CAPITAL STRUCTURE AND PROFITABILITY OF QUOTED COMPANIES IN NIGERIA

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ABSTRACT

The study examined the relationship of capital structure to profitability of quoted firms in Nigeria. The study was based on a panel data set from 1996 to 2010 comprising sixty non – financial companies. The study specified two panel regression models. Two profitability measures: Net Profit Margin (NPM) and Operating Profit Margin (OPM) were taken as the dependent variables respectively. The principal explanatory variable for each of the models was Debt Ratio (DR). The results of the study indicated that there was a significant negative relationship between capital structure and profitability of quoted companies in Nigeria. Indeed, the results the Pecking order theory that profitable firms do not target an optimal level of leverage to balance the benefits and costs of debt financing. Rather, firms use retained earnings first, then debts and finally equity. Such firms would actually be paying high tax charges and also high operating costs arising from over dependence on the money market for their funds requirements. It was recommended that appropriate fiscal policies, relevant capital market institutional and legal framework should be put in place. These measures, we believe, will ensure better access to funds and reduce the cost of doing business.

Keywords: Quoted companies, panel data, profitability, capital structure, debt ratio, debt financing, retained earnings, equity financing, optimal capital structure.

1. INTRODUCTION

Capital structure is the mix of equity and debt that a company uses to finance its operations. Half a century of research on capital structure attempted to verify the presence of an optimal capital structure that could amplify the company's ability to create value. Important, and still in vogue, is the debate between two main theoretical perspectives, the trade-off approach (Kraus & Litzenberger, 1973); and the pecking order approach (Myers 1984; Myers & Majluf, 1984).

According to the trade-off approach, by balancing the advantages and disadvantages of debt it could be possible to determine an optimal level of indebtedness that could reduce the cost of capital and contribute to the creation of economic value. In other words, an element of balance is introduced in capital structure choices because of the optimal combination of debt and equity. Many factors generate costs and benefits of debt and contribute to determining optimal capital structure. Firms that use debts, in fact, can take advantage not only of tax benefits derivable from the deductibility of financial obligations, but can also minimize their costs arising from information asymmetries and discipline managerial behaviour with regards to firm investment policies. This type of financing, however, also brings with it the possibility that some specific problems can arise, that are attributable to the costs of eventual financial distress, agency costs and costs deriving from a loss of financial flexibility (Graham & Harvey, 2001; Bancel & Miltoo, 2004).

The pecking order theory, on the other hand, posits that based on the assumption of information asymmetry, firms avoid equity and risky securities that are sensitive to mis-pricing and adverse selection. Pecking order theory does not predict an optimal or target capital structure. It argues that profitable firms will use their retained earnings first to meet their capital needs. They opt for debt as their second choice and additional equity finance as a source of last resort. It contends that more profitable firms rely more on their retained earnings to finance their growth, whereas less profitable firms use more of debt financing. This is the opposite of the position of trade-off approach.

The emergent nature of the Nigerian capital market with its inherent problems of inactive debt market, shallow nature of the market, buy and hold syndrome of Nigerian investors and so on, coupled with the unconducive socio-political environment make firms in Nigeria to rely more on the money market than the capital market for their funds requirement. Hence the money market is dominant in the Nigerian financial system. The multiplier effects of this aberration put a question mark on the true relationship between capital structure and profitability of quoted firms in Nigeria. That is, whether trade – off theory which supports a positive relationship or pecking order theory which supports a negative relationship. The study seeks to examine this relationship.

2. LITERATURE REVIEW

Without doubt, the most prominent tax-related capital structure anomaly is that profitable firms often carry little or no debt, despite conventional wisdom that the value of the tax shield forgone far exceeds the expected distress costs of debt (Miller, 1977; Graham, 2000). Modigliani & Miller (1963) argue that, due to the tax deductibility of interest payments, companies may prefer debt to equity. This would suggest that highly profitable firms would choose to have high level of debts in order to obtain attractive tax shields. However, others such as Miller (1977) highlight the limitations of this and Modigliani's 1963 arguments by additionally considering the effect of personal taxation. Moreover, DeAngelo & Masulis (1980) argue that interest tax shields may be unimportant to companies with other tax shields, such as depreciation. It is well known that in leverage regression profits are negatively related to leverage. The literature (Myers, 1993; Fama & French, 2002), considers this to be a key rejection of the static trade-off theory. Frank & Goyal (2007) show that:

1. The literature has misinterpreted the evidence as a result of the wide-spread use of familiar but empirically misleading leverage ratio.
2. More profitable firms experience an increase in both book equity and the market value of equity.
3. Empirically, they react as in the trade-off theory. Highly profitable firms typically issue debt and repurchase equity, while low profit firms typically reduce debt and issue equity.
4. Firm size matters. Large firms make more active use of debt, while small firms make more active use of equity.

An alternative hypothesis regarding the relationship between profitability and gearing relates to Myers and Majluf (1984) and Myers (1984) pecking-order theory. Consistent with the findings of Kester (1986) and Titman & Wessles (1988), Rajan & Zingales (1995) find profitability to be negatively related to gearing. Given, however, that the analysis is effectively performed as an estimation of a reduced form, such a result masks the underlying demand and supply interaction which is likely to be taking place. Although on the supply-side one would expect that more profitable firms would have better access to debt, the demand for debt may be negatively related to profits. Stiglitz & Weiss (1981) illustrate that the inability of lenders to distinguish between good and bad risks ex ante prevents them from charging variable interests rates dependent on the actual risk. In this event lenders are forced to increase the general cost of borrowing, which will tend to induce a problem of adverse selection as good risks are driven from the market by the high costs of borrowing. Due to this information asymmetry, companies will tend to prefer internal to external financing, where available.

The relationship between firm profitability and capital structure can be explained by the Pecking Order Theory (POT), which holds that firms prefer internal sources of finance to external sources. The order of the preference is from the one that is least sensitive (and least risky) to the one that is most sensitive (and most risky) that arise because of asymmetric information between corporate insiders and less well-informed market participants (Myers, 1984). By this token, profitable firms with access to retained profits can rely on them as opposed to depending on outside sources (debt). Murinde, Agung & Mullineux (2004) observe that retentions are the principal source of finance. Titman and Wessels (1988) and Barton, Hill and Srinivasan (1989) agree that firms with high profit rates, all things being equal, would maintain relatively lower debt ratios since they are able to generate such funds from internal sources.

Empirical evidence from previous studies seems to be consistent with the pecking order theory. Most studies found a negative relationship between profitability and capital strcuture (Friend & Lang, 1988; Barton et al., 1989: Van der Wijst & Thurik, 1993; Chittenden et al., 1996; Jordan et al., 1998; Shyam-Sunder & Myers, 1999; Michaelas, Chittenden & Poutziousris, 1999). Zeitun & Tian (2007), Cassar & Holmes (2003) and Hall, Hutchinson & Michaelas (2004) also suggest negative relationship between profitability and both long-term debt and short-

term debt ratios. Petersen & Rajan (1994); Jensen, Solberg & Zorn (1992), however, found a significantly positive association between profitability and debt ratio; supporting the trade-off theory.

3. METHODOLOGY

The study covered a period of 15 years, that is, 1996 – 2010. The population of the study was all the 134 non – financial firms quoted on the Nigerian Stock Exchange as at 2010. The sample size was determined by using the Burley's formula for the determination of sample size for finite population as propounded by Yamane (1973). The formula is expressed as follows:

$$n = \frac{N}{1 + N(e)^2}$$

Where n = sample size

N= Population

e = Level of significance (5% for this study)

This procedure produced a sample size of 100 firms. The selection of the 100 firms was based on stratified random sampling technique. The research population was organized into homogenous subsets with heterogeneity between the subsets in accordance with the Nigerian Stock Exchange sectoral classification as at 2010. From each sector, the sample companies were drawn randomly based on the relative proportion of the population represented by each sector. To achieve this, the names of the companies in each of the sectors were written on equal-sized pieces of paper one at a time. These pieces of paper were then kept in baskets – one for each sector – and an assistant was asked to pick a total of 100 pieces of paper from the baskets (with replacement) on the basis of the relative proportion of the population represented by each sector. This is to ensure proportional representation of the different sectors that make up the population.

