

## Responsiveness of Return on Assets to External Financing of Manufacturing Firms in Nigeria

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**Abstract:** Firms face challenges in rebalancing of their capital structures in order to reduce adjustment costs and create wealth for the firms or be optimal on the returns/profits that firms make. One of such challenges is the financing policy of the firms to fund new investments through equity and debts issues in order to impact positively on the firms' performance returns on assets. This paper examined the responsiveness of return on assets to external financing in Nigerian manufacturing firms. From the result, external financing had positive and significant impact on return on assets of quoted Nigerian manufacturing firms. In view of the finding of this paper, the financial decision which the firm makes must enhance value for shareholders, potential investors and stakeholders involved with the firm. Also, as a going concern, it is the wish of investors and investees that the firm should continually exist; therefore, the financial decision of the firm should ultimately help in achieving the overall objective of the firm that is, enhancing shareholders wealth maximization.

**Key words:** External Finance • Return on Asset • Manufacturing Firms

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### INTRODUCTION

The effect of external financing on firm performance in developing economies like Nigeria could be explained through several theories such as Miller and Modigliani irrelevance theory, the pecking order theory, the trade-off theory, the signally hypothesis, market mutation hypothesis and the agency theory, amongst other capital structure theories. From these theories, the use of external financing increases returns on equity up to a certain level of operating income not only in a developing economy like Nigeria but also firms in developed economies. Hence, as the firm grow; higher levels of external financing are needed to cover for available investment opportunities. In a perfect world, management would favour more external financing whenever return on capital exceeds the cost of internal financing. However, higher returns could also result in higher risk to the business.

The use of external financing is a balancing act between higher returns for shareholders versus higher risk to shareholders. Though external financing can boost stock performance of firms, it is still inconclusive as to its impact on performance of firms in developing economies like Nigeria. In view of the above, the financial decision which the firm makes must enhance value for shareholders, potential investors and stakeholders involved with the firm. Also, as a going concern, it is the

wish of investors and investees that the firm should continually exist; therefore, the financial decision of the firm should ultimately help in achieving the overall objective of the firm that is, enhancing shareholders wealth maximization.

The Nigerian capital market is skewed towards equity funding which is associated with higher cost of capital and imposes serious financing constraint on corporate managers. Such skewness could influence the financing behaviour of corporate managers and the overall performance of the firm. For instance, the under-development of the long-term end of the debt market could put so much pressure on corporate managers to perform. Such pressure could enhance performance or promote short-termism and stymie or hinder long-term investment that promotes performance on the long-run. The under-development of the debt market could also compel firms to rely so much on internal funds, thereby restraining their ability to pay dividend.

To empirically ascertain the influence of external funding on asset returns has become imperative given the level of corporate failure and moribund firms in Nigeria. The Nigerian capital market which was established in 1960, but started operation in 1961 had 9 government stock. However, in 1980 following the enterprise promotion decree of 1972, the market witnessed increased activities as the total number of equity stood at 23 and

government development stock stood at 59. The privatisation exercise which was as a result of Nigerian government decision to adopt the Structural Adjustment Programme (SAP) in 1986 accelerated capital market activities within the period. For instance, the value of equity stock which was N92.4 million in 1973 rose to N348 billion in 1987 and stood at N2, 086.294.59 trillion in 2007. The value of government development stock also rose from N91.1 billion to N307.9 million in 1987 and stood at N1.665.4 million in [1].

Important event that promoted capital market activities in Nigeria was the 2004 banking consolidation. It will be recalled that in July 6<sup>th</sup>, 2004, all commercial banks in Nigeria were mandated to shore-up their share capital to N25b by December 31, 2005 or have their licenses revoked [2]. Banks in order to comply with this directive used the capital market option. This singular episode astronomically increased capital market activities. For instance, the total market capitalization stood at N132.95 billion as at 2007 [1] ;. [3]

From the above analysis, it is evident that the Nigerian capital market is dominated by equity and government development stock. The market for corporate bond is not developed and this has important financing implication for corporate managers in Nigeria. Thus, Nigerian firms will depend more on equity for permanent source of fund and loans from banks for debt component of their funding mix. This also explains the absence of long-term debt in financial structure of Nigerian firms [4].

