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Determinants of Debt Financing in Nigeria

Biliqees Ayoola Abdulmumin[1]

Abstract: This study examines the debt financing determinants within corporations based on the annual time series data between 2008 to 2018 using Panel Least Square technique (PLS). The findings show that asset tangibility, profitability, non-debt tax shield, firm growth and firm size are statistically significant in explaining the variation in debt policy. The result also shows that there is a positive relationship between asset tangibility, profitability, non-debt tax shield and debt policy while, the result exhibits a negative relationship between firm growth, firm size and debt policy. It is therefore recommended that management needs to increase efficiency by maximizing the use of debt in the capital structure option.

Keywords: asset tangibility; profitability; non debt tax shield; firm growth and firm size

JEL Classification: G3

1. Introduction

Companies in the world use some debt in their capital structure. Debt structures are claimed to be one of the important determinants of a company's success and motivate its sustainable growth (Madan, 2007). Thus, decisions concerning debt structure are vital for the business survival (Ahmed & Wang, 2011). The selection of debt as against the equity finance structure could lead the company to financial distress and bankruptcy if a wise decision is not made. The relationship between among the factors that determines debt structure of the firm has been extensively investigated (Su, 2010; Cespedes, 2010; Bopkin & Arko, 2009; Abor, 2007; Fleming, Heaney & McCosker, 2005; Abor, 2005; Bryan *et al.*, 2005; Tauringana & Clarke, 2000; Haris & Raviv, 1990). However, there has been no consensus on the findings of these studies in relevance to the determinants of debt financing.

Capital structure of a company is a combination of own capital (equity) and corporate debt. Equity can be derived from the company's internal and external. Internal equity in the form of common stock, paid-in capital, retained earnings, and reduced stocks pulled back (treasury stock), while external equity in the form of shares sold by the company to investors. Debt comes from debt to the creditor and corporate issuance. Debt comes from bonds issued by the company, and sold to investors in the capital market. Various sources of funding companies require fund managers to be able to meet the exact composition of the sources of funding for the company. Each funding source decisions have consequences and different financial characteristics of the firm. Funding through debt policy decisions will have an impact on increasing the leverage of the company, instead of funding sources through internal cash resources and the issuance of shares will have an impact on the decline in corporate leverage. Funding decisions change over time, meaning that funding decisions change with the

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company's financial condition.

Against these backgrounds, the following fundamental questions are relevant to the study: what has been the impact of Non-debt Tax Shield on financial leverage in Nigeria? does asset tangibility enhance financial leverage in Nigeria? to what extent does profit influence financial leverage in Nigeria? what has been the impact of firm growth on financial leverage in Nigeria? does firm size enhance financial leverage in Nigeria? Besides, Nigeria being a developing country with an emerging market in Africa, Nigeria is chosen in this study because of its unique concentrated business environment and multicultural population with different ethnic groups. Hence, this study attempts to examine the determinants of debt financing of Nigeria manufacturing companies.

This study is expected to broaden extant literature and provide essential findings to assist stakeholders of financial markets and research work in the country towards formulating and administering relevant and pragmatic policies to enhance debt structure management. Studies in the past (Christopher, Schafer & Talavera, 2006; Oyesola 2007; Omran and Pointon, 2009; Ezeoha & Okafor, 2010;) have only paid limited attention to the determinants of debt financing in Nigerian manufacturing sector. The choice of this sector is based on the fact that the manufacturing sector's capital structure has a large impact on the running and sustainability of the company.