From this sample size, we deleted firms that do not have complete data of the relevant variables required for our analysis. This may be due to cessation of operation before 2010, commencement of operations after 1996, change of accounting year-end or problems with the Nigerian Stock Exchange and Securities and Exchange Commission at any point during the period of study. This measure helps to guide against data omission and ensure uniformity in data presentation. Thus, the study retained a sample size of sixty (60) firms over a fifteen (15) - year period of time in a balanced panel. These firms are active non-financial firms with a basic characteristic of continuous operational existence over a period of at least fifteen years to date.

The study relied wholly on secondary sources of data from where we collected data to calculate Capital Intensity (CI), Size (S), Debt Ratio (DR), Age (A), Current Ratio (CR), Total Assets Turnover (TAT), Net Profit Margin (NPM) and Operating Profit Margin (OPM), which were used for the analysis. Debt ratio, which is the ratio of total debts to total assets, was used as the principal explanatory variable in the study. It served as the proxy for capital structure. In order to recognize the fact that a number of factors associated with leverage may impact on performance, other variables were also chosen as explanatory variables and used in this study as control variables. These control variables were treated in the same way as the explanatory variable. The control variables that were used are total asset turnover, size, current ratio, age and capital intensity.

For the statistical analysis, first, we carried out descriptive analysis of data using correlation matrix and Jacque Bera test. This was to ascertain the pattern of relationship among the data and the possible degree of multi-colinearity among the regressors. The results obtained were satisfactory. Second, we carried out econometric analysis based on panel data regression techniques. To start with, we carried out a level ordinary least square analysis on the pooled data. And as was expected, the results were biased and spurious. To correct for this, we adopted the first difference autoregressive analysis. Because of the panel nature of the data, we carried out analysis based on both the fixed effect models and the random effect models. A comparison of the overall performance of the models indicated that the fixed effect models have better results. To confirm this, we carried out a Hauseman specification test of choice and the result confirmed the superiority of the fixed effect results over the random effect results. Hence our analysis was based on the fixed effect models. The form suitable for the empirical testing of the data was stated as:

$OPM_{it} = (\alpha_2 + \mu_{i4}) + ß_1 DR_{it} + ß_2 TAT_{it} + ß_3 CR_{it} + ß_4 A_{it} + ß_5 S_{it} - ß_6 CI_{it} + V_{it}$ ......(1)

$NPM_{it} = (\alpha_2 + \mu_{i5}) + ß_1 DR_{it} + ß_2 TAT_{it} + ß_3 CR_{it} + ß_4 A_{it} + ß_5 S_{it} - ß_6 CI_{it} + V_{it}$ ......(2)

Where :
OPM   = Operating Profit Margin
NPM   =   Net Profit Margin
DR   = Debt Ratio
TAT   = Total Asset Turnover
CR   = Current Ratio
A   =Age
S   =Size
CI   =Capital Intensity
         i (=1,2,3,...60) is the given firm
         t = time
         Also, β_1, β_2, β_3, β_4, β_5, $\beta_6 < 0$
All the estimating procedures were programmed using E-Views 7.1 for windows.

RESEARCH HYPOTHESIS
The research hypothesis tested was stated as:
   Ho: There is no significant negative relationship between capital structure and
        profitability of quoted firms in Nigeria.

4. DATA ANALYSES AND PRESENTATION OF RESULTS

Table 1   Model 1
                    AR(1) RESULTS
Dependent variable is OPM.

