

FIRM CHARACTERISTICS AND FINANCIAL LEVERAGE OF QUOTED FINANCIAL FIRMS IN NIGERIA



¹Nasir Rahman Ichanyi
(haytarufirst@gmail.com.)
+2348035957735

²Abdullahi Sani Rufai
(abdullahsanirufai@yahoo.com)
+2347060957441



³Ude, Alexander Onyebuchi
(onyebuchialexude@gmail.com)
+2348035727742

^{1,2 and 3} Department of Accounting, Prince Abubakar Audu University, Anyigba, Kogi State, Nigeria

ABSTRACT

This study examines the firm characteristics and financial leverage of quoted financial firms in Nigeria. The population comprises of all the quoted 49 financial firms in Nigeria while a filtering sampling technique was used to arrive at forty-one (41) sampled firms covering the periods of 2012 to 2022. The data were analysed using Shapiro-Wilk Normality, Pearson correlation, Variance Information Factor (VIF), Heteroskedasticity Breusch-Pagan Test, Hausman specification test and while hypotheses were tested using robust random effect regression model. The results showed that both earning volatility and firm liquidity have significant effects on financial leverage of quoted financial firms in Nigeria for the period under review. However, the results showed that non-debt tax shield has an insignificant effect on financial leverage of quoted financial firms in Nigeria for the period under review. The study recommends that the financial firms with high earning volatility should use low leverage level in Nigeria to gauge their capital structure and boost their performance. Also, the financial firms with high liquidity should use low leverage level in Nigeria. The liquidity need of firms should be put into consideration to guide the firms against the level of their leverage level.

Keywords: Earning Volatility; Financial Leverage; Firm Liquidity, Firm Characteristics, Non-Debt Tax Shield

INTRODUCTION

The views regarding financial leverage vary among scholars; the circumstances and characteristics of firms differ in each case and many firm characteristics including but not limited to earning volatility, non-debt tax shield, firms' liquidity among others have been identified as factors that determine firms' financial leverage. In choosing the financial leverage of a firm, it is imperative to consider the different factors that can be controlled to optimize the value of a firm. All firms have to analyze financial leverage properly to obtain optimal financial leverage in implementing financing decisions, otherwise firms will face various financial problems, such as bankruptcy and financial distress among others. Hence, the firm which has high leverage needs to make an efficient capital mixture of debt and equity to minimize cost and maximize the net profit that maximizes the value of the firm.

Firms with high earning volatility face a higher probability of financial distress; which often triggers the use of less debt. In this case, what matters for predicting leverage changes should be primarily the changes in volatility, not necessarily the level of volatility. Firms will adjust their leverage downward or upward when volatility has risen or fallen. The earnings volatility has been introduced as the factor for choosing the conservative policy in the financial leverage. The changes in financial leverage in case of changes in earning volatility in distressed firms can differ from that of the healthy firms and it is necessary to study the effect of earning volatility on the financial leverage of financial firms in Nigeria.

In consideration of the corporate income tax, the higher the tax rate, the more savings from debt interest deduction. Thus, companies which face high tax rates may choose higher leverages to increase business values. Debt generates higher profits because of the interest tax credit. Accordingly, this tax credit effect is called the debt tax shield. Miller (1977), however, asserted that excessive leverage not only has the tax credit effect but also has the risk of a financial crisis; therefore, enterprises should weigh their debt levels and maintain the optimal capital structure. Lipson and Mortal (2009) asserted that more liquid firms are more financed by its internal resources and are therefore less leveraged. According to Anderson (2002), firms with high liquid assets prefer a high degree of long-term leverage without changing the structure of their liquid assets.

The age of the firm is one of the factors that determine the level of the firms' financial leverage. There are differed views in literature especially the one in favour of the firms which have been in existence for a long period, that they have a serious advantage over newly established firms regarding their ability to maintain a very high level of reserve which in turn will lower their leverage level. On the basis of this argument, this study introduced firm age as a control variable to examine firm characteristics and financial leverage decision making by the management of quoted financial firms in Nigeria.

One of the major issues encountered by fund managers today is not just the procurement of funds but also their meaningful deployment to generate maximum returns. Sources of funds are generally the same across all businesses but then why is it that some businesses can do better than the rest. If the logic of outstanding performance is a viable business idea, then why is it that some companies still fail to achieve success even with ample funds and the right business idea? The above differed views implies that there is something beyond the financial success of business besides great ideas and good geographic presence.

