financing that minimizes the WACC and maximizes value. This theory depends on assumptions that the cost of either debt or equity financing vary with respect to the degree of leverage. In essence, the firm faces a trade-off between the value of increased leverage against the increasing costs of debt as borrowing costs rise to offset the increased value. Beyond this point, any additional debt will cause the market value to increase the cost of capital (Ho and Phan, 2020). Traditional theory of capital structure expresses that wealth

is not just created through investments in assets that yield a positive return on investment; purchasing those assets with an optimal blend of equity and debt is just as important. The traditional theory of capital structure has been criticized for not adequately considering the impact of taxes on capital structure decisions: that the tax deductibility of interest makes debt financing more attractive and that this aspect should be taken into account (Bimpong, *et. al.*, 2021). However, the theory is relevant to this study because DFIs create wealth through investment that are purchased with the appropriate capital structure. And, the cost and choice of the capital structure are important decisions that managers/owners of DFIs must make to ensure the desired performance.

2.3 Review of Related Empirical Studies

Khan & Qasem (2024), examined the empirical relationship between the different leverage levels as a proxy of financing mix on the financial performance of the non-financial firms listed on capital markets in GCC economies. Data was obtained from the annual financial statements of firms listed on the GCC Capital Markets for ten (10) years from 2011 to 2021. The study used the pooled ordinary least squares regression (OLS), fixed and random effects regression, and feasible generalised least square (FGLS) regression to analyse the relationship among variables. The findings of the study suggest that capital structure considerably affects firms' performance: thus refuting the theoretical assumptions of Modigliani and Miller's debt irrelevance and debt-supporting theorem. The study findings also contradict the debt-supporting benefits the agency and trade-off theory suggest. Specifically, the study found that short-term, long-term, and total debt adversely affect the return on assets (ROA), return on equity (ROE), and earnings per share (EPS). Control variables, growth opportunities, and size of the firm positively and asset tangibility negatively contribute to the performance.

Al-Taani (2023), empirically investigated the relationship between capital structure and firm performance across different industries using a sample of 45 Jordanian manufacturing firms in Jordan. The annual financial statements of the companies listed on the Amman Stock Exchange were used for the study which covered a period of five (5) years from 2005-2009. Multiple regression analysis was applied on performance indicators proxied by Return on Asset (ROA) and Profit Margin (PM); while capital structure was surrogated by Short-term Debt to Total Assets (STDTA), Long Term Debt to Total Assets (LTDTA) and Total Debt to Equity (TDTE). The study found a statistically negative and insignificant relationship between STDTA and LTDTA, and ROA and PM respectively; while TDTE was found to be positively related with ROA and negatively related with PM. The study concludes that statistically, capital structure is not a major determinant of firm performance.

Evbayiro-Osagie & Enadeghe (2022), examined capital structure and performance of non-financial firms in Sub-Saharan Africa. The study looked at the impact of capital structure on return-on-assets (ROA) performance of non-financial firms in Sub-Saharan Africa for a period of nine (9) years (2012-2020). A total of forty (40) non-financial firms were studied using their capital structure variables of long term debt to equity (LTDTE), total debt (TD), total debt to equity (TDTE), and total debt to total assets (TDTA) as well as their ROA performance. The panel data analysis technique was employed. It was found that LTDTE, TD and TDTE have positive impact on ROA performance; while TDTA has a negative impact on ROA performance, and all variables were significant at 1 percent level. The study concluded that: long term debt to equity strongly explains corporate performance in the Sub-Saharan African Countries; and

the appropriate amount of long term debt ought to be included in their capital structure build up.

Michael and Babajide (2022), studied capital structure and firm performance of Nigerian consumer goods manufacturing firms listed on the NGX. Secondary data was collected from consumer goods manufacturing companies listed on the Exchange (NGX). Eighteen companies were used in the study, and panel data method deployed in sampling the 18 listed manufacturing firms from 2008-2018. The study adopted the popular accounting and financial measures used in the vast literature on the subject matter namely, return on equity (ROE), return on asset (ROA), Tobin's Q and earning per share (EPS) as the dependent variable. In measuring the independent variable of the study, which is capital structure, long term debt, short term debt, total debt ratios, and growth was adopted. The study also included size as a control variable. The results from the regression analysis carried out in this study show that firm performance has a negative relationship with the capital structure in listed Nigerian manufacturing firms. Additionally, growth and performance had a positive correlation for the sampled companies.

