

Analysis of Firm Characteristics on Leverage of Industrial Companies in Nigeria



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ABSTRACT: This study analyzed the effect of firm characteristics on the leverage of industrial companies in Nigeria for a 16 years period covering 2007-2022. This study specifically ascertained the effect of firm characteristics on the debt-to-equity of industrial companies. Panel data was used in the study, obtained from Nigerian Exchange Group Fact Books and related companies' annual financial reports of sampled industrial goods listed companies. Ex-Post Facto research design was employed and analyzed using a panel regression analysis. Variance inflation factor, Multicollinearity test and heteroskedasticity were applied to test the study's hypothesis. The result revealed that growth opportunities positively affect the leverage of industrial companies by 135.77%. The study recommends among other things that industrial companies strive to increase sales so as to enhance the profitability of firms which increases their liquidity level, increasing the equity of firms and monitor that leverage acquired is channeled into viable investments.

KEYWORDS: Profitability, Liquidity, Asset Tangibility, Growth Opportunities, Leverage, Debt-to-equity.

1. INTRODUCTION

Leverage (debt-to-equity) is a ratio between a company's equity held by common shareholders and its creditors. It is a gauge of a company's financial leverage, to put it another way. According to Amahalu and Obi (2022), the debt-equity ratio is a measurement of the proportional contributions of creditors and shareholders or owners to the capital used in a corporation. The debt-to-equity ratio, which measures a company's financial leverage, is determined by dividing its total liabilities by the value of its shareholders. The ratio serves as a gauge for how much a business relies on debt versus fully owned capital to fund its operations. More specifically, it shows whether shareholder equity would be sufficient to pay off all debts in the event of a downturn in business. A specific kind of gearing ratio is the debt-to-equity ratio (Fernando, 2021). According to Charles and Stephens (2013), total debt to equity ratio (also known as leverage) is used to assess an organization's capacity to repay long-term loans. The ratio illustrates how much of a firm's finance is under the control of outside parties. Long-term debts are included in the ratio's calculation as the numerator, while shareholders' equity serves as the denominator. Financial leverage is often defined as the ratio of a company's total debt to equity. Financial leverage is the amplification of risk and return through the use of fixed-cost financing, such as debt and preferred stock, according to Wijayanto, Dzulkirom, and Nuzula (2019). The predicted risk and return of a company increase with the amount of fixed-cost debt it uses. Chinaemerem and Anthony (2012) use a sample of thirty non-financial companies listed on the Nigerian Stock Exchange over a seven-year period, from 2004 to 2010, to investigate the effect of capital structure on financial performance of Nigerian businesses. The outcome demonstrates that a firm's financial measurements (ROA and ROE) are dramatically impacted when the capital structure is substituted by the debt ratio.

Profitability and the cost of capital are related to leverage. Leverage is frequently separated into operational and financial categories. Operational leverage, according to AbuTawahina and Helles (2015), deals with the erratic nature of EBIT and how a rise in revenue may be accompanied by a levered rise in EBIT depending on the movement of variable costs. Financial leverage addresses the erratic nature of earnings after taxes and the way that the tax benefits of debt interest raise value to owners.

Debt is typically considered to be the less expensive source of capital, and by incorporating the tax shield benefit, the cost of debt will be even less after taxes. Firms may maintain modest debt levels in order to maintain their financial flexibility, as opposed to leveraging the company in order to benefit from debt. In an effort to increase performance, the majority of businesses finance

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their operations through debt. Companies can subsequently invest in their operations without raising equity money, increasing their indebtedness. While a company's capital structure is vital, the best balance of equity and debt is needed to increase enterprise value and lower capital expenditures. In practice, there are so many elements at play that it is almost impossible to pinpoint the perfect leverage. Therefore, from 2006 to 2021, this study examines the traits of a firm that characterizes leverage of listed industrial companies in Nigeria.

