

Determinants of Capital Structure in the Nigerian Listed Insurance Firms

Shehu Usman Hassan

Ahmadu Bello University, Zaria, Nigeria.

The paper investigates the determinants of capital structure in Nigerian listed insurance firms using data obtained from annual report of the sampled firms for the period of 2001-2010. It used five explanatory variables to measure their effects on debt ratio. Multiple regression is employed as a tool of analysis. The result reveals that all the explanatory variables have statistically and significantly influenced the explained variable. The results approve the prediction of pecking order theory in the case of profitability and trade-off theory in case of tangibility variables. The growth variable supports the agency theory hypothesis whereas size variable confirms to the asymmetry of information theory. It is therefore recommended that the management of listed insurance firms in Nigeria should always consider their positions using these capital structure determinants as important inputs before embarking on debt financing decision.

Keywords: capital structure determinants, leverage, Nigerian insurance firms

Introduction

One of the many objectives of financial managers is to maximize the wealth of shareholders. Shareholders' wealth maximization depends on some issues like managing lower cost of capital, generating tax shield benefits from debt financing, reducing the agency costs of debt and equity, etc.. All these issues are determined and managed by reaching at a point of optimal capital structure. As a result, financial managers strive to ensure the optimal mix of debt and equity in the firm's capital structure. Does such an optimal capital structure exist in reality or not? What are the potential factors that affect such optimal capital structure? These are the questions to be answered by this study. Although the above questions are of paramount importance, academic theories and literatures have not provided satisfactory answers on such practical questions. Rather, the theories of capital structure still remain one of the most controversial issues in modern corporate finance. In other words, there is currently no any generally accepted capital structure theory despite decades of intensive researches and all the existing assumptions contradict one another. Such disagreement over basic empirical results in turn proves disagreement about desirable features for theories. Moreover, the contemporary theories and the empirical researches are primarily based on aspects of and data from western developed economics. Few researches are

Shehu Usman Hassan, BSc., MSc., Ph.D. (ABU), CNA, CFA, FCSA (USA), Lecturer, Department of Accounting, Ahmadu Bello University.

Correspondence concerning this article should be addressed to Shehu Usman Hassan, P.M.B 1013, Department of Accounting, Ahmadu Bello University, Zaria, Nigeria. E-mail: shehu.hassanus.usman@gmail.com.

carried on the perspective of developing economies. Hence, it is hard to say whether conclusions from theoretical and empirical research carried out in developed economies are also applicable for developing economies too or whether a different set of factors work in deciding capital structure in developing economies. Rajan and Zingales (1995) studied the G-7 countries. This work is extended by including some data from emerging economies by Booth, Aivazian, Demircug-Kunt, and Maksimovic (2001). Their conclusions suggest that there were some common attributes in the capital structures of firms in different countries but they advocated the necessity of further research to be carried out to identify the determinants of capital structure in particular institutional settings or countries. Like other developing economies, the area of research for capital structure is still unexplored in Nigeria. Only Salawu (2007) to the best of the author's knowledge has carry out a study in this area. As a result, the study of capital structure determinants bears significant importance. Therefore, this study aims to identify the potential determinants of capital structure among Nigerian insurance listed firms in conformity with the predictions drawn by capital structure theories so that their financial managers can benefit from it to make an optimal mix of debt and equity to maximize shareholders' wealth. The determinants of capital structure is examined focusing on agency cost, trade-off and pecking order theories with five variables, namely age, growth rate, tangibility, profitability, and size of the 15 Nigerian listed insurance firms on December 31, 2010.