Independent variables	Coefficients	Standard error	t-stat	Prob.
C	3.310983	5.323177	0.621994	0.5341
DR	-11.71457	1.379854	-8.48713*	0.0000
TAT	-0.209803	0.218947	-0.958239	0.3382
CR	0.00452	0.01301	0.347436	0.7284
A	0.256778	0.134765	1.905378	0.0571
S	-0.025091	0.021361	-1.174617	0.2405
CI	-1.976905	0.812733	-2.432415**	0.0152
AR(1)	0.349611	0.034719	10.06976*	0.0000
R – squared	0.55768	Mean dependent var 5.19586		
Adjusted R - squared	0.51985	S.D dependent var 13.29055		
S.E of regression	9.209403	Akaike info. Criterion 7.354857		
Sum squared Resid.	64457.96	Pool Observation 826		
F-statistic	14.74171	No of cross - section 60		
Inverted AR Roots	0.35	D.W – statistic 2.031703		

Source: Authors' computation (2011)
Note: * = significant @1%
         ** = significant @5%

   $OPM = 3.31 - 11.72DR + O.21TAT + 0.005CR + 0.26A + 0.035S - 1.98CI$
         (0.62) (-8.49)   (-0.96)   (0.35)   (1.91) (-1.17) (-2.43)
   R^2 = 0.56
   Adj. R^2 = 0.52
   F-Stat. = 14.74

From table above, the value of Adjusted R - squared shows that the six independent variables together explains over 51% of the systematic variation in OPM during the period studied. The F-value of 14.74171 is significant, passing the significant test at 1% level. Thus, there is significant linear relationship between OPM and the six independent variables as a group. The signs of the coefficients are correct except for CR and A. the positive sign of the coefficient of CR and A shows that there is a direct relationship between the variables and OPM while the

negative signs of DR, TAT, S and CI indicates an inverse relationship. The t-values of the independent variable pass the two-table test of significance at the 1% level in DR and CI with t-values of -8.49 and -2.43 respectively. This shows that DR and CI are capable of predicting OPM while the remaining variables did not pass the two-tailed test of significance at the 1% level. The t – value of the coefficient of AR(1) of 10.07 pass the two-tailed test of significance at the 1% level. This means that there is absence of positive autocorrelation. Moreover, the result was further supported by DW-statistic of 2.031703 and inverted AR root of 0.35 indicating the absence of autocorrelation.

In the next section, we present the result for model V using Net Profit Margin (NPM) – measure of profitability- as dependent variable.

Table 2   Model 2
                           AR (1) RESULTS
Dependent variable is NPM.

Independent variables	Coefficients	Standard error	t-stat	Prob.
C	3.134105	4.896051	0.640129	0.5223
DR	-10.32539	1.333463	-7.743286*	00.000
TAT	-0.033682	0.213535	-0.157737	0.8747
CR	0.002869	0.01284	0.223455	0.8232
A	0.180429	0.124618	1.447859	0.1481
S	-0.014913	0.020195	-0.738444	0.4605
CI	-1.702958	0.793622	-2.145804**	0.0322
AR(1)	0.315441	0.035364	8.919731*	0.0000
R – squared	0.462007	Mean dependent var 3.358983		
Adjusted R - squared	0.415994	S.D dependent var 11.74649		
S.E of regression	61241.65	Akaike info. Criterion 7.303671		
Sum squared Resid.	61241.65	Pool Observation 826		
F-statistic	10.04088	No of cross - section 59		
Inverted AR Roots	0.32	D.W – statistic 1.982721		

Source: Authors' computation (2011)
Note: * = significant @1%
          ** = significant @5%

NPM = 3.31 − 10.33DR - O.03TAT + 0.03CR + 0.18A - 0.01S − 1.70CI
        (0.64)   (-7.74)   (-0.16)   (0.22)   (1.45) (0.74)   (-2.15)
R^2 = 0.46
Adj. R^2 = 0.42
F-Stat. = 10.04

From table 2 above, it can be concluded from the adjusted R - squared value that the six independent variables together explain over 41% of the systematic variations in NPM during the period studied. The F-statistic of 10.04088 is significant at 1% level. This means that there is a significant linear relationship between NPM and the six independent variables as a group. The signs of the coefficient are correct except CR and A. the positive sign of CR and A indicates that there is a direct relationship between NPM and the variables while the negative sign of DR TAT, S and CI shows an inverse relationship between the NPM and the variables. The t-values of the coefficients of DR and CI of -7.74 and 2.15 respectively pass the two-tailed test of significance at the 1 percent level. This means that only DR and CI are capable of predicting NPM while the remaining variables can not. Also the t-value of AR(1) of 8.92 pass the two-tailed test of significance at the 1 percent level. This shows the absence of positive autocorrelation. This was further supported by the value of D.W-statistic of 1.98221, and inverted AR roots of 0.32. These results show that there is absence of autocorrelation problem. This implies that the estimates are reliable for structural analysis and policy direction.

