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# EFFECT OF FINANCIAL LEVERAGE ON STOCK RETURNS OF LISTED COMPANIES IN NIGERIA CAPITAL MARKET

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## **Abstract**

*This study investigated the effect of financial leverage on stock returns of listed companies in Nigeria. The study population is listed companies in Nigeria capital market. The adjusted population is 103 companies. Monthly share prices and financial leverage from 2010 to 2018 were extracted from Bloomberg. Data were transformed to single period averages, and cross sectional regression and Z-test analysis were conducted. The outcome from the regression and z-test revealed that financial leverage has no significant relationship with stock returns. The outcome was consistent with Modiglianni and Miller theory. It was recommended that companies focus on investment strategies as opposed to financing strategies.*

**Key words:** Stock returns, financial leverage, Nigeria capital market.

## **1. Introduction**

Companies exist to compensate shareholders for their investment. In the capital market, the most accessible and comprehensive indicator shareholders have as a reflection of growth in wealth is share returns or share prices. This is because share prices reflect financial and non-financial event affecting firm activities (Dobbs & Koller, 2005). Over the years, market performance of stocks in the Nigeria capital market have experienced decline. The capital market as a whole reached a low basis point of 19785.03 in 2011, and the decline has persisted that led to the ranking of the country's capital market at 55 out of 61 world capital market (Bloomberg, 2018).

Consequently, according to corporate finance theory, increase or decrease in firm value can be attributed to investment decision, financing decision and dividend decision (Fama & French, 2015). The decision pertinent to this study is the financing decision owing to increased level of borrowing by government and corporations to an unprecedented amount of \$281trillion (Maki, 2021). In finance, financing decision is best understood through capital structure. Capital structure or financial leverage refers to the way company finances its activities, which can through debt or equity (Modiglianni & Miller, 1958). Financing through

debt means utilizing debt, or more of debt over equity. Financing through equity means utilizing equity, or having larger equity proportion in a company capital structure mix. The implication of debt financing is that it stabilizes a company income stream since interest rates are fixed. Also, debt financing provides companies with lower cost as interest is tax deductible. On the other hand, the tendency of default of debt exposes companies to financial distress. In contrast, equity financing reduces the likelihood of bankruptcy as owner's equity is used to pursue investment opportunities. However, cost of equity is higher because investors' funds are used to pursue the investment (Modiglianni & Miller, 1958).

Classical capital structure/financial leverage theorem initiated by Modiglianni and Miller (1958) argued that capital structure of a firm is irrelevant to the firm's value or performance. Modiglianni and Miller argued that in a perfect capital market where there is absence of information asymmetry, the benefit of debt which is tax shield is eradicated by increase in financial distress. Similarly, the benefit of equity which is lower level of financial distress is cancelled by higher cost of equity. Hence, whichever form of financing a company select would not lead to increment in value/performance. Firm value is only derived through companies' investment strategy. However, theories like signaling theory (Ross & Jordan, 2019), pecking order theory (Myers, 1977), tradeoff/static theory (Berk & Demazo, 2020), and agency theory (Frank & Goyal 2008) have all countered Modiglianni and Miller theorem and assumptions.

Despite the situation of the Nigerian capital market and the importance of share return in measuring market performance, researches conducted in the Nigeria capital market such as Ibhagui and Olokoyo (2018) and Imeokparia et al. (2021) have largely focus on using accounting based measures to understand companies' situation. Whereas this study makes use of stock returns to analyse it relationship with financial leverage. Also, while prior studies such as Anton (2018) considered financial leverage using regression analysis, this study would incorporate Z-technique analysis to further understand the regression analysis. For the Z-technique analysis, the stock returns are segregated based on median to low financial leverage firms and high financial leverage firms. Moreover, prior studies such as Jeleel and Olayiwola (2017) considered specific industry in a capital market. This study however considers the entire capital market to gain an overall picture of the discussed variable.