According to the trade-off hypothesis, in an environment where a firm is predominantly externally financed and the market for long-term debt is under-developed, corporate managers are under pressure to enhance market performance. This is to ensure secure access to the new issue market according to [5]. Scholars are divided on the influence of such pressure on firm performance. One school argued that such financing pressure could be the needed incentive for managers to maximize shareholders' wealth thus improving firm performance [6]. Another school, however, argued that such financing pressure could make corporate managers pursue short term goal (shorter-termism) which could stymie corporate performance as a result of under-investment in long-term projects [7].

The two conflicting schools are based on the assumption that investors are not myopic and could effectively monitor managers. This raises an important question on what happens in an economy that is characterized with investors' myopia. How do corporate

managers' manipulate market indicators to promote access to the new issue market? This study strived to clear our understanding of the financing behaviour of corporate managers in Nigeria, a country that is characterized by the under-development of long-term debt market and myopic investors.

The Nigerian capital market is skewed towards equity funding which is associated with higher cost of capital and imposes serious financing constraint on corporate managers. Such skewness could influence the financing behavior of corporate managers and the overall performance of the firm. The under development of the long-term end of the debt market could put so much pressure on corporate managers to perform. Such pressure could enhance performance or promote short-termism and stymie or hinder long term investment that promotes performance on the long run. The under-development of the debt market could also compel firms to rely so much on internal funds, thereby restraining their ability to pay dividend. The constraints the developing economy firms face in sourcing external resources through issuing of equity shares in their stock market; will bring out the dividend policy decisions of firms. It is therefore, against the foregoing that this paper examines the impact of external financing on return on assets of manufacturing firms in Nigeria. The subsequent sections of this study is divided into three sections. In the next section, the methodology adopted was ex-rayed. This also included the research design, model specification and explanation of the model proxies. In section 3.0, the result of the model analysis was explained while I concluded in section four.

## MATERIALS AND METHODS

Data for this study were obtained from the published financial statements and accounts of quoted manufacturing firms for the period 1999 – 2012. This study adopted [8] model. Thus, the model is specified as shown in equation (1).

$$Y_{it} = \alpha + \beta X_{it} + \mu_{it} \quad (i)$$

with the subscript  $i$  denoting the cross-sectional dimension and  $t$  representing the time series dimension. The left-hand variable,  $Y_{it}$ , represents the dependent variable in the model, which is the firm's debt ratio,  $X_{it}$  contains the set of explanatory variables in the estimation model,  $\alpha$  is the constant and  $\beta$  represents the coefficients while  $\mu$  represents the error term.

However, in line with the objective of examining the impact of external financing on return on assets of quoted manufacturing firms in Nigeria, I thus, hypothesized that external financing do not have positive and significant impact on return on assets of Nigerian manufacturing firms, it was represented as:

$$ROA = a + \beta_1EF + \beta_2AS + \beta_3FS + \mu \quad (ii)$$

where;

ROA=Return on assets

EF= External finance

AS= Asset structure

FS= Firm size

**Explanation of Model Variables:** The concept of external finance measures the proportion of permanent capital in the financing mix of a firm. Essentially, this is based on the postulation that in the Nigerian financial system, the market is skewed towards equity financing. Thus, the best measure of external financing in the Nigerian corporate environment is external equity. In line with the works of [8], this paper measures external finance by taking the natural logarithm of total debt (long and short term) of manufacturing firms in Nigeria in line with the works of [8]. For return on assets, it is a profitability measure that evaluates the performance of the firm by dividing the profit before interest taxes and depreciation by the total assets. According to [8], a high ROA means the investment gained compare favourably to the cost investment. As a performance measure, ROA is used to evaluate the efficiency of an investment or to compute the efficiency of number of different investment.

However, for this paper, I introduced two variables which are assets structure and firm size. Assets structure is an important determinant of the capital decision. According to [6] the firm’s assets are tangible and have a greater liquidation value. In this study the asset structure of Nigerian firms will be measure by fixed assets divided total asset in line with the works of [8]. As asserted by [8] the more tangible assets are, the more collateral would be. This was predicted by the pecking order theory which assumes that firms holding more tangible assets will be less prone to asymmetric information problems and reduce the agency cost. According to [5], size plays an important role in capital structure and [9] assert that firms strive for external sources of finance only if the internal sources are exhaust. In this study, size will be measured by taking the natural log of total asset. Therefore, in this paper firm size of a firm is important.

## RESULT AND DISCUSSIONS

Table 1 presents the descriptive statistics which is used to explain the movement of the model proxies in line with the objective of this study.