5. DISCUSSION OF FINNDINGS

It was hypothesized that capital structure proxy by Debt Ratio (DR) is negatively related to profitability proxy by Operating Profit Margin (OPM) and Net Profit Margin (NPM). The OPM regression result indicates that as individual variable, the estimate of the relationship between OPM and DR shows a negative relationship. This implies that an increase in debt ratio will lead to a decrease in OPM. The t-value of debt ratio is significant at 1% level. This implies that debt ratio is capable of predicting OPM. This significant negative relationship between DR and OPM is in line with the apriori expectation and conforms to the findings of Ebaid (2009) and Rao, Al-Yahyaee and Syeed (2007). Of the five control variables, total asset turnover, size and capital intensity has negative relationship with OPM, out of which only capital intensity is significant. A non-significant positive relationship exists between OPM and current ratio and age.

The NPM regression result indicates that as individual variable, the estimate of the relationship between NPM and DR shows a negative relationship. This means that an increase in debt ratio will bring about a decrease in NPM. The t-value of DR is significant at 1% level. This implies that DR is capable of predicting NPM. This significant negative relationship between NPM and DR conforms to the theoretical postulation and the findings of Rao et all (2007) and San & Heng (2011).

Indeed, the OPM and NPM regression results indicate that there exist a significant negative relationship between profitability and capital structure among Nigerian firms. This is consistent with the findings of Onaolapo & Kajola (2010). Therefore capital structure choice in Nigeria supports the pecking order theory that firms prefer raising capital, first from retained earnings, second from debt, and third from issuing new equity. Consistent with the findings of Kester (1986) and Titman & Wessles (1988), Rajan & Zingales (1995) find profitability to be negatively related to capital structure. A comparison of the regression results of OPM model and NPM model in the study, reveals that the OPM model performed better than NPM model. This can be attributed to the high interest charges firms in Nigeria pay for overdraft facilities and short-term bank loans. A noticeable feature of firms in Nigeria was the over reliance on short-term debt capital to finance both current and fixed assets requirements. No doubt, the Nigerian financial system is dominated by the money market which is supposed to provide finance on short-term basis. This has remarkable implications for firms in Nigeria.

6. CONCLUDING REMARKS

The study has examined the relationship between capital structure and profitability of quoted companies in Nigeria. The main aim is to provide empirical insights on the financing behaviour of Nigerian business firms as it relates to the two main theoretical perspectives of capital structure. The study conforms to our a-priori expectation that there is a significant negative relationship between capital structure and financial performance. The study showed that quoted companies in Nigeria follow a pecking order in their financial decision making. However, the rationale of information asymmetry that underlies pecking order theory in developed countries was not revealed by the study. The pecking order behaviour in the Nigerian context seems to be based on the zero transaction cost associated with retained earnings and the low flotation cost for debt capital. This suggest that companies in Nigeria do not have a well defined debt – equity mix, but finance their operations with sources of finance that provide the least resistance to the management.

The significant negative relationship between profitability and leverage implies that most profitable companies in Nigerian have very low leverage ratio. Such firms would actually be paying very high tax charges. Based on theoretical postulations, the study recommends that Nigerian business firms should introduce more debt, especially long-term debt, into their capital structure. This will help the firms to take advantage of the tax benefit of using debt capital. The study also showed that business firms in Nigeria suffer high operating costs. This is not unexpected considering the state of the Nigerian economy and the high cost of doing business in the country. The study therefore recommends that business firms should put in place necessary machinery to control costs and avoid wastage. Also, government should make concerted economic and political efforts to reduce the cost of doing business in the country.

Finally, it is essential for Nigeria to develop and improve the institutions and supporting economic and regulatory infrastructure. This will promote the development of efficient markets and financial institutions and the mechanisms of corporate governance, so that firms' choice of equity or debt may be made in a more informed and transparent market and institutional context.

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