COMPARATIVE STUDY OF THE DETERMINANTS OF CAPITAL STRUCTURE OF QUOTED AND UNQUOTED AGRO-BASED FIRMS IN NIGERIA

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Abstract

The study examined the determinants of capital structure decision and compared the capital structure of quoted and unquoted agro-based firms in Nigeria. Data collected through a multi- stage random sampling from the financial statements of 28 quoted and 60 unquoted agro-based firms for the period 2005-2010 were analyzed using descriptive statistics, Z-test and Ordinary Least Square (OLS) regression. The result revealed significant differences in capital structure (long term debt and total debt use) between quoted and unquoted agro-based firms. Short-term debts constituted a higher proportion of total debts of both sampled groups. The regression result showed that firm size, asset structure andgrowth coefficients had significant positive relationships with both long and short term debt finance for both listed and unlisted agro-based firms respectively. Result further showed that age of firms, educational status of CEO, export status of firms, and gender of firm owners were positive and significantly related to long term debt for both listed and unlisted firms. Also, highly profitable firms depended on internally generated revenue, thereby lending credence to the pecking order theory (POT). Therefore, The study showed that pecking order theory dominated the financing behavior of agro-based firms in Nigeria while the agency cost argument was only relevant for listed agro-based firms. Hence, policies that would enhance the acquisition of tangible assets, encourage exportation, ensure appropriate record keeping and encourage the use of more long term finance in place of short-term finance should be pursued.

Keywords: *Short-term, long- term ,debt, explanatory variable*

1. Introduction

Since the pioneering work of Franco Modigliani and Miller commonly known as the M&M theory, published in their seminal paper in 1958, research on the determinants of capital structure have evolved along many directions. Majority of these studies have incorporated new variables not considered by M&M in that initial study such as taxes

(Modigliani & Miller, 1963), bankruptcy cost (Titman, 1984), agency costs (Jensen & Meckling, 1976; Myer, 1977), and the information asymmetry (Myer & Majluf, 1984). The M&M theory states that in an efficient market world devoid of taxes or bankruptcy cost,the value of a firm is not affected by the manner in which the firm is financed. Several models have equally been constructed in literature to explain firm's financing behavior (Harris &Raviv, 1991). Findings from these studies vary considerably; whymost results consolidate the idea that there should indeed be an optimal capital structure to maximize the firm value that should be pursued through long term policies (Martin, Nakamura, Forte, Carvalho, Antonio, Miguel & Pinado,2001),others such as Titman and Wassel (1988); Harris and Raviv (1991); Frank and Goyal, (2004) have continued to argue that there is no universal theory of capital structure. According to them, the choice of suitable explanatory variable is potentially contentious. Hence, even though the M&M capital structure irrelevance theorem rests on unrealistic assumptions, it served as a starting point to search for factors that influence corporate leverage policies.

Though most researchers have come to consensus on certain factors affecting capital structure, these factors at times vary depending on a host of factors such as the nature of firm in question, their operational environment, gender of CEO, their tax payment ability and procedures, dividend payment as well as the state of growth of the country's economy and extent of capital market development. Hence, in addition to tangibility, size, profitability and growth opportunities identified by Rajan and Zingales (1995); Bevan and Danbolt (2002), this study incorporate other variables like taxes, form of business, gender of CEO, age of firms, educational level of CEO and export status in attempt to arrive at the determinants of capital structure of agro-based firms in Nigeria.Given the enormous role of agro-based firms,with regards to generating employment and income in terms of profit, dividend and wages to households, foreign exchange to government as well as being up to date with regards to their discharge of Corporate social responsibilities, it is imperative for agro financial managers to be able to find out the appropriate financial mix that would ensure their continuous survival and profitability. To achieve this objective,knowledge of capital structure and its determinants becomes indispensable and warrants this study. Against this backdrop, the study compared and investigates the determinants of capital structure of quoted and unquoted agro–based firms in Nigeria. It will also attempt to find out which capital structure theories dominate the Nigerian agro-allied firms.

