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EXAMINING THE IMPACT OF STOCK VOLATILITY ON CAPITAL STRUCTURE OF LISTED NIGERIAN FIRMS

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ABSTRACT
This paper seeks to examine the impact of stock volatility on capital structure choice of listed Nigeria firms in influencing their corporate financing strategy and performance analysis. The research work will examine if western capital structure theories (static trade-off, agency cost and pecking order theories) are applicable to listed Nigeria firms. The work also establishes that the balance of the argument supports the view that good corporate financing strategies impact positively on firms' performance. The research study analysed 47 listed firms on the Nigeria stock exchange over the period 1997-2007 using the OLS regression with the objective of observing firm effect on leverage on observed firms. The theoretical contributions of trade-off, agency and pecking order theories were examined in assessing impact of stock volatility on financing patterns for listed Nigerian firms. Results shows that Nigerian firms do not follow observed patterns observed in western countries. In analysing firm leverage, Nigeria firms were found to have a positive non-statistical significant correlation between income variability and leverage. Results reflect that to a large extent Nigeria firms do not follow the same financing pattern with western countries.

KEYWORDS: Stock Volatility, Capital Structure, trade-off Theory, Agency Cost Theory, Pecking Order Theory, Corporate Financing Strategy

INTRODUCTION
The fluctuation in price of stocks and its influence on choice of capital structure for firms have drawn attention of both the academia and financial market participants in recent past. The importance of stock volatility is widespread in finance with portfolio managers, corporate treasurers, risk arbitrageurs having a close watch on stock volatility trends of their chosen firms as changes in prices of stocks could have a major impact on the funding pattern for the firm and expected cash flow for the firm and investors alike (Gregoriou, 2010): Firms raise capital using different combination of instruments in financing their investment decisions i.e. primary listing, secondary listing or issuing debt using different combinations of instruments such as ordinary equity, debt and hybrid securities which includes; preference shares, convertible and warrant debt as this tend to affect the capital structure of the firms.

Raising capital can also be done through Initial Public Offerings by private firms that have just gone public or by listed firms to raise additional equity through seasoned equity issue. The preference of raising new financing through stock and bond offerings presents firms with the choice of selling these securities with underwritten general subscription (offering of stock and bonds to the public at an offering price guaranteed by an investment bank), placing bonds and stock privately with institutional investors or issuing these stocks and bonds directly to investors without the services of any middlemen. The impact of these financing decisions on firms is crucial in determining the cost of capital (debt-equity mix), value of the firm and ultimately firms financing demeanor.

The management of a firm has to decide what appropriate level of borrowing will be given to its equity capital base. To assist in this decision, it would be useful to know if by varying the debt-equity ratio it could increase shareholders wealth. A firm, in financing its operations will use a combination of debt and equity that best maximises the value of the firm. The Nigeria Capital Market plays a cardinal role in this context, by providing facilities by which listed firms on the exchange mobilize and deals in

medium and long term funds. The players in the market are the operators who act as intermediaries between the providers of the funds and the fund users. They include, Securities Exchanges, Brokers/Dealers, Issuing Houses, Registrars and Investment Advisors.

AIM
To examine the impact of stock volatility on capital structure choice of listed Nigeria firms in influencing their corporate financing strategy and performance analysis.

OBJECTIVES
1.   To determine whether the main theories of capital structure (trade-off, agency and pecking order theories) explains financing behaviour for listed firms in Nigeria.
2.   To examine the impact of stock volatility on choice of capital structure for listed firms in Nigeria.

THEORETICAL FRAMEWORK
For over four decades, literature on corporate finance has profound different theories to identify and explain determinants factor for a firm's financing policy and capital structure. These theories span across various aspects of the firm that can explain how firms choose their capital structure. In corporate finance, the academic contribution of Modigliani and Miller (1958, 1963) about capital structure irrelevance and the tax shield advantage paved the way for the development of alternative theories and series of empirical research initiatives on capital structure. The alternative theories include the trade-off theory, the pecking order/asymmetric information theory and agency cost theory. All these theories have been subjected to extensive empirical testing in the context of developed countries, particularly the United States (US), however not much research has been done with respect to developing countries.