2. LITERATURE REVIEW

2.1 Theoretical Framework

Market Timing Hypothesis of Capital Structure

According to the market timing theory of capital structure, companies issue new stock when their stock price is overvalued and buy it back when the price is undervalued (Baker and Wurgler, 2002). Share price fluctuations have an impact on corporate financing choices and, in turn, the firm's capital structure. Further, according to Baker and Wurgler (2002), equity transactions are totally timed to stock market conditions, therefore market timing theory does not shift to target leverage in accordance with the pecking order theory of capital structure. This suggests that adjustments to capital structures motivated by market timing have a lasting effect (Bessler et al., 2008). This statement explains why gearing ratios are inversely correlated with historical stock returns (Bessler, 2004). According to Welch, 2004 stock returns are the most significant factor influencing capital structure. However, according to Hovakimian (2006), market timing does not have a substantial long-term impact on the capital structure of the firms. According to the same data from Atieno (2009), the impact of market timing on gearing will completely disappear in two years. Three arguments were made by Saadah and Prijadi (2012) on the merits of MTT (Market Timing Theory), and they are as follows: When market value is high in relation to book value as well as when market value historically is high, managers frequently issue equity instead of debt; through the study of projected earnings prospects, businesses frequently sell equity at a time when investors are enthusiastic and optimistic; MTT is conducted when a company is experiencing rapid growth (the product life cycle's growth stage), as this would welcome a lot of market sentiment.

The announcement effect of securities issuance serves as the main proxy for the degree of information asymmetry because the pecking order theory implies that markets are semi-strongly efficient. The assumption of semi-strong form market efficiency is not a prerequisite for the market timing theory. As long as the relative cost of equity fluctuates over time for either rational or irrational reasons, windows of opportunity remain.

Signaling Theory

The signaling theory is a result of information gaps between shareholders and company management. Managers will first issue debt and then, as a last resort, equity if they think their companies are undervalued. In contrast, management will issue equity first if they think their company is overvalued. The signaling theory was first proposed by Ross (2007), who contends that managers' choice of capital structure will serve as a signal to the market if they have inside knowledge. The theoretical presumption that rising debt is a sign that managers are optimistic about future profits may have an impact on leverage. Managers sign debt contracts as a promise to pay future interest. Bankruptcy may result from failure to pay debt. This sends a message to the market that the company is confident it will generate enough cash flow to pay off its debt.

The remaining claimants to a company's cash flows are its shareholders. This is so because dividends come second in importance to interest payments that have been committed as obligations. As a result, share prices react to news about the financial structure more strongly than bond prices. If managers have high expectations for their company's future, the share price will seem more discounted than bond prices.

Although there are other capital structure theories, the signaling theory is the foundation of this study. The signaling theory implies that business managers will try to timing equity offerings based on how the market perceives their shares. The signaling theory is a result of information gaps between shareholders and company management. Managers will first issue debt and then, as a last resort, equity if they think their companies are undervalued. In contrast, management will issue equity first if they think their company is overvalued. Essentially, a company's capital structure is the accumulation of business managers' prior attempts to time the market.

2.2 Empirical review

Pratheepan and Banda (2016) looked into the variables affecting a sample of publicly traded firms in Sri Lanka. For a subset of Sri Lankan listed companies, it was discovered that profitability has a statistically significant inverse connection with leverage, although company size and growth had a statistically significant positive link with leverage. Tangibility and non-debt tax shelters indicate that leverage has no impact. In Tai (2015), the work of Titman and Wessels (1988) and Dittmar and Thakor (2007) is combined to provide a model of simultaneously determined capital structure and stock returns. According to empirical results

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from structural equation modeling (SEM) and confirmatory factor analysis (CFA), the determination of the capital structure is significantly influenced by factors such as stock returns, asset structure, growth, industry classification, uniqueness, volatility and financial rating, profitability, government financial policy, and managerial entrenchment. Iranian non-financial firms' capital structure drivers are examined by Alipour, Mohammadi, and Derakhshan (2015). The results of the study show that factors such as firm size, financial adaptability, asset structure, profitability, liquidity, growth, risk, and state ownership all have an impact on different components of the capital structure of Iranian firms. It has been found that a considerable portion of Iranian businesses' funding comes from short-term debt. By industry and business size, Songul (2015) assessed the effects of model variables on capital structure. Prospects for future growth, size, profitability, tangibility, and non-debt tax shelters are all used as firm-specific factors that affect a company's capital structure choice. The empirical data shows that traits related to growth potential, scale, profitability, tangibility, and leverage significantly correlate with one another. Leverage 1 (book value of total debt / total assets) is mostly unaffected by the explanatory variable for non-debt tax shields. Capital structure is impacted by growth potential, supporting the concept of a trade-off. Chadha and Sharma (2015) looked at the major factors affecting the capital structure of Indian manufacturing companies to identify any theoretical ramifications. Financial leverage in enterprises is determined by total debt to total capital and total debt to total assets. It was experimentally found that firm size, age, asset tangibility, growth, profitability, non-debt tax shield, business risk, uniqueness, and ownership structure are all closely related to financial leverage or significant drivers of capital structure in the Indian manufacturing industry. Ztekin (2015) investigates the global drivers of capital structure using a sizable sample of businesses from 37 nations. Leverage is a consistent function of firm size, tangibility, industry leverage, profitability, and inflation. Between 2001 and 2010, 870 publicly traded Indian corporations from the private and public sectors were studied. Handoo and Sharma (2014) determined the most crucial factors of the capital structure of these companies. The leverage structure used by businesses in India has been found to be significantly influenced by characteristics like profitability, growth, asset tangibility, size, loan cost, tax rate, and debt servicing capacity. Leland's (1994) capital structure model's optimal compensation dilemma between shareholders and agents was studied by He (2010), who discovered that the optimal leverage is decreased by the debt-overhang effect on endogenous managerial incentives. Their model predicts a negative link between pay-performance sensitivity and company size that is consistent with the evidence, and it also shows that smaller firms take on less leverage than their larger competitors due to the interaction of agency problems and debt overhang.

