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Effect of Leverage on Firm Performance in Nigeria: A Case of Listed Chemicals and Paints Firms in Nigeria

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Abstract- This paper assesses relationship between leverage and Return on Assets of Chemicals and Paints firms quoted on the floor of Nigerian Stock Exchange using a sample of three firms randomly chosen from a total of nine firms listed in the sector for a period of ten years, 2000 – 2009. Our sample size represent one-third of the population of the study which is considered enough to generalize the findings on the sector for the period in question. Ordinary Least Square (OLS) was used as a method of estimation for the data sourced secondarily from the NSE factbook covering the period of the study of the selected firms. Return on Assets (ROA) was used as measure of performance while Equity (EQT) and Debt Ratio (DR) as proxies for capital structure in models 1 and 2 respectively.

Keywords: *capital structure, agency cost theory, firm performance, leverage, ROA.*

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Effect of Leverage on Firm Performance in Nigeria: A Case of Listed Chemicals and Paints Firms in Nigeria

Abdul Jeleel [α] & Badmus Olayiwola [σ]

Abstract- This paper assesses relationship between leverage and Return on Assets of Chemicals and Paints firms quoted on the floor of Nigerian Stock Exchange using a sample of three firms randomly chosen from a total of nine firms listed in the sector for a period of ten years, 2000 – 2009. Our sample size represent one-third of the population of the study which is considered enough to generalize the findings on the sector for the period in question. Ordinary Least Square (OLS) was used as a method of estimation for the data sourced secondarily from the NSE factbook covering the period of the study of the selected firms. Return on Assets (ROA) was used as measure of performance while Equity (EQT) and Debt Ratio (DR) as proxies for capital structure in models 1 and 2 respectively. The results showed that EQT finance has a significant and positive impact on ROA but DR has a negative and insignificant relationship on the performance measure. It was therefore recommended that firms in the sector should be more of equity financed than debt by sourcing more of equity in their finance ratio and avoiding too much debts. This findings of this study is consistent with most of the empirical studies and provide evidence in support of Agency Cost Theory.

Keywords: *capital structure, agency cost theory, firm performance, leverage, ROA.*

I. Introduction

The essence of the application of firm assets is to generate a stream of operating cash flows in the business. The providers of capital have claims on the net cash flows of the business after paying the obligatory tax dues while the balance is retained for business operations. If firm is wholly equity financed, all the after-tax operating cash flow in each period accrues as a benefit to its shareholder in form of dividend and retained earnings. On the other hand, if the firm borrowed portion of its capital, a proportion of its cash flow must be dedicated to servicing this debt element. Firm choice of source of funds therefore determines the allocation of its operating cash flow each period between debt and shareholders. The overall significant of the firm choice of capital structure is esoteric. It relates to splitting finance into debt and equity elements with each of these having its peculiar features, merits and demerits on firm sustainability and market value.

The Modigliani and Miller's (1958) proposition always referred to as "irrelevancy" challenged the traditional view for arguing that firm value may increase to a certain level with increased leverage up to a certain point beyond which the overall value reduces. They argued that firm market value remains same throughout the level of leverage based on certain assumptions. These assumptions include absence of taxes, bankruptcy costs and other imperfections that exist in the real world situation. The reasonableness of these assumptions led to series of publications to confirm or disconfirm this popular publication. However, the M & M explained how financial decision is irrelevant to firm value stating that with well-functioning markets (and neutral taxes) and rational investors, who can 'undo' the corporate finance structure by holding positive or negative amount of debt, the market value of the firm-debt plus equity-depends only on the income stream generated by its assets. It follows in particular that the value of the firm should not be affected by the share of debt in its financial structure or by what will be done with the returns-paid out as dividend or reinvested (Modigliani, 1980, p. xiii).

Efforts have been made by the researchers on how leverage affects firm performance but mostly, they are of varying findings, conclusions and recommendations and besides these, none of those studies have considered listed Chemicals and Paints firms on the NSE solely. This study therefore aims at investigating impact of leverage on the performance of Chemicals and Paints firms listed on the Nigerian Stock Exchange. Specifically, the study shall examine:

a. The relationship between equity finance and Return on Assets of Chemicals and Paints firms listed on the Nigerian Stock Exchange and
b. The relationship between leverage and Return on Assets of listed Chemicals and Paints firms on Nigerian Stock Exchange.

In line with the stated objectives, the following null hypotheses are formulated:

H_{01}: There is no significant relationship between equity finance and ROA of Chemicals and Paints firms listed on the Nigerian Stock Exchange and

H_{02}: There is no significant relationship between leverage and ROA of Chemicals and Paints firms listed on the Nigerian Stock Exchange.

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The study shall be of significant contribution to existing literatures on capital structure including the sensitivity of leverage and equity finance to firm financial performance. It shall also serve as a further guide for the financial managers to design optimum capital structure to maximize the market value of their firms.