2. Theories of Capital Structure

Among the competing theories in explaining a firm's capital structure choices are;

2.1 The Static Trade off Theory

The Static trade off theory was developed by Myers in 1984. It is also called the tax based theory and proposes that firm's target leverage is driven by taxes, bankruptcy cost and agency conflicts. The theory attempted to balance the corporate tax advantage of debt financing against the cost advantages of bankruptcy, as well as incorporating personal tax and non tax shields. According to the theory, highly profitable firms should have high debt ratio so as to shield their large profits from taxation. The effect of tax policy on capital structure of firms has been acknowledged by studies such as Green, Murinde, and Suppakitjarak (2002) and Abor (2008). Other studies such as Titman and Wessel (1988) support this theory. In their views, the advantages associated with leverage would lead firms to be completely financed through debt since corporate taxes allow firm to deduct interest on debt in computing taxable profit. Hence, a positive relationship is expected between leverage ratios and profitability. However, researchers such as Myers (2001) and Cheng & Jiang

(2001) have pointed out some problem areas in the theory's inability to explain firm's actual behavior. Accordingly, the alternate hypothesis that would be use to test if the static trade-off theory is relevant in Nigerian agro-based firms is:

H1: There is a positive relationship between leverage and profitability.

2.2 The Agency Cost Theory

The classical agency theory was developed in 1932 by Berle & Means. They attempt to resolve the conflict between owners and managers over the control of corporate resources through the use of contracts that seek to allocate decision rights and incentives. According to the theory, there is separation between ownership and control in larger corporation, as a result of dilution in equity position. The theory holds that an optimal capital structure will be determined by minimizing the cost arising from conflicts between the parties involved. According to Roy & Li (2002), the contractual device suggested by agency theory to accomplish the transfer of wealth from the organization to investors is debt creation. But, the use of debt by firms leads to agency costs. Debt agency cost arises fromthe conflict of interest between debt providers, shareholders and managers. Consistent with this prediction are Titman and Wessel (1988) and Rajan and Zingales (1995) who reported a negative relationship between debt ratios and growth. It is suggested that the bigger a firm is, there is less information asymmetry. Given the above, the alternate hypothesis to test the relevance of the agency theory in Nigerian agro-based firms is:

H2: There is a negative relationship between leverage ratios and growth

H3: There is a positive relationship between leverage ratios and size

2.3 The Pecking Order Theory

The pecking order theory was proposed by Myer &Majluy(1984), by explaining the effect of information asymmetries between insiders and outsiders of companies. The theory proposes that firms prioritize their financing sources such that all internal funds are exhausted first before looking elsewhere for costly external finances. According to the theory, highly profitable firms would use less debt than less profitable ones. Hence, a negative relationship is expected between leverage ratios and profitability. Numerous studies such as Fama& French (2002); Chen (2004) and Al-Sakran(2001) also lend credence to the pecking order theory. They found that leverage is inversely related to profitability. To determine the relevance of the pecking order theory in agro-allied firms in Nigeria, the following hypothesis would be tested:

H4: There is a negative relationship between leverage ratios and profitability

H5: There is a positive relationship between leverage ratios and firm'sgrowth

3. Research Methodology

3.1 The Study Area

Nigeria is part of the African countries that are situated in West Africa. It lies between Latitudes 4^0 and 14^0 North and Longitudes 2^02^1 and 14^030^1 East. It has a total population of 140,003,542 (NPC, 2006) and land area of approximately 923,708sq km (FOS, 1989). Location wise, the country has a total boundary of 4047Km and borders the Gulf of Guinea and lies between Benin in the South West 773Km, Cameroun to the South East 1690km, Niger in the North 1,497km and Chad 87km. Nigeria has two predominant climate; the semi-arid in the North and the humid in the South. These give rise to two distinct seasons, the dry and wet seasons.

