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Dynamics of Financial Leverage and Firm's Profitability: Evidence from Nigerian Deposit Money Banks

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ABSTRACT

The aim of the paper was to analyse the relation between financial leverage on firm's profitability from the perspective of Nigerian deposit money banks. We employed a random effects regression model with return on asset as dependent variable and three factors (leverage, liquidity and size) as regressors. The panel data series was collated from the annual reports and statement of accounts of 14 selected deposit money banks in Nigeria for the period 2000-2014. Data was analysed using descriptive statistics, correlation matrix and panel regression analysis. A panel random effect and panel fixed effect estimations were processed while the hausman test was employed in selecting the most appropriate model. The results showed that financial leverage has a negative impact on profitability. The findings further revealed that size and liquidity have positive impact on profitability whereas firm size was found to be negatively related to leverage. As expected, the relationship between liquidity and leverage appears to be negative. As the selection of independent variables was influenced by availability of data, we recommend that further studies could expand our analysis by incorporating other determinants factors such as industry-level and country-level variables, so long as the data series are available.

1. Introduction

Financial leverage is a critical aspect of overall firm management, and can be referred to as the relationship between borrowed funds and owner's funds in the capital structure of a firm. Financial leverage consists of debt, common and preferred equities channeled toward financing the firm's assets, operations and financial growth (Goel, Chadha and Sharma, 2015). Firms deploy a number of strategies to enhance profitability. Besides such strategies like streamlining of processes and integrating new technologies, financial leverage stands as an alternative way to improve firm's profitability by financing a portion of the business through debt or by issuing stock (Kunga, 2014).

Akhtar (2012) contends that though financial leverage is crucial for improvement in profitability, it does not guarantee such outcome. For instance, business organizations have varied degrees of uncertainties to cope with – which may be in the areas of future sales. Moreover, when a firm is introducing a new product into the market, or offering untested products and services, such firm faces higher risks of failure. Consequently, financial leverage for such businesses may be secured at the cost of high interest on borrowed fund, higher dividend payout to stockholders, which adversely affect profitability. In contrast, financial leverage may come at a lower cost or favourable interest where businesses offer products or services with proven track record and broad acceptance with consumers (Kunga, 2014).

Cheng and Tzeng (2010) argue that when a firm effectively uses leverage, is often a demonstration that it can handle the risks inherent with carrying debt.

This has largely been considered a very vital factor when a firm requires additional financing. It may not just be enough for loans to be available, but interest rate on such loans must be attractive. It will not be adequate for a firm to have impressive financial position, but a remarkable credit history is essential if a firm is to secure a good rate from lenders. When leverage is successfully used, it has the tendencies of improving a firm's rate of return which often arises from higher return on debt or borrowed funds. Leverage can therefore be said to be positive if the return on asset of a firm is greater than the before tax interest rate charged against borrowed funds.

It is not really uncommon for firms avoid debt in financing their assets. Rather some firms find it good in their financial planning strategies to rely completely on equity financing which ultimately entails that the firm has no financial leverage since the financing option is free from fixed interest charges. Amalendu (2012) states that firms have the obligation to weigh financial leverage options, associated cost of capital and the possible implications they may have on the profitability of the firm. Barakat (2014) highlights that firm's financial structure is very essential in investment and financing decisions, owing to its effect on profitability, and as well as extent of risk associated with firm's reliance on debt. He argues that financial structure decisions have effects on financial risk of a firm as measured by leverage expressed as the ratio of borrowed to owned money. Financial risks have been acknowledged to have links with funding decisions, which entails that that it cannot be

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ignored is the event of selection of a combination of its financial structure. Financial leverage increases the degree of risk shareholders face; therefore it increases the possibility of company's inability to service the debt. Financial policy therefore tries to find a trade-off, or balance between the impact of borrowing and the return on equity vis-à-vis the degree of risk faced by shareholders. It is widely argued that finding a balance between borrowed funds and equity to attain the optimal mix of financial structure may lead to reduced cost of funding.