Literature Review

Since the work of Modigliani & Miller (1958) on capital structure, numerous studies have been carried out to explain the capital structure decisions of which theories have been proposed to juxtapose the link among the factors the determines the debt financing. Among others are trade off-theory (Modigliani & Miller, 1958), pecking order theory (Myers & Majluf, 1984; Myers, 1984) and agency theory (Jensen & Meckling, 1976). This study will particularly examine the validity of pecking order theory and trade-off theory in relation to the determinants of debt financing of Nigerian companies. Trade-off theory asserts that a company may set a target debt to company value, and gradually moves towards it (Karadeniz, Kandir, Balcilar, & Onal, 2009; Chen, 2004). This theory establishes that an increase in debt level will lead to increase in financial distress, agency and the cost of bankruptcy. Thus, a company needs to find an equilibrium where the level of debt would be able to off-set its costs (such as tax advantages of the debts) with the costs of possible financial distress (Chen, 2004; Zhang & Kanazaki, 2007. Larger companies are said to better diversifies, thus have lower possibility of experiencing financial distress, this led to positive relationship between company size and debt level. And companies with high profit render high level of borrowing capacity, thus resulted in positive relationship of the variables.

Another famous theory being associated with debt is the pecking order theory (Myers & Majluf, 1984). Myers & Majluf assert that information asymmetry exists among the investors. Investors are said to generally have less information than insiders, thus resulted in the undervalued of the company's common-shares. This would then lead to positive relationship between growth of the companies and debt level, when the companies have more growth opportunities than the assets they have. Unlike, trade-off theory, companies do not have target capital structure, however, it is assumed that companies would prefer internal to external fund; and prefer debt to equity. They would only use external financing when their internal funds are insufficient (Myers & Majluf, 1984; Myers 1984).

Pecking order emphasizes on information asymmetry. Information asymmetry is also considered to be less severe in larger companies, as a consequent, larger companies cost of capital would be less than that of small companies (Kardeniz et al., 2009). This theory also posits that profitable companies can generate internal funds, and do not like to use external funds, if the needs arise for external fund, they would prefer debt to equity.

Following the seminar work of Modigliani and Miller (1958, 1963), a substantial amount of effort has been put forward in corporate finance theory to determine the factors that influence a firm's choice of capital structure. Raising debt or equity capital is the important question facing companies towards embarking on new finance for any organization. It is also important in this regard to understand how firms in Nigeria finance their operations by examining the factors that makes up debt financing decisions. Financial economists in the literatures have studied capital structure financing from different perspectives and in different environments some of which are Drobetz & Fox (2005) which discussed the determinants of capital structure using two theories namely: trade-off theory and pecking order theory. Trade-off theory which is attached to three main factors: agency costs, tax shields and bankruptcy costs, relates to the fact that more profitable firms uses more debt than equity while pecking order theory relates to the fact that more profitable firms use less debt than equity. In this wise, Hadlock & James (2002) while assessing the financial slack provided by the banking system to the companies confirmed the pecking order hypothesis by reporting that the decision of financing of corporate assets through equity or debt were mainly determined by the market evaluation.

However, there are many factors that affect debt policy, but this study will only be limited to five factors namely: Non-Debt Tax Shield, Tangibility, Profitability, Growth, and Firm Size. Previous studies on the factors that affect the leverage are still showing different results. The research of non-debt tax shields effect on leverage by De Miguel and Pindado (2001), Ozkan (2001), and Shahjahanpour, et al. (2010), did not find any influence of non-debt tax shields on leverage. However, research conducted by Sayilgan & Karabacak (2006), and Teker, et al. (2009), found that non-debt tax shield and a significant negative effect on leverage. Studies on the effect of tangibility on leverage also showed different results. Gaud, et al. (2005), Buferna, et al. (2005), and Teker, et al. (2009) found that tangibility had a significantly positive impact on leverage. While the results of Sayilgan & Karabacak (2006) found that the tangible had a significantly negative impact on leverage. However, results from Çitak (2012), showed that tangibility was insignificantly related to leverage.

Inconsistencies also present the results of research on the study of the influence of profitability on leverage. Research conducted by Ellili and Farouk (2011) on the one hand showed that the effect was not significant on leverage. However, on the other hand, studies conducted by Ozkan (2001), Chen (2003), Gaud, et al. (2005), Sayilgan & Karabacak (2006), Teker, et al. (2009), and Çiatk (2012), showed that the profitability was significantly and negatively related to firm leverage. While studies conducted by Mutamimah (2003) and Buferna, et al. (2005) showed that profitability has positive and significant impact on leverage. Moreover, studies relating to relationship between growth and leverage were not consistent. Studies conducted by Ozkan (2001), and Gaud, et al. (2005), showed that growth was significantly and negatively related to firm leverage while the study by Chen (2003), Sayilgan & Karabacak (2006), Teker, et al. (2009), and Ellili and Farouk (2011) showed that growth significant positive effect on leverage. Moreover, results from Buferna, et al. (2005) revealed that the growth was not significant on leverage.

