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The Effect of Financial Leverage on Corporate Performance of Some Selected Companies in Nigeria

EFFET DE LEVIER FINANCIER SUR LES RESULTATS DE CERTAINES ENTREPRISES COLLABOREES, SELECTIONNES AU NIGERIA

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Abstract

This paper empirically examines the effect of financial leverage on selected indicators of corporate performance in Nigeria. In an attempt to juxtapose the earlier findings that were specific of developed nations, econometric technique of Vector Auto Regression (VAR) model was employed.

The findings revealed that Leverage shocks exert substantially on corporate performance in Nigeria. In addition, Earnings Per Share (EPS) depends more on feedback shock and less on leverage shock. Leverage shocks on Earnings Per Share indirectly affect the Net Assets Per Share of firms as the bulk of the shocks on the Net Assets Per Share was received from Earnings Per Share of the firms.

Leverage therefore significantly affect corporate performance in Nigeria. Thus, theories that are adequate for indigenous macro economic variables should be developed instead of depending on the structured theories of the advanced developed countries of the world, as these theories cannot be appropriate proxies for advancing the course of the developing nations.

Key words: Financial Leverage; Corporate Performance; Earnings Per Share (EPS); Net Assets Per Share (NARS); Leverage Stocks; Capital Structure; Vector Auto Regression Model (VAR)

Résumé

Cet article examine de façon empirique l'effet de levier financier sur les indicateurs sélectionnés de la performance des entreprises au Nigeria. Dans une tentative de juxtaposer les résultats antérieurs qui étaient spécifiques des pays développés, la technique économétrique de régression automatique Vector (VAR) a été employée.

Les résultats ont révélé que les chocs de levier exercent essentiellement sur la performance des entreprises au Nigeria. En outre, le bénéfice par action (EPS) dépend de plus sur le choc des commentaires et moins sur le choc de levier. Chocs de levier sur le bénéfice par action indirecte sur les actifs nets par action des entreprises comme la majeure partie des chocs sur les actifs nets par action a été reçue de bénéfice par action des entreprises.

L'effet de levier conséquent affecter significativement les performances de l'entreprise au Nigeria. Ainsi, les théories qui sont adéquates pour les autochtones variables macroéconomiques devraient être développées au lieu de dépendre des théories structurées des pays avancés du monde, que ces théories ne peuvent pas être procurations appropriées pour faire avancer le cours des nations en développement.

Mots clés: Effet de levier financier; Rendement organisationnel; Bénéfice par action; Actif net par action; Les stocks de levier; La structure du capital; Modèle de régression du Vecteur Auto

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INTRODUCTION

The proportionate mix of equity and debt in financing a firm's investment proposals has been the subject of intensive theoretical modeling and empirical examination over the years having its tenet in the implication of such a mix on corporate performance. The mix has been defined in terms of capital structure in the literature (Grinblatt and

Titman, 2003; Pandey, 2008). On one hand is the idea of categorizing capital structure in terms of the combination of the short- term and long- term funds available to the business (Horne, 2002). On the other hand, capital structure is seen as the mix of debt and equity. The capital structure decision reflects judgment and the assessment of a highly uncertain future management degree of risk aversion and may affect the firm's financial policy. Thus, the change in capital structure that is caused by an increase or decrease in the ratio of debt to equity is referred to as financial leverage. When a firm includes debt as a proportion of funds employed to finance its project, financial leverage is brought into being.

Among the various findings, there is need to substantiate the existing findings on what is the effect of the introduction of fixed- interest- bearing funds (debts) on the return to the firm's shareholders. This point forms the basis of this study and the focus will be to fill the existing gap due to the inconclusive nature of the argument on the impact of leverage on corporate performance of the firm.

OBJECTIVES OF THE STUDY

The broad objective of the study is to examine the effect of financial leverage on the selected indicators of corporate performance in Nigeria. Other specific objectives are to:

Examine the impact of leverage on the earnings per share and net assets per share of corporate firms in Nigeria.

Decompose the variations in earnings per share and net assets per share into their components innovation.

The result of the study will either validate or refute the earlier claims on the impact of financial leverage on earnings capacity and of course, the performance potential of corporate firms.