II. Literature Review and Theoretical Framework

a) Agency Cost Theory

Agency Cost Theory was developed by Berle and Means (1932). They argued that separation of ownership and control of large corporations become more widen resulting from a continuous dilution of equity owners which gives managers an opportunity to strive for their interests at the expense of the business owners: shareholders (Jensen and Ruback, 1983). The primary responsibility of the directors is to ensure that interests of shareholders are maximized because the shareholders are the owners of the business.

According to Elliot and Elliot (2002), the duty of the directors is to run businesses in a way that maximizes long term returns to shareholders and thus maximizes company's profit. It was however observed by Jensen and Meckling (1976) that managers do not always work with this assumption and therefore the birth of the Agency Cost Theory which take principal-agent relationship into consideration as a key factor determining firm performance.

Jensen and Meckling (1976) identified agency costs as derived from conflicts between equity holders and managers which means that the agent uses various ways to benefit from the firm to maximize their own desires. Harris and Raviv (1990) argued that managers always want to make the business operations an ongoing even if liquidation is preferred by investors due to benefits they are getting from it. Stulz (1990) suggested that managers always want to invest available funds to satisfy their own desires even if shareholders prefer dividends. Therefore, the conflicts between the managers and shareholders may not be resolved unless a threat in form of debt servicing is introduced.

Agency theory becomes hardened when debt holders' interest is incorporated. As a means of financing, leverage has been extensively discussed in literatures. Modigliani and Miller (1963) demonstrated that in order to raise the value of firm, the amount of debt financing should be higher as much as possible than equity for tax subsidy. However, their theory ignores the agency cost of debt. Jensen and Meckling (1976) pointed out that the optimal utilization of debt is when debt marginal wealth benefits of tax subsidy equate marginal wealth effects of agency cost.

The theory specifically considered principal-agent relationship in the attainment of the overall goal of an entity. It stressed that agent has hired by the principal to attain these goals only struggle to his own benefits at the detriment of the company. The only way therefore to force the agent to work towards company's goals achievement according to theory is introducing debt serving instrument which by implication ensures agents work tirelessly to serve. In a nutshell, the theory envisages higher debt ratio in firm's finance.

The problem or conflict between equity and debt holders may affect a firm's decision in three dimensions (Kuben 2008). These include investment, financing strategy and dividend distribution. Debt holders may restrict manager's investment on very risky projects even though they may bring high returns (Kalcheva and Lins, 2007). As soon as the amount of debt increases, debt holders will be more powerful and their interferences in firm's investment decisions will increase correspondingly (Margaritis and Psillaki, 2007).

Capital structure refers to the ratio at which both equity and debt are combined in financing. Since capital doe not belongs to the firm, it indicates her mix of financial liabilities as shown on the liability side on the balance sheet. Decisions of structuring finance are very essential to the success of any business organization. It is important not only to maximize returns to the stakeholders but also due to the significant impact such decisions have on its ability to deal with external environment or competitive environment (Bodhoo, 2009).

Onaolapo and Kajola (2010) studied the impact of capital structure on performance of Nigerian firms focusing on the non-financial sector with a sample of thirty listed firms for a period of seven years, 2001-2007 from agency cost theory point of view. The result revealed that capital structure surrogated by debt ratio has a significant negative impact on financial measures, return on assets and return on equity and therefore in support of the agency cost theory's position.

Pratomo and Ismail (2006) studied capital structure and performance of Islamic Banks of Malaysia. They used profit efficiency of bank as an indicator for reducing agency cost and the equity ratio of bank as indicator for leverage. Their findings were also in consistent with the agency hypotheses.

Berger and Wharton (2002) in the same vein studied capital structure and firm performance testing agency cost theory hypothesis. The study focused the banking sector only. Their findings are well consistent with agency cost hypothesis- lower leverage or higher equity capital ratio is associated with higher profit efficiency.

Oke and Afolabi (2011) investigated the impact of capital structure on industrial performance in Nigeria. They took a sample of five quoted firms into consideration. Debt financing, equity financing and debt/equity financing were used as proxy for capital structure while profit efficiency a surrogate for

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performance. For equity and debt/equity finances, a positive relationship existed but a negative relationship between debt financing and performance.

Furthermore, Anup and Suman (2010) assessed the impact of capital structure on the value of firm of Bangladesh by using secondary data of publicly listed companies traded on Dhaka Stock Exchange and Chittangong Stock Exchange using share price as a proxy for firm's value and different ratios for capital structure decision. It was found that maximizing wealth for the shareholders requires perfect combination of debt and equity and that cost of capital is negatively correlated and therefore to be reduced to minimum level.