2. Literature Review

Historical studies and contribution in corporate finance literature suggest that financial leverage induce cost of capital, affect firm's profitability and stock price. Trade off theory of capital structure supposes that firms can take precedence of debt to enjoy a prominent return. If a company adopts more debt then it will pay less in income tax but on the other hand financial risk will surge (Ahmad, Salman & Shamsi, 2015).

Finance managers strive to ascertain the targeted financial structure parameters with specific emphasis on the elements it is composed of, and the proportion of each constituent element. This enables the business realize the core strategic objective of maximizing firm's value. It is expected that expected return arising from financial structure and the risks embedded in this return should be harmonized. The supposition of Modigliani and Miller (MM) on financial markets suggest that financial structure has no effect on cost of capital and hence firm's value remain constant and is not responsive to financial structure.

Nevertheless, as a result of the fact that interests due on debts are tax deductible, the composition of debt in the company's financial structure reduces cost of capital, which relatively enhance profitability. The outcome leads to improvement on return on equity which invariably results in increase in firm's value (Barakat, 2014). Financial leverage or gearing is at times referred to as 'trading on equity', which simply explains that the owners' equity formed the basis to raise debt. The lender has very limited involvement in the sharing of company's profits and therefore, normally attaches restrictive condition, to protect his position, on the firm. Such restrictions may be in the way of provision of collateral, sinking funds, restrictions on company's dividend policy and further borrowing. Financial leverage decision is critical in financing decision since it remains crystal-clear that the performance of a firm is directly affected by decision on leveraging; hence, financial managers ought to exercise due consideration especially as regards to risk, growth and profitability, before arriving at a debt-equity mix decision (Abubakar, 2015).

Most corporate finance literatures argue that a higher rate of return on equity capital should yield in turn considerable rapid growth of earnings and dividends while enhancing higher valuation of the common stock. The return on equity capital, earnings growth, and improved dividends and higher market's valuation of the firm's common stock are all directly related to leverage in as much as theory is concerned. Finance experts acknowledge that the proportion of leverage in a company's capitalization would have direct ties to its relative return on common equity, earnings growth, appreciation of price and market valuation (Ahmad, Salman & Shamsi, 2015). When leverage is discussed, we keep in mind that it helps the investor and the firm alike to invest or operate.

However, it is not without significant risk. If an investor relies on leverages in making investment and makes a loss in the end, the loss would be much greater compared to investing from unleveraged position. This therefore reveals that leverage amplifies both gains and losses. In the global business place, a firm can use leverage in its effort to maximize shareholder wealth, but if it fails to achieve this goal, the interest expense in addition to the credit risk of default mars shareholder value (Al-Shamaileh & Khanfar, 2014).

Arguing from the point of theory, Hasannejadneisi, Mazraeh & Mousavi (2013) suggest that the investment performance of investment funds is sustained due to the fact that the marginal cost of capital equal to the return of investment. In the financial decision of the firm, especially from the perspective of debt-equity mix, have to be harmonized since a change in the capital structure and stock market of the firm will ultimately affect both profitability and risks position of the company, and must be critically addressed when evaluating firms and investors in the market.

2.1 Empirical Review

A number of studies have already been conducted on the impact of financial leverage on firm profitability but there appear to be no consensus regarding the precise response of firm profitability to variations in financial leverage. For instance, Fengju, Fard, Maher, Akhteghan (2013) examined the effect of financial leverage on profitability of listed companies of Tehran Stock Exchange. The research findings revealed the presence of smoothing and relationships between financial leverage and profitability in the listed companies, and indicated that firms are smoothing firms with special emphasis on operating profit, gross profit and net profit. The main result of the study indicates that there are significant differences between financial leverage and profitability between smoothing and non-smoothing firms.

