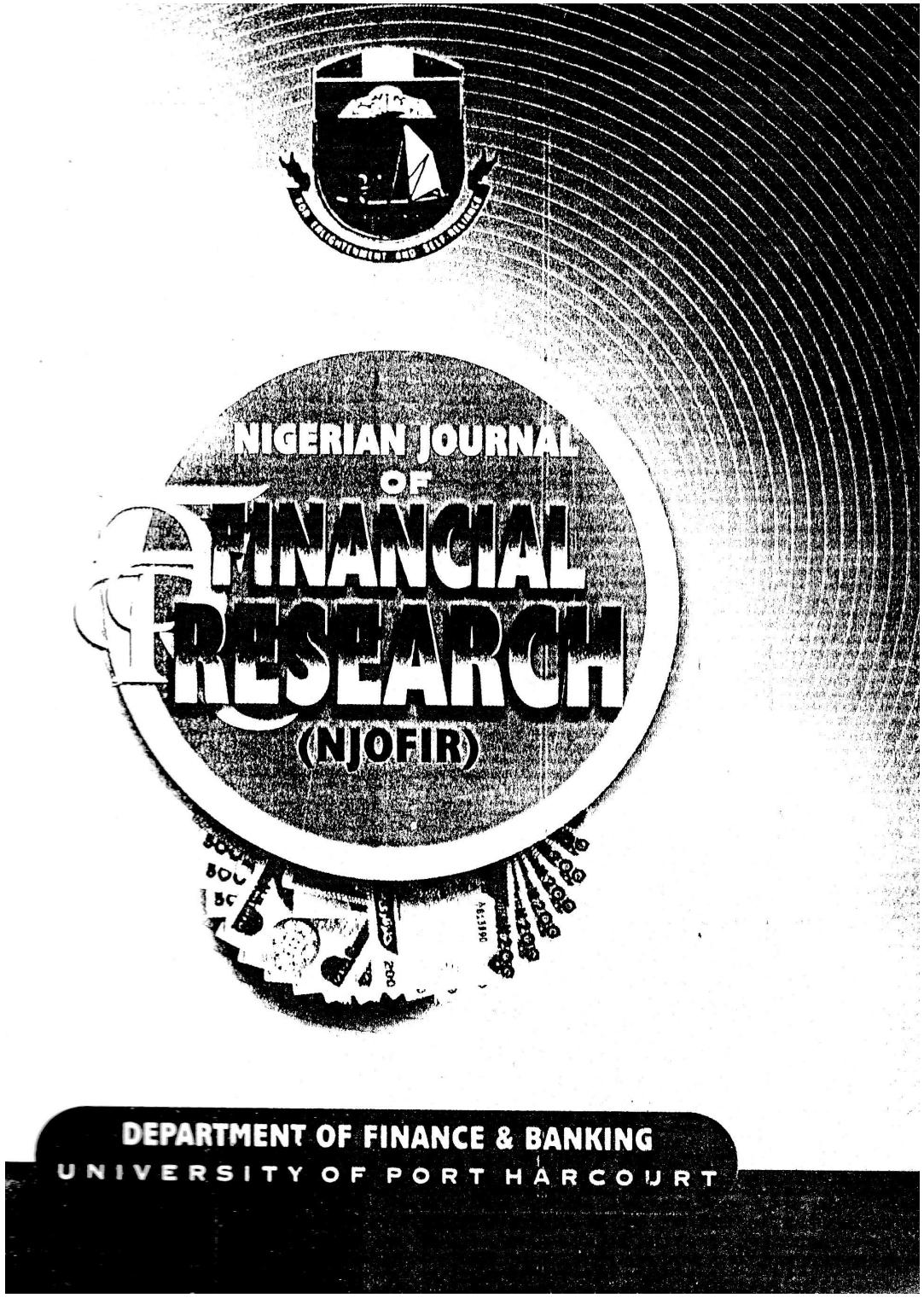

RELEVANCE OF CAPITAL STRUCTURE THEORIES TO THE CAPITAL STRUCTURE OF SELECTED FIRMS IN NIGERIA

BY

EMEKA. J. OKEREKE *Ph.D*

Department of Finance & Banking,
Faculty of Management Sciences.
University of Port Harcourt,
Choba, Nigeria.
E-Mail: erokereke77@Yahoo.com M.Pone:+234-0803-3795828

ABSTRACT

The study aimed at establishing the applicability or relevance of Capital Structure Theories to Nigerian Firms for the period 1992 – 2002. Data on Cost of Capital (Ke), Weighted Average Cost of Capital (Ko), Cost of Debt (Kd), Leverage (L) and Value (V) for 33 selected firms were sourced from Nigerian Stock Exchange (NSE) Factbook (1997, 2000 and 2003). The computations and analysis of data were based on a number of underlying theoretical assumptions and models. It was found, among others, that there is no consistent trend in the behaviour of the concerned variables, Kd, Ke, Ko, L and V, as proposed by the earlier theorists. Thus, capital structure theories have not found true relevance or applicability among Nigerian firms. Based on this it was recommended that a multiple approach should be adopted while relaxing some assumptions of the theories and integrating other variables like riskness of debt and attitude of management, among others.