Olayemi & Fakayode (2021), examined the effect of capital structure on financial performance of quoted manufacturing companies in Nigeria. The study covered ten companies for a period of seven years from 2013 to 2019. Panel data analysis was used to test the hypothesis. The independent variables used are total debt to total asset ratio (TDTAR), long-term debt to total assets (LTDAR), short-term debt to total assets (SDAR) and total debt to total equity (TDTER) while the dependent variables are return on asset (ROA) and return on equity (ROE). The results of the study showed that SDAR and LTDAR have positive but insignificant effects on ROA, and TDTAR has a negative significant effect on ROA and ROE respectively. Also, TDTAR and TDTER had negative and insignificant effect on ROE.

Sani, *et. al.* (2021), examined the impact of capital structure on firm's performance in Nigerian Building Materials Industry. Five (5) firms listed on the Nigerian Stock Exchange (NGX) were used as a sample over a ten (10) year period (2009-2018). Data was generated from annual financial statements of the firms within that period. Regression analysis was run to determine the level of impact of capital structure surrogated by short term debt (STDAR), long term debt and equity on performance proxied by Return on Asset (ROA). The analysis revealed that short term debt had a significant impact on firm performance; long term debt had a significant negative impact on firm performance. The result also revealed that equity has an impact on firm performance and a weak negative relationship between equity and Return on Asset.

Shaik & Sharma (2021), investigated the effect of leverage and capital on the profitability of selected Saudi Arabian banks for a period of five (5) years from 2014 and 2019. The banks were selected based upon their size in terms of total assets. The profitability elements, such as Earnings per Share (EPS), Return on Assets (ROA), and Return on Equity (ROE) were used as the dependent variables; while Total Debt Ratio (TDR), Tier 1 Capital Ratio and Total Debt to Equity Ratio (TDTE) were used as the independent variables, and firm size was the control variable. The study utilized a pooled regression analysis to examine the relationship the variables. The study found that there is a positive relationship between the different profitability variables and TDTE. It was also revealed that TDR has a positive association with ROA and ROE, and an insignificant negative relationship with EPS; while Tier1 capital ratio has a positive association with ROA and ROE, and an insignificant relationship with the EPS.

Julius & Lucky (2020), looked at the effect of capital structure on corporate performance in Nigeria. The specific objectives were to; examine the effect of debt to equity (TDTE) on corporate performance in Nigeria; examine the effect of total debt to total assets on corporate performance in Nigeria; ascertain the effect of short term debt to total assets (STDTA) on corporate performance in Nigeria; and investigate the effect of short term debt to total debt on corporate performance in Nigeria. All the independent variables were regressed on Return on Assets (ROA) as proxy for corporate performance the dependent variable. An ex-post facto research design was adopted for the study. Time series data that already exist in various financial publications and reports was used. The study used Ordinary Least Square regressions (OLS), to determine the effect of independent variables on the dependent variable. The result of the study indicates that: Debt to equity, total debt to total asset and long term debt to total asset has positive and significant effect on return on asset (ROA) while short term debt to total asset has negative and insignificant effect on return on asset (ROA).

Larasati, *et. al.* (2020), examined the effect of debt to equity ratio (DER) and return on assets (ROA) on earnings per share (EPS) with firm value as a moderating variable. The study purposively sampled 45 industrial sub-sector manufacturing companies listed on the Indonesia Stock Exchange (BEI) - for three (3) years from 2016-2018. The data evaluation technique used was path analysis. The study found that the Debt To Equity Ratio (DER) had a significant effect on Earning Per Share (EPS); also Return On Asset (ROA) had a significant affect on Earning Per Share (EPS). Further, Price to Book Value (PBV) moderates Debt to Equity Ratio (DER) against Earning Per Share (EPS) and strengthen the effect of Return On Assets (ROA) on Earning Per Share (EPS).