Rehman (2013) investigated the influence of financial leverage on financial performance by taking evidence from listed sugar companies of Pakistan. The results of the study revealed mix results. The results indicated that there is positive relationship between debt equity ratio with return on asset and sales growth, whereas negative relationship between debt equity ratio and earnings per share, net profit margin and return on equity. Focusing on firm's capital structure which operates in United State, United Kingdom, Japan, France, and Germany, Wald (1999) contends that debt to assets ratio has significant negative effect the firm profitability, while using firm size, growth and firm's riskiness as explanatory variables.

lkhatib (2012)empirically investigate the determinants of leverage of listed companies. The study sample included 121 listed companies on the Jordanian Stock Exchange between the period 2007 and 2010. The sample included the industrial and services sectors. Regression model was employed in processing the data; the dependent variables were represented by firm liquidity, profit, size, tangibility, and growth rate whereas the explained variable was the leverage ratio. The results showed that there were no statistical significant relationship for both industrial and services sectors. Studying the sectors individually, the results for the industrial sector revealed that liquidity and tangibly have significant positive relationship with leverage, whereas the results for the services sector revealed that the growth rate, liquidity, and tangibility are significant in determining leverage.

Ting (2015) investigated the effect of dynamic relation by the presence of a lagged leverage decision to leverage decision. Dynamic panel model is developed to determine the likely effect of previous leverage decision on leverage adjustments speed of listed public firms in Malaysia for the period 2004 to 2013. The results revealed that leverage have negative effect on firm profitability of publicly listed Malaysian companies. The study paved the way for a more advanced and mixed method approach to firm leverage decision in Malaysia.

Yoon, Eunju, Jang & SooCheong (2005) took an empirical insight into the relationship between return on equity, financial leverage and size of firms in the restaurant industry between 1998 and 2003 using OLS regressions. Research results suggested that firm size had a more overriding effect on return on equity of restaurant firms than debt use, and higher equity returns was earned by larger firms. Results also revealed that even with lower financial leverage, risks of smaller firms are significantly higher than that of larger firms.

Onofrei, Tudose, Durdureanu & Anton (2014) assessed the determinants of capital structure of micro- and small enterprises in Romania. The study employed debt ratio as the dependent variable and profitability, tangibility, liquidity, size, and growth opportunity as determinants of capital structure. Leverage was confirmed to be negatively related to tangibility, profitability and liquidity. The size of the firm and the growth opportunities has non-significant negative effect on the leverage.

3. Data and Methodology

Data for this study is basically from secondary sources. The panel data series was collated from the annual reports and statement of accounts of 14 selected deposit money banks in Nigeria for the period covering 2000-2014. Data was analyzed using descriptive statistics, correlation analysis and panel regression analysis. A panel random effect and panel fixed effect estimations will be processed while the Hausman test will be employed in selecting the most appropriate model. Panel unit root test will also be conducted since our series has a feature of time-series. This will help us ensure that are data set are stationary. The series that were analyzed comprise the financial leverage which is the explanatory variable. This component was measured using long-term liabilities divided by total assets. Profitability which is the explained variable was measured using Return on Assets (ROA). Control variables have also been introduced as moderating variables and included liquidity and bank size and which were respectively measured as ratio of current assets to current liability and natural logarithm of total assets.

3.1 Model Specification

The study adopted a regression model to establish the relationship between financial leverage and profitability of selected deposit money banks in Nigeria. The a priori expectation in the study projected a negative association between financial leverage and profitability of our sample study. The study sought to modify the model as proposed in Onofrei, *et al.*, (2015); the regression model was as follows:

$$\mathbf{ROA_{it} = \beta_0 + \beta_1 FLEV_{it} + \beta_2 SZE_{it} + \beta_3 LQDTY_{it} + \varepsilon_{it}} \quad (1)$$

Where, *i* and *t* denotes cross section and time respectively, *ROA* = return on assets, *FLEV* = financial leverage, *SZE* = bank size, *LQDTY* = liquidity, β_0 = intercept, β_1- β_3 are parameter estimates, ε = white noise process.