3. METHODOLOGY

3.1 Model Specification

The model is specified to capture firm characteristics as major determinants of capital structure. Thus, the econometric form of our model is expressed to avoid the problem of multicollinearity:

$$DETE_{it} = \beta_0 + \beta_1 PROF_{it} + \beta_2 LQTY_{it} + \beta_3 NDTS_{it} + \beta_4 ATAN_{it} + \beta_5 GROP_{it} + \beta_6 COEQ_{it} + \beta_7 FRSI_{it} + \mu_{it} \quad (1)$$

Where:

<i>DETE</i>	=	<i>Debt to Equity (Proxy for leverage is computed as total liabilities divided by total equity)</i>
<i>PROF</i>	=	<i>Profitability (computed as profit before tax divided by total asset)</i>
<i>LQTY</i>	=	<i>Liquidity (computed as inventory days + trade receivable days – trade payable days)</i>
<i>NDTS</i>	=	<i>Non-Debt Tax Shield (computed as depreciation and amortization divided by total asset)</i>
<i>ATAN</i>	=	<i>Asset Tangibility (computed as fixed asset divided by total asset)</i>
<i>GROP</i>	=	<i>Growth Opportunities (computed as market capitalization divided by total equity)</i>
<i>COEQ</i>	=	<i>Cost of Equity (computed as cash dividend paid divided by market capitalization)</i>
<i>FRSI</i>	=	<i>Firm Size (computed as log of total asset)</i>
β_0	=	<i>Constant</i>
$\beta_1 - \beta_6$	=	<i>Slope Coefficient</i>
μ	=	<i>error term</i>

3.2 Research Design and source of data

This study made use of quantitative research to collect data employing the firm-level approach. Secondary data was for sampled industrial goods listed companies were sourced from Nigerian Exchange Group Fact Books and related companies' annual financial reports and footnotes for the periods covered.

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3.3 Sample Size and Sampling Technique

The population of this study consists of all the listed industrial goods firms in Nigeria as at December 2022, selected using a purposive sampling technique of industrial companies listed in the Nigerian Exchange Group market over the period 2007-2022.

4. RESULT AND FINDINGS

The average on asset tangibility is 0.52 with minimum of 0.02 and maximum asset tangibility of 0.96 indicates that asset tangibility has very little importance in determining the capital structure of listed industrial companies. A standard deviation of 0.2 further shows small spread around the average value. Also, the average leverage of 0.61 indicates that listed industrial companies have more asset than debt with a minimum and maximum of 0.036 and 2.23 respectively. The standard deviation of 0.61 shows small spread around the average value. In addition, average profitability of firms is 0.057828 with minimum of -1.80 and maximum profitability of 1.09. The standard deviation of 0.22 shows small spread around the average value. The overall average liquidity of listed industrial companies is 3.19 with minimum and maximum liquidity of 0 and 39 respectively. A standard deviation of 5.94 indicates small spread around the average value. Also, the overall average of non-debt tax shield is 0.041 with minimum and maximum non-debt tax shield of 0 and 0.15. A standard deviation of 0.024 indicates small spread around the average value. the average of firm size for of listed industrial companies is 16 with minimum of 12 and maximum firm size of 22. The standard deviation of 2.5 indicates that small spread around the average value. Furthermore, the average value of growth opportunity of listed industrial companies is -8.36 with minimum growth opportunities of -1176.19 and maximum growth opportunities of 51.96. The standard deviation of 109.48 further shows a wide spread from the average value. Lastly, the average cost of equity is 0.061 with minimum and maximum cost of 0 and 5.57 respectively. The standard deviation of 0.424 indicates a small spread around the average value.