In corporate finance, the academic contribution of Modigliani and Miller (1958, 1963) about capital structure irrelevance and the tax shield advantage paved the way for the development of alternative theories and series of empirical research initiatives on capital structure. The alternative theories include the trade-off theory, the pecking order/asymmetric information theory and agency cost theory. Examining the practicability of Modigliani & Miller (M&M) assumptions in the context of a real life scenario, one can state that the capital market are not always perfect, which means that the context within which market participants operate affect financing decisions of firms. The assumption of no taxation cost of M&M could be said to be also unrealistic. However due to criticism of these assumptions, M&M in their 1963 paper "*Corporate income taxes and the cost of capital*" addressed the issue of no taxation cost. This they did by acknowledging that individuals and companies do pay taxes and made adjustment for this. These assumptions have been criticized by scholars on its relevance. For example, conventional capital structure theories (Jensen, 1986; Myers, 1997) suggest that firms optimal capital structure is related to costs and benefits associated with debt and equity financing. With the optimal debt-to-equity mix, firms could achieve the lowest financing costs and consequently increase the value of shareholders (Sheel, 1994). Although the optimal mix varies from industry to industry (Kim, 1997) and from country to country (Wald, 1999), previous researchers have constantly found capital structure theories applicable when explaining financing decisions.

Similarly, Boyd & Smith, (1998); Hovakimian *et al.*, (2001) and Pagano, (1993) stated that listed firm's choice on method and approach to adapt in financing projects for growth given their debt-equity mix is influenced by the cost of capital required. It can be established therefore that subsequent theoretical works have focused on market imperfections and their impact on capital structure of a firm.

Theoretical Contribution of the Static Trade-off Theory
The trade-off hypothesis, suggests that the optimal financing policy for a firm consists of making adjustments toward the target debt level provided that deviation costs exceed adjustment costs. The target leverage ratio balances the marginal tax benefit with the marginal financial distress cost of debt. Scott (1977) claimed that a firm's optimal debt ratio is determined by the trade-off between the bankruptcy cost and tax advantage of borrowing. Higher profitability decreases the expected costs of distress and let firms increase their tax benefits by raising leverage. Firms would prefer debt over equity until the point where the probability of financial distress starts to be important.

Similarly, Myers (1997) and Jensen (1986) examined the impact of corporate income tax on the capital structure and suggested that firm's optimal capital structure is related to cost and benefits associated with debt and equity financing. Ngugi (2008) submits that there are benefits and costs associated with the use of debt as against equity, thus the firm will only choose an optimal capital structure that trades off between the tax advantages of debt against bankruptcy cost. Myers (1984), suggest that the trade-off between the tax advantage of debt and cost of financial distress is expected to yield the optimal level of debt that maximizes the value of the firm.

Bhaduri (2002) examined firms with high earnings volatility; he stated that such firms face a risk of its earnings level dropping below their debt servicing commitments, thereby incurring a higher cost of financial distress. In this wise, firms that tend to exhibit such trends are faced with the possibility of financial distress. A firm's leverage in terms of combination of debt instrument it uses in raising capital will be influenced by its stock volatility. Theoretical prepositions of Bradley et al. (1984) on developed countries identified a negative relationship between leverage level of firms and their stock volatility under the trade-off theory. This inverse relation between the debt ratio and earnings variability is consistent with the notion that the greater the variability of the earnings, the greater the present value of leverage-related costs and hence the lower the optimal level of debt.