Keywords: *Capital Structure, Cost of Capital (Ke), Cost of Debt (Kd), Leverage (L), Manufacturing and Financial Sectors, Market Value (V), Multiple Approach, Nigeria Stock Exchange , Riskness of Debt, Weighted Average Cost of Capital (Ko).*

Introduction

Capital structure is a firm's financial structure excluding short term debt. It is a firm's permanent financing representing the proportion of long term debt and equity in the total capital employed by the firm. According to Pandey (1979:203), the term capital structure is used to represent the proportionate relationship between the various long-term forms of financing such as debentures, long-term debt, preference capital and common share capital including reserves and surplus.

Capital structure of a firm has in recent times, in finance theory and practice, attracted the greatest attention among financiers, economists, bankers, investors and the like. This is because of the important position of the concept in the survival and growth of the firm and most importantly the divergent and opposing views of scholars based on their different logical and empirical findings. These views were expressed in theories. Hence, we have theories of capital structure.

The study of capital structure theories sterns from the quest to increase the firm's value contingent upon the exposure or non-exposure of shareholders to business risk as well as exposure or non-exposure of creditors to financial risk. Ezra (1963) expressed this quest thus: given that a firm has a certain structure of assets, which offers net operating income earnings of given size and quality, and given certain structure of rates in the capital markets, is there some specific degree of financial leverage at which the market value of the firm's securities will be higher (or the cost of capital will be lower) than at other degree of leverage? Capital structure theories uses the balance sheet to find out if there exist a particular capital structure that increases the value of the firm, reduce that its overall cost of capital and simultaneously reduces the weighted average cost of capital. The extent to which these theories are relevant to Nigerian firms demands some investigation.

Essentially, financial managers are interested in optimizing their capital structure as it affects the direction of stock prices, hence, a firm's value. The extent to which this is acquired depends on proper knowledge, understanding and application of capital structure theories. However, they (theories) are not an end in themselves but a guide to capital structuring of the firm by financial managers.

1.1 Theoretical Foundation

Capital structure theories gained the most prominent academic discourse and interest with the work of Franco Modigliani and Merton Miller (MM) (1958). Before their work, capital theories were little more than loose assertion about investor behaviour rather then models based on scientific tests. There were no systematic ways of analyzing the effect of debt financing. MM expositions attracted followers and they were able to establish models which identified the specific benefits and cost of using debt – The tax effects, financial distress costs, etc. However, MM had some opponents whose views were also based on various scientific foundations.

Essentially, the basic augment of capital structure theories is the effect of leverage on the overall cost of capital. Hence the value of the firm is affected dependently or independently with leverage, which is defined as an increase in the proportion of debts in the capital structure of the firm. There are basically three outstanding views on capital structure. They are Net Operating Income Approach, Net Income Approach and Traditional Approach. The first two approaches are mutually – opposed to each other with extreme views, while the third approach (traditional) tried reconciliation by blending their views.

Before we delve into the brief discussion of the approaches, let us itemize the common assumptions of the three theories and debt as the minimization of these costs is the essence of capital structure theories. The common assumption includes:

i Firms employ two types of capital debt and equity.

ii The gearing of a firm, that is degrees of leverage is changed immediately by issuing debt to repurchase equity (share) or by using shares to retire debt. No transaction cost is issue. Thus, total assets of the firm are given.

iii investors have the same subjective probability distributions of expected future operating earnings for a given firm

iv There in constant growth in the operating earnings of firms. That is, constant growth.

v There is no corporate income taxes.

vi Firms have policy of paying out 100 percent dividend.

vii The business risk is constant and independent of capital structure and financial risk.

viii The stream of expected income before interest and taxes remain constant in perpetuity.