Table 1: Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
ATAN	0.521475	0.244383	0.024537	0.957825
DETE	0.607218	0.292509	0.035548	2.229656
PROF	0.057828	0.215538	-1.79917	1.088969
LQTY	3.186047	5.941256	0	39
NDTS	0.040865	0.024302	0	0.149381
FRSI	15.51163	2.504939	12	22
GROP	-8.35527	109.4776	-1176.19	51.96112
COEQ	0.060953	0.423514	0	5.568043

Source: Computed by the Author (2023)

Testing for correlation among the variables in the model helps to avoid the possible problems of multicollinearity. Variance inflation factor (VIF) technique is used to detect the presence or absence of multicollinearity in the model. Variance inflation factors (VIF) measures how much the variance of the estimated regression coefficients is inflated as compared to when the predictor variables are not linearly related. Specifically, we adopt Green (2009) which allows a cut-off value of 10. From the result, it shows that the standard error of the model is inflated by 1.15 degrees which indicates that this model doesn't suffer the problem of multicollinearity.

Table 2: VIF Test of Multicollinearity

Variable	VIF	1/VIF
ATAN	1.29	0.772449
PROF	1.26	0.791584
FRSI	1.25	0.798259
NDTS	1.11	0.89735
LQTY	1.09	0.918208
GROP	1.04	0.960148
COEQ	1.03	0.971919
Mean VIF	1.15	

Source: Computed by the Author (2023)

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Based on heteroskedasticity test results, the insignificant values of the test results suggest the acceptance of null hypothesis and indicate that the model is free from heteroskedasticity problem as the probability is greater than 5%.

Table 3: Breusch-Pagan Test for Heteroskedasticity

Source	chi2	P
Heteroskedasticity	10.17	0.1014

Source: Computed by the Author (2023)

The within r-square of this model is 0.3613, with between r-square of 0.9605 and overall r-square of this model is 0.4091. The result of the wald chi2 (10.67) shows that the model is significant at 1% level of significance. The result of the regression result shows a positive significant relationship between growth opportunities and debt-to-equity while profitability, liquidity, non-debt tax shield, asset tangibility, cost of equity and firm size have insignificant effect on the leverage of listed industrial companies. By implication, an increase in growth opportunities, leads to a 137.87% increase in the leverage of listed industrial companies. Conclusively, growth opportunities have significant effect on leverage of listed industrial companies in Nigeria.

Table 4: Effect of firm characteristics on leverage of industrial companies in Nigeria

DETE	Coefficient	Standard Error	Z	P> z
PROF	1.1959	4.59752	1.33	0.185
LQTY	3.179645	4.833108	0.66	0.511
NDTS	2.079008	4.1694	0.00	0.998
FRSI	7.913075	7.291565	1.09	0.278
ATAN	-1.8429	4.58158	-1.38	0.168
GROP	1.357732	0.1297908	10.62	0.000
COEQ	6.555478	3.27335	0.15	0.880
_cons	-24.58926	97.43136	-0.25	0.801
R-square	Within 0.3613			
	Between 0.9605			
	Overall 0.4029			
Wald chi ²	10.67 (0.0000)			

Source: Computed by the Author (2023)

Findings from the study indicates that this model doesn't suffer the problem of multicollinearity. Also, the test for heteroskedasticity shows that the model is free from problems of heteroskedasticity. In addition, growth opportunities are found to have a significant positive impact on debt-to-equity of listed industrial companies in Nigeria. The growth opportunities of listed companies account for a 137.87% increase in leverage. This means that as companies grow, so does their debt-to-equity, this supports the trade-off theory. Similar findings by (Mbonu & Amahalu, 2021) found that one naira increase in revenue growth will cause debt-to-equity to reduce by 3.75%, thereby exhibiting a negative effect on listed Insurance companies in Nigeria. Chadha and Sharma (2015); Songul (2015) and Pratheepan and Banda (2016) also found that growth opportunities are a strong determinant of capital structure in India's manufacturing sector. Similarly, Pratheepan and Banda (2016) found growth to be positive statistically significant positive relationship with leverage for selected listed companies in Sri Lanka.

5. CONCLUSION

This study analyzes the effect of firm characteristics on the leverage of listed Industrial Companies in Nigeria. The study revealed that only growth opportunities has significant effect on the leverage of listed industrial companies in Nigeria. Asset tangibility, liquidity, firm size, cost of equity, profitability and non-debt tax shield were found to have insignificant effect on leverage of listed industrial companies. The study found that an increase in growth opportunities increases the leverage of industrial companies by 137.87%.

The study recommends that industrial companies strive to increase sales so as to enhance the profitability of firms which increases their liquidity level, increasing the equity of firms and monitor that leverage acquired is channeled into viable investments.

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