Literature Review and Theoretical Framework

Modern theory of capital structure can be traced to the path-breaking paper of Modigliani and Miller (M&M) (1958). The duo used some restrictive set of assumptions and contended in their first proposition that the impact of financing on the value of the firm is irrelevant. The M&M's propositions assert that there would be arbitrage opportunities in the perfect capital market if the value of the firm depends on its capital structure. They also argued that if investors and firms can borrow at the same rate, investors can neutralize any capital structure decisions the firm's management may take (home-made leverage). Though their proposition theoretically sounds good, it is only valid under perfect market conditions (no tax is one of them) which were not actually possible in the real world. They corrected this proposition in 1963 incorporating the effect of tax on value and cost of the capital of the firm (Modigliani & Miller, 1963). Their new proposition contends that, in the world of corporate tax, the value of the firm depends on the variation of the debt level and tax shield benefit on interest payments. In 1976, Miller brought forward the next version of irrelevance theory of capital structure. He appealed that, capital structure decisions of firms with both corporate and personal taxes circumstances were irrelevant (Miller, 1977).

According to trade-off model, optimal capital structure does exist. A firm sets its target debt level and then gradually moves towards it. This theory asserts that a firm's optimal debt-equity ratio is achieved at the point when the marginal present value of the tax on additional debt is equal to the increase in the present value of financial distress costs. Under this theory, a firm's target leverage is driven by three competing forces: (1) taxes; (2) costs of financial distress (bankruptcy costs); and (3) agency costs. Both tax-based and agency-cost-based models belong to the static trade-off models as supported by Kraus and Litzenberger (1973), Jensen and Meckling (1976), Miller (1977), Kim (1978), Grossman and Hart (1982), Bradley, Jarrel, and Kim (1984), Jensen (1986), Harris and Raviv (1990), Stulz (1990), and Chang (1999). Agency theory developed by Jensen and Meckling in 1976 also suggests for an optimal debt level in capital structure by minimizing the agency costs arising from the divergent interest of managers with shareholders and debt holders. Jensen and Meckling (1976)

suggested that either ownership of the managers in the firm should be increased in order to align the interest of managers with that of the owners or use of debt should be motivated to control managers' tendency for excessive perk consumptions. Jensen (1986) presented agency problem associated with free-cash flow. He suggested that free cash flow problem could be somehow controlled by increasing the stake of managers in the business or by increasing debt in the capital structure, thereby reducing the amount of "free" cash available to managers. There are several capital structure theories like signaling theory and pecking order theory. Ross (1977) laid down the foundations of signaling theory in which he assumed that managers being the insiders have a better knowledge about the true distribution of future returns of the firm whereas investors do not. Investors interpret larger levels of leverage as a signal of the firm's current stable income, high future cash flows and managers' confidence about the performance of their own firm. According to him, investors take larger levels of debt as a signal of higher quality. He then concludes that profitability (as a proxy of quality performance) and leverage are thus positively related.

On the other hand, pecking order theory, suggested by Myers and Majluf (1984), which captured the effect of asymmetric information upon the mispricing of new securities, says that there is no well-defined target debt ratio. They opined that investors generally perceive that managers are better informed of the price sensitive information of the firms. Investors' perception is such that managers issue risky securities when they are overpriced. This perception of investors leads to the under pricing of new equity issue. Sometimes this under pricing becomes so severe that it causes substantial loss to the existing shareholders. To avoid the problem arising from information asymmetry firms usually fulfilled their financing needs by preferring retained earnings as their main source of financing, followed by debt and finally external equity financing as the last resort. Capital structure is thus arranged by a hierarchy of preferences for the issuance of new capital. This has been termed as "pecking order theory". Empirically, previous studies suggest that the level of leverage depends upon the definition of leverage. Several research studies have used both market and book value-based measures of leverage (Titman & Wessels, 1988; Rajan & Zingales, 1995). We use the book value measure of leverage. This can be justified with the argument that optimal level of leverage is determined by the trade-off between the benefits and costs of debt financing. The main benefit of leverage is the cash savings generated because of the debt-tax shield. This tax shield benefits are not changed by market value of the debt once it is issued (Banerjee, Heshmati, & Wihlborg, 2000).