Thus, specifically, the objective of the study is to investigate the effect of financial leverage on stock returns of listed companies in Nigeria. The hypothesis raised is presented in null form and alternate form at the same time using the language of hypothesis.

$$H_0: \mu(\bar{R}_j^{HFL}) \leq \mu(\bar{R}_k^{LFL})$$

H<sub>01</sub>: The mean average stock returns of high financial leverage firms is lesser than or equal to the mean average stock returns of low financial leverage firms.

$$H_1: \mu(\bar{R}_j^{HFL}) > \mu(\bar{R}_k^{LFL})$$

H<sub>1</sub>: The mean average stock returns of high financial leverage firms is greater than the mean average stock returns of low financial leverage firms.

Where:  $\bar{R}_j^{LFL}$  is the average monthly returns of low financial leverage companies within the period of studies,  $\bar{R}_k^{HFL}$  is the average monthly returns of high financial leverage companies within the period of the study,  $\mu(\bar{R}_j^{LFL})$  is the average of average monthly returns of low financial leverage companies, and  $\mu(\bar{R}_k^{HFL})$  is the average of average monthly returns of high financial leverage companies within the period of study.

## **2. Literature Review**

This section provides conceptualisation of stock returns, critical empirical review of the related study and theory used to underpin the work.

According to Dobbs and Koller (2005), stock return is market performance indicator that reflect appreciation of stock prices. In the short term, it helps provides market expectation about a company performance. Owing to shareholders demanding return through capital gain or dividend payment, stock return measurement constitutes both capital gain and dividend payment. Stock returns are expressed in percentage, cash value, and capital gain yield. However, this study makes use of stock return in the percentage form due to it easy use for interpretation. The percentage form of stock return is expressed as  $\frac{\text{current stock price} - \text{previous price} + \text{dividend}}{\text{previous stock price}}$ . The drawback of stock return is that Dobbs and Koller (2015) argued that they are not robust market based measure for long term considerations.

Leverage is defined as the use of debt to finance asset or investment. It is an important concept of financing. Leverage is usually represented by leverage ratio. The leverage ratio shows the proportion of debt to equity or total asset. Generally, there are two types of leverage ratio; financial leverage and operational leverage. Financial leverage represents the debt used to finance business operations in relation to equity. While operational leverage represents the ratio of fixed cost to variable cost. For the purpose of this study, financial leverage represented by total debt to total equity will be used. Studies like Frank and Goyal (2014) and Fama and French (2015) made use of book to market value ratio. However, this study will make use of book value to avoid mismatch in measurement of debt and equity.

Leverage is seen as risk related variable because of the trade-off theory. The argument in trade-off theory is that there is bankruptcy risk in debt. As companies make use of borrowings to finance business operations, tendency of defaulting will rise. Thus, investors should be compensated higher for bearing such risk. Therefore, highly levered firm should have higher returns than lower levered firms.

### **2.1 Review of Empirical Studies**

Empirical studies on financial leverage and stock returns are generally of three outcome and implications; positive significant outcome that implies higher proportion of debt to equity improves financial performance/stock returns, negative significant outcome that implies higher proportion of debt to equity reduces financial/stock returns, and the insignificant outcome that implies financial leverage is irrelevant to firm performance/stock returns. Furthermore, the reviewed literature below are mostly based on accounting based measures due to unavailability of studies related to market based measures. However, Fama and French (2015) argued that accounting based measures provide intrinsic basis for market based valuation.

#### ***Financial Leverage and Stock Returns***

Seo (2016) examined moderating effect of market competition on leverage and firm performance in casino firms in the US stock exchange market from 1992 to 2014 using panel regression analysis. Financial leverage was measured using total debt divide by total asset. Financial performance was proxied using return on asset and Tobin's Q. The regression result revealed negative relationship between leverage and financial performance given market competition. However, the study ought to have used market measurement for leverage, just as

it made use of market measurement for financial performance and market competition (Boone indicator).

Jeleel and Olayiwola (2017) examined the impact of leverage on firm performance of listed chemicals and paints firm in Nigeria from 2000 to 2009. Debt to asset ratio served as proxy for leverage, whilst equity to asset ratio served as proxy for equity ratio. And return on asset was a proxy for financial performance. Ordinary least square was used for regression analysis. The findings from the study revealed positive significant relationship between equity ratio and financial performance, and a negative insignificant relationship between debt equity ratio and financial performance. The implication of the result was that higher equity results in higher performance, whilst higher leverage results in lower financial performance (although by chance). The limitation of the study is that it only made use of three listed chemicals and paints companies. A larger sample might provide a more comprehensive case for the result.