There exist various factors that are related to financial leverage that must be considered in choosing an optimal financial leverage target. Many firms would not be able to identify the best financial leverage for maximizing their profits due to lack of proper forecasting regarding the factors such as earning volatility, non-debt tax shield, firms' liquidity among others which are related to financial leverage. Firms have different financial leverage techniques for optimizing shareholder's wealth, therefore, copious research have been conducted on the financial leverage to explain the variation of firms financial leverage over time with contradictory findings (Saber *et al.*, 2012).

The empirical works have also shown that most of the studies such as (Mohammad, 2023; Ronny *et al.* 2023; Tilahun 2023; Waleed *et al.*, 2023) carried out in recent times regarding firm characteristics and financial leverage in Nigeria and other countries of the world were not current in the data used for the analysis as all the data were within 2020 and earlier except few studies like Mabandla (2023) whose data covered up to 2021. Furthermore, these kinds of studies conducted in Nigeria in this area were very scanty while most of these studies (Euphrasia, 2014; Do *et al.*, 2020; Mabandla, 2023; Mohammad, 2023; Morteza *et al.*, 2019; Mostafa *et al.*, 2018; Ronny *et al.*, 2023; Siti & Hassan, 2015; Tilahun, 2023; Waleed *et al.*, 2023) were done in other countries of the world. These gaps in literature call for further study in this area which necessitated this study; firm characteristics and financial leverage of quoted financial firms in Nigeria, in order to update the data up to 2022, use panel regression technique, and add to the scanty literature in this area in Nigeria.

The main objective of this study is to examine the firm characteristics and financial leverage of quoted financial firms in Nigeria. The specific objectives are to: (i) evaluate the effect of earning volatility on financial leverage of listed financial firms in Nigeria; (ii) examine the effect of non-debt tax shield on financial leverage of listed financial firms in Nigeria; and (iii) assess the effect of firm liquidity on financial leverage of listed financial firms in Nigeria. Following the above stated specific objectives, below are the hypotheses formulated in null form: Ho₁: Earning volatility has no significant impact on financial leverage of listed financial firms in Nigeria. Ho₂: Non-debt tax shield has no significant impact on financial leverage of listed financial firms in Nigeria. Ho₃: Firm liquidity has no significant impact on financial leverage of listed financial firms in Nigeria.

REVIEW OF RELATED LITERATURE

Conceptual Framework

The conceptual framework of this study comprises of proxies of independent variable; earning volatility, non-debt tax shield and firm's liquidity) and their effect on the proxy of the dependent variable; financial leverage with a control variable of firm age.

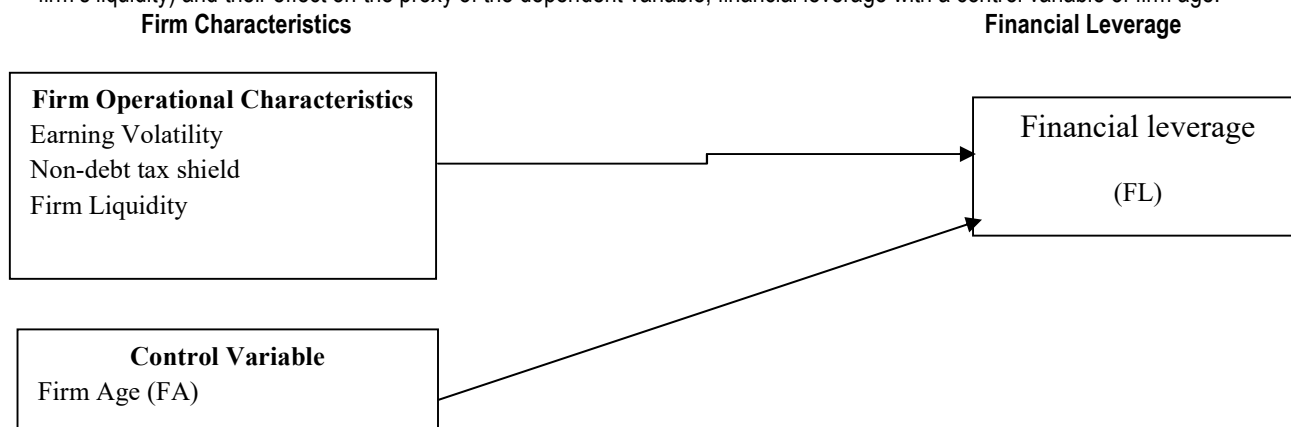


Figure (1): Adapted Conceptual Framework from Semra *et al.* (2016)