3.2 Sampling Methodology

Thestudy employed multi stage sampling techniques for selecting the firms. Two groups of agro-allied firms; large quoted and large unquoted firms were sampled for the study. For quoted firms, five geopolitical zones out of the existing six in the country were first selected. The selected geopolitical zones were South South, South West and South East, North West and North Central. The second stage involved the selection of one State each from the five geopolitical zones. These States are Lagos State (South West), Abia State (South East) and Rivers State (South South), Kano (North West), Jos (North central). The third stage entailed selecting ten (10) agro-allied firms each from the list of agro-based firms that have registered with Small and Medium Scale Enterprise Development Association of Nigeria (SMEDAN) except Lagos, where twenty was selected due high concentration of agro industries in the state, making a total of sixty (60) unlisted agro-allied firms. For listed firms, 28 agro firms that have been listed in the Nigerian Stock Exchange Market (NSE) were also sampled from the Nigerian Stock Exchange Fact Book. This resulted in a sampling frame of 68 agro-based firms through which information were gotten

3.3 Data Collection

Data were gathered only from primary and secondary sources. Data used for the study were gotten from the financial statements of 88 agro-based firms during the period 2005-2010. 60 of these firms were large unquoted firms while 28 were quoted in the Nigerian Stock Exchange (NSE) market. Information regarding other heterodox factors such as gender of firm owners, educational qualification, and nature of business were obtained with the aid of an interview schedule.

3.4 Data Analysis

Z-test was used to test whether there were differences in capital structure of quoted and unquoted agro-based firms. The formula for the Z-test is given as:

$$Z_{cal} = \frac{\bar{X_1} - \bar{X_2}}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}} \qquad . \qquad . \qquad . \tag{1}$$

Where Z_{cal} is the calculated value of Z distribution; $\bar{X_1}$ is the mean debt ratio for quoted agro-based firms; $\bar{X_2}$ is the mean debt ratio for unquoted agro-based firms; S_1^2 is the variance for the quoted agro-based firms; S_2^2 is the variance for the unquoted agro-based firms.

Decision rule: Reject the null hypothesis if $Z_{cal} > Z_{tab}$.
Accept the null hypothesis if $Z_{cal} < Z_{tab}$.

Ordinary Least Square regression analysis was used to analyze those variables that affected short and long term debt ratios. The generalized form of the multiple regression models is specified as;

$$Y = \alpha + \sum \beta X + \epsilon \tag{2}$$

WhereY= Leverage of the firms and represents the dependent variable in the model i.e the firm debt ratios.

α is the constant intercept of the equation, β represents the coefficients for the explanatory variables in the estimated model, Xis the vector of explanatory variables in the estimation model, ϵ is the error term; and

$\sum$ is the summation sign.

Accordingly, the empirical investigation model for both quoted and unquoted Agro allied firms is given as follows:

$LDR = \beta_0 + \beta_1 PRFT + \beta_2 AST + \beta_3 SZ + \beta_4 GWT + \beta_5 TX + \beta_6 AGE + \beta_7 DIV + \beta_8 RSK + \beta_9 EDU + \beta_{10} FRM + \beta_{11} EXP + \beta_{12} GEN + \epsilon$ (3)

$SDR = \beta_0 + \beta_1 PRFT + \beta_2 AST + \beta_3 SZ + \beta_4 GWT + \beta_5 TX + \beta_6 AGE + \beta_7 DIV + \beta_8 RSK + \beta_9 EDU + \beta_{10} FRM + \beta_{11} EXP + \beta_{12} GEN + \epsilon$ (4)

Where the variables are as presented in Table I below:

Table 1. Description of Explanatory Variables in The Model

Variable	Description
LDR	Long- term debt ratio
SDR	Short-term debt ratio
PRFT	Profitability: Proxied by the ratio of earnings before interest and taxes (EBIT) to the book value of total assets for the firm
AST	Asset structure of the firm. This was measured by the ratio of tangible fixed assets to total assets for firm
SZ	size of firm measured by the natural log of total assets
AGE	Number of years in business
GWT	Growth rate in total sales for firm measured by the percentage change in the value of assets of firm i in time t
TX	The ratio of tax paid to operating income for firm
DIV	Dividend payable as a proportion of operating income for the firm: proxied as a ratio of dividend to total income available to shareholders. It is taken here to imply only cash and not stock.
FRSK	Absolute coefficient of variation in earnings before interest and tax i.e $\partial EBIT/\mu EBIT$; Where $\partial EBIT$= expected earnings before interest and tax; $\mu EBIT$= the standard deviation of earnings before interest and tax;
EDU	Education measured as a dummy (1 if CEO has a degree or professional Qualification, otherwise 0);
Gender	Constructed as a dummy (1 if male owned, otherwise 0);
FRM	Form of business constructed as a categorical variable (0 if firm is solely owned, 1 if Partnership, limited liability or public corporation);
EXP	Export status constructed as a binary (1 if owner is engaged in export, otherwise 0);
ϵ	The error term

4. Result and Discussion

Table 2 and 3 present the descriptive statistics of variables for quoted and unquoted agro-based firms in Nigeria from the result, quoted firms had the highest long and short- term debt ratios of 0.6029 and 0.7421 than unquoted firms with short and long term ratios of 0.1651 and 0.5044.

Unquoted agro-based firms were more profitable (28.65%) than quoted firms (10.36%). In terms of asset value,unquoted agro-based firms had the highest mean asset value of 22.63 percent compared with that of quoted firms (15.22 percent). Also, unquoted firms had the highest fixed asset with mean value of 64.4 percent than quoted firms with 44.81 percent.

Growth wise, unquoted agro-based firms were found to be the fasted growing firms with mean growth rate of 25.3 percent while quoted firms recorded a growth rate of 15.46 percent. Further, quoted firms recorded the highest dividend payout 0.5204 than unquoted firms with mean value of 0.0971.

Unquoted agro-based firms were the highest risk takers with mean value of 1.5080 against 0.3446 recorded by quoted agro-based firms.This justified the high growth rate value recorded by unquoted firms. The average tax values for quoted and unquoted firms were 38.23 and 45.04 percent, showing that unquoted firms pay more taxes than quoted agro-based firms. The plausible explanation for this is that unquoted firms are worst hit by illegal taxes and fraudulent activities of touts. The average ages of quoted and unquoted agro-based firms were 39.4 and 8.5 respectively, with quoted firms appearing to be older than unlisted firms. About 96.7 and 76.7 percent of Chief Executive Officers of listed and unlisred firms had a degree or professional qualification. Also, 93 and 80 percent of the sampled listed and unlisted agro-based firms were male owned. In terms of export status, about 98.7 and 73.3 percent of listed and unlisted firms engaged in export. While 100% of sampled listed firms were limited liability companies, majority of the unlisted firms were limited liability Companies (68.4%), 23.5 percent were sole proprietorships, while 8.3 percent were partnerships

Table 2. **Descriptive Statistics of Variables for Quoted Agro Firms.**

Variable	Mean	Std Dev	Min	Max	No. of observations
LDR	0.6029	0.5406	0.0024	1.3246	28
SDR	0.7421	0.5629	0.0273	1.4852	28
Log (size)	15.2158	2.1087	10.6799	20.4612	28
Asset structure	0.4481	0.3777	0.0335	1.0346	28
Profitability	1.0365	0.5519	0.0000	1.8709	28
Dividend	0.5204	0.5332	0.0000	1.4627	28
Growth	1.5461	1.8976	0.0118	6.4332	28
Tax	0.3323	0.3364	0.0000	0.89332	28
Age	39.4286	21.0204	3.7000	84.5000	28
Risk	0.3446	0.23129	0.00012	0.7434	28
Education	0.9672	0.4718	1.0000	1.0000	28
Gender	0.9300	0.3775	0.0000	1.0000	28
Export status	0.9870	0.5703	0.0000	1.0000	28
Form of business : Sole proprietor = 0, partnership = 0, Limited liability = 100 %					

Source: Computed Field Survey Data, 2012 SDR = Short - term debt ratio and LDR = long term debt ratio

Table 3. Descriptive Statistics of Variables for Unlisted Agro-Based Firms.