4. Results and Discussions

4.1 Preliminary Tests

Table 1. Descriptive Statistics.

	ROA	FLEV	LOG(SZE)	LIQ
Mean	0.019167	3.602700	2.839463	1.164333
Median	0.017000	2.960000	2.818575	1.179000
Maximum	0.096000	4.830000	3.058895	1.295000
Minimum	0.000000	2.110000	2.661797	1.035000
Std. Dev.	0.024782	0.708878	0.155362	0.074426
Observations	168	168	168	168
Cross sections	14	14	14	14

Source: Authors' 2017

Table I presents the descriptive statistics of our series in our panel model analysis of all the 14 firms. With respect to financial leverage (FLEV) the reported mean is 3.60 while return on assets averaged 0.019. The results further indicated that the sector is highly liquid, exceeding a hundred percentage point mark. The firm size average for the period is about 2.8. It is however noteworthy that the series have unit root at level but attained stationarity after first differencing.

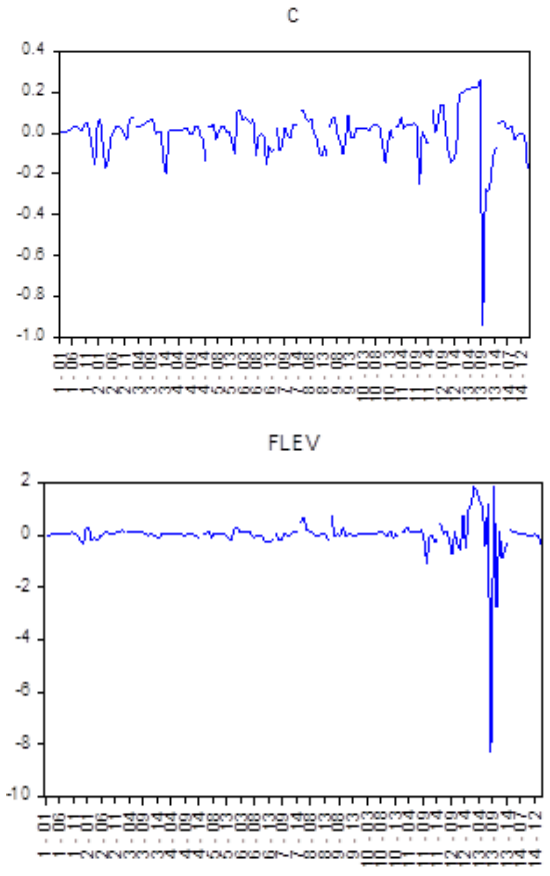
Table 2. Correlation Matrix.

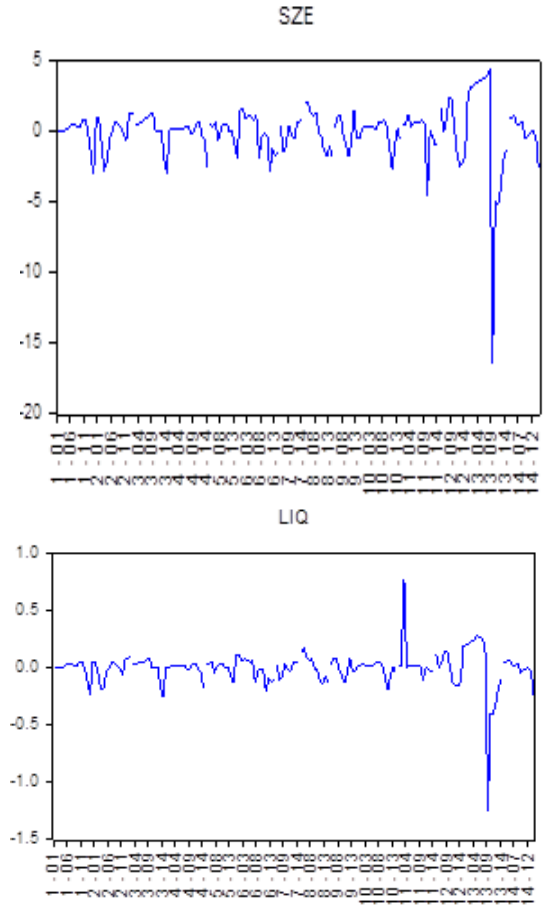
	ROA	FLEV	LOG(SZE)	LIQ
ROA	1.000000	-0.162252	-0.237694	0.696531
FLEV	-0.162252	1.000000	0.057726	-0.262642
LOG(SZE)	-0.237694	0.057726	1.000000	-0.543974
LIQ	0.696531	-0.262642	-0.543974	1.000000