Ong and Teh (2011) studied capital structure and performance of construction companies for a period of four years, 2005 – 2008 in Malaysia. Long term debt to capital, debt to capital, debt to asset, debt to equity market value, debt to common equity, long term debt to common were used as proxies and independent variables while return on capital, return on equity, earnings per share, operating profit margin were used to surrogate corporate performance. The result showed that there is relationship between capital structure and corporate performance.

Zeitun and Tian (2007) studied capital structure and corporate performance of 167 Jordanian firms for a period of 1989 – 2003. A significant negative relationship was found between capital structure and corporate performance. Variables such as ROA, ROE, PROF, Tobin's Q, MBVR, MBVE, P/E were used to measure performance while leverage, growth, size, tangibility were proxies for capital structure.

Pratheepkanth (2011) carried out an investigation on capital structure and financial performance of some selected companies in Colombo Stock Exchange between 2005 – 2009. Capital structure was surrogated by debt while performance was proxied by gross profit, net profit, ROI, ROCE, and ROA. The results showed that the relationship between capital and financial performance is negative.

On the U.S. banking industry, using the ratio of Equity to Gross Total Assets (ECAP) to proxy capital structure and profit efficiency for firm performance, Berger and Wharton (2002) concluded that higher leverage is associated with higher profit efficiency.

III. Methodology

The paper employed a correlation research design to explain the direction as well as describing the relationship between leverage and performance of the Chemicals and Paints firms listed on the floor of the Nigerian Stock Exchange. All firms listed under the Chemicals and Paints Sector form our population which are nine in number going by the 2010 NSE factbook and a random selection of three firms were chosen to form our sample size which is considered enough to generalize the findings on the total. Secondary data as extracted from the NSE factbook covering the period of 2000 – 2009, a ten year period was used and analyzed using multiple regression technique.

Panel model for the study is specified thus:

$$Y_{it} = \beta_0 + \beta_1 D_{it} + e_{it}$$

Where:

Y_{it} = dependent variable i.e. performance measure

D_{it} = independent and control variables

β_0 = intercept

β_1 = beta coefficient

e = error tem

Therefore, the models below are adopted:

$$ROA_{it} = \beta_0 + \beta_1 EQT_{it} + \beta_2 TAN_{it} + e_{it} \quad \text{Model 1}$$

$$ROA_{it} = \beta_0 + \beta_1 DR_{it} + \beta_2 TAN_{it} + e_{it} \quad \text{Model 2}$$

ROA=Return on Assets measured as profit after tax divided by total assets.

DR = Debt Ratio measured as total debt divided by total assets.

EQT=Equity for the period measured as total share divided by total assets.

TAN=Asset Tangibility measured as fixed assets divided by total assets. Yes, there are other firm specific characteristics that determine performance like size, age, etc, asset tangibility is used only here because we are dealing with a tangible asset based sector and besides it is only serving as a control variable.

IV. Results and Discussions

Table 1.1 and 1.2 below present the regression results of the study for the two models.

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Table 1.1: (Model 1)

Independent variables	Dependent variable (ROA)
Equity	.401 [.097] {.047}**
Tangibility	-.357 [-.849] {.077}*
R	.448
R Square	.201
Adjusted R^2	.134
F-statistics	3.07
Prob (F change)	.068
Durbin Watson	.849

Source: Computed by the authors using SPSS 16 output.
Predicators (constant) EQT and TAN.
t-statistics are shown in [] form while p-values are in {} form.
**, ** indicate significance at 5% and 10% respectively.*

From Table 1.1 above, EQT, the proxy for capital structure is positively related with ROA and significant at 5% level. The implication of this is that any increase in the level of equity funding by entities in the Chemicals and Paints Sector leads to a corresponding increase in ROA (firm performance) level. However, the relationship between TAN and ROA is negative and significant at 10% level. This implies that the proportion of tangible assets of the listed Chemicals and Paints firms affects their level of performance negatively. This is against the theoretical expectation that more tangible assets in the asset base of a firm impacts more on the performance. Mackie-Manson (1990) concluded that a firm with a high fraction of plant and equipment (tangible assets) in its asset base makes the debt choice more likely and influences the firm performance. A simple explanation to this is that, firms are of two categories: those that invest on tangible assets and those that invest on intangible assets. The tangible assets are what financial institutions mostly consider as collateral securities before granting loan/advances to firms sourcing found and therefore increase their chances to fund. Besides, investing in tangible assets eliminates excessive recurrent expenditures on rent, royalties, etc and as such expected to impact positively on the performance of the firms that have them. This is the theoretical expectation and belief. However, our finding as shown above says no, asset tangibility of the Chemicals and Paints firms listed on the NSE does not affect their performance positively. In the same vein, Akintoye (2008) argued that a firm which retains large investments in tangible assets will have smaller cost of financial distress than a firm that relies on intangible assets.