Tangibility of Assets and Leverage

A firm with large amount of fixed asset can borrow at a relatively lower rate of interest by providing the security of these assets to creditors. Empirical evidence reveals mix conclusion on the effect of tangibility on capital structure across various studies. While Wiwattanakantang (1999) and Booth et al. (2001) found a negative relationship between tangibility and leverage in Thailand firms, Prasad, Green, and Murinde (2003) and Suto (2003) found a positively significant relationship in Malaysian firms. This means that a firm that has the incentive of getting debt at a lower interest rate as a result of possessing higher percentage of fixed asset is expected to borrow more as compared to a firm whose cost of borrowing is high because of having less fixed assets.

It is assumed, from the theoretical point of view, that tangible assets can be used as collateral. Therefore higher tangibility lowers the risk of a creditor and increases the value of the assets in the case of bankruptcy. As

Booth et al. (2001, p. 101) stated: “The more tangible the firm’s assets, the greater its ability to issue secured debt and the less information revealed about future profits”. Thus a positive relation between tangibility and leverage is predicted. Several empirical studies confirm this suggestion, such as Rajan and Zingales (1995), Friend and Lang (1988) and Titman and Wessels (1988). On the contrary, Booth et al. (2001) and HUANG and SONG (2002) experienced a negative relation between tangibility and leverage.

Firm Size and Leverage

There are two conflicting viewpoints about the relationship between size and leverage of a firm. First, large firms do not consider the direct bankruptcy costs as an active variable in deciding the level of leverage as these costs are fixed by constitution and constitute a smaller proportion of the total firm’s value. In addition, larger firms being more diversified have lesser chances of bankruptcy (Titman & Wessels, 1988). In line of this, one may expect a positive relationship between size and leverage of a firm. Second, contrary to the first view, Rajan and Zingales (1995) argued that there was less asymmetrical information about the larger firms. This reduces the chances of undervaluation of the new equity issue and thus encourages the large firms to use equity financing. This means that there is a negative relationship between size and leverage of a firm. From the theoretical point of view, the effect of size on leverage is ambiguous.

As Rajan and Zingales (1995) claimed:

Larger firms tend to be more diversified and fail less often, so size may be an inverse proxy for the probability of bankruptcy. If so, size should have a positive impact on the supply debt. However, size may also be a proxy for the information outside investors which should increase their preference for equity relative to debt. (p. 1451)

Also empirical studies do not provide us with clear information. Some authors found a positive relation between size and leverage, for example HUANG and SONG (2002), Rajan and Zingales (1995) and Friend and Lang (1988). On the other hand, some studies reported a negative relation, for example Kester (1986), Kim and Sorensen (1986) and Titman and Wessels (1988). Moreover, the results are very often weak as far as the level of statistical significance is concerned.

Firm Growth and Leverage

Empirically, there is much controversy about the relationship between growth rate and level of leverage. According to the pecking order theory hypothesis, a firm will first use internally generated funds which may not be sufficient for a growing firm. And the next option for the growing firms is to use debt financing which implies that a growing firm will have a high leverage (Drobetz & Fix, 2003). On the other hand, agency costs for growing firms are expected to be higher as these firms have more flexibility with regard to future investments. The reason is that bondholders fear that such firms may go for risky projects in future as they have more chances of selecting between risky and safe investment opportunities. Deeming their investments is at risk in future, bondholders will impose higher costs of lending to growing firms. Growing firms, thus, facing higher cost of debt will use less debt and more equity. Congruent with this, Titman and Wessels (1988), Barclay, Smith, and Watts (1995) and Rajan and Zingales (1995) all found a negative relationship between growth opportunities and leverage. Initially the author expects that firms with higher growth opportunities will have lower level of leverage.

According to Myers (1977), firms with high future growth opportunities should use more equity financing, because a higher leveraged company is more likely to pass up profitable investment opportunities. As HUANG

and SONG (2002, p. 9) claimed: “Such an investment effectively transfers wealth from stockholders to debtholders”. Therefore a negative relation between growth opportunities and leverage is predicted. As market-to-book ratio is used in order to proxy for growth opportunities, there is one more reason to expect a negative relation as Rajan and Zingales (1995, p. 1455) pointed out: “The theory predicts that firms with high market-to-book ratios have higher costs of financial distress, which is why we expect a negative correlation”. Some empirical studies confirm the theoretical prediction, such as Rajan and Zingales (1995), Kim and Sorensen (1986) or Titman and Wessels (1988) reported. However, Kester (1986) and HUANG and SONG (2002) demonstrated a positive relation between growth opportunities and leverage.