On the part of size and leverage, studies established inconsistent results. While Ozkan (2001), and Ellili & Farouk (2011), maintained that firm size was not a did not have a significant effect on leverage, Mutamimah (2003), Gaud, et al. (2005), Buferna, et al. (2005), Sayilgan & Karabacak (2006), Teker, et al. (2009), Karadeniz, et al (2011), and Çitak & Ersoy (2012) revealed that the firm size has a significantly positive impact on firm leverage. But studies by Chen (2003) had an opposite result that suggested that firm size had a significantly negative impact on leverage.

Methodology

The study used quantitative research design and a set of regression estimates was applied to test the determinants of debt financing in Nigerian manufacturing sector. Debt Policy, proxied by Leverage serve as dependent variables while the independent variables are Asset Tangibility (ASTANG), profitability (PROF), Non-Debt Tax Shield (NDTAS), Firm Growth (FIGRO) and Firm Size (FISIZ). The study used the secondary source for data retrieval from various editions of top five (5) listed manufacturing companies in the Nigerian Stock Exchange. These are: Guinness Nigeria Plc, Cadbury Nigeria Plc, Dangote Flour Mill Nigeria Plc, Nestle Nigeria Plc and Berger Paint Nigeria Plc. The study covers fifty-five observations between 2008 to 2018.

Model Specification

This study follows Nyamita Garbharran & Dorasamy, (2013) in their study on factors influencing debt financing decisions of corporations. In order to consider, the effects of the meaningful temporal variation in debt policy, panel data (pooling method) approach was used. The operationalization and analytical procedure is based on the result derived from Panel Least Square technique. The model is specified as:

$$Y_t = \quad + \quad X_t + \tag{1}$$

Where Y_t is the selected Debt Policy variables measured by Leverage; and X_t is the determinants of debt financing factors which contains the independent (explanatory) variables which represent the firm specific factors and macroeconomic factors. Therefore, expanding the above general model into a multiple linear regression model of the form, it becomes:

$$Y_{it} = \Gamma_0 + \sum_{K=1}^{N} S_1 X_{kit} + \sim_{it} + \vee_{it} \tag{2}$$

Where *Yit* is a measure of debt financing (financial leverage) of firm *i* in year *t* and *X* represents the measure of explanatory variables (firm specific factors and macroeconomic factors). μ represents unobserved factors (either firm-specific or macroeconomic) and $μ_0$ is the constant. from $k = 1$ to N are unknown parameters to be estimated. The measure of explanatory variables *X* includes *k* factors, which total the number of all studied factors influencing debt financing. Explanatory variables include both the macroeconomic factors and firm-specific factors. The regression model can, therefore, be presented as:

Financial leverage = *ƒ* (firm Specific factor) (3)

Firm Specific factors = *ƒ* {ASTANG, PROF, NDTAS, FIGRO, FISIZ} (4)

LERAG=ƒ{ASTANG, PROF, NDTAS, FIGRO, FISIZ} $\qquad$ (5)

Stating equation (5) in the linear form yields:

$$\mathbf{LERAG} = \Gamma_0 + s_1\mathbf{ASTANG}_t + s_2\mathbf{PROF}_t + s_3\mathbf{NDTAS}_t + s_4\mathbf{FIGRO}_t + s_5\mathbf{FISIZ}_t + \sim_t \dots\dots\dots\dots\dots(\mathbf{6})$$

Where:

LERAG = Leverage; ASTANG = Asset Tangibility; PROF = Profitability

NDTAS = Non-Debt Tax Shield; FIGRO = Firm Growth; FISIZ = Firm Size; **μ** is the error term

Data Analysis Method

This study therefore adopted the decomposed equation 6 for our multivariable regression analysis. Panel Least Square regression method was used to evaluate the determinants of debt financing in Nigerian manufacturing sector.