Anton (2018) examined the effect of leverage on profitability of listed banks in Central, Eastern and South Eastern European countries from 2006 to 2014, using multiplicative heteroskedasticity regression model. Total debt to total asset served as proxy for leverage in the study. Whilst, employment growth, sales growth and total asset growth served as proxy for profitability. The regression outcome suggested negative significant relationship between leverage and the profitability, which implies that other source of financing should be pursued to stimulate growth in listed banks in those emerging economies. The limitation of the study is that all profitability measures used ignored costs. And firms can generate high sales but suffer huge losses due to higher incurred cost. Hence, an after cost measure of profitability like return on asset or return on equity might be a better indicator for firm performances.

Adel et al. (2018) examined the impact of leverage on financial performance of listed companies on Egyptian capital market from 2018 to 2019. Financial performance was proxied by free cash flow to equity and Tobins Q. Whilst, leverage was proxied by debt to total asset and debt to equity ratio. Ordinary least square technique was used for the study. And firms were categorized into size and age. The regression result revealed negative insignificant relationship between leverage and financial performance for larger firms. Whilst older firms had positive and significant relationship with financial performance. The outcome suggested that the positive performance of older firms might be due to investors' confidence. The limitation of the study is that it misinterpreted the insignificant relationship from the regression outcome, as theoretically, the interpretation falls under irrelevant theories of capital structure.

Bashir and Asad (2018) examined the moderating effect of leverage on the relationship between board meetings, board size and financial performance of listed textile companies in Pakistan from 2015 to 2017 using ordinary least square regression. Leverage was measured using total debt to total asset, whilst financial performance was measured using return on asset. The findings from the study revealed negative significant relationship between board size and financial performance as well as board meeting and financial performance, when moderated with leverage. The limitation of the study is that it considered few period, which might not be helpful for a generalized analysis.

Li et al. (2018) examined the moderating effect credit risk of on leverage and financial performance of European small and medium enterprises using cross sectional data. The countries considered for the study were Belgium, Austria, Finland, France, Germany, Italy,

Portugal, Spain and United Kingdom. Total debt to total asset was used as proxy for leverage, return on asset was used as proxy for financial performance, and credit risk was measured using a dummy of 0 and 1. Ordinary least square was the technique for data analysis. The outcome from the regression revealed negative relationship between leverage and financial performance given credit risk. The result suggested low risk firm should go for lower leverage as higher debt only decreases financial performance. However, the study made use of dummy variable for credit risk rather than continuous variable such as non-performing loan proportion to total loan. The problem with dummies is that a researcher might fall into dummy trap and is not necessarily truly representing the variable itself.

Ibhagui and Olokoyo (2018) examined the effect of leverage on financial performance of listed companies in Nigeria between 2003 and 2007. The study made use of total debt to asset ratio, short term debt to asset ratio and long term debt to asset ratio as proxies for leverage. Tobin's Q, return on asset and return on equity were used as proxy for financial performance. Threshold regression model was used for the study and the threshold variable was firm size. The result was that leverage has negative significant relationship with financial performance. The implication of the finding was that, smaller firms with high leverage tend to have lower financial performance. But as they grow, their performances improve. The problem with the study is that it covered a short period of time and there may be little variation in the features of the variables. Hence, a longer period of study might result in different outcome. Also, the study might have experienced multicollinearity, given that total debt constitute both short term and long term debt.

Iqbal and Usman (2018) investigated the impact of leverage on financial performance of textiles companies from 2011 to 2015. Debt to equity ratio, proprietary ratio and solvency ratio were proxies for leverage. Return on asset and return on equity were proxies for financial performance. Ordinary least square model was used for analysis. The result from the study found out that there is negative significant relationship between leverage and return on equity. It also found out positive relationship between leverage and return on asset. The finding suggested that higher leverage results in improved return on asset, while return on equity reduces with higher leverage. The limitation of this study is that outcome for return on asset differed from the outcome for return on equity, which is a contradiction to accounting theory. This is because return on asset and return on equity revealed the same information. The only variation is that return on equity makes use of equity, while return on asset makes use of asset. Theoretically, total asset is the same as equity.