Concept of Firm Characteristics

Firm characteristics refer to the various attributes and information disclosed in a firm's financial statements that help explain its accounting quality and performance (Lang & Lundholm, 1993). They describe the operational patterns and internal features of a company that influence the achievement of organizational objectives and provide signals to stakeholders about the firm's financial position and performance (Stainer, 2006). Scholars also view firm characteristics as advantages or internal attributes

that enable firms to compete effectively in their operating environment (Moh'd, 2005). Firms that align their attributes with environmental conditions are more likely to perform better than others (Wiklund & Shepherd, 2005). As such, firm characteristics are important determinants of business success and performance (Dean et al., 2000). In this study, firm characteristics are represented by firm age, earnings volatility, non-debt tax shield, and firm liquidity.

Financial Leverage

Financial leverage refers to the use of debt financing to fund business activities with the aim of improving firm performance. Firms often employ leverage to achieve specific objectives such as acquisitions, share buyouts, dividend payments, or investment in profitable assets (Pachori & Tatala, 2012). It is commonly measured as the ratio of total debt to equity, indicating the extent to which a firm relies on borrowed funds in its capital structure (Yoon & Jang, 2005). While leverage can increase profitability because interest payments are tax-deductible, excessive debt may reduce cash flows due to interest and principal repayments and may expose firms to financial risk, especially during economic downturns (Magpayo, 2011; Tudose, 2012). Thus, firms seek to balance the benefits and risks of debt in order to achieve an optimal capital structure.

Leverage can take different forms, including financial, operating, and investment leverage. Operating leverage reflects the extent to which a firm relies on fixed operating costs such as rent, insurance, and salaries relative to variable costs (Tudose, 2012). Firms with high operating leverage tend to experience larger increases in operating income when sales rise but also greater losses when sales decline (Omolehinwa, 2006). Investment leverage refers to using a relatively small amount of capital to control larger investments through borrowing or margin financing. Overall, leverage enables firms to increase potential returns by using borrowed funds to acquire assets or finance investments. In this study, financial leverage is defined as the strategic use of debt to increase a firm's potential return on investment.

Earnings Volatility

Earnings volatility is a decreasing function of a firm's financial leverage. If the firm uses more debt in its financial leverage, then the firm needs more stable cash inflows to meet the interest payments and principal payments as they get due. If the earning volatility of a firm is high, there's more risk that a firm may not be able to make the debt. Thus it indicates that contractual claims and leverage of the firm has negatively correlated with each other (Booth, 2001; Bradley, 1984; Fama & French, 2002; Jong, 2008). Non-debt tax shields are the substitute for tax shields on debt financing (Dangelo & Masulis, 1980). All things being equal, firms with higher non-debt tax shields are expected to have less debt financing in its financial leverage. This inverse relationship has been supported by many empirical findings. This study defined earnings volatility as the degree of fluctuation or variability in a company's earnings over a specific period of time.

Non-Debt Tax Shield

Asset tangibility plays an important role in determining a firm's leverage decisions. Tangible assets reduce lenders' risk because they retain value during liquidation and can be used as collateral for loans (Rajan & Zingales, 1995; Jensen & Meckling, 1976). As a result, firms with a higher proportion of tangible assets are more likely to obtain debt financing, which increases their leverage level. Tangible assets also reduce agency costs and financial distress costs since creditors can recover part of their investment if the firm defaults (Myers, 1977; Booth, 2001). Consequently, asset tangibility is generally associated with higher leverage because lenders require lower risk premiums when adequate collateral exists (Titman & Wessels, 1988). This effect is particularly important in countries with weaker creditor protection, where collateral plays a critical role in lending decisions (La Porta et al., 1998).

Based on these views, changes in asset structure or tangibility can influence a firm's long-term debt decisions within the framework of trade-off theory, pecking order theory, and free cash flow theory. Mature firms with strong internal funds may rely less on external debt, whereas growing firms may use more debt to finance investments and reduce internal financing constraints. In this study, non-debt tax shield (NDTS) is defined as the reduction in taxable income obtained through deductions, allowances, or credits that do not arise from debt financing.