2.2.1 Net Income Approach (NI)

The net income approach views the firm as increasing its value or lowering the overall cost of capital by increasing the proportion of debt in its capital structure. That is, increase in debt in a firm's capital structure reduces the overall cost of capital and increases the firm's value. Under the approach, the cost of debt and cost of equity are assumed to be constant imply that with increased use of debt, by magnifying the shareholders' earnings, the value of the firm will increase via higher cost of equity. Consequently the overall or the weighted average cost of capital, K_o, will decrease. The approach also assumed that cost of debt and cost of equity are independent of leverage. Thus, leverage affects the overall cost of capital, hence, the value of the firm.

2.2.2 Net Operating Income Approach.

According to the Net Operating Income (NOI) approach, the market value of the firm is unaffected by capital structure changes and cost of equity is around to be increasing linearly with leverage which makes the overall cost of capital constant. This implies that both the overall cost of capital and the market value of the firm are independent of the capital structure. Going by this approach, it means that finance decision would not be rewarded by financial managers as they would not have any effect on the value of the firm.

Modigliani and Miler (M&M) supports the net operating income approach by providing logically consistent scientific behavioral justification in its favour. They oppose the existence of optimum capital structure.

1.2.3 Traditional Approach

The traditional or intermediate approach is a compromise between the net income approach and the net operating incomes approach. According to this approach, the value of the firm can be increased or the cost of capital

can be reduced by the judicious mix of debt and equity capital. Thus, the traditional view is that there is an optimal capital structure which is reached when the overall cost of capital is minimum and the value of the firm is maximum. This implies that the cost of capital decreases within the reasonable limit of debt and then increases with leverage. The cost of capital declines with leverage because debt capital is cheaper than equity capital with reasonable or acceptable limit of debt. Thus weighted average cost of capital decrease with the use of debt.

1.3 Empirical Evidence

A number studies have been carried out that either supports or contradicts the three propositions of capital structure theory. According to Boyd and Runke (1993) and Bhat (1980), the use of financial leverage leads to greater risk exposure, which according to Nyony (1994, 1995) leads to ultimate failure, as against increase in value. Leverage increase only equity return (E 2004:36) and decreases stock prices (Black 1976 in Ursel and Erlen 2004:43) and therefore the value the firm. Wald (1999) looked at the behaviour of profitability and leverage using debt/asset ratio as an index for United States of America, Japan and United Kingdom. He found a significant negative correlation between the variables. This confirmed the work of Kester (1986). In a study of Indian Cement Industry, Bhayani (2006) found out that firm's financial leverage is related to its profitability; the negative relationship between financial leverage and coefficient of variation in dividend payout ratio (DPR) shows that low leverage firms have conservative dividend policy; cost of capital and firm's financial leverage are positively related and that financial leverage and interest to EBIT ratio have been found to be negatively related.

1.4 Methodology

This paper used secondary data to achieve the objective set. Two major sectors of the economy mainly manufacturing and financial sectors were chosen and twenty-five (25) companies selected from each sector using simple random sampling technique. Deliberate effort is made to represent the sub-sectors in each sector. To this end, banking and insurance sub sectors constitute the financial sector while breweries, building materials, conglomerates, food / beverages and tobacco, footwear, industrial/domestic products, and textile subsectors constitute the manufacturing sector. Companies studied are those quoted in the Nigeria Stock Exchange Factbook. Thus, data were collected mainly from Nigeria Stock Exchange Factbook. The data used is assumed reliable since they have been certified by External Auditors of the companies before they were published in Factbook (1997, 2000 and 2003) and it covered a period of 11 years (1992-2002).

The computation and analysis of data is based on a number of underlying theoretical assumptions, and models. The theoretical assumption are as stated above in 2.1 while the models, which represent capitalization rates or costs associated with the different earnings stream (cost of capital and debt) and value of the firm are defined as:

$$\text{Kd} = \text{Cost of debt} = \frac{I}{Md} \quad \ldots\ldots\ldots\ldots \quad (1)$$

(Given in this study as 18 %)*

**This is the average CBN Minimum Rediscount Rate (MRR) for the study period*

$$\text{Md} = \text{Market value of debt} = \frac{I}{Kd} \quad \ldots\ldots\ldots\ldots \quad (2)$$

$$\text{Ke} = \text{Cost of equity} = \frac{D_1}{P_0} + g \quad \ldots\ldots\ldots\ldots \quad (3)$$

$$\text{Given a zero g, Ke} = \frac{D_1}{P_0} \quad \ldots\ldots\ldots\ldots \quad (4)$$

$$g = \text{Growth rate of earnings} = \left(\frac{D_n}{D_o}\right)^{1/n} \times 100 \quad \ldots\ldots\ldots\ldots \quad (5)$$

$$= \left(\sqrt[n]{\frac{D_n}{D_o}}\right) - 1 \times 100 \quad \ldots\ldots\ldots\ldots \quad (6)$$

$$\text{M0e} = \text{Market value of equity} = \frac{N_1}{Ke} \text{ (given in this}$$