LITERATURE REVIEW

A casual review of the literature brings one quickly to the key question of whether the 'mix' in financing an investment of a firm really matters? When the ratio of debt to equity, or degree of leverage is varied, what happens to the total valuation of the firm and to its cost of capital? On the other hand, what happens to its earnings capacity? The former has been an issue of intensive argument over the years. With differing assumptions, the traditionalists and the Modigliani-Miller (M&M) were the major acclaimed contending parties on the matter. Equipped with 'arbitrage' syndrome, the M&M made a formidable attack on the traditionalists. They opined that the total investment value depends on its underlying profitability and risk and that it is independent of its financing mix. They further stressed that unless a company is able to do something for investors that they cannot do for themselves, value is not created. Hence, the Modigliani-Miller (MM) capital structure models are based on the central assumption that the levered and the unlevered firms belong to the same 'homogeneous risk-class'.

Literally, their argument seems to be strong; however, it failed to realize that the proportion of risk of an investment is influenced by the introduction of debt into its capital structure. No matter how arbitrage transactions are adopted, the final implication of debt as it affects individual perception of investment risk stands out. Thus, the inclusion of financial risk cannot be all that over emphasized. This rationally will have a feedback on the firm's earnings capacity and eventually the value of the firm.

Horne (2002), in furtherance of his support for the latter argument, opined that the possibility of bankruptcy usually is not a linear function of the debt-to-equity ratio, but it increases at an increasing rate beyond some threshold. According to him, the expected cost of bankruptcy increases are expected to have a corresponding negative effect on the value of the firm and its cost of capital.

Furthermore, Pandey (2008) opined that financial leverage causes variability in the returns of shareholders, thus, adds financial risk; consequently, beta (risk) of a levered firm's equity will increase as debt is introduced in the firm's capital structure.

In contrast to the above aforementioned opinions, there appears to be a common consensus among authors on the other side of the effect of financial leverage on the earnings available to a firm's shareholders. They were of the view that bond (debt) is a relatively low-risk security and therefore the after-tax cost of debt is lower, and often substantially lower than equity financing (Haim and Marshall's, 1988). This reflects the fact that the bondholders' claim is limited to a fixed rate of interest and that the interest cost is deductible for tax purposes. In their opinion, there is no sharing of control (or ownership dilution) when debt is issued and the fact remains that debt is not permanent, which permits greater flexibility as the firm can adjust its financing programme to meet unexpected and unanticipitated changes.

The conclusion of Haim and Marshal implies that debt magnifies the earnings available to shareholders. However, this assertion will only be valid if the return on assets (ROA) is higher than the cost of debt. In this case, the more the debt, the higher the return on equity (ROE). The implication of this is that Earnings Per Share and of course, Net Assets Per Share will fall if the company obtains debt at a cost higher than the rate of return on the company's assets.

This view was supported by Van Horne (2002). According to him, "the advantage of debt in a world of corporate taxes is that interest payments are deductible as an expense". He went further in comparison to say that this will not be the case with dividends or retained

earnings associated with stock which are not deductible by the corporation for tax purposes.

Theoretical Framework

Mark and Sheridon (2006), opined that debt-equity choice of a firm conveys information to investors for two reasons: first, because of financial distress cost, managers will avoid increasing a firm's leverage ratio if they have information indicating that the firm could have future financial difficulties, to the extent that their firms may go bankrupt. On the average, managers of firms that do go bankrupt are subject to penalties. They are likely to be fired, to have their prerogative reduced and importantly, will suffer reputation loss which will harm their future earnings potential(Narayanan, 1987).

A debt issue can be viewed as a signal that managers are confident about the firm's ability to repay the debt. In this setting, firms desire higher debt levels when expected cash flows are higher because they can better utilize the tax benefits of debt (being tax deductible expense/ obligation). For any given debt level, according to Mark and Sheridon, the probability of incurring the cost of financial distress (or better put 'financial risk' element) is lower if expected cash flows are higher.

The second reason has to do with the reluctance of managers to issue what they believed are under priced shares. Hence, an equity issue might be viewed as a signal that the firm's shares are not under priced and therefore, maybe over price.

Furthermore, information content of the capital structure will affect managers differently based on their concern either in intrinsic value or in current share price. As managers with interest in intrinsic value would not be affected by such information.

Ross, Westerfield and Jordan (1998), retreated that the use of debt in a firm's capital structure is called financial leverage. The more debt a firm has (as a percentage of assets), the greater is its degree of financial leverage. To them, debt acts as a lever in the sense that using it can greatly magnify both gains and losses. Hence, financial leverage increases the potential reward to shareholders, but it also increases the potential for financial distress and business failures.