Variable	Mean	Std Dev	Min	Max	No. of observations
LDR	0.1651	0.2714	0.0000	1.0101	60
SDR	0.5044	0.1553	0.0965	0.8740	60
Log (Size)	22.6267	4.6361	10.4211	29.6246	60
Asset structure	0.6441	0.2232	0.0032	0.9972	60
Profitability	2.8653	2.9800	0.0000	8.8470	60
Dividend	0.0971	0.2640	0.0000	0.7174	60
Growth	2.5336	4.0639	0.2440	14.3041	60
Tax	0.4504	0.2487	0.0023	0.8980	60
Age	8.5883	3.9849	2.0000	18.5000	60
Risk	1.5048	1.8360	0.1117	9.3004	60
Education	0.7667	0.4265	0.0000	1.0000	60
Gender	0.8000	0.4034	0.0000	1.0000	60
Export status	0.7333	0.4459	0.0000	1.0000	60
Form of business: Sole proprietor =23.3%, Partnership =8.3%, Limited liability= 68.4%					

Source: Computed Field Survey Data, 2012 SDR = Short - term debt ratio and LDR = long term debt ratio.

4.1 Differences in Capital Structure of Quoted and Unquoted Agro-Based Firms

Table 4 present the result of the Z-test analysis which was carried out to ascertain whether there were differences in the mean debt ratios of quoted and unquoted agro-based firms. The result revealed a statistically significant difference in the total debt ratios between the sampled firms at the 1 percent level. Since the calculated t (3.1317) is greater than the tabulated t 0.025 with 86 degree of freedom, we concludedthat quoted agro-based firms attracted more debts in their capital structure than unquoted firms. This difference can be attributed to differences in firm sizes. Large sized firms are perceived to be highly tangible and as result accesses and used more debts than smaller sized firms. the result further revealed that long term debt represented about 60.3 and 16.5 percent of the total assets of quoted and unquoted firms while short- term debts represented about 74.2 and 50.5 percents of the total assets of quoted and unquoted agro-based firms. This shows the importance of short-term debts over long term debt financing within the firms under investigation. Abor (2008), Hall, Hutchinson and Michaelas(2004) and Sogorb- Mira (2005) all reported similar results.

Table 4: Mean Debt Ratio Tests Between Quoted and Unquoted Agro-Based Firms

Firm group	long- term debts	short-term debts	Total debts
Quoted firms	0.6029	0.7421	1.3450
Unquoted firms	0.1651	0.5044	0.6695
t-statistics	2.4646**	1.5779 [ns]	3.1317***

Source: Computed from filed survey data, 2012.
Note: *** , **and ns denote significant in 1 and 5% and non significant

4.2 Determinants of Long and Short-Term Debt Ratios of Listed and Unlisted Agro-Based Firms

Table 5 presents the regression result for quoted and unquoted agro-based firms. With respect to unquoted firms, of the four functional forms that was used to run the regression, the linear model models were chosen as the lead equations for both short and long-term debt ratios due to their higher R^2 value as well as the conformity of the estimates to a priori expectation. The result of the diagnostic test for the unquoted agro-based firms revealed the R^2 values of 0.7536 and 0.8860 for short and long- term debt ratios. This implied that the specified explanatory variables explain about 75.4 percent and 88.6 percent of the total variability in the short and long-term debt ratios. The F- statistics value of 11.06 and 9.46 for both sampled groups,which were significant at 1 percent level of probability showed the goodness of fit of the estimated models. Both normality (6.75***) and RESET (16.91***) test values for long- term debt ratio and 2.05 for short- term debt ratio were significant, denoting the appropriateness of the Ordinary Least Square regression technique used.