Firm Profitability and Leverage

Given the pecking order hypothesis firms tend to use internally generated funds first and then resort to external financing. This implies that profitable firms will have less amount of leverage (Myers & Majluf, 1984). We expect a negative relationship between profitability and leverage. There are no consistent theoretical predictions on the effects of profitability on leverage. From the point of view of the trade-off theory, more profitable companies should have higher leverage because they have more income to shield from taxes. The free cash-flow theory suggested that more profitable companies should use more debt in order to discipline managers, to induce them to pay out cash instead of spending money on inefficient projects. However, from the point of view of the pecking order theory, firms prefer internal financing to external. So more profitable companies have a lower need for external financing and therefore should have lower leverage. Most empirical studies observe a negative relationship between leverage and profitability, for example Rajan and Zingales (1995), HUANG and SONG (2002), Booth et al. (2001), Titman and Wessels (1988), Friend and Lang (1988) and Kester (1986).

Firm Age and Leverage

Age of the firm is a standard measure of reputation in capital structure models. As a firm continues longer in business, it establishes itself as an ongoing business concern and therefore increases its capacity to take on more debt; hence age is positively related to debt. Before granting a loan, banks tend to evaluate the creditworthiness of entrepreneurs as these are generally believed to pin high hopes on very risky projects promising high profitability rates. In particular, when it comes to highly indebted companies, they are essentially gambling with their creditors' money. If the investment is profitable, shareholders will collect a significant share of the earnings, but if the project fails, then the creditors have to bear the consequences (Myers, 1977). To overcome problems associated with the evaluation of creditworthiness, Diamond (1984) suggested the use of firm reputation. He took reputation to mean the good name that a firm has built up over the years; the name was recognized by the market, which has observed the firm's ability to meet its obligations in a timely manner.

Methodology

The paper adopted correlational research design using secondary data only. The data were extracted from the annual reports and accounts of the 15 sampled firms out of all the 32 listed insurance companies in Nigeria representing 47% of the population. Random sampling technique is used to draw the sample firms so that all the firms have equal chance of representation. Multiple regression is used as a tool of analysis for the study covering period of 10 years (2001-2010).

Model Specification and Robustness Test

The model is specified on an empirical framework using the determinants mentioned for this study to investigate the influence of the determinants on the capital structure of Nigerian listed insurance firms. This is functionally stated as:

$$DR_t = f(TANG_t, SIZE_t, GROWTH_t, PROF_t, AGE_t, \varepsilon_t) \quad (1)$$

This is therefore stated in a stochastic model as:

$$DR_t = \varphi_0 + \varphi_1 TANG_t + \varphi_2 SIZE_t + \varphi_3 GROWTH_t + \varphi_4 PROF_t + \varphi_5 AGE_t + \varepsilon_t \quad (2)$$

Where:

DR = Debt ratio (measured as book value of long-term debts divided by capital employed i.e., long-term debts plus shareholder funds);

TANG = Tangibility of assets (measured as fixed assets divided by net total assets);

AGE = Number of years in which the firm was incorporated (Log of number of the year of incorporation);

SIZE = Size of the firms (measured as log of turnover);

GROWTH = Growth potential (measured as % increase in net total assets);

PROF = Profitability (measured as earning after tax divided capital employed);

φ_{1-5} = Coefficients of explanatory variables;

φ_0 = Constant or intercept;

ε_t = Error term.

In this research, linear regression model has been used, therefore the assumptions of this model is well regarded. The integrity of regression assumptions can be determined by considering residuals distribution and its relationships with other variables. Residuals include the difference between the observed values of a dependent variable and the predicted values by regression line. In regression analysis considering linearity, normality, stability of variance and independence of observations is of vital importance. In this research, these assumptions were considered, but not mentioned here for brevity.