Firm Liquidity

Firm liquidity refers to a company's ability to meet its short-term financial obligations as they fall due and is commonly measured by the ratio of current assets to current liabilities (Omolehinwa, 2006). A strong liquidity position assures suppliers, creditors, and lenders of the firm's capacity to settle obligations and sustain daily operations (Kurfi, 2003). Liquidity represents cash or assets that can easily be converted into cash within a short period, typically within one accounting year. The current ratio is often used to assess liquidity, with a 2:1 ratio generally considered an acceptable benchmark for financial stability, although this may vary depending on the firm's circumstances (Akinsulire, 2014). Effective liquidity management ensures that firms maintain adequate cash and liquid resources to meet operational expenses, repay debts, and avoid insolvency risk (Biety, 2003). In this study, firm

liquidity is defined as the ability of a firm to maintain sufficient cash or liquid assets to meet its short-term financial obligations and support ongoing business operations.

Theoretical Framework

The trade-off theory of capital structure highlights the interplay between firm characteristics and financial leverage. Firms must carefully consider their specific situation, industry dynamics, growth prospects, and risk tolerance when determining the optimal mix of debt and equity. It is essential to strike a balance that maximizes the benefits of financial leverage while minimizing the potential costs associated with excessive debt. These considerations, along with the prevailing market conditions and tax environment, collectively determine a firm's capital structure and, ultimately, its ability to create value for shareholders.

Empirical Review

Earnings Volatility and Financial Leverage

Several empirical studies have examined the relationship between earnings volatility and capital structure. For instance, Mabandla (2023) analyzed commercial banks in South Africa from 2012–2021 and found that earnings volatility had a significant positive relationship with total debt ratio but a negative relationship with long-term and short-term debt ratios. Similarly, Mohammad (2023) reported that cash flow volatility significantly influences leverage among Jordanian firms, indicating that firms with higher volatility tend to use more debt. In contrast, Morteza et al. (2021) and Morteza et al. (2019) found that earnings volatility has a significant negative effect on capital structure, and that financial distress weakens this relationship. Semra et al. (2016), however, reported that earnings volatility had an insignificant effect on leverage among Turkish manufacturing firms.

Other studies have also examined broader firm characteristics and capital structure decisions. Mohammad et al. (2015) found that firm size, profitability, asset structure, liquidity, growth, and financial risk significantly influence capital structure among Iranian firms. Similarly, Bilal et al. (2012) reported that profitability, firm age, and earnings volatility are negatively related to leverage in Pakistan's insurance sector, while firm size shows a positive relationship. Although these studies applied appropriate econometric techniques, most were conducted outside Nigeria and used relatively older datasets, making their findings difficult to generalize to the Nigerian financial sector and highlighting the need for updated country-specific evidence.

Non-Debt Tax Shield and Financial Leverage

Several studies have examined the determinants of capital structure and financial leverage across different countries. Ronny et al. (2023) found that firm size, profitability, debt tax shield, growth, and liquidity significantly influence capital structure among Indonesian manufacturing firms, with firm size, tax shield, and growth showing positive effects while profitability and liquidity showed negative effects. Similarly, Tilahun (2023) reported that earnings volatility, profitability, non-debt tax shields, tangibility, and liquidity significantly affect the capital structure of Ethiopian commercial banks. Rasool et al. (2021) also observed that earnings volatility, liquidity, and profitability negatively influence leverage in Pakistani firms, whereas asset tangibility and firm size have positive effects. In Nigeria, Mbonu and Amahalu (2021) found that firm size positively affects leverage, while liquidity and revenue growth have negative effects among listed insurance firms. Other studies such as Ani and Mitha (2020) and Griska and Isnurhadi (2018) reported that non-debt tax shield significantly influences capital structure, often showing a negative relationship with leverage.

Earlier studies also support the role of firm characteristics in determining capital structure decisions. For instance, Sarada (2018) found that profitability, asset structure, firm size, and non-debt tax shield significantly influence leverage in Indian firms. Similarly, Enakirerhi and Chijuka (2016) and Ruibing (2016) reported significant relationships between non-debt tax shield and leverage, while Tita (2016) observed that firm size, profitability, and non-debt tax shield significantly affect capital structure in Indonesian banks. In addition, Sritharan (2014) found that profitability, tangibility, growth, and liquidity negatively influence debt ratios among Sri Lankan financial institutions. Faruk and Ayub (2012) also reported that profitability, tangibility, and liquidity significantly reduce leverage, while growth opportunities and non-debt tax shield positively influence it. Despite the use of appropriate econometric techniques, most of these studies were conducted outside Nigeria and relied on relatively older datasets, limiting their direct applicability to Nigerian financial firms and highlighting the need for updated country-specific evidence.