Results and Discussions

Pre-Test Analysis

Table 1. Showing the Descriptive Statistics for Model

	LERAG	ASTAG	PROF	NDTAS	FIGRO	FISIZ
Mean	3.817583	1.168500	3309.723	1.842117	0.833437	4.824100
Median	4.003720	1.054000	3244.100	1.730200	0.058200	3.418800
Maximum	11.75182	5.867200	6241.700	3.352200	7.215300	7.640500
Minimum	0.449501	0.430200	1362.400	1.255800	-0.059800	1.785300
Std. Dev.	3.148233	0.965093	1392.700	0.500880	2.141870	2.032332
Skewness	0.869624	3.441634	0.297348	1.239844	2.456595	0.300463
Kurtosis	3.006497	17.22712	1.795817	4.316413	7.113278	1.305655
Probability	0.110168	0.000000	0.268417	0.003192	0.000000	0.094741

Source: Author's Computation, (2018)

The summary of the statistics used in this empirical study is presented in the table 4.1 above. As observed from the table, Firm Growth (FIGRO) has the lowest mean value of 0.833437 and Profitability (PROF) has the highest mean value of 3309.723 where as the mean value of Leverage (LERAG), Asset Tangibility (ASTAG), Non-Debt Tax Shield (NDTAS), Firm Growth (FIGRO) and Firm Size (FISIZ) are 3.817583, 1.168500, 1.842117, 0.833437 and 4.824100 respectively. The standard deviation measures how concentrated the data are around the mean, hence it can be observed from the study presented in table 4.1 that the value for Profitability is the largest while value for NDTAS is the lowest giving the implication that the values for the operational data values are further from the mean on averages. Skewness measures how asymmetric a distribution can be. Therefore, from the table, all the variables were positively skewed meaning that the mass of the distribution is concentrated on the right (that is, it is said to be left-skewed. On the part of Kurtosis, all the variables used present positive kurtosis value which means that the distribution is leptokurtic (too tall).

Table 2. Showing Augmented Dickey Fuller (ADF) Unit Root Test

Variables	ADF TEST	MACKINNON CRITICAL VALUES	LEVEL OF SIG.
LERAG	-3.372067	-3.639407	I(0)
ASTAG	-3.515294	-3.679322	I(0)
PROF	-6.436038	-3.653730	I(0)
NDTAS	-4.734997	-3.646342	I(0)
FIGRO	-9.577177	-3.646342	I(0)
FISIZ	-5.532638	-3.646342	I(0)

Source: Author's Computation, (2018)

From the table above, it is evident that all variable is stationary at level and this can be seen by comparing the absolute values of the ADF test statistics with the absolute critical values of the test statistics at 1% level of significance, which implies the presence of unit root in all variables. So therefore, there is a need to difference the variables either at order one or order two until they are stationary. The result from the table shows that all variables (dependent and independent) are stationary at level 1% level of significance using ADF test. Then we can carry out our ordinary least square regression.

Regression Result

The table presented below is the result for hypothesis one which is stated as: There is no significant impact of determinants of debt financing on debt policy in Nigerian manufacturing industry.

Table 4.3. Model Results

Independent Variables	Pooled OLS		Fixed Effects		Random Effects	
	Coefficient	**P-val**	**Coefficient**	**P-val**	**Coefficient**	**P-val**
C	-6.004	0.0521	-12.821	0.0001	-6004	0.3461
ASTAG	0.26579	0.0872	0.19212	0.456	0.2658	0.0451
PROF	-0.1308	0.0001	0.67811	0.077	-1308	0.092
NDTAS	0.3689	0.0461	0.8201	0.0001	0.3689	0.051
FIGRO	0.1004	0.0871	-0.2424	0.0511	0.1000	0.0912
FISIZ	-0.3182	0.0212	-0.4042	0.0770	0.2371	0.0191
R-Square	0.44021		0.6016		0.5201	
Adjusted R-Square	0.41253		0.6193		0.5193	
Pro(F-stats)	0.07269		0.0004		0.0109	
Durbin Watson	1.75236		1.8723		1.8128	
Rho			0.864		0	
Hausman Test			0.0004			

Source: Author's Computation, (2018).