Buia (2019) examined the effect of financial leverage and supply chain finance on financial performance of listed construction firms in Vietnam capital market from 2015 to 2018 using generalized method of moment. Financial leverage was measured using total leverage divide by total assets, and supply chain finance was measured using cash conversion cycle, whilst financial performance was measured using return on asset. The result from the study obtained negative significant relationship between financial leverage and financial performance, as well as supply chain finance and financial performance. The outcome indicated that more debt results in lesser performance. The limitation of the study is that the period of the study is short for an annualized variable like leverage and return on asset. Particularly as the study is looking at total leverage, which includes long term financing.

Tripathya and Shaik (2019) examined the effect of leverage on firm performance of listed Indian food processing companies from 2000 to 2018 using ordinary least square method. Operating profit measured by earnings before interest and tax to total asset was used as proxy

for financial performance. Whilst, long term debt to total equity was used as proxy for leverage. The result revealed positive relationship between leverage and financial performance, which implies that higher long term debt will result in higher operating performance for companies operating within the industry. However, the limitation of the study is that it ignored short term debt and total debt effect. This is particularly important given that food industry are generally characterized with short term borrowing due to perishability of their products.

Mishra and Dasgupta (2019) carried out a cross country bank based study on leverage and performance from 1990 to 2016. Two forms of economies were examined; developed economies and frontier economies. The developed economies selected were Germany, France and Japan. The frontier economies were Argentina and Sri Lanka. Total debt to total asset and total debt to total equity were proxies for leverage. Return and asset and return on equity were proxies for financial performance. The study made use of simultaneous equation modelling technique using two staged least square. It found negative significant relationships between debt ratios and performance, as well as performance and debt ratio for the developed economies, meaning that performance influence debt and debt influences performance.

In contrast, it found positive significant relationship between debt and performance, as well as performance and debt for the frontier economies, meaning that debt improve performance, and performance results in higher debt. The limitation of the study is that it ignored the impact of negative interest policy adopted in those developed economies as opposed to the frontier economies where negative interest rate policy does not exist.

Abdullah and Tursoy (2019) examined the effect of leverage on financial performance of listed non-financial firms pre and post international financial reporting standard (IFRS) in Germany from 1993 to 2016 using generalized methods of moment. Leverage was measured using total debt to total asset, while financial performance was measured using return on asset and return on equity. The result from the study revealed positive relationship between leverage and financial performance, prior to IFRS, and negative relationship between leverage and financial performance post IFRS adoption. The reason could be the additional transparency that comes with IFRS adoption. Criticism of the study is that it ignored essential sector (financial industry) that deals with leverage. The data used may not be sufficient for analysis, as IFRS adoption in Germany was in 2015, while the study ends at 2016. Hence, there is 20years of pre IFRS information and only 2years of post IFRS information.

Ramli et al. (2020) examined the mediating effect of firm leverage on firm attributes and financial performance of listed Sharia compliance companies on Bursa Malaysia stock exchange market from 2000 to 2018 using partial least square structural equation modeling approach. Leverage was measured as total debt to total asset, and financial performance was measured by return on asset, return on equity and return on invested capital. The study revealed positive relationship between firm attributes and financial performance mediated with firm leverage. Hence, it implied that there is inter relationship between firm attributes, financial performance and leverage. Limitation of the study is that it ignored non Sharia compliance companies, given that there are probably companies with zero debt or zero net interest margin.

There are two theoretical explanations in this study - Modiglianni & Miller theory and Signaling theory of debt. The foundation of capital structure theory was laid by Modigliani and Miller (1958) in their seminar paper. Modigliani and Miller (1958) steered academic debate when they argued that the choice of capital structure is irrelevant to a company value.

They justified their argument by making certain assumptions about capital market. They postulated that in a perfect capital market where there is no transaction cost such as interest rate and issuing cost such as brokerage cost, and no taxation, selection of debt or equity has no relevance to a firm value. This is because transaction costs exist due to information asymmetry as one party of the transaction has more information than the counter party. Therefore, the party with lesser information would have to incur cost when transacting in the capital market. Consequently, in a perfect capital market buyers and sellers have perfect knowledge about the market, therefore no cost is incurred.