Samson, *et. al.* (2017), investigated the effect of capital structure on the performance of Nigerian listed manufacturing firms from 2004-2013. The aim of the study was to determine the overall impact of capital structure on corporate performance of Nigerian quoted firms by establishing the relationship that exists between the capital structure choices of firms in Nigeria and their return on assets (ROA), return on equity, sales growth and earnings per share (EPS) - as proxies to measure corporate performance. Multiple regression were used as a tool of data analysis and result of the findings revealed that, capital structure has no significant effect on ROE but has significant effect on ROA, EPS and sales growth of listed manufacturing firms in Nigeria.

Abdulkadir & Sayilir (2015), examined the relationship between capital structure and firm performance in Borsa Istanbul, Turkey. The study investigated 130 manufacturing listed firms on the Borsa Stock Exchange for the period between 2008-2013. Using panel data analysis, short term debt to total asset (STDTA) and long-term debt to total asset (LTDTA) were used as proxies for capital structure (independent variables) while Return on equity (ROE), return on asset (ROA), earnings per share (EPS) and Tobin's Q ratio were used as proxies of firm performance (dependent variables). Sales growth rate and firm size were used as control variables in the study. The study findings reveal that STDTA has a significant negative relationship with ROA, EPS and Tobin's Q ratio. Furthermore, the study found that LTDTA has a significant negative relationship with ROE, EPS and Tobin's Q ratio, while it is positively and significantly correlated with ROA.

3.0 METHODOLOGY

The study adopted an ex-post facto design which follows a quantitative methodology (using multiple regression analysis). Data collection was from published annual financial records of the selected DFIs on both the independent variables (STDTA and TDTE) and the dependent variables (EPS and ROA). Published financial records of the study DFIs were obtained for a period of ten (10) from 2013 to 2022. The population of the study composed of seven (7) national DFIs namely: Central Bank of Nigeria (CBN), Bank of Agriculture (BOA), Bank of Industry (BOI), Development Bank of Nigeria (DBN), Federal Mortgage Bank of Nigeria (FMBN), Nigeria-Export-Import Bank (NEXIM) and the Infrastructure Bank Plc (IBN). The study sampled four (4) national DFIs using a purposive sampling technique. The DFIs selected include Central Bank of Nigeria (CBN); Bank of Industry (BOI); Federal Mortgage Bank of Nigeria (FMBN); and Nigeria Export Import Bank (NEXIM). The raw data in the form of quantitative figures was extracted from the said financial statements. Computation of the relevant ratios were done for the independent variables (STDTA and TDTE); and the dependent variables (EPS and ROA). The ratios were rounded up to the nearest decimal places, where necessary. The information was recorded in the data sheets developed by the researcher for the period of the study.

The independent variable (capital structure) is proxied by STDTA and TDTE while the dependent variable (firm performance) is measured by yearly EPS and ROA of the DFIs. The relationship between the variables is as expressed in the following models. This in its implicit form is as follows:

$$FP = f(CS) \quad (1)$$

where,

FP = firm performance

CS = capital structure

However, capital structure comprises STDTA and TDTE. That is:

$$CS = (STDTA, TDTE) \quad (2)$$

Therefore:

$$FP = f(STDTA, TDTE) \quad (3)$$

where,

FP = firm performance

STDTA = short term debt to total assets

TDTE = total debt to total equity

Explicitly, the relationship is of the nature:

$$FP_t = \beta_0 + \beta_1 STDTA_t + \beta_2 TDTE_t + \varepsilon_t \quad (4)$$

where,

β_s = Regression Coefficients

β_0 = Regression intercept

With the other variables as already explained above.

However, to effectively determine the effect of the variables, a decomposition of the model was done. Thus, from equation (4), we have other models, each measuring the effect of the independent variables on the dependent variables as follows:

$$EPS_t = \alpha_0 + \alpha_1 STDTA_t + \alpha_2 TDTE_t + \mu_t \quad (5)$$

$$ROA_t = \varphi_0 + \varphi_1 STDTA_t + \varphi_2 TDTE_t + \epsilon_t \quad (6)$$

where,

EPS = earnings per share

ROA = return on assets

α_s , and φ_s are the coefficient estimates ϵ , μ , are the estimates of the stochastic term, and t is the time period measures in financial years.