Empirical Evidence of Static Trade-off Theory from Developed and Developing Countries.
Several studies have been conducted on developed and a few on developing countries to examine capital structure theories. Titman and Wessels (1988) using data from US industrial companies analyzed the impact of unobservable attributes on the choice of corporate debt ratios. They regressed the collateral value of assets, non-debt tax shields, growth, uniqueness of business, industry classification, firm-size, volatility of earning and profitability on three separate measures of short-term, long-term, and firm growth. They found a negative relationship between debt levels and uniqueness of business. Profitability was negatively related to all measures of debt. Finally, short-term debt ratios are found to be negatively related to a firm's size.

Similarly, Booth et al, (2001) carried out studies in ten (Malaysia, Zimbabwe, Mexico, Brazil, Turkey, Jordan, India, Pakistan, Thailand, and Korea) developing countries to assess whether capital structure theories are applicable across developing countries with different institutional structures. Booth et al. (2001) use three measure of debt ratio; total debt ratio, long-term book debt ratio, and long-term market debt ratio with average tax rate, assets tangibility, business risk, size, profitability, and the market to book ratio as explanatory variables.

The study showed that the more profitable the firm, the lower the debt ratio and earning volatility, regardless of how the debt ratio was defined. Booth et al. (2001) concluded that the debt ratio in developing countries seemed to be affected in the same way by the same types of variables that were significant in developed countries. However, they pointed out that the long-term debt ratios of those countries are considerably lower than those of developed countries.

Theoretical Contribution of Agency Cost Theory
The theory examined the conflict of interest that arises between shareholders, managers and debt holders with the objective of aligning the interest of the stakeholders for the benefit of its shareholders. In this case, the shareholders and debt holders are referred to as the principal. The need to ensure that agent act in the best interest of the principal to avoid conflict was examined in the contributions of; Ross (1973), Shavel (1979), Fama (1980, 1990), Arrow (1985) and Jensen and Meckling (1992). They all debate that conflict arises if the firm issues equity, the proportion of owners-manager's interest within the firm minifies, this invariably encourages the owner-managers to engage in activities that might not be beneficial in the long run because of the reduced equity stake.

Jensen and Meckling (1976) examined the question of asset substitution that arises when share holders decides to seize wealth from debt-holders by investing in riskier projects which if successful offers high returns benefits to owners-mangers solely but with a high possibility of failure. This tend to increase stock volatility for the firm, the switching from a safer to a more risky investment portends potential conflict that may arise between shareholders and debt holders. Reason for this is simple, in

the event the project fails the owner-managers exposure is mild because his equity holding in the firm has been reduced. Similarly, Myers (1977) identified firms in financial difficulties to have incentive to sacrifice low positive net present value (NPV) projects whose benefits accrue mainly to debt-holders. This results in under-investment by the firm. He then postulates that the greater the investment opportunity in a firm, the greater is the potential conflict of interest between shareholders and debt-holders.

To moderate such conflicts, Smith and Warner (1979) opined using restrictive covenants on debt such as interest coverage requirement or prohibitions against investing in new unrelated lines of business. It should be noted that restrictive covenants' involves cost as they restrict the firm's investing and financing opportunities. Diamond (1989) suggested an alternative approach where managerial reputation plays an important role in mitigating conflicts between shareholders and debt-holders. Galai and Masulis (1976) utilised an option model where stock of a levered firm is analogous to a European call option on the firm's cash flows, with an exercise price equal to the face value of the debt to show that a redistribution of wealth from bondholders to shareholders will result from any of: an increase in the risk of the firm, an increase in debt, or a distribution (payout) of assets to shareholders.

Jensen and Meckling (1976) identified two major types of conflict: agency cost that arise from conflict of interest between managers and shareholders and agency costs that arise as a result of the conflicts of interest between shareholders and debt holders. Jensen and Meckling reasoned that the firm is presented with two options to raise capital i.e. issue equity or debt. They argued that conflicts arise between managers and shareholders when managers hold less than 100% of the residual claim, this they stipulated will lead to managers pursuing activities that will not help in maximizing the value of the firm, thereby increasing the firm's earnings volatility. They then suggested that managers should be allowed to own a larger equity portion, these they stated will help engender better commitment towards enhancing the value of the firm by managers.