Firm Liquidity and Financial Leverage

Several empirical studies have examined the relationship between firm characteristics and financial leverage. Waleed et al. (2023) found that profitability, liquidity, and firm size have significant negative effects on leverage among non-financial firms in Gulf Cooperation Council (GCC) countries, while market value-added, return on capital employed, and Tobin-Q positively influence leverage. Similarly, Do et al. (2020) reported that firm size, risk, age, and liquidity significantly affect leverage among real estate firms in Vietnam, with liquidity showing a negative relationship with short-term and total leverage. Dakane and Fredrick (2019) also found that firm size, profitability, tangibility, liquidity, and growth negatively influence financial leverage among firms listed on the Nairobi Securities Exchange. In addition, Mostafa et al. (2018) showed that firm characteristics such as asset structure, size, profitability, liquidity, and ownership structure significantly determine capital structure decisions among SMEs in Egypt.

Earlier studies also support the importance of liquidity and other firm attributes in leverage decisions. Maziar and Nazrul (2016) reported that liquidity significantly influences leverage in Malaysian firms, with mixed effects depending on the liquidity measure used. Similarly, Yuga (2016) found that liquidity is negatively associated with capital structure among Nepalese manufacturing companies, while Siti and Hassan (2015) reported that profitability, size, and liquidity negatively affect leverage among Malaysian food-producing firms. Euphrasia (2014) also observed that liquidity and asset structure significantly influence capital structure in Indonesian firms. Furthermore, Dejan et al. (2013) found that liquidity, tangibility, and profitability negatively affect debt ratios, while income volatility and growth opportunities positively influence leverage in Serbian firms. Despite the use of appropriate econometric techniques, most of these studies were conducted outside Nigeria and relied on older datasets, limiting their direct applicability to Nigerian firms and highlighting the need for updated country-specific evidence.

METHODOLOGY

For the purpose of this study, an *ex post facto* research design was used to address the research problem. The design is used to examine the statistical association or relationship between two or more variables. The population of the study consists of all the 49 quoted financial firms in Nigeria on the Nigerian Exchange Group as at 31st December 2022 calendar year. The sample size of this study comprises of all the firms quoted in the financial sector, at least one year before the implementation of International Financial Reporting Standards (IFRS) in 2012 totaling forty-one (41) firms in the financial sector in Nigeria covering 2012-2022 based on the filter criteria stated below. This sector was selected for this study because it is one of the most capitalized sectors in the capital market in Nigeria. The filter criteria for the firms included in the study from the financial sectors are stated below: (i) A firm must have been quoted on the floor of the Nigerian Exchange (NGX) Group at least a year before the implementation of IFRS in (2012). (ii) A firm must be quoted on the Nigerian Exchange (NGX) Group and its shares often traded on the floor of the exchange for the periods covered by the study. Based on the criteria, eight (8) firms were eliminated for not being quoted at least one year prior to IFRS implementation in Nigeria in 2012. Based on this, the sample size for this study comprises 41 firms.

The study used panel data mainly from secondary sources which are quantitative in nature. The data were obtained from the annual reports and accounts of the quoted companies submitted to the Nigerian Exchange (NGX) Group. The technique of data analysis employed by this study is panel multiple regression analysis. The study adopted this technique and ascertained the firms' characteristics proxies by non-debt tax shield, earning volatility and liquidity on financial leverage of quoted financial firms in Nigeria. The data were analyzed using STATA 15 and the outcome were used to test the research formulated hypotheses. In view of this, panel data analysis was adopted for the study. This current study adapts the econometric style of Bilal *et al.* (2012) and Semra *et al.* (2016). Various robustness tests were carried out to test the validity of the research results.

Financial leverage (FL) is measure through total debt to total equity and is a function of earning volatility (EVT), non-debt tax shield (NTS) and liquidity (FLQ)] with firm age (FAG) as a control variable.

Therefore;

$$FL = f(EVT, NTS, FLQ, FAG)$$

Econometrically, the above equation is rewritten into a model as follows:

$$FL_{it} = \beta_0 + \beta_1EVT_{it} + \beta_2NTS_{it} + \beta_3FLQ_{it} + \beta_4FAG_{it} + \mu_{it} \dots \dots \dots (1) \text{ [Model]}$$

Where:

$\beta_1 \dots \dots \dots \beta_5$ are parameters to be estimated with a-priori expectations.