4.0 RESULTS AND DISCUSSION

4.1 Data Presentation and Analysis

The analysis is based on the relationship between the dependent variable, firm performance [proxied by earnings per share (EPS) and return on assets, (ROA)] and the independent variable (capital structure), proxied by Short-Term Debt to Total Assets (STDTA), and Total Debt to Total Equity (TDTE). The results of the descriptive statistics employed in the estimations by the study are presented in Table 1.

Table 1: Descriptive Statistics Results

	EPS	ROA	STDTA	TDTE
Mean	5.819008	0.032531	0.268654	10.74200
Median	0.332879	0.013005	0.085568	3.538990
Maximum	42.71240	0.367403	0.976432	43.57210
Minimum	0.001600	0.000673	0.005012	0.403139
Std. Dev.	9.703572	0.062088	0.361807	14.13008
Skewness	0.989712	0.209671	0.249603	0.314212
Kurtosis	2.766104	2.54247	2.681653	3.011307
Jarque-Bera Probability	5.03226	7.655954	4.578961	5.514573
	0.201730	0.062547	0.197504	0.283160
Sum	232.7603	1.301233	10.74616	429.6801
Sum Sq. Dev.	3672.213	0.150344	5.105272	7786.704
Observations	40	40	40	40

Source: Author's computations using Eview. 13

As seen from the values in Table 1, the variables, EPS, ROA, STDTA, and TDTE have respective mean values of 5.819008, 0.032531, 0.268654 and 10.74200. Their median values are 0.332879, 0.013005, 0.085568 and 3.538990 respectively. It should be noted that the median is a robust measure of the centre of the distribution that is less sensitive to outliers than the mean. Another important characteristic of the data worth noting is the standard deviation (SD), which measures the dispersion spread in each of the series. For the variables of the study, the SD are 9.703572 for EPS, 0.062088 for ROA, 0.361807 for STDTA and 14.13008 for TDTE. Again, one important observation from Table 1 is that the skewness, which is a measure of asymmetry of the distribution of series around its mean, are positive and about 0 for the

variables. This means that the other variables have distributions that are neither skewed to the left nor right, but have normal tails. The Kurtosis statistic that measures the peakedness or flatness of the distribution revealed that the values for the variables are about 3, meaning that the distribution is highly peaked (Leptokurtic) relative to normal. Based on the Jarque-Bera test of normality, the null hypothesis of normality in the distribution of the series could not be rejected since the p-values are all greater than 0.05 (the significance level set for the study). This means that variables have the quality of normality.

Table 2: Pesaran test for cross-sectional dependence

Variable	C-D Test	p-values
EPS	1.308773	0.1906
ROA	1.281786	0.1999
STDTA	1.479182	0.1391
TDTE	1.399521	0.2027

Source: Author's computations using Eview. 13

The results of the Pesaran cross-sectional dependence test in Table 2 suggest the acceptance of the null hypothesis of no cross-sectional dependence in all the variables across the firms in the panel, at least at a 10% level of significance. This implies the absence of cross-sectional dependence in the model. This then satisfies the condition of the first-generation panel unit root tests which assume independence of cross-sections, which may not hold when there is cross-sectional dependence in the panel data, requiring the use of second-generation panel unit root tests that account for this dependence.

Table 3: Result of panel stationarity (unit-root) tests

	@ Levels		@ First Difference	
Levin, Lin & Chu test				
Variable	Without Trend	With Trend	Without Trend	With Trend
EPS	-2.98675***	-6.46516***	-4.37803***	-2.69925***
ROA	-2.11809**	-11.7224***	-5.55909***	-7.27076***
STDTA	-2.79125***	-5.31678***	-9.30269***	-46.7448***
TDTE	-0.24525	-3.04810***	-3.38323***	-2.40078***
ADF-Fisher Chi-square test				
Variable	Without Trend	With Trend	Without Trend	With Trend
EPS	13.2733*	14.3554*	20.9467***	12.7423
ROA	15.3661*	20.7652***	25.3222***	21.7599***
STDTA	14.7017*	19.3693**	27.7464***	23.0958***
TDTE	7.45781	13.4997**	11.2424	4.34917

Note: ***, ** and * indicate rejection of the null hypotheses at the 1%, 5%, and 10% significant levels respectively.