Given the analogy, Jensen and Meckling (1976) addressed the incentive problems that could arise due to the separation between ownership and control and suggested that the use of secured debt could help in reducing the cost of debt. This separation may provide them with the incentive to maximize their wealth in a way that may harm stockholders by either over-investing in managerially rewarding but unprofitable activities or to overvalue the investment requirements and to take the difference between the dummy value and real value of investment Zuriagat (2009).

Theoretical Contribution of Pecking Order Theory
Pecking order theory predicts that due to the information asymmetry between the firm (mangers/insiders) and outside investors regarding the real value of both current operations and future income stream and prospects, external capital (debt and equity) will always be relatively costly compared to internal capital (retained earnings). In this context equity will only be issued by the firm due to duress or in an event where the benefit of investments exceeds earnings that debt financing would have produced to put the firm at leverage. Two main literature approaches have been advanced that examined the impact of information asymmetry on firm's capital structure.

The contribution of Myers and Majluf (1984) and Myers (1984) posits that capital structure is designed to mitigate inefficiencies in the firm's investment decisions that are caused by information asymmetry, by following a pecking order in their investment decisions. In their seminar paper Myers (1984), Myers and Majluf (1984), argue that managers use private information to issue risky securities when they are overpriced. Investors are aware of this asymmetric information problem, and the prices of risky securities fall when new issues are announced. Managers anticipate the price declines, and may forego profitable investments if they must be financed with risky securities. Managers must therefore follow a pecking order in issuing securities of the firm to avoid this type of distortions.

Given this view, Myers was able to demonstrate that given asymmetry of information between investors and firm insiders, firm equity may be underpriced by the market and this will result in new equity being under-priced. For managers to act in the best interest of shareholders, managers will refuse to issue equity even if it means passing up a positive Net Present Value (NPV) projects because the possible net loss to existing shareholders will outweigh its possible gain. This suggest that firms would

prefer to use internally generated funds as a means of financing and only resorts to external funds only if the need for funds is unavoidable.

Examining the transactions costs associated with seasoned equity offerings (SEOs), warrants, and convertible bonds have large underwriting costs. The large price concessions in private placements of equity are also a high transaction cost (see Wruck, 1989: Hertzel *et al.*, 2002). In contrast, Smith (1977) argued that rights offerings are not costly. The issuing of stock to employees via grants, options, and other benefit plans also probably involves low transactions costs Fama and French (2005). The same is true for direct purchase plans. Negotiating mergers is costly, but the marginal cost of carrying out an exchange of stock may not be high. In short, four of the alternatives for issuing stock seem to involve low transactions costs.

Myers (1984), posits that stock price declines in response to announcements of equity issues reflect asymmetric information problems. In this context Masulis and Korwar (1986), stated that the problem will only be severe for SEOs and present but weaker for convertible bonds Mikkelson and Partch, (1986). Wruck (1989) and Hertzel *et al.* (2002) find that the stock price response to private placements is positive. Though their samples are small, Smith (1977), and Eckbo and Masulis (1992) find no evidence of a reliable negative price response to announcements of rights issues. The price responses to initiations of dividend reinvestment plans Allen *et al.* (1995) also seem to be small. Moeller *et al.* (2004) find that the negative price responses to stock-financed mergers are limited to acquisitions of publicly traded firms by big publicly traded firms. Otherwise, mergers financed with stock do not seem to have negative price effects.

METHOD OF ANALYSIS
This study makes use of econometric approach, the Ordinary Least Square (OLS) to investigate the relationship between capital structure theories (the static trade-off theory, agency cost theory and the pecking order model) and stock volatility as it affects financing choice of listed Nigeria firms from 1997 to 2007. Two main hypotheses derived to be tested are:

H1:   *There is a negative relationship between leverage ratios and income*
        variability.

H2:   *There is a positive relationship between leverage ratio and income*
        variability.