$\beta_1, \beta_2, \beta_3$ and $\beta_4 < 0$

FL = Financial Leverage

EVT = Earnings volatility

NTS = Non-debt tax shield

FLQ = Firms' Liquidity

FAG = Firms' age

β_0 = Constant

μ = Error term

i = Firms

t = Periods

Table 1 below explains the variables under study.

Variable	Acronym	Type of variable	Measurement	Justification
Financial Leverage	FL	Dependent	Total debt/Total equity.	Semra <i>et al.</i> (2016), Siti and Hassan (2015)
Earnings volatility	EVT	Independent	Earning volatility measured the dispersion of returns for firms' securities or market indexes and is calculated using variance and standard deviation.	Bilal <i>et al.</i> (2012); Morteza <i>et al.</i> (2019).
Non-debt tax shield	NTS	Independent	Depreciation/Total assets.	Enakirerhi and Chijuka (2016); Lung-Ken <i>et al.</i> (2010); Shalini and Mohua (2017).
Firms' Liquidity	FLQ	Independent	Current assets/current liabilities.	Enakirerhi and Chijuka (2016), Semra <i>et al.</i> (2016).
Firm Age	FAG	Control	This is the difference between the year of incorporation and the year of 2020.	Bilal <i>et al.</i> (2012), Semra <i>et al.</i> (2016).

Source: Researcher's compilation, 2023.

RESULTS AND DISCUSSION

The data of forty-one (41) financial firms regarding financial leverage, earning volatility (EVT), non-debt tax shield (NTS), liquidity (FLQ) and firm age (FAG) were. The data were analysed with the aid of Stata 15 software using Descriptive Statistics, Shapiro-Wilk Test, Pearson Correlation, Heteroscedasticity test, Hausman Specification Test and robust random effect regression model.

Descriptive Statistics

Table 2 summarises the descriptive statistics of the entire data sets.

Variable	Obs	Mean	Std. Dev.	Min.	Max.
FL	451	0.452	0.133	0.054	0.699
EVT	451	4.228	0.427	0.013	4.713
NTS	451	0.048	0.062	0.001	0.381
FLQ	451	1.231	0.526	0.105	3.543
FAG	451	41.200	17.900	10	102

Source: Researcher's Computation using STATA 15 software

Table 2 presents the descriptive statistics of the study variables. Financial leverage (FL) ranges from 0.054 to 0.699 with a mean value of 0.452 and a standard deviation of 0.133, indicating moderate dispersion during the period. Earnings volatility (EVT) records a minimum value of 0.013, a maximum of 4.713, and a mean of 4.228, with a standard deviation of 0.427, suggesting moderate variation. Non-debt tax shield (NTS) has a minimum value of 0.001, a maximum of 0.381, and a mean of 0.048, while its standard deviation of 0.062 indicates relatively higher variability. Firm liquidity (FLQ) ranges from 0.105 to 3.543 with a mean of 1.231 and a standard deviation of 0.526, reflecting moderate dispersion. Finally, firm age (FAG) ranges from 10 to 102 years with a mean value of 41.200 and a standard deviation of 17.900, indicating variations in the age structure of the sampled firms during the study period.

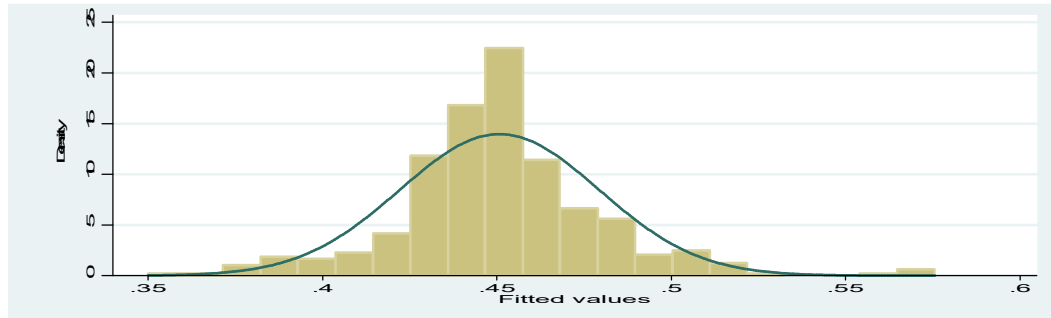
Shapiro Wilk Normality Test

Table 3 and figure 2 below presents the results of the normality test conducted with the use of Shapiro-Wilk normality test and normal distribution curve. The decision rule is if P-Value > 0.05, the residual is normally distributed but if P-Value is equal to or < 0.05, the residual is not normally distributed.