Nolan (2002), in his study of leverage changes of UK adopted what can be regarded as a behavioral approach to leverage behaviour using the framework of Stein (1989). He claimed to have used managerial utility function in his model. The comprehensive view of his model is outside the scope of this paper but the study will borrow the short run behavioral implication of the model. Implicit in his model is that a low debt (D) implies that the cost of short run behaviour is low, given as

$$\int_{-\infty}^{\infty} \int_{D}^{D+rx} dG(u)\,dF(y)$$

At the low debt (D), he opined that the extra probability of going bankrupt is low also. As the debt level rises, the loss from choosing X (i.e. taking quantity X of earnings from the second period and shifting them to the first period) should also rise. Higher debt levels should have higher expected penalties for short-run behaviour. In contrast, as D rises, it is possible that X will lower the extra probability of going bankrupt when X is chosen, thus, rising D could cause the extra bankruptcy risk to fall, then rise again.

According to Pandey (2008), the variance and covariance and therefore *beta* depend on three fundamental factors: the nature of business, the operating leverage and the financial leverage. As suggested by their names, operating leverage and financial leverage are analogous concepts. In his words, operating leverage is the use of fixed costs, the degree of which is defined as the change in a company's earnings before interest and tax due to change in sales.

Going by his words on the other hand, financial leverage is seen as the existence of debt in a firm's capital structure. Hence, a levered firm is the one that has debt in its capital structure.

Furthermore, the capital structure of a firm can take the form of 0% debt, 100%equity; or 100% debt, 0% equity; or X% debt, Y% equity. It is often said that the most feasible one in the real life situation is X% debt and Y% equity. The degree of financial leverage is defined as the change in a company's profit after tax due to changes in its EBIT. It is therefore enough to note that financial leverage increases the firm's (financial) risk and hence, the equity *beta* of the firm.

METHODOLOGY

This paper provides empirical evidences of the effect of leverage on some performance indicators of corporate firms using panel data between 1993 and 2005. The empirical exercise is to estimate the effect of leverage on the selected variables in a Vector Auto Regressive (VAR) and decompose the forecast error variance to analyze how a unit shock generate by leverage is transmitted to the variables in the system.

The VAR model is composed of two sets of variables, namely: the leverage (LEV), measured by the debt-equity ratio of the firms and corporate performance indicators represented by earnings per share (EPS) and the net assets per share (NAPS)

The following VAR model of order (p) were consider;

$$Yt = \mu + \sum_{i=1}^{n} \text{Øí}\ yt_{-1} + \varepsilon_t$$

Where

yt = a (n x $_1$) vector of endogenous variables,

μ = (μ_1 ...., μ_3), is the (3 x 1) intercept vector of

VAR,

Øí = the (3 x 3) matrix of autoregressive coefficients for í = 1, 2, ……, p,

ε_t = (εí$_t$ ..... ε_{3t}), the (3 x 1) generalization of a white noise process.

In order to analyze the system's response to a real leverage shock, the VAR system removes the assumption of white noise and it is transformed into its moving average representation as follows:

$$yt = \mu + \sum_{í=0}^{\infty} y\,í\,\varepsilon_{t-1}$$

Where yí is the identify matrix, μ is the mean of the process. The moving average (MA) representation is used to obtain the forecast error variance decomposition and the impulse-response function. The variance decomposition shows the proportion of the unanticipated change of a variable that is attributable to its own innovations and shocks to other variables in the system.

The estimate of VAR is necessary in this study to determine and trace the effect of one standard deviation shock coming from leverage on current and future performance of corporate firms. This analysis is called "***impulse response***". In addition, a different method of depicting the system dynamics is to decompose the variation in an endogenous variable into its component sources to the endogenous variables in the VAR. This process is called "***variance decomposition***". It gives information about the relative importance of each random innovation to the variables in the VAR.

This paper sources its data from a panel of selected corporate firms. 17 firms were randomly selected and studied for a period ranging from 1993 to 2005. The limit of this period arises from the fact that some of the firms were not incorporated earlier than the period under study (see the appendix). The observations were aggregated using the pooled panel aggregation method.

Empirical Results

A graphic relationship among the three variables using their correlation matrix is as shown in table 1

Table 1
Correlation Matrix

	LEV	EPS	NAPS
LEV	1.0000	-0.4262	0.6895
EPS	-0.4262	1.0000	-0.2490
NAPS	0.6895	-0.2490	1.0000

Source: Data Analysis.

Table 1 above shows that the relationship between leverage and earnings per share is negative while it is positive with the net assets per share (NAPS). It is to be noted here that the correlation matrix in table 1 is a mere descriptive analysis of the relationship among the variables, it does not tell the nature and the direction of such relationship. Therefore, before a meaningful inference could be drawn from the result in table 1, there is the need to discuss the results of the VAR model.