Stock volatility was measured following Booth *et al.* (2001) and Haung and Song (2006) as standard deviation of earnings before interest and tax scaled by total assets as measure of income variability.

Analysis is done using historical volatility and making year to year analysis.
The research will analyze data samples of 216 listed firms on the Nigeria stock exchange from 1997 to 2007 from which a final sample set consisting of 47 firms was selected based on random sampling spanning across all the major sectors on the stock exchange. This accounts for about 22 percent of the relevant population of listed firms on the exchange, however given the wide spread of observed firms across various sectors listed on the stock exchange, research sample can be viewed to be a good representative of firms listed on the stock exchange as all classified sectors on the stock exchange was captured. Given the focal point of the research are listed firms on the Nigeria stock exchange, all non-publicly quoted firms were excluded from the research.

The Ordinary Least Square (OLS) Regression
The OLS provides the statistical technique used in determining the linear relationship between an independent and dependent variable. The Ordinary Least Square (OLS) technique shall be employed in obtaining the numerical estimates of the coefficients in different equations.

MODEL 1

$$Tot = \alpha + \beta 1nXn + \beta 2nXn + \beta 3nXn + E_t$$

Where:
Tot = Trade-off theory is the dependent variable.
Xn = Independent variables 1, 2 and 3
1 = Size of the firm;   2 = Stock Volatility;   3 = Assets tangibility
α = Intercepts, E_t = Random Error

Gillan and Starks (2003) argues that the conflict of interest which is referred to the agency theory is attributed firstly to the heterogeneity of the participants' preferences and seek to achieve different goals, and secondly to the asymmetric information, where they have imperfect information as to each other' actions and preferences, taking in consideration that managers are better–informed than stockholders.

MODEL 2

$$Ag = \alpha + \beta 1nXn + \beta 2nXn + \beta 3nXn + E_t$$

Where:
Ag = Agency theory is the dependent variable.
Xn = Independent variables 1, 2 and 3
1 = Size of the firm;   2 = Stock Volatility;   3 = Assets tangibility
α = Intercepts, E_t = Random Error

MODEL 3

$$Po = \alpha + \beta 1nXn + \beta 2nXn + \beta 3nXn + E_t$$

Where:
Po = Pecking Order theory is the dependent variable.
Xn = Independent variables 1, 2 and 3
1 = Size of the firm;   2 = Stock Volatility;   3 = Assets tangibility
α = Intercepts, E_t = Random Error

Dependent Variable
This is the measure of the firms' performance. The proxy used to denote these within the context of Tot, Ag and Po in the assessment of capital structure theories is leverage (L_i).

Independent Variable
These are the explanatory variables which are viewed as factors influencing corporate performance;
Firm's Size: Theoretical and empirical investigation points to the fact that the size of the firm is a major determinant of leverage. Several studies have suggested a positive relationship between leverage and size. Rajan and Zingales (1995), Graham et al (1998) and Al-Dohaima (2008) all suggested that large firms more often choose long-term debt, while small firms choose short-term debt. This was attributed to the ability of large firms been able to take advantage of economies of scale in issuing long-term debt.

Stock Volatility: Stock volatility is a proxy used to measure the probability of financial distress in the firm and it is generally expected to be negatively related with leverage (Haung and Song, 2006). The implication of this statement is that variance in the earnings of the firm affects the firms leverage and its cash flow. Firms with high earnings volatility, hence face a risk of the earnings level dropping below their debt servicing commitments, thereby incurring a higher cost of financial distress (Bhaduri, 2002). Several measures of volatility are used in empirical studies. Titman and Wessels (1988) used standard deviation of return on assets as measure of volatility of earnings, Bradley et al. (1984) and Wald (1999) employed the use of standard deviation of the first difference in operating cash flow

scaled by total assets, while Booth *et al* (2001), and Haung and Song (2006) made use of standard deviation of the return on sales in their analysis.