Ross and Jordan (2019) developed the signaling theory of debt on the basis of information asymmetry. Ross and Jordan (2019) argued that firms that have higher proportion of debt to equity depict higher returns than low financial leverage firms. This is because, as firms continue to borrow, they are sending signal to the market that they are capable of paying interest and have many investment opportunities. Consequently, the market would interpret the signal positively and increase the firm share prices.

### 3. Methodology and Data

This section provided information about the population of the study, source and method of data collection, tools and techniques for data analysis, and model specification and measurement. All the 177 companies listed in the Nigeria capital market are the population of this study. However, filter was employed to reach the adjusted population 103 firms. The filtering criteria were; firms would have to listed and not delisted between the period of the study, December 2010 and January 2018. Also, the firms would have to have their share prices available within the period. The period was selected to cover the period of high decline of stock performances in the capital market. Furthermore, the procedure for the grouping mentioned in the introductory section is as follow; the average financial leverage of two periods (December 2010 and January 2018) were taken to obtain the median, and the average stock returns of all the companies were separated in low and high financial leverage based on the median figure. The reason is to capture the differences across the various groups. The study extracted secondary data from Bloomberg terminal due to the lack of availability of certain information (share price) in firms' annual report. The data extracted directly from Bloomberg were share prices and financial leverage. The study employed Z- test analysis and cross sectional regression as techniques for data analysis. The use of Z-test analysis was to see the differences across the two groups (low and high financial leverage). The cross section is because the averages of the companies' return do not entail time series.

**Table 1: Variable definitions and Measurement**

Variable name	Type	Measurement	Source

Monthly stock return ( $R_{jt}$ )	Dependent	$R_{jt} = \frac{(P_{jt} + D_{jt}) - P_{j(t-1)}}{P_{j(t-1)}}$ <p>where <math>P_{jt}</math> and <math>P_{j(t-1)}</math> are company <math>J</math>'s stock closing prices at the last trading day of the months <math>t</math> and <math>t-1</math> respectively and <math>D_{jt}</math> is the dividend per share paid by company <math>j</math> to its common stockholders during the month <math>t</math>. Adjusted closing prices was used to account for dividend effect</p>	Elliot (1978)
Financial leverage	Independent	Total debt/Total asset	Frank and Goyal (2014)
Firm size (s)	Independent/control	Price * Total number of outstanding shares=market capitalization	Fama and French (2015)

**Source: Authors, 2021**

#### Model Specification

The model took the following form:

$$SRT_{it} = \beta_0 + \beta_1 FL_{it} + \beta_2 FS_{it} + \varepsilon_{it}$$

Where:  $SRT_{it}$  represents stock returns,  $\beta_0$  being the Constant and  $\beta_1$  and  $\beta_2$  are coefficients for financial leverage and firm size respectively. Finally,  $\varepsilon_{it}$  captures the stochastic disturbance (the error term). Firm size is a control variable that was introduced to improve the fitness of the model. Hence, it would not be interpreted.

#### 4. Results and Discussion

This section provides descriptive analysis, inferential analysis and discussion about the outcome of the study.

**Table2: Descriptive Statistics**

Variable	Observation	Mean	Standard deviation	Minimum	Maximum	Skewness	Kurtosis
Stock returns	103	0.38%	1.5%	-3.2%	4.6%	0.1099	0.1510
Financial leverage	103	5.4256	8.1697	1.3717	61.004	0.0000	0.0000

**Source: Stata Output, 2021**

Table 2 above reveals the descriptive statistics of the collected data. The observation is 103, which is the adjusted population. The mean of the average monthly stock return is 0.38%. The minimum stock return is -3.2%, which is the stock of MORISON NL Equity. The maximum stock return is 4.6%, representing FORTISMF NL Equity stock. The standard deviation is 1.5%, which is a value not far away from the mean 0.38%, indicating normality of the variable distribution. To further confirm normality of the variable distribution, the

skewness and kurtosis of stock return are below the threshold of 0 and 3 respectively (Jammalamadaka, Taufer, & Terdik, 2021).