For quoted firms, exponential and semi-log models were chosen as the lead equations for long and short-term debt ratios. The diagnostic test results showed R^2 values of 0.756 and 0.8049 for short and long-term debt ratios. This showed that about 75.6 percent and 80.5 percent of the total variability in the dependent variables is attributed to the estimated explanatory variables in the models. The calculated F-statistics value of 5.44 and 4.13 for short and long-term debt ratios are significant at 1 percent, implying the significance of the estimated $R^2$and the goodness of fit of the estimated models. The normality and RESET tests were significant for long term debt ratios, showing that the functional forms were not mis- specified.

From the result, the size coefficient had a significant positive relationship with short and long –term debt ratio for quoted firms as well as short term debt ratio for unquoted firms. This is true because large sized firms have been found to be more diversified in their investment and tolerant to high debt ratios (Wald, 1999). This therefore, reduces their probability of going bankrupt (Rajan&Zingales,1995) and places them at advantage position to obtain loans. While the positive signicant relationship between firm size and long term debt ratio support the findings of Hovakimian, Hovakimian & Tehranian(2004), Bevan &Danbolt (2002), Al-Sakran (2001), the positive significant relationship with short term debt ratio supported Abor (2008).

The result for asset structure showed a significant positive relationship was recorded between asset structure and long term debt ratios for quoted and unquoted agro-based firms. This is in line with theoretical literature because firms with tangible assets use such assets as collateral to access long term debts. The result is consistent with the agency cost argument and suggests that debt providers rely upon these fixed assets in giving out debts so as to avoid default. This is the case in developing countries where loan repayment is characterized by high rate of default. Studies such as Wedig, Sloan, Assan and Morrisey (1988); Berger and Udell (1998) all pointed to the fact that firms with tangible assets can easily accessed debts by mortgaging part of their assets as collateral for loans. The significant relationship with long term debt supported Hovakimian et al., (2004). In Ghana, Abor (2008) found a negative relationship with short term debt ratio.

Profitability variable was significant and negatively related to both long and short term debt ratios for quoted firms. For unquoted firms, only short term debt ratio was significant at 10 percent. The negatively significant relationship is consistent with the pecking order theory (POT), Which opined that firms would prefer external financing first and would only seek for costly external financing when the internal sources have been depleted (Ang, 1991). The negative significant relationship with both short and long-term debt supported Abor (2008), Abell (2011), Hall et al., (2004). The negative significant relationship with long term debt

ratio also supports the findings of Jordan, Lowe, and Taylor (1998); Mishra and Mc Connaughty(1999).

The coefficient for growth was positive and significantly related to both short and long-term debt ratios for quoted agro-based firms. This might be attributed to the huge capital requirement for financing new investment opportunities which trigger them to source for and uses both short and long- term debts. The significant relationship with long term debts supported the findings of Abor (2008) and Mischaelas (1999), while that of short term debt ratio support Burfena et al., (2010) and contradicted those of Al-Sakran (2001), Titman and Wessel (1988) and Rajan and Zingales (1995).

Firm risk was negative and only significant with short- term debt ratio for unquoted firms. This implied that unquoted agro-based firms with huge investment in risky projects used more short- term debts. The plausible explanation for the inverse relationship between firm risk and the debt ratios is that they try to avoid borrowing so much so as to reduce the performance pressure associated with debt repayment. Kim and Sorensen (1986) documented that firms with high degree of business risk has less capacity to sustain financial risk and hence, used less debts. The negative and significant relationship with short-term debt ratio is consistent with French and lang (1988); Titman and Wessel (1988).