Assets Tangibility: The tangibility of assets is characterized by the effect of the collateral values of assets on the firm's leverage level. The underlying argument behind the use of tangible assets as collateral for debt is the higher liquidation value of these assets in the event of financial distress or bankruptcy (Rajan and Zingales, 1995).

Table 1: Summary measurement of variables.

Variables	Measurement
Dependent Variable	
Overall Leverage (LEV)	Total debt to total assets (TD/TA)
Short-term Leverage (SLEV)	Short time debt to total assets (STD/TA)
Independent Variable	
Firm's Size	Logarithm of sales [Ln(Sales)]
Stock Volatility	Standard deviation of earnings before interest and tax divided by total assets. (SD EBIT/TA)
Assets Tangibility	Fixed assets divided by total assets (FA/TA).

Beta Coefficients: This variable is used to examine the strength of relationship between the dependent variable (leverage) and independent variables (size, asset tangibility and stock volatility). The relationship between the dependent and independent variable was measured using the book value of leverage.

Sig: These represent t-test level of significance. When the value of "Sig" is below 0.01, 0.05 and 0.1 it implies that at 99%, 95% and 90% confidence intervals respectively the relationship between relevant independent variables i.e. size, volatility and asset tangibility are good proxies that explains the leverage ratio for the firms been considered. Hence we cannot accept the null hypothesis. While when the value obtained is above 0.01, 0.05 and 0.1 we cannot reject the null hypothesis at 99%, 95% and 90% confidence interval, which infers that the relationship between variables occurred coincidentally.

RESULTS AND DISCUSSION
The Table 2: presents the descriptive the statistics for the various explanatory variables and leverage measures for the entire sample of Nigeria companies. Leverage was measured as short-term debt scaled by total asset and total debt scaled by total assets (both book values). A descriptive statistic for variables been examined is presented in the table below.

Table 2: The leverage ratio's results

	Size		Stock Volatility		Asset Tangibility		Short-term debt ratio		Total debt ratio	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
1997	14.57	1.60	0.71	0.55	0.62	0.53	1.76	2.23	2.32	2.63
1998	14.69	1.45	0.63	0.48	0.67	0.47	1.48	1.52	1.98	1.97
1999	14.82	1.58	0.50	0.64	0.68	1.00	1.25	1.36	1.60	2.28
2000	14.90	1.71	0.48	0.55	0.77	0.76	1.27	1.41	1.72	1.83
2001	15.11	1.73	0.69	1.69	0.81	1.48	2.11	3.69	2.75	4.59
2002	15.32	1.70	0.47	1.30	0.75	1.00	2.02	4.42	2.46	4.72
2003	15.44	1.68	0.16	0.14	0.53	0.32	1.34	3.57	1.57	3.81
2004	15.63	1.67	0.12	0.10	0.48	0.27	0.67	0.30	0.78	0.30
2005	15.76	1.63	0.18	0.48	0.55	0.29	0.62	0.27	0.79	0.24
2006	15.66	2.05	0.09	0.07	0.48	0.27	0.60	0.26	0.82	0.28
2007	16.09	1.64	0.07	0.06	0.50	0.30	0.56	0.23	0.75	0.30

(Source: Survey Data)

The leverage ratio's results from the Table 2 indicates that over the entire period (1997-2007) of consideration there was successive decrease in both short-term debt and total debt ratio of the firms with exception in the year 2000 and 2001 where values obtained were uptrend. This indicates that there has been successive decrease in the ability of Nigerian firms to use increased debt to finance their activities. The double digit inflation rate, lack of adequate infrastructure, lack of uniform accounting reporting standard and unstable government policies in the country can be attributed to reasons why it is increasingly difficult for firms to use debts in financing its activities over the years. The slight increase in total debt witnessed in the year 2000 and 2001 can be attributed to the economic boom witnessed in the country as a result of the boom witnessed in the oil sector (noting that the Nigerian economy is largely dependent on the income proceeds from sales of its crude oil).