Source: Authors'

Result of the correlation analysis on the series is demonstrated in table 2. The result showed that financial leverage has negative relationship with profitability. This outcome is in line with our theoretical expectation. Bank size is negatively related to profitability while liquidity was found to be positively related to profitability.

Gradient of the objective Function





4.2 Panel Model Estimations:

We estimated the fixed effect model and the random effect model, and then used the Hausman test to select the appropriate model.

Table 4 presents the Hausman test which will guide us on determining the most appropriate model. The p value is greater than 5% significant level. This suggests we accept the null hypothesis that the random effect model is more appropriate.

Table 4. Hausman Test.

Correlated Random Effects - Hausman Test			
Equation: Untitled			
Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	3.583446	3	0.3101

Source: Authors' 2017

Hence, results in table 4 reveals that financial leverage has negative effect on profitability of deposit money banks in Nigeria. Size and liquidity however exerted positive influence on profitability. The result further indicated that about 74% of the impact on profitability was due to variation in the regressors, and the remaining 26% was due to other variables not included in the model. The overall regression is also confirmed to be significant while the Durbin-Watson statistics indicated that our model if free from autocorrelation problem.

5. Conclusion

The aim of the paper was to analyse the relation between financial leverage on firm's profitability from the perspective of Nigerian deposit money banks. We employed a random effects regression model with return on asset as dependent variable and three factors (leverage, liquidity and size) as regressors. We have found that financial leverage has a negative impact on profitability. The results of the estimation model show that size and liquidity have positive impact on profitability. As expected, the relationship between liquidity and leverage is negative. Our regression results revealed that firm size is negatively related to leverage. Since the selection of independent variables was influenced by availability of data, we consider that further studies could be expanded by incorporating other determinants factors such as industry-level and country-level variables, so long as the data series are available.

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Table 3. Random Effect Model Estimate.

Dependent Variable: D(ROA)				
Method: Panel EGLS (Cross-section random effects)				
Sample: 2000 2014				
Periods included: 15				
Cross-sections included: 14				
Total panel (unbalanced) observations: 178				
Swamy and Arora estimator of component variances				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.185394	0.089868	-2.062950	0.0406
D(FLEV)	-0.001096	0.001112	-0.985732	0.3256
D((LOG(SZE))	0.078660	0.031543	2.493782	0.0136
D(LIQ)	0.002666	0.006231	0.427851	0.6693
	Effects Specification			
			S.D.	Rho
Cross-section random			0.017423	0.0788
Idiosyncratic random			0.059589	0.9212
	Weighted Statistics			
R-squared	0.741408	Mean dependent var		0.025940
Adjusted R-squared	0.724881	S.D. dependent var		0.060346
S.E. of regression	0.059631	Sum squared resid		0.618715
F-statistic	21.50545	Durbin-Watson stat		1.922309
Prob(F-statistic)	0.000038			
	Unweighted Statistics			
R-squared	0.069121	Mean dependent var		0.037826
Sum squared resid	0.673438	Durbin-Watson stat		1.031110

Source: Authors'

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