Study, as published in the Financial Reports adopted.... (7)

$1K_o$ = Weighted Average Cost of Capital (WACC)

$$Ke\left(\frac{Me}{Me+Md}\right) + Kd\left(\frac{Md}{Me+Md}\right) = Ke\left(\frac{Me}{V}\right) + Kd\left(\frac{Md}{V}\right) \quad \ldots\ldots(8)$$

OR

$$Ke - (Ke - Kd)\frac{Md}{V} \text{ (derived)} \quad \ldots\ldots\ldots\ldots \quad (9)$$

$$\text{V} = \text{Value of the firm} = \text{Me} + \text{Md} \quad \ldots\ldots\ldots\ldots(10)$$

$$\text{Leverage} = \frac{\text{Debt}}{\text{Equity}} \quad \ldots\ldots\ldots\ldots(11)$$

Where D_1 = Dividend per share (present)
P_o = current market price per share
D_n = Future Dividend per share
n = number of years.
NI = Net Income (net operating Income – Interest charge)

Other terms are as defined above.

It has to be noted and very importantly too that the above equations (1 – 11) do not provide any source of controversy among the capital structure theorists. But the controversy emerges from the perceived behaviour of major variables like Ko, Ke and V with L (leverage). We are interested in relating this behaviour to the Nigerian firms. This is with a view to placing Nigerian firms to either of the capital structure theories or to an independent theory.

Table 1: Summary Result of the Analysis of Capital Structure and Computation of Cost of Debt (kd), Cost of Equity (ke), Overall Cost of Capital (ko), Leverage (L) and Value of the firm (V).

Firm categories		1992				1993				1994				1995			
	Kd	Ke	Ko	V	L	Kd	Ke	Ko	V	L	Kd	Ke	Ko	V	L	Kd	Ke	Ko	V	L
Manufacturing industry	18	57.82	58.92	20562502	11.87	18	344.71	567.53	222.761.06	36.27	18	1025.43	690.78	843.578.76	28.23	18	106.48	103.23	1.910.683.75	7.20
Insurance industry	18	37.17	37.19	158398.7	72	18	38.23	38.26	84655.2	0.58	18	37.79	37.81	104.986.2	0.44	18	47.62	47.62	217.502.83	0
The banking industry	18	26.78	26.78	7778952	0	18	42.1	42.1	8481232.15	0	18	37.78	37.79	135.374.243.8	0.16	18	40.16	40.18	155.578.331.2	1.79
Financial sector.	18	31.97	31.98	39973775.35	36	18	40.16	40.18	4248489.18	.29	18	37.78	37.80	6.821.215.5	0.3	18	43.89	43.9	77.897.907.02	0.46
Firm categories	Kd	Ke	Ko	1996 V	L	Kd	Ke	Ko	1997 V	L	Kd	Ke	Ko	1998 V	L	Kd	Ke	Ko	1999 V	L
Manufacturing industry	18	69.87	70.43	77,172,127.81	7.20	18	65.99	65.77	9.276.295.22	15.99	18	65.49	58.92	9,035,698.27	5.04	18	80.16	76.89	10.0712.241.	7.52
Insurance industry	18	17.14	17.14	374,939.2	0	18	22.28	22.28	611.510.4	0	18	22.58	22.58	657,930.1	0	18	18.28	18.28	465584.4	0
The banking industry	18	36.92	37.29	1,698,594.71	1.79	18	37.41	36.96	1,332,467.54	3.49	18	35.59	35.89	271,524.17	2.48	18	22.70	22.85	3246,607.92	1.62
Financial sector.	18	27.03	27.21	2,073,535.9	0.89	18	29.84	29.62	971,988.97	1.74	18	29.08	29.08	464,727.13	1.24	18	20.49	20.56	1,856,096.16	0.18
Firm categories	Kd	Ke	Ko	2000 V	L	Kd	Ke	Ko	2001 V	L	Kd	Ke	Ko	2002 V	L					
Manufacturing industry	18	46.61	48.64	6.516.908.06	9.01	18	40.77	46.49	7.832.578.06	11.43	18	78.69	77.89	8.480.403.8	15.73					
Insurance industry	18	12.21	12.21	791511.78	0	18	23.45	23.45	855445.28	0	18	20.2	20.2	1233039.2	0					
The banking industry	18	1.82	2.11	2200039.45	0.89	18	5.92	6.16	3262415.69	0.64	18	-0.48	-0.62	2304162.2	2.58					
Financial sector.	18	7.01	7.16	505735.6	0.445	18	14.68	14.80	2058930.48	0.32	18	9.86	9.79	1768100.7	1.29					