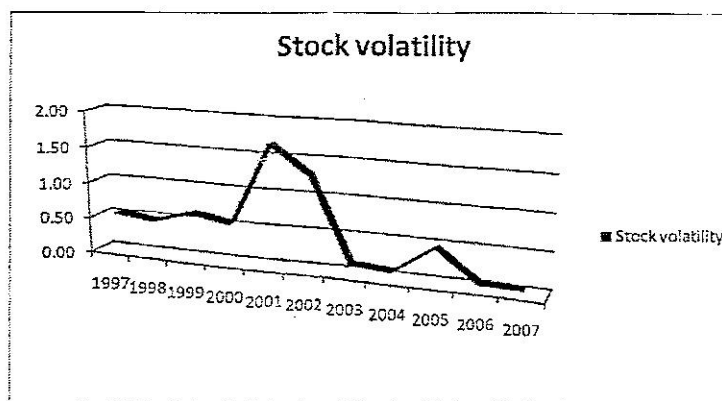The graph in Fig 1 gives a pictorial view of the analysis .

Fig 1: Stock Volatility

Stock volatility (which was measured by the proxy SDEBIT/TA) gives no pictorial view of any particular trend over the period 1997-2007 examined. This is a reflection of the high earning volatility of firms, a direct result of the harsh operating environment in country which makes it increasingly difficult for firms to service their debt obligations; hence they are exposed to higher cost of financial distress. This conforms to Bhaduri (2002) postulation of a negative relationship between leverage and stock volatility.

Given an overview of the relationship between factors identified as determinants of capital structure in Nigeria (i.e. size, asset tangibility and stock volatility) and leverage, the researcher used the SPSS program in running regression analysis of natural log of sales (size of the firm), fixed asset to total asset (asset tangibility) and standard deviation of earnings before interest and tax scaled by total assets (stock volatility) against leverage (total debt to total asset and short-term debt to total asset) of 47 selected companies listed on the Nigeria stock exchange. However the analysis will be focused on examining the impact of stock volatility on the capital structure of listed Nigeria firms.

The use of t-test statistic was employed by the researcher to determine if the results of the analysis are truly relevant or if they occurred due to coincidence. The relationship between output of the dependent and independent variable was measured by standardized coefficient (Beta). Tables 3 and 4 below present the output of the regression analysis.

Table 3: Output of the regression analysis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constan)	-0.183	2.377		-0.077	0.939
	LNSALES	0.051	0.151	0.055	0.341	0.736
	SDEBIT/TA	1.955	0.677	0.517	2.886	0.008
	FA/TA	0.442	0.712	0.111	0.622	0.540

Dependent Variable: Total debt (total debt to total assets)
Independent Variable: Size (LNSALES), Stock Volatility (SDEBIT/TA) and Asset Tangibility (FA/TA)

Table 4: Regression analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.577(a)	0.333	0.256	1.3054124

(Source: Output of SPSS Computation)

Table 5: Strength of relationship between the dependent variable (leverage) and independent variables

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-0.183	2.120		-0.086	0.932
	LNSALES	0.040	0.135	0.048	0.294	0.771
	SDEBIT/TA	1.723	0.604	0.517	2.852	0.008
	FA/TA	0.292	0.635	0.084	0.460	0.649

Dependent Variable: Short-term debt (Short-term debt to total assets)
Independent Variable: Size (LNSALES), Stock Volatility (SDEBIT/TA) and Asset Tangibility (FA/TA)

Table 6: SPSS Computation

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.561(a)	0.315	0.236	1.1642648

(Source: Output of SPSS Computation)

Definition of Key Variables used in Analysis

Beta Coefficients: This variable (Table 5) is used to examine the strength of relationship between the dependent variable (leverage) and independent variables (size, asset tangibility and stock volatility). The relationship between the dependent and independent variable was measured using the book value of leverage.