The table 2 also shows that the average financial leverage ratio is 5.4256. The minimum is 1.3717 and the maximum is 61.004. The company representing the minimum value is CHAMPION NL Equity. The company representing the maximum value is ARBICO NL Equity. The standard deviation of the population is 8.1697, which is a figure not far away from the mean population of 5.4256. The lack of distance between the mean and standard deviation is an indication that the variable is normally distributed. The skewness and kurtosis level of financial leverage are below 0 and 3, indicating that the variable is bell shaped and there is not outliers amongst the variable distribution.

**Table 3: Summary of regression result**

Stock returns (SRT)	Coefficients	Standard error	T	Significance level
F-statistics	0.09			
Adjusted R-squared	0.03			
<b>Regression result</b>				
Financial leverage (FL)	-0.0003	0.0002	-1.40	0.165
Firm size (FS)	-5.94	3.57	1.66	0.100

**Source: Stata Output, 2021**

The table 3 above provides information related to cross sectional regression conducted for the study. The F-statistics is statistically significant at 10% level of significance. The significance of the F-statistics demonstrates that the model is fit to conduct analysis, and independent variables are properly selected. The adjusted R-squared of 3% revealed that 3% variation of stock return is due to financial leverage and firm size, whilst 97% is due to variables not captured in the model. The table also reveals that financial leverage has a beta coefficient of -0.0003 and a p-value of 0.165. The beta coefficient of -0.0003 implies that as financial leverage increases by a unit, stock return reduces by -0.03%. The p-value of 0.165 implies that the extent of the relationship is not significant as it is statistically insignificant, thus its occurrence is by chance.

The implication of the insignificant relationship between financial leverage and stock returns is that financial leverage/capital structure is irrelevant to firm value. Hence, the firm value will not increase or reduce as a result of its capital structure mix. This is because benefit of debt from tax shield is offset by cost of financial distress, and similarly the benefit of reduced financial distress from issuing more of equity is offset by higher cost of equity. This finding is in line with Modiglianni and Miller capital structure theory. It is also in line with empirical studies conducted by Jeleel and Olayiwola (2017), and Adel et al. (2018).

### **Hypothesis Testing**

*Table 3 Results of the Z Test for Comparing Low and High leverage Companies' Average Returns*

***z-Test: Two Sample for Means***

	<b><i>Low leverage companies</i></b>	<b><i>High leverage companies</i></b>
Mean	0.005859021	0.001638354
Known Variance	0.000163	0.000268
Observations	52	52
Hypothesized Difference	Mean 0	
Z	1.466034489	
P(Z<=z) one-tail	0.071319446	
z Critical one-tail	1.644853627	
P(Z<=z) two-tail	0.142638891	
z Critical two-tail	1.959963985	

**Source: Excel, 2021**

The Z-table revealed that low financial leverage firms have higher returns than high financial leverage return. This implies that the lower the financial leverage of companies, the higher the companies' return. Also, the higher the financial leverage of companies, the lower the companies' return. However, this relationship is not statistically significant because the p-value is not statistically significant at 10% level of significance. Therefore, the null hypothesis from the study is rejected and the alternate is accepted. Moreover, outcome of the z-statistic is in line with the regression outcome that supported findings of Modiglianni and Miller theorem.

### **5. Conclusion and Recommendation**

The study investigated the effect of financial leverage on stock returns of companies in Nigeria capital market. Regression analysis and z-test technique were used for the analysis of financial leverage and stock returns. The findings from the regression result revealed that financial leverage has no relationship with stock returns. Similarly, the z-test analysis revealed that financial leverage has no significant relationship with stock returns of stocks in Nigeria. The finding is supported by the Modiglianni and Miller irrelevant capital structure theorem. Owing to the above findings, the study recommends that listed companies in Nigeria should focus on investment strategies as opposed to financing strategies. The benefits derived from financing are insignificant and does not increase a firm's stock return. With the right investment strategy such as adopting new technologies, expanding to new market, and diversifying portfolios, companies can generate sufficient returns as well as increase their market share or value.

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