Table 1: Descriptive Statistics

	EXF	ROA	LOGAS	SZ
Mean	0.8425	0.5571	6.3067	5.5348
Median	0.1600	0.2750	6.2800	5.5550
Maximum	52.0100	17.220	9.1800	7.8600
Minimum	0.0000	0.0000	3.8000	1.6000
Std. Dev.	4.2529	1.3264	1.0178	1.0095
Skewness	10.3723	9.0121	0.0768	-0.2269
Kurtosis	115.379	103.16	2.7068	3.2882
Jarque-Bera	146918.	116505.9	1.2325	3.2529
Probability	0.0000	0.0000	0.5399	0.1966

Source: Researcher’s E-view Result

Table 1 present the descriptive statistics for the period 1999 to 2012. As revealed from the table, it showed that the mean of the external finance of quoted Nigerian manufacturing firms was 0.8425 while the median was 0.1600. As revealed by the skewness, there was a positive skewness (10.37) of external finance indicating that the degree of departure from the mean of the distribution is positive revealing that overall there was a consistent increase in external finance from 1999 to 2012. Though as indicated by the Kurtosis which was 115.37 > 3 which is the normal value indicates that the degree of peakedness within the period of this study were not normally distributed as most of the values did not hover around the mean. The Jarque-Bera statistic is an indication of the normality of distributions was 146918 and since the probability was equal to zero, the distribution was not normally distributed.

The average return on assets is 0.557 while the median was 0.275. The maximum return on assets was 17.22 while the minimum was 0.00 with a standard deviation was 1.32. As revealed by the skewness, there was a positive skewness of 9.012 indicating that the degree of departure from the mean of the distribution is positive revealing that overall there was a consistent increase in return on assets from 1999 to 2012. As indicated by the Kurtosis which was 103.16 > 3 which is the normal value indicates that the degree of peakedness within the period of this study was not normally distributed as most of the values did not hover around the mean. The Jarque-Bera statistic is an indication of the normality of distributions was 116505.9 and since the probability was equal to zero, the distribution was not normally distributed.

From the table also, the average assets structure of Nigerian manufacturing firms for the period was 6.3067 while the median was 6.18. The maximum assets structure was 9.18 while the minimum was N3.80 with a standard deviation of 1.0178. As revealed by the skewness, there was a positive skewness (0.0768) of asset structure indicating that the degree of departure from the mean of the distribution is positive revealing that overall there was a consistent increase in assets structure from 1999 to 2012. As indicated by the Kurtosis which was  $2.7068 < 3$  which is the normal value indicates that the degree of peakedness within the period of this study was normally distributed as most of the values hover around the mean. The Jarque-Bera statistic is an indication of the normality of distributions was 1.233. The probability value of 0.53 reveals that 53% of normality can be explained hence, the distribution was normally distributed.

The average size of Nigerian manufacturing firms for the period was 5.53 while the median was 5.555. The maximum size of Nigerian manufacturing firms for the period of this study was 7.86 while the minimum was 1.60 with a standard deviation of 1.009. As revealed by the skewness, there was a negative skewness (-0.227) of size indicating that the degree of departure from the mean of the distribution is negative revealing that overall there was a consistent decrease in size from 1999 to 2012. As indicated by the Kurtosis which was  $3.253 > 3$  which is the normal value indicates that the degree of peakedness within the period of this study was not normally distributed as most of the values did not hover around the mean. The Jarque-Bera statistic is an indication of the normality of distributions was 3.253. The probability value of 0.19 reveals that 19% of normality can be explained hence, the distribution was not normally distributed.

Figure 1 diagrammatically presents external finance, return on assets, asset structure and total size of Nigerian manufacturing firms from 1999 to 2012.

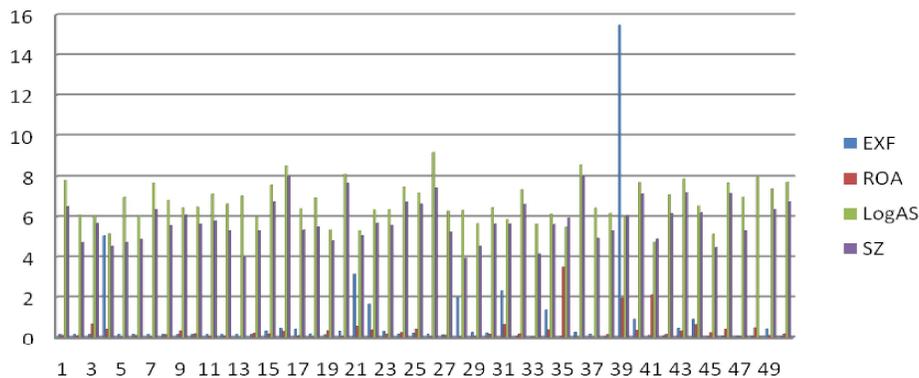


Fig. 1: External Finance, Return on Assets, Asset structure and Size  
Source: Researcher’s E-view Result

Table 2 presents the results of the Hausman test.