Adjusted R-Square: This (Table 6) is used to give computed R-square more honest/fair value (where r-squared reflects the explanatory power of independent variables in predicting the dependent variable). For analysis the use of adjusted R-squared was adopted because the linear model being explained constitutes a sample of listed firms on the Nigeria stock exchange. This makes the use of r-squared more relevant

T-test Statistic: The use of t-test statistic was employed by the researcher to determine if the results of the analysis are truly relevant or if they occurred due to coincidence.

Sig: These represent t-test level of significance. When the value of "Sig" is above 0.01, 0.05 and 0.1 it implies that at 99%, 95% and 90% confidence intervals respectively the relationship between relevant independent variables i.e. size, volatility and asset tangibility are good proxies that explains the leverage ratio for the firms been considered. Hence we cannot reject the null hypothesis. While when the value obtained falls below 0.01, 0.05 and 0.1 we cannot accept the null hypothesis at 99%, 95% and 90% confidence interval, which infers that the relationship between variables occurred coincidentally.

Estimation and Testing of Results

Influence of Stock Volatility on Leverage of Firms

Reviewing the trade-off theory and pecking order theory, empirical result findings of Bradley et al. (1984), Fama and French (2005) reveals a negative relationship between leverage and income variability. Regression, results obtained reflects a Beta value is 0.517 and Sig value of 0f 0.008 for both total debt and short-term debt. This reflects that a 1 unit change in income variability will bring about 0.517 increases in leverage. The Sig value of 0.008 indicates that observed positive correlation between stock volatility and income variability is statistically significant at 99%, 95% and 90% confidence level. Although empirical postulation of Bradley et al. (1984), Fama and French (2005) reveals a negative relationship between leverage and income variability, observed regression result for Nigerian firms indicate a positive relation between leverage and income variability.

Reason that can be adduced for the observed positive relationship between leverage and income variability, is the heavy dependence of Nigerian firms for bank loan and investors funds, who all place high value on firms income stream in determining its viability before advancing loan or investing in any issued securities by the firm. For this reason, based on obtained regression results the hypothesis is re-stated below to reflect a positive relationship between leverage and income variability.

H5: There is a positive relationship between leverage and income variability.

Decision: Accept H5 i.e. there is an observed positive relationship between leverage and income variability.

CONCLUSION

This study examines the determinants of capital structure decisions for listed firms on the Nigeria stock exchange. Previous research work have focused mainly on western countries, the objective of the research work is to examine the applicability of postulated capital structure theory (trade-off, agency and pecking order theory) in western countries to observed trend on listed firms in Nigeria. We discuss how the capital structure decisions of firms are influenced, with focus on a sample of 30 out of 216 listed firms on the Nigerian stock exchange. The use of short-term and total debt was adapted as a proxy for determining leverage. We analyze the impact of firm's size, asset tangibility and income variability on choice of capital structure for observed listed firms. An analogy of impact of firm leverage, industry leverage and year on year effect was also examined in this context.

The following major deduction can be inferred from obtained results. Firstly, observing impact of size on firms' leverage,

Stock volatility which was used as a proxy for income variability of firms was also examined within the context of the investigated theories. Results reflect a statistical positive correlation between stock volatility and leverage for listed Nigeria firms, the observed trend contradicts empirical findings of Bradley et al. (1984), Fama and French (2005) who found a negative relationship between leverage and income variability in western countries under the trade-off theory and pecking order theory. The observed positive relationship was attributed to Nigeria firm's dependence on the market (investors) and banks for funds, and investors tend to place high preference on the firms income stream in determining their returns before investing in a firm.

RECOMMENDATIONS
This study generally provided a number of insights which could form the basis of further research on Nigerian firms.
1) Carrying out a market leverage analysis to make comparison with book leverage will be useful in testing the robustness of observed results.
2) It will be useful to investigate correlation between observed dependent and independent variables by conducting studies based on interviews, questionnaire surveys and case studies.
3) The use of alternative methodology should be adopted i.e. panel data technique to take into account time variance observed in the result.

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