Interpretation of Result for the Model

The result of the three static panel data estimation techniques for the model is presented above. The statistical significance of the f-stats of the fixed effect estimator suggests the inappropriateness of the pooled OLS estimator, thus explaining that there are significant individual (firms) effects in the model.

In comparison with the random effect estimator, the probability value of the Hausman test shown in the table below suggests the null hypothesis that the Random Effect estimator consistency is rejected, explaining that firm level individual effects does appear to be correlated with the regressors. The value of the F-stat of the fixed effect, according to the result of the regression is given as 0.0004. The decision rule for the F-stat is that we reject the null hypothesis when the F-stat is less than 0.01, 0.05 and 0.1 at 1%, 5% and 10% level of significance respectively. Since the F-stat is less that the required value at all level of significance, it means that the explanatory variables are significant in explaining changes in the dependent variable and so therefore we reject our null hypothesis. The model goodness fit is fortified by the Durbin-Watson result of 1.8723 which is within the bench mark of 1.00 to 2.00. The regression result for the model revealed the relationship between central bank independence and employment.

The result also shows that asset tangibility, profitability, non-debt tax shield, firm growth and firm size are statistically significant in explaining the variation in leverage which is the proxy for debt policy. The estimate of rho explains that almost all variation in firm debt policy is related to inter-firm differences in debt financing. Inferring from the result above, an increase in asset tangibility, profitability, non-debt tax shield, firm growth and firm size of the firm by 1 percent, will result into an increase in debt policy of the firm by 19%, 68% and 82% respectively. Likewise, an increase in growth and size of the firm by 1 percent, will result into a decrease in debt policy of the firm by 24% and 40%. The result also shows that there is a positive relationship between asset tangibility, profitability, non-debt tax shield and debt policy while, the study exhibits a negative relationship between firm growth and firm size and debt policy. This result is in line with studies conducted in the literature ranging from Mutamimah (2003), Gaud, et al. (2005), Buferna, et al. (2005), Sayilgan, Guven (2006), Teker, et al. (2009), Karadeniz,et al (2011), and Çitak and Ersoy (2012) which predicted the relationship between the determinants of debt financing and debt policy.

Conclusion and Recommendation

The results concluded that asset tangibility, profitability, non-debt tax shield, firm growth and firm size are statistically significant in explaining the variation in leverage which is the proxy for debt policy. The estimate of rho explains that almost all variation in firm debt policy is related to inter-firm differences in debt financing. Inferring from the result above, an increase in asset tangibility, profitability, non-debt tax shield, firm growth and firm size of the firm by 1 percent, will result into an increase in debt policy of the firm by 19%, 68% and 82% respectively. Likewise, an increase in growth and size of the firm by 1 percent, will result into a decrease in debt policy of the firm by 24% and 40%. The result also shows that there is a positive relationship between asset tangibility, profitability, non-debt tax shield and debt policy while, the study exhibits a negative relationship between firm growth and firm size and debt policy. This result complies with the apriori expectation in the literatures such as Mutamimah (2003), Gaud, et al. (2005), Buferna, et al. (2005), Sayilgan, Guven (2006), Teker, et al. (2009), Karadeniz,et al (2011), and Çitak & Ersoy (2012) which predicted the relationship between the determinants of debt financing and debt policy. Based on the findings, the study therefore recommends that management needs to increase efficiency by maximizing the use of debt.

Suggestion for further Research

In this study, there are limitations that need improvement for future studies. These include:

i. Suggestions for more independent variables in both industry specific and macroeconomic variables should be incorporated into the model.

ii. Expanding the scope period of the study to more than 11 years for better results

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