A review of prior studies in this area highlighted the difficulty in identifying the association between the dependent and the explanatory variables. Several assumptions in regression analysis were first tested to ensure that, there was no significant multicollinearity problem between independent variables; the variance of the distribution of the dependent variable is similar for all values of the independent variables (homoscedasticity); a linear relationship exists between the dependent and independent variables (linearity); the distribution values of the dependent variable for each value of the independent variable are normal (normality) and that no errors related to measurement and specification exist (Haniffa & Cooke, 2002).

The tolerance value and the variance inflation factor (VIF) are two advanced measures of assessing multicollinearity between the independent variables of the study. Using SPSS, the variance inflation factors and tolerance values are computed and found to be consistently smaller than 10 and one respectively indicating complete absence of multicollinearity (Neter, Kutner, Nachtsheim, & Wasserman, 1996; Casey & Anderson, 1999). This shows the appropriateness of fitting the model of the study with the three independent variables. In addition, the tolerance values are consistently smaller than 1.00 thus which substantiates the fact that there is complete absence of multicollinearity between independent variables (Tobachnick & Fidell, 1996).

Results and Discussion

The analysis begins with a wide range of summary statistics on dependent variables and independent variables with mean, standard deviation, skewness, and kurtosis presented in Table 1.

Table 1

Summary of Descriptive Statistics

	DR	TANG	SIZE	AGE	PROF	GROWTH
Mean	0.094907	-0.334606	0.802513	0.200159	0.013190	1.842788
Std. Dev.	0.063188	0.357187	0.070390	0.043965	0.068904	0.674370
Skewness	0.339638	0.357671	0.605128	-0.856190	-4.412321	-2.233994
Kurtosis	2.895209	4.151218	2.492815	2.932601	22.91358	6.508349
Observation	150	150	150	150	150	150

Note. Source: Output of data analysis by author 2011 using e-view.

From the above table, the average leverage of this industry is 0.094, size accounted for about 0.80, age 0.20, growth 1.84 and profitability 0.13. The standard deviation of the debt ratio is 0.063, tangibility 0.357, size of the firm 0.0703, age 0.0439, profitability 0.0689 and growth has the highest of 0.674. The result of skewness ranges from 4.4123 to 0.6051 whereas the result of the Kurtosis is in the range of 2.492 and 22.913.

Table 2

Summary of Coefficient of Correlation

	DR	TANG	SIZE	AGE	PROF	GROWTH
DR	1					
TANG	0.281	1				
SIZE	-0.378	-0.069	1			
AGE	-0.047	-0.276	-0.675	1		
PROF	-0.263	-0.405	0.323	0.115	1	
GROWTH	0.099	-0.0547	0.076	0.158	0.305	1

Note. Source: Output of data analysis by author 2011 using e-view.

The result presented in Table 2 above confirms that tangibility and growth have positive correlation with leverage whereas size, age and profitability are negatively correlated with the dependent variable. This therefore means that an increase in growth and tangibility will result in an increase in debt. On the other hand, a decrease in size, age and profitability will lead to a decrease in leverage.

Table 3 below shows the summary of the estimated regression model:

$$DR = 0.8307 - 0.7418 \text{ SIZE} - 0.9034 \text{ AGE} + 0.0241 \text{ GROWTH} + 0.0264 \text{ PROF} + 0.0135 \text{ TANG} \quad (3)$$

The results show that the estimated model of the study is fit because all the explanatory variables are significant in determining the dependent variables. It can also be observed that the coefficients of all the explanatory variables are positive and significant. Thus, size, age, profitability, and tangibility are all significant at 1%, whereas, growth is significant at 5%. The result also indicates the relationship between leverage and size to be negative. This is in agreement with the earlier work of Rajan and Zingales (1995) who argued that there was less asymmetrical information about the larger firms. The age of the firm was found to be negatively correlated with leverage which contradicts our earlier expectation that age of the firm is positively related to leverage. The expectation was based on the findings of Diamond (1984) who took reputation to mean the good name that a firm

has built up over the years; the name is recognized by the market, which has observed the firm's ability to meet its obligations in a timely manner.