Source: Data Calculated from NSE Fact Book 1997, 2002 and 2003

1.5 Interpretation

From Table 1 we observe that the result of average values of K_e, K_o V and L showed mixed result for the major sectors studied. In the manufacturing sector, weighted cost of capital (K_o) increases with cost of equity (ke) for the period studied except in 1994, 1995, 1998, 1999 and 2002 that decreased with increased cost of equity. In the financial sector, the weighted cost of capital in (K_o) increases with cost of equity for the period studied except for 1997 and 2002. These exceptions in the two sectors are against theoretical economic reasoning since weighted average cost of capital is the sum of the cost of debt and that of equity (see equation No. equation 8 or 9).

The result of leverage and weighted cost of capital in the manufacturing sector showed that with high leverage in 1992 there is, as expected, a corresponding decrease in Ko and in 2002 negative sign is recorded. However, this is at variance with other years that consistently saw an increasing Ko with a reduced leverage. In the financial sector, with less than 1% leverage the weight cost of capital recorded an average of 35% from 1992 to 1997 and average of 16% from 1998 to 2002. This is not as expected especially for the net income approach.

Cost of equity (Ke) is greater than the cost of debt for the two sectors over the period studied except for the financial sector that recorded opposite result for the period 2000 to 2002. This is accounted to the banking sub-sector that recorded very low and negative cost of capital over the period investigated. This is not expected but may be as a result of the reforms specifically consolidation embarked upon in the banking sector.

On leverage and value of the firm, the result is mixed and revealing. In 1992, value increased with leverage for both sectors. But in 1993, a reduction in leverage reflected also a decrease in the value of the manufacturing sector but s similar reduction in the financial sector led to an increase in the firm's value. This trend is the same from the financial sector in 1995, 1999 and 2001 while in 1994, 1996 1997, 1998, 2000 and 2002, increased leverage lead to decreased value. For the manufacturing sectors, as leverage decreases, value of the firm increased as in 1994, 1995, 1996 and 1998. On a relative note, an increase in leverage from 5.04 in 1998 to 7.52 in 1999 lead to an increases in the firm's value from

9,035,698.27 to 10,071,241.61 respectively. This trend continues up to 2002.

When the sectors are disaggregated, we observe that the firm's value increased substantially, even without any leverage. For instance, in the banking sub-sector value increased without leverage in 1992 and 1993 but with the introduction of leverage in 1994, the value increased up to 1995 but decrease in 1996 and 1997 with increased leverage. This is mixed and contradictory. In PZ Industries, Vano Products and Cadbury Nig Plc, among others, there is no recorded leverage but value increased geometrically and on a consistent basis throughout the period studied.

1.6 Conclusion and Recommendations

From the foregoing interpretation of our data analysis, it is evidently clear that non of the sectors (manufacturing and financial) or their sub-sectors followed a consistent trend in the behavior of the concerned variables; K_e, K_o, L and V. It means that the firms studied did not embrace, in its entirely, any particularly capital structure theory in structuring their firm's capital. Thus, cost of equity is not moving in same manner as leverage increases, increase in debt (leverage) does not reduce the overall cost of capital nor increase of the firm's value, cost of capital does not decline with leverage, value of the firm does not increase with increased leverage. These are the features of the propositions of the capital structure theory, which none of the firm can be wholly identify with. However, at some points firms embrace a feature of one of the theories and at another they shift to another. This inconsistency did not allow for clear picture of the effect of leverage on the firm value and therefore these firms cannot be wholly placed to a particular capital structure theorist.

Based on the above conclusion, it in recommended that while some earlier assumptions of the theorists like tax, be relaxed efforts should be made to adopt a multiple approach to capital structure by incorporating variables while riskness of debt (dr), attitude of management (ma), environment (envir), growth rate (gr), and cost of debt before interest and tax (ctd) in order to achieve a maximum value of the firm. Thus, value of the firm (V) is a function of these variables, among other original variables.

This is mathematically represented as

$$V = f(ov, dr, ma, envir, gr, cdit)$$

Where ov =original variables i.e ko, ke,kd, L.

Further study should be carried and to find the impact of each of these new variables on the firms value.

Capital market should be made active, investor-friendly and respond to the value (performance) of firms.

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