The age variable was positive and significantly related to long -term debt ratios for both quotedand unquoted agro-based firms. This implied that older firms depended more on long term debts. This can be attributed partly to the fact that they are knowledgeable in available long term credit history and sources information and partly to prolonged fraternity between them and external long- term debt providers. This finding corroborates that of Abor (2008) and Peterson and Rajan (1994).

The education variable was positive and significantly related to long-term debts for listed and unlisted firms and short-term ratio for unquoted firms. This is possible given that educated entrepreneurs are perceived to know where to source for long term debts at lower interest rate and with less stringent conditions. They are also good record keepers and as such perceived by debt providers as prudent managers of borrowed funds, thereby mitigating the conflict of interest that might have arisen as a result of non fulfillment of debt obligations. Hence, they are viewed by debt providers as being credit worthy and granted more long term debts. This result contradicts Abor (2008) who reported a negative relationship for both listed and unlisted firms in Ghana.

The gender coefficient was found to be positive and significantly related with long term debt ratio for unquoted and unquoted firms, showing that gender of firm owners determine to a large extent the type and amount of debt taken. Male owned firms are presumed to use more debts than female. Beside, female entrepreneurs have been found by Aryeety et al., (1994) to have difficulty accessing debt finance due to discrimination and their high risk adverse nature. This findings support Abor (2008).

The result for the tax variable showed a significant positive relationship only with short-term debt ratio for quoted agro-based firms at 1 percent level. This showed that quoted agro-based firms with high taxes depended more on short term debts. This findings support Abor (2008). For unquoted firms, the result showed a negative relationship with short- term debts. The reason might be that unquoted firms which are worst hit by illegal taxes are cautious in taking more debts so as to reduce excessive debt burden.

Exporting firms were found to have a significant positive relationship with long term debts for listed and unlisted firms. The reason for this is that, given their highly diversified nature, they record high cash flow and acquire huge foreign exchange with which they use to fulfill; their debt obligations and are over time viewed by debt providers as credit worthy. This therefore, increases their chances of securing long term debts. This finding is consistent with Abor (2008) and Abor (2004), who reported that exporting firms were able to accommodate and repay more debt capital than their counterpart.

Table 5. Regression Model Results for Quoted and Unquoted Agro-Based Firms

Variable	Unquoted firms		Quoted firms	
	LDR	SDR	LDR	SDR
	Linear	Linear	Exponential	Semi-log
Constant	0.3921	0.4700	-3.8613	0.2884
	(1.407)	(2.581)**	(1.2294)	(0.1461)
Size	0.0013	0.0003	0.0201	0.4397
	(0.184)	(7.765)***	(3.110)***	(3.6579)***
Asset Structure	0.1205	0.120	2.7101	0.3041
	(1.793)*	0(1.216)**	(1.7425)*	(3.4017)***
Profitability	-0.0111	-0.0002	-1.4398	0.2138
	(1.009)	(-2.025)*	(2.158)**	(2.4019)**
Growth	0.0028	0.0025	0.0526	0.0391
	(2.353)**	(0.0007)	(1.9597)*	(2.6125)**
Dividend	-0.4226	-0.0539	0.1301	0.0468
	(3.137)	(-0.6128)	(0.0896)	(0.9176)
Business risk	-0.0297	0.035	-0.3433	-0.0535
	(0.018)	(2.869)***	(0.2083)	(1.3541)
Tax	0.0171	-0.1495	0.4606	0.01299
	(0.119)	(-1.5887)	(0.4461)	(3.348)***
Age of firms	0.0228	0.0004	0.03465	-0.0501
	(2.596)**	(0.0641)	(1.9481)*	(-0.4529)
Education	0.1228	0.0936	0.6110	0.1170
	(2.526)**	(1.7806)*	(2.409)**	(0.0353)
Gender	0.0946	0.0189	0.0092	0.0674
	(1.972)*	(0.0527)	(3.413)***	(1.3470)
Form	0.0576	-0.0046	-0.0716	0.3114
	(1.474)	(0.1814)	(1.3271)	(0.0034)
Export status	0.1378	0.0475	0.0145	0.9107
	(1.854)*	(0.9774)	(1.9972)*	(0.833)
R^2	0.886	0.753	0.805	0.757
Fstat	9.46***	11.06***	4.13***	5.445***
Norm test	6.78***	2.059**	0.763	1.964*
RESET	16.91***	0.090	5.079***	0.164