Table 3

Summary of Regression Result

Variable	Coefficient	Standard error	t-test	Probability
INTERCEPT	0.830782	0.176744	4.700497	0.0000*
SIZE	0.741830	0.169894	4.366419	0.0001*
AGE	0.903466	0.270208	3.343597	0.0016*
GROWTH	0.024131	0.011452	2.107163	0.0404**
PROF	0.026452	0.132606	3.199475	0.0027*
TANG	0.013531	0.023356	3.579335	0.0051*
R-squared		0.781927		
Adjusted R-squared		0.677545		
Durbin-Watson stat.		1.964305		
F-statistic		5.932154		
Prob. (F-statistic)		0.000031*		

Notes. Source: Output of data analysis by author 2011 using e-view. * = Significant at 1%; ** = Significant at 5%.

This work found a positive relationship between profitability and leverage which is in conformity with trade-off theory and consistent with the works of Bowen et al. (1982), Dammon and Senber (1988) and Givoy, Grossman, and Hart (1992). It is however in disagreement with pecking order theory (Myers & Majluf, 1984). Empirically, there is much controversy about the relationship between growth rate and level of leverage. According to the pecking order theory hypothesis, a firm will first use internally generated funds which may not be sufficient for a growing firm. And the next option for the growing firms is to use debt financing which implies that a growing firm will have a high leverage (Drobetz & Fix, 2003). On the other hand, agency costs for growing firms are expected to be higher as these firms have more flexibility with regard to future investments. The reason is that bondholders are panicking for such firms may go for risky projects in future as they have more choice of selection between risky and safe investment opportunities. Deeming their investments at risk in future, bondholders will impose higher costs at lending to growing firms. Growing firms, thus, facing higher cost of debt will use less debt and more equity. This is in agreement with Titman and Wessels (1988), Barclay, Smith, and Watts (1995) and Rajan and Zingales (1995) who all found a negative relationship between growth opportunities and leverage.

The effect of tangibility on capital structure according to both trade-off theory and pecking order theory suggests a positive relationship between tangibility and leverage. The result of our findings also indicates a positive significant relationship between tangibility of assets and leverage of Nigerian listed insurance firms. This is line with the findings of Prasad, Green, and Murinde (2003) and Suto (2003) who found a positively significant relationship for Malaysian firms. On the other hand, another study conducted by Wiwattanakantang (1999) and Booth et al. (2001) found a negative relationship between tangibility and leverage for Thailand firms. Having the incentive of getting debt at a lower interest rate, a firm with higher percentage of fixed asset is expected to borrow more as compared to a firm whose cost of borrowing is higher because of having less fixed assets.

Finally, the cumulative influence of all the explanatory variables put together is able to explain the dependent variable up to 68% as indicated by the adjusted R^2 and remaining 32% is controlled by other factors.

Similarly, the result of the *F*-statistic value of 5.9 implies that the model is well fitted and significant at 1% considering the rule of thumb of 2. This provides evidence of rejecting the null hypothesis that capital structure determinants have no significant impact on debt ratio of firms in insurance industry. The Durbin-Watson of 1.96 indicates a complete absence of serial correlation within the period of the study.

Conclusions and Recommendation

Five explanatory variables were used to measure their effects on debt ratio and all of them are statistically significant in influencing the leverage level of firm in the Nigerian insurance industry. It is therefore concluded that capital structure determinants play a significant role in determining the leverage level of insurance firms in Nigeria. However, in line with the finding and conclusion of this study, what left to be done is for the management of Nigerian firms in insurance industry to be considering their position using five variables of capital structure determinants as yardstick before embarking on debt financing decision to enable them arrive at a very favourable financing structure.

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