Source: Author's computations using Eview. 13

Due to the absence of cross-sectional dependence in the series, the first-generation panel unit root tests were used. The Levin, Lin & Chu and ADF-Fisher Chi-square tests were conducted to check the stationarity of the data. Considering the results from Levin, Lin & Chu test (see Table 3), all the variables were stationary at least at 10% significance level, computed with and without trend. Exception is, however, for TDTE which was not stationary at level when measured without trend. With the ADF-Fisher Chi-square test, all the variables attained

stationarity at level at least at 10% significance level measured with trend. This meant the rejection of the null hypothesis that a unit root exists in the series. The implication is that these variables have the mean reverting ability such that any perturbation to the series will fade out with time.

4.2 Correlation analysis results

The outcomes of the analysis of correlation between the relevant variables are presented in Table 4. Earnings per share (EPS) is positively correlated ($r = 0.64914$ and 0.63535) with STDTA and TDTE respectively; while that between ROA and STDTA and TDTE ($r = -0.2956$ and -0.27082) is negative. In terms of significance of the correlation estimates, all the variables are significantly correlated at 5% level of significance. This demonstrates the relationship between the dependent variables (EPS & ROA) and the explanatory variables. Correlations between explainers also vary in strength and significance, and they are moderate.

Table 4 *Pairwise correlation analysis results*

	EPS	ROA	STDTA	TDTE
EPS	1			
ROA	0.12583	1		
STDTA	0.64914*	-0.29561*	1	
TDTE	0.63535*	-0.27082*	0.96262*	1

* shows significance at the 0.05 level

Source: Author’s computations, using Eviews 13.

The effect of the independent variable on the dependent variable is shown in Table 5 below.

Table 5: *Test of the Effect of Short-Term Debt to Total Assets (STDTA) and Total Debt to Total Equity (TDTE) on Earnings per Share (EPS) and Return on Assets (ROA)*

Variables	Earnings per share (EPS)	Return on assets (ROA)
		0.001258
STDTA	1.165987* (2.125616)	(0.401019)
TDTE	-0.595635* (-4.050015)	0.001696* (4.041963)
Total panel (balanced) observations	40	40
Adjusted R ²	0.744460	0.975500
	Diagnostic Test	
Wald Test	25.92599*	17.35851*
p-value	(0.0000)	(0.0001)

t-Statistics in parenthesis; * $p < 0.05$; EPS, ROA, STDTA and TDTE are earnings per share, return on assets, short-term debt to total assets and total debt to total equity respectively.

Source: Author’s computations, using Eviews 13.

The panel dynamic ordinary least squares (PDOLS) was used to estimate the effect of STDTA and TDTE on EPS and ROA. The model was used to specify and estimate the various relationships. In these models, earnings per share (EPS) and return on assets (ROA) were used as measures of firm performance (FP). The results revealed that STDTA had positive and significant effect on EPS and ROA; while TDTE had a negative and insignificant effect on EPS and a positive insignificant effect on ROA. The estimated coefficients show that, a percentage change in STDTA will significantly increase EPS by 1.165987% and ROA by 0.001258%; while a percentage change in TDTE will decrease EPS by -0.595635% but significantly increase ROA by 0.001696%. The implication is that capital structure is effective in enhancing return on assets (ROA) thus improving performance of the DFIs. The negative effect of the TDTE strand of capital structure on EPS is overshadowed by the positive contributions of TDTE on ROA, hence overlooked. Indeed, assets are grown principally through reserves created from profits made by the DFIs. However, the DFIs are not strictly profit entities. Therefore, when debts become large, then, it is expected that earnings per share (EPS) could reduce or become negative.