Variable	OBS	W	V	Z	Prob>Z
Residual	448	0.956	13.156	6.164	0.000

Source: Researcher's Computation using STATA 15 software

Figure 2: Normal Distribution Curve



Source: Researcher's Computation using STATA 15 software

Table 3 above presented the residual and the z-value of 6.164 and the corresponding probability of value of 0.000 that is less than 0.05 which signifies that the residual is not normally distributed around the mean. This result is further collaborated by the normal distribution curve presented in figure 2 above. This implies that one of the basic assumptions of linear regression technique which allows only normally distributed residual has been satisfied.

Pearson Correlation

Table 4 below is the Pearson correlation matrix for the data set to show the extent of associations between the variables.

Variable	FL	EVT	NTS	FLQ	FAG
FL	1				
EVT	-0.0738	1			
NTS	0.0628	0.0411	1		
FLQ	-0.1872	0.0065	-0.0290	1	
FAG	0.0376	0.0553	-0.1863	-0.0199	1

* = Significant at 1%

** = Significant at 5%

Source: Researcher's Computation using STATA 15 software

The correlation matrix determines the degree of relationships between the proxies of independent variable and the dependent variable. It also show whether there is an association among the proxies of independent variable themselves, to detect if multicollinearity problem exists in the model. The result from table 4 shows 7% negative and weak association between earning volatility (EVT) and financial leverage (FL) of quoted financial firms in Nigeria, from correlation coefficient of -0.0738. The table also indicate 6% positive and weak relationships between non-debt tax shield (NTS) and financial leverage (FL) of quoted financial firms in Nigeria, from correlation coefficient of 0.0628. The table indicates 19% negatively and weak relationships between firm liquidity and financial leverage (FL) of quoted financial firms in Nigeria, from correlation coefficient of -0.1872.

The table further indicate 4% positively and weak relationships between firm age and financial leverage (FL) of quoted financial firms in Nigeria, from correlation coefficient of 0.0376. Finally, the relationships between the proxies of independent variable themselves suggest being mild as all coefficients are below the threshold of 0.85 as suggested by (Gujarati, 2003).

Heteroscedasticity test

To establish that the data for this study was robust for the model, heteroscedasticity test was carried out. However, the study revealed that data is heteroskedastic; as such the basic linear regression model would not be reliable. This can be confirmed from the heteroskedasticity result in table 5 below which revealed the chi2 value of 2.46 with a p-value of 0.1167. In order to correct for this anomalies, the robust linear regression technique was used as suggested by (Hoechle, 2007).

Table 5: Heteroscedasticity test

Type of test	Chi2	P-Value
Heteroscedasticity Test	2.46	0.1167

Source: Researcher's Computation Using STATA 15 software

Breusch-Pagan Lagrangian Multiplier Test

Based on the result of Random Effect Model (REM) regression, the Breusch-Pagan Lagrangian Multiplier test was conducted to give an insight into an actual test to be carried out between Random Effect Model and Pooled Ordinary Least Square Regression. From the Breusch-Pagan Lagrangian Multiplier test, the chibar2 value of (383.06) and the probability of (0.00) in table 6 below, therefore, suggests that REM is more appropriate instead of Pooled Ordinary Least Square.

Table 6 below presents the result of the Breusch-Pagan Lagrangian Multiplier test conducted.

Variable	Chibar2	P-Value
FL	383.06	0.00

Source: Researcher's Computation using STATA 15 software

Hausman Specification Test

The data for this study is panel and panel data can lead to an error that is clustered and possibly correlated over time. This is due to the fact that each financial firm may have its own entity specific characteristic that can determine its information (i. e. unobserved heterogeneity). And this may bias the outcome variable or even the explanatory variables. Then, Hausman specification test was run and the result shows that the random effect model is more appropriate. This can be confirmed from the Chi2 value of 8.67 with a p-value of 0.2150 in table 7 which is not significant at all levels of significance as suggested by (Hoechle, 2007).

Table 7 below presents the result of a Hausman specification test conducted.

Chi2	8.67
Prob. Chi2	0.2150

Source: Researcher's Computation using STATA 15 software

Firm Characteristics and Financial Leverage using Robust Random Effect Model (REM)

Table 8 below is the robust random effect regression model conducted for the estimation of this model.