The multivariate form of VAR estimate is presented in table 2 below:

Table 2
Vector Auto Regressive Estimate

	LEV	EPS	NAPS
LEV (-1)	-1.5049	9.5756	1.5570
LEV (-2)	-0.8813	31.8579	1.3457
EPS (-1)	-0.0145	0.1932	-0.0136
EPS (-2)	-0.0073	0.I815	0.0183
NAPS (-1)	-0.0091	-3.3485	0.9311
NAPS (-2)	0.2827	-3.6544	-0.4405
C	11.0485	354.27	20.1015
R^2	0.94	0.82	0.74
Adj.R^2	0.8472	0.5547	0.35
F-stat.	1.4685	95.864	16.792

Source: Data Analysis.

The result in table 2 shows that there is a dynamic relationship among the variables. Although, individual coefficients in table 2 have no strong economic meaning, a comparison between the R^2 and the adjusted R^2 really shows the nature of the relationship. The negative impact of leverage is well pronounced in the result. It shows that there is a casual relationship between leverage and corporate performance. The causality is bi-directional. This implies that, even though leverage effect affect the performance of firms, a feedback arises within the firms as their poor performance may also cause them to incure more debt**.**

Impulse Response

Impulse response analysis of the VAR traces the effect of a one standard deviation shock to one of the innovations on current and future values of the endogenous variables. The impulse response table is presented in table 3 below. It covers a forecast period of ten years. It is used to predict the behaviour of the corporate performance (EPS and

NAPS) to a standard deviation shock on leverage. The impulse response graph is presented in Appendix 2.

The impulse response of corporate performance indicators (EPS and NAPS) to a standard deviation shock in leverage is interpreted as follows; the response of EPS to a shock in leverage produces an unstable effect. It shows a positive effect within the first three periods rising to a peak of about 60%. It shows a sharp swing between the third and fourth period falling to negative trough of about 12%. Thereafter, it produces a relatively stable effect, moving smoothly from positive to negative oscillation.

However, the response of NAPS of the firms to a standard deviation shock in leverage generates a worsening effect. A visual observation of the impulse response graph shows that the response of NAPS to leverage effect during the ten-year period is negative. The effect reduces over the ten years but never die out (do not zero off). Unlike the EPS, where oscillations were recorded, the leverage effect on the NAPS of the corporate firms is a non-oscillatory converging time path.

Table 3
Impulse Response

Response of LEV			
Period	LEV	EPS	NAPS
1	0.885584 (0.18881)	0.000000 (0.00000)	0.000000 (0.00000)
2	-1.551827 (0.43387)	-0.726036 (0.275220)	-0.019580 (0.10627)
3	-0.747873 (0.76072)	-1.970058 (0.69049)	0.719161 (0.30488)
4	0.099333 (0.58922)	0.167005 (0.67458)	-0.225612 (0.26493)
5	-0.532489 (0.61677)	-0.580853 (0.67317)	0.215158 (0.24098)
6	-0.498460 (0.65189)	-0.664972 (0.67967)	0.147404 (0.24572)
7	0.249119 (0.50735)	-0.063336 (0.66985)	0.040437 (0.24615)
8	-0.363908 (0.42108)	-0.060679 (0.50934)	-0.049197 (0.21407)
9	-0.140133 (0.48715)	-0.474890 (0.55646)	0.194142 (0.21523)
10	0.061927 (0.39291)	0.123318 (0.52004)	-0.088886 (0.21439)

Source: Data Analysis

Response of LEV			
Period	LEV	EPS	NAPS
1	18.85746 (16.9598)	54.64601 (11.6506)	0.000000 (0.00000)
2	32.61521 (17.4994)	36.61565 (16.9143)	-7.147961 (7.09687)
3	60.76517 (27.8530)	65.23370 (22.9705)	-16.02545 (5.94075)
4	-12.54020 (23.7731)	21.99419 (29.5088)	-8.667981 (10.3782)
5	10.20656 (21.8413)	-11.16403 (32.4460)	8.526397 (9.19262)
6	20.19898 (24.5177)	34.03782 (27.8390)	-13.31614 (8.53694)
7	-3.889887 (19.3441)	0.829903 (24.1607)	2.117335 (7.57401)
8	-0.023197 (14.3505)	-1.274492 (21.6517)	-0.033100 (6.66560)
9	13.55034 (15.5222)	11.54639 (16.7412)	-2.534198 (5.73709)
10	-5.338657 (14.5035)	4.417523 (18.3397)	-2.321679 (6.71465)