Note: *, **, *** = significant at 1 %, 5% and 10%, SDR and LDR = Short and long- term debt ratios

4.3 Relevance of Capital Structure Theories

In testing which capital structure theory was relevant in Nigeria agro-based firms, five hypotheses were formulated. Results of the tested hypothesis are discussed below:

4.3.1 Static Trade off Theory

H1which was stated for the static trade off theory suggested a positive relationship between leverage ratios and profitability but the debt ratios were found to be negatively related with profitability, hence, the static trade off theory was not relevant and supported.

4.3.2 Agency Cost Theory

In verifying this argument, two hypotheses H2 and H3 were stated thus:
   H2 suggested a negative relationship between leverage ratios and growth while
   H3 suggested a positive relationship between leverage ratios and firm size.
Based on hypothesis H2, the agency cost argument was not supported because the relationship between leverage ratios and growth were found to be positive instead of negative as proposed by the theory. However, for hypothesis H3, the agency cost theory was supported only for listed firms, where a positive relationship existed between both short and long –term debt ratios and firm size.

4.3.3 Pecking Order Theory

   To test for the relevant of this theory, hypothesis 4 and 5 were formulated as follows:
   H4 suggested a negative relationship between leverage ratios and profitability
   H5 suggested a positive relationship between leverage ratios and growth.
   Results obtained were consistent with hypothesis H4 and H5, hence the pecking order theory can be said to dominate the financing decisions of agro-based firms in Nigeria.

5. Conclusion and Recommendations

   The study examined the various determinants of capital structure and compared the capital structure of quoted and unquoted agro-based firms in Nigeria. Evidence suggested significantdifferences in both long term debt and total debt ratios of quoted and unquoted agro-based firms. Short-term debts constituted a higher proportion of total debts of both sampled groups. Large sized and highly tangible quoted and unquoted firms depended on long term debts, thereby supporting the agency cost argument and showing the importance of fixed assets in securing long term debts.The study showed that pecking order theory dominated the financing behavior of agro-based firms while the agency cost argument was only relevant for listed firms.Further, while male owned firms, exporting firms and older firms relied on long term debts, educated entrepreneurs and growing listed firms depended on both long and short term financing. Also,agro-based firms with high degree of business risk and high taxes relied on short term debt financing
   Based on the findings of the study, the following recommendations emerged:
   • Exporting firms were found to access and used more long term finances than non exporting firms; hence, policies that would encourage exportation should be pursued. Giving incentives such as reduction of export duties to agro exporting can help out.This would enable them access huge cash inflows and generate foreign exchange that can be plough back into their businesses.
   • Large sized and highly tangible firms were found to have easy access to long term finance than smaller sized and less tangible firms, hence, growing firms should be encourage to accumulate more tangible asset. Tax incentives such as tax exemption and rebates can be given to start-up firms.
   • Agro firms should be encouraged to keep adequate financial records. This would enable them ascertain their present and future capital requirement. It would also enable them measure their firm's profitability level.
   • From the findings, agro firms were found to use more short term finances than long term finances. Hence, if agro- firms should acquire debt finance, effort should be directed towards encouraging them to use more long term debts. This can be achieved through proper enlightenment campaign in the areas of cheap long term credit sources information at

concessionary interest rates and less stringent conditions can be of help. Also, collateral free long term finance should be made available. If possible guaranteed agro credit schemes like the Agricultural Credit Guarantee Scheme Fund (ACGSF) can be introduced to guarantee long term finance to agro entrepreneurs.

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