Variable	Coefficients	z-value	Prob.
Cons.	.588	12.23	0.000
EVT	-.024	-2.67	0.007
NTS	.149	1.25	0.211
FLQ	-.046	-4.11	0.000
FAG	.0003	1.19	0.234
R-sq overall	0.7165		
Wald chi2	106.98		
Prob. >F	0.00		

Source: Researcher's Computation using STATA 15 software

Table 9 above indicated that 72% variation of financial leverage is predicted by the combined effect of earning volatility (EVT), non-debt tax shield (NTS), firm liquidity (FLQ) and firm age (FAG) with (Overall R-sq of 0.7165). This indicates that the model of the study is fit and the independent variables are properly combined and used. The wald chi2 value of 106.98 with a P-value of 0.00 signified that the model is fit for the study.

Discussion of Findings**Earning Volatility (EVT) and Financial Leverage**

This study also shows earning volatility (EVT) has a significant negative effect on financial leverage (FL) of quoted financial firms in Nigeria for the period under review. This implies that a unit increase in earnings volatility will reduce the financial leverage (FL) of quoted financial firms in Nigeria by -0.024. This study is in line with the trade-off theory because the theory emphasized the firms must carefully consider their specific situation, industry dynamics, growth prospects, and risk tolerance when determining the optimal mix of debt and equity. It is essential to strike a balance that maximizes the benefits of financial leverage while

minimizing the potential costs associated with excessive debt. This finding is in agreement with the findings of Bilal *et al.* (2012), Dejan *et al.* (2013), and Morteza *et al.* (2019). However, the finding is not in line with the findings of Faruk and Ayub (2012) and Semra *et al.* (2016).

Non-Debt Tax Shield (NTS) and Financial Leverage

The study equally shows that non-debt tax shield (NTS) has an insignificant positive effect on financial leverage (FL) of quoted financial firms in Nigeria for the period under review. This implies that a unit increase in non-debt tax shield increases the financial leverage (FL) of quoted financial firms in Nigeria by 0.149. This study is not in line with the trade-off theory because the theory emphasized the firms must carefully consider their specific situation, industry dynamics, growth prospects, and risk tolerance when determining the optimal mix of debt and equity. It is essential to strike a balance that maximizes the benefits of financial leverage while minimizing the potential costs associated with excessive debt. This finding is in line with the finding of Sriharan (2014). However, the finding disagrees with the finding of Enakirerhi and Chijuka (2016), Griska and Isnurhadi (2018), Ruibing (2016), Sarada (2018) and Tita (2016).

Firm Liquidity (FLQ) and Financial Leverage

The study further shows that firm liquidity (FLQ) has a significant negative effect on financial leverage (FL) of quoted financial firms in Nigeria for the period under review. This implies that an increase in firm liquidity will increase the financial leverage (FL) of quoted financial firms in Nigeria by -0.046. This study is in line with the trade-off theory because the theory emphasized the firms must carefully consider their specific situation, industry dynamics, growth prospects, and risk tolerance when determining the optimal mix of debt and equity. It is essential to strike a balance that maximizes the benefits of financial leverage while minimizing the potential costs associated with excessive debt. This finding is in agreement with the finding of Mostafa, ELbekpashy and Khairy (2018) and Yuga (2016). However, the finding is not in line with the findings of Maziar and Nazrul (2016).

CONCLUSION AND RECOMMENDATIONS

The financial firms with high earning volatility need low leverage level in Nigeria. The increase in earnings volatility level of financial firms will call for less capital from both within and outside the firm, therefore, low leverage level is required in the financial firms in Nigeria. The financial firms with high non-debt tax shield need low financial leverage level in Nigeria. The non-debt tax shield is an internal capital of firms that boost the level of their capital structure, therefore, financial firms with high non-debt tax shield must reduce the level of their leverage. The financial firms with high liquidity level required low leverage level in Nigeria. The liquidity level of firms must be put into consideration to guide the firms against the level of their financial leverage level to boost their performance.

Based on the above conclusion, the following recommendations are proffered:

- i. The financial firms with high earning volatility should use low leverage level in Nigeria to gauge their capital structure and boost their performance.
- ii. The financial firms with high non-debt tax shield should use high leverage level in Nigeria. This is to increase the level of their leverage to boost their performance.
- iii. The financial firms with high liquidity should use low leverage level in Nigeria. The liquidity need of firms should be put into consideration to guide the firms against the level of their leverage level.

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