Response of EPS

Response of LEV			
Period	LEV	EPS	NAPS
1	-6.119190 (2.76040)	-7.780683 (1.77933)	2.134629 (0.45510)
2	-4.575999 (3.33839)	-7.989936 (3.16655)	1.987616 (1.28598)
3	-2.888249 (2.98579)	-4.639383 (3.36322)	0.977190 (0.86444)
4	-4.156520 (3.29761)	-5.062176 (3.72500)	1.215023 (0.84663)
5	-2.164430 (3.20160)	-4.164458 (4.22750)	1.141676 (0.92003)
6	-1.248509 (2.57085)	-1.771476 (3.94848)	0.283938 (0.96722)
7	-1.789868 (2.48994)	-2.300447 (3.36954)	0.618299 (0.70668)
8	-0.976045 (2.50986)	-1.742262 (3.38006)	0.438936 (0.83340)
9	-0.422586 (1.83138)	-0.755814 (2.89205)	0.153368 (0.70556)
10	-0.856530 (1.58217)	-0.938002 (2.16454)	0.219440 (0.49884)

Ordering: LEV EPS NAPS

Variance Decomposition

The variance decomposition measures the proportion of forecast error variance in one variable explained by innovation in itself and the other variables. It gives information about the relative importance of each random innovation to the variables in the VAR. Thus, it decomposes the variation in leverage of firms into the component shocks to earnings per share (EPS) and net assets per share (NAPS) of firms. Table 4 presents a random sample of the ten (10) year period variance decomposition results.

Table 4
Variance Decomposition (Sampled)

	LEV	EPS	NAPS
EPS			
1/period	10.64	89.35	0.000
4/period	35.79	61.59	2.602
8/period	34.53	61.67	3.79
10/period	35.00	61.20	3.78
NAPS			
1/period	36.52	59.04	4.44
4/period	31.52	64.37	4.10
8/period	30.69	65.12	4.19
10/period	30.73	65.08	4.18

Source: Data Analysis.

Earnings Per Share (EPS)

The variance decomposition suggests that shocks to leverage as evidenced in table 4, explained about 11 percent of the shocks to corporate performance measured by earnings per share (EPS) in the 1st period; increasing in effects to about 36 percent in 4th period , it remains relatively stable at 35 percent up to the 10th period. The contribution of net assets per share (NAPS) to earnings per share shocks was absolutely zero in the 1st period, about 4 percent in the 8th and 10th periods. The greater contribution to the shock in earnings per share (EPS) was a feedback shock; about 89 percent in the 1st period, declining to about 61 percent in the 10th period.

Net Assets Per Share (NAPS)

Leverage shock had a greater impact on corporate performance measured by the Net Assets Per Share (NAPS). Initially, leverage shocks contribute about 37 percent to the deviation in NAPS but declined to about 31 percent in the 4th , 8th , and 10th periods respectively. On the other hand, the effect of feedback shock on NAPS of firms was 4 percent in the first period and remains stable all through the 10th period. The contribution of EPS shock on the changes in the net assets per share (NAPS) was much. Initially it was about 59 percent, rising gradually to about 64 percent in the 4th period and 65 percent in the 8th and 10th period.

CONCLUSION

The econometric findings presented in this study demonstrate that leverage shocks (debt/ equity ratio) have substantial effect on corporate performance especially when the net assets per share (NAPS) is used as an indicator of corporate performance in Nigeria over the period covered by the study. Earnings per share depend on feedback shock and less on leverage shock. Also, the finding revealed that the leverage shock on earnings per share indirectly affect the net assets per share of firms as the bulk of the shocks on the net assets per share was received from earnings per share of the firms.

Deduced from the findings is the fact that indigenous works have not been thoroughly carried out on the this subject matter. The paucity of such home based studies is attended to by 'mix- effect' of leverage on corporate performance. Most existing theories were typical of the advanced civilized societies that failed to address the peculiar nature of developing nations like Nigeria. Such theories on USA and UK, include; Bernanke *et al* (1990), Hall and Hall (1993), Stein (1989). Their empirical observations on leverage behaviours in the developed nations would not be adequate proxies for such behaviour in Nigeria and could not be used to explain the empirical realities in developing nations of the world. Therefore, the importance of indigenous observation as above cannot be over emphasized.

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