The statistical results of 45% indicates a weak correlation between the variables. This is because the computed R in the model is less than the 0.875 rule of thumb. The coefficient of determination (R^2) is used to measure the explanatory power of the independent variables on the dependent variables. Given Table 1.1, R^2 revealed 20%. This means that EQT accounted for only 20% variations in performance of Chemicals and Paints firms listed on the NSE. This implies that there are other variables asides equity that influence or affect the firms' performance which may include size of the firm, age of the firm, etc. The claim is also supported by the Adjusted R^2 with approximate value of 13%. The F-statistics of value of 3.07 indicates an insignificant relationship between EQT and ROA.

Dubin Watson, DW's value was used to assess the level of autocorrelation of the variables. As we have it on the table, DW is 0.849 which signifies absence of autocorrelation in the models because the value is positive and relatively far away from zero. The overall significant (sig. F change) value of 0.068 indicates at 5% level. This therefore provides evidence that the regression model is fitted and that fluctuations in the performance of the listed Chemicals and Paints firms in Nigeria are significantly influenced by equity.

From Table 1.2 below, DR, the surrogate for capital structure in model 2 is negatively related with ROA but significant. The implication is that higher leverage in financial structure of the Chemicals and Paints firms in Nigeria results to a corresponding decrease in the financial performance. This is in consonance with theoretical explanation of the Agency Cost Theory that higher debts results to lower performance. However, the relationship between TAN and ROA is positive and significant at 1%. This implies that the proportion of tangible assets to total assets of the firm in the sector affects their performance level positively.

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Table 1.2: (Model 2)

Independent variable	Dependent variable (ROA)
Debt ratio	-.003 [-.081] {.936}
Tangibility	.980 [.337] {.000}***
R	.682
R Square	.569
Adjusted R^2	.490
F-statistics	7.134
Prob (F change)	0.000
Durbin Watson	1.379

Source: Computed by the researcher using SPPS 16 output.
Predicators (constant) DR and TAN.
t-statistics are shown in [] form while p-values are in {} form.
**** indicates significance at 1& level.*

The statistical results of 68% indicates a weak correlation between the variables. This is because the computed R in the model is less than the 0.875 rule of thumb. The coefficient of determination (R^2) revealed 57% meaning that DR accounted for 57% variations in performance and that other variables influence listed Chemicals and Paints firms in Nigeria. It was supported by Adjusted R^2 with approximate value of 49%. F-statistics value of 7.134 indicates an insignificant relationship between DR and ROA.

The autocorrelation coefficient, Durbin Watson stands at 1.379. It therefore shows absence of autocorrelation in the model. The overall significance value of 0.000 indicates a significant relationship at 1% level meaning that the regression model is fitted and that the fluctuations in the performance of the Chemicals and Paints firm in Nigeria is significantly affected by leverage.

Hypothesis one predicted an insignificant relationship between EQT and ROA but the result showed otherwise. Hypothesis one is therefore rejected. On the other hand, hypothesis two predicted an insignificant relationship between DR and ROA while the result supported this. We therefore failed to reject the second hypothesis.

The agency Cost Theory hypothesis holds the view that when firms are experiencing agency conflicts amongst the stakeholders, they tend to over levered themselves as a control measure and this results to negative financial performance. The result of this study is therefore in support of the theory that firms with high debt ratio do have negative financial performance.

This finding is in line with Puwanenthiren (2011), Onaolapo and Kajola (2010), Zeitun and Tian (2007), Majumdar and Chhibber (1999), Rao, M-Yahyaee and Syed (2007), Krishnan and Moyer (1997), Tzelepis and Skruras (2004), Oke and Afolabi (2010) and Akintoye (2008). However, it is against the findings of Wahya and Ismail (2006) and Anup and Suman (2010).

V. Conclusion

This paper examined equity and leverage finances of capital structure on firm's financial performance using three listed non-financial firms from Chemicals and Paints firms listed on the Nigerian Stock Exchange where ten years assessment of secondary data were used via the NSE factbook for a period of ten years. The study shows that the expected sign of β_1 is confirmed by the actual relation obtained for the models used in the study. Thus, capital structure is an important determinant of firm's financial performance and firms that finance with more equity performs better than that of more levered firms as shown on Tables 1.1 and 1.2.

The study further revealed that asset tangibility is an important determinant of financial performance. The expected β_2 is confirmed by the financial performance proxy in the two models. The study, however, against the theoretical expectations provides evidence of a negative and significant relationship between TAN and ROA in model one. The implication of this is that firms in the Chemicals and Paints Sectors failed to efficiently utilize the fixed asset composition of their asset base to impact positively on their performance though TAN is a major determinant of performance.

In line with the findings above, we therefore recommend that financial managers should be conscious of excessive debt when raising finance but they should source more of equity to better their firms' performances.

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