Table 2: Hausman Test Result

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. hausman fixed random
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	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed	(B) random		
EXF	.1647409	.1662003	-.0004593	.0002567
LogAS	-.5090162	-.4676977	-.0413185	.0161683
SZ	.3842447	.3882986	-.0040539	.0079892

b = consistent under Ho and Ha; obtained from xtreg  
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(3) = (b-B)'[(V\_b-V\_B)^(-1)](b-B)  
= 7.36  
Prob>chi2 = 0.0612

Source: Researcher’s Stata Result

From the above, the null hypothesis is accepted since p-value < 0.05, hence, the fixed effect regression model was used to test hypothesis four.

Table 3 presents the regression test.

Table 3: Regression Result

Fixed-effects (within) regression		Number of obs	=	603
Group variable: YEAR		Number of groups	=	19
R-sq: within	= 0.9584	Obs per group: min	=	1
between	= 0.9016	avg	=	31.7
overall	= 0.9582	max	=	51
corr(u_i, Xb) = 0.0370		F(3, 581)	=	4462.87
		Prob > F	=	0.0000

ROA	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
EXF	.1647409	.0014788	111.40	0.000	.1618364	.1676455
LogAS	-.5090162	.064204	-7.93	0.000	-.6351163	-.3829161
SZ	.3842447	.0534749	7.19	0.000	.2792171	.4892723
_cons	1.470548	.3044091	4.83	0.000	.8726712	2.068424
sigma_u	.217673					
sigma_e	1.0874706					
rho	.03852239 (fraction of variance due to u_i)					

F test that all u_i=0:	F(18, 581) =	0.85	Prob > F = 0.6355
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Source: Researcher's Stata Result

As revealed from table 3, the impact of the external financing on return on assets of quoted Nigerian manufacturing firms is positive and significant ( $\alpha = 0.16$ ,  $t = 111.40$ ,  $p\text{-value } 0.00 < 0.05$ ). This indicates that the use of external financing have positive and significant on the return on assets of Nigerian manufacturing firms. Overall, the coefficient of determination as revealed by R-square ( $R^2$ ) in between the firms was 95.8%. This indicates that 95.8% of variations observed in the dependent variable return on assets were explained by variations in the independent variable external financing and the control variables (asset structure and size). This is quite significant given the level of observations in the panel. The F-test which was 4462.87 indicates that the result of all the coefficients in the model is perfectly fitted. The fixed effect result which was less than zero reveals that the differences across units are uncorrelated with the regressors. For the control variables, the results indicates that asset structure of quoted manufacturing firms in Nigeria also had negative and significant ( $\alpha = -0.51$ ,  $t = -7.93$ ,  $p\text{-value } 0.000 < 0.05$ ) impact on return on assets while size of the firm had positive though positive and significant ( $\alpha = 0.38$ ,  $t = 0.05$ ,  $p\text{-value } 0.000 < 0.05$ ) impact on return on assets.

## CONCLUSION AND POLICY RECOMMENDATION

As revealed the hypothesis tested, the impact of the external financing on return on assets of quoted Nigerian manufacturing firms is positive and significant. For the control variables, the results indicates that asset structure of quoted manufacturing firms in Nigeria also had negative and significant impact on return on assets while size of the firm had positive though positive and significant impact on return on assets.

In view of the finding of this paper, the financial decision which the firm makes must enhance value for shareholders, potential investors and stakeholders involved with the firm. Also, as a going concern, it is the wish of investors and investees that the firm should continually exist; therefore, the financial decision of the firm should ultimately help in achieving the overall objective of the firm that is, enhancing shareholders wealth maximization. This result of this study will help management to decide on the optimal debt level that enhances the value of the firm as well as increase the chances of management to continue in their position as managers of these firms. The separation of ownerships and management in modern day corporations (firms)

demands that agents must act in ways that is in line with the objectives of the principal because failure to do so means the principal (owners) can remove the agent there limiting efficiency of management. Therefore, the findings of this research will go a long way in awakening management to their responsibility as agents by enhancing return on assets.

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