4.3 Test of hypotheses

1. The null hypothesis (H_0) which stated that Short-Term Debt to Total Assets (STDTA) has no significant effect on the firm performance (EPS and ROA) of selected non-deposit financial institutions in Nigeria was rejected based on the regression analysis's t-value (and p-value), which were significant at a 5% level of significance. This led to the endorsement of the alternative hypothesis, which states that STDTA has a statistically significant effect on the performance of Nigerian DFIs.

2. The effect of Total Debt to Total Equity (TDTE) on firm performance (EPS and ROA) of selected non-deposit financial institutions in Nigeria was measured with the p-value being significant at the 5% ($\alpha_{0.05}$) level. Based on the decision rule, since the computed p-value is less than the significance level of 0.05, the null hypothesis was rejected and the alternative hypothesis [Total Debt to Total Equity (TDTE) has significant effect on firm performance of selected DFIs in Nigeria] was sustained.

4.4 Discussion of findings

The findings of the study revealed STDTA has a significant positive effect on EPS and ROA. The result show that a unit increase in STDTA will lead to an increase in EPS and ROA. This findings tally with most authors like Ogunsola and Ogheneoparobo (2022), Henry and Anyamaobi (2021), and Olayemi and Fakayode (2021) who, in their different studies, found that STDTA positively improve organizational (financial) performance. A statistically significant positive effect of Short Term Debt to Total Assets (STDTA) on firm performance, measured by earnings per share (EPS) and return on assets (ROA), for DFIs in Nigeria implies several things. The positive relationship suggests that these institutions are effectively using short-term debt to finance operations and investments that yield higher returns. This could be due to lower total interest costs associated with short-term borrowing compared to long-term debt, thereby enhancing profitability.

The result of test of hypothesis two revealed that Total Debt to Total Equity (TDTE) has significant but negative effects on EPS. This means that a unit rise in TDTE will cause EPS to decline, all things being equal. That is, as Total Debt to Total Equity (TDTE) grows, EPS falls, thus leading to low performance of the DFIs. This findings agrees with authors like Michael and Babajide (2022); Etale, *et. al.* (2020); and Marigu and Gerald (2020), among others, who had found that TDTE has a negative effect on financial performance of organizations. For the

return on assets (ROA), it was revealed that TDTE has a significant positive effect on ROA. The estimated coefficients show that a percentage change in TDTE will significantly increase ROA. This is in consonance with what Sani, *et. al.* (2021); David, *et. al.* (2020); and Julius and Lucky (2020), among others, have found. The negative effect of TDTE on EPS means that higher debt levels increase interest expenses, reducing net income, which in turn lowers EPS. On the side of the positive effect of TDTE on ROA, it can be explained that by using debt effectively, the DFIs can leverage their operations, generating higher returns on the assets financed by debt. This leverage effect can boost ROA, assuming the company earns more from its assets than the cost of the debt. Equally, the positive effect on ROA suggests that the DFIs are efficiently using their assets to generate profits. Debt can be a tool for financing growth and expansion, leading to higher income from the increased asset base.

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The study examined the effect of capital structure on firm performance of selected non-deposit financial Institutions (DFIs) in Nigeria for a period of ten (10) years (2013 to 2022). Findings of the study indicated that there is a significant effect of capital structure on the performance of development financial institutions in Nigeria. The study concludes that STDTA significantly affects the performance of the studied DFIs in Nigeria. The study also concludes that the role of STDTA on EPS and ROA is positive.

5.2 Recommendations

Based on the findings of the study, the following recommendations are made that:

- i. The studied institutions should ensure effective management of their short-term debt (STDTA) such that there is sufficient liquidity to meet short-term obligations without compromising the financial stability of their firms. This can be done by maintaining a balanced cash flow to cover short-term liabilities and using short-term debt for operational needs and projects with quick turnaround times to avoid liquidity crunches and ensure operational efficiency.
- ii. The DFIs should maintain a healthy debt-to-equity ratio (TDTE) will also raise equity financing to maintain a healthy balance between debt and equity. This can reduce reliance on debt and lower financial risk. Equally, developing a risk management framework that considers the implications of high debt levels on equity and overall organizational stability is required of the DFIs.

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