Agency Cost of Equity and Growth Rate in Relation to Returns on Capital Employed and High and Low Leveraged Firms in Nigeria

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ABSTRACT

This study empirically examined the theoretical predictions of agency, trade-off and pecking order theories of leverage in relation to agency cost of equity and growth rate using secondary data derived from census sampling of manufacturing, financial services (banking and insurance) firms quoted on the Nigeria Stock Exchange for the period 2013-2017. Using the same sample, the study also sought to determine the effect of agency cost of equity and growth rate on return on capital employed of high and low leverage firms. Hausman test was applied in the selection of appropriate regression model using *E-Views* for data analysis. Results confirm the negative relation of agency cost of equity and growth rate to leverage as predicted by agency and trade-off theories. The result also confirmed that highly profitable firms prefer internal financing to debt thus supporting the pecking order theory. Also, high leverage firms were found to post higher returns on capital employed when compared to low leverage firms implying that leverage enhances profitability. It was found that the direction of the sign of the relations of leverage and performance is swayed by the dominating subsample between high and low leveraged firms. We recommend judicious mix of equity and debt to enhance returns on investment and that regulators overhaul their monitoring mechanisms to isolate early warning signs of bankruptcy risks and earnings management.

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Highlights of this paper

- This study empirically examined the theoretical predictions of agency, trade-off and pecking order theories of leverage in relation to agency cost of equity and growth rate.
- This study provides an explanation that the conflict arises from the dominance of subsamples of either high or low leveraged firms in the sample and that this determine the direction of the sign.
- While high leverage supports higher profitability, low leverage does not necessarily do so.

1. INTRODUCTION

Investors have the profit motive and firm managers indulge in both finance and investment decisions that optimize returns to investors. Thus, the financing option available to the firm is a significant determinant of the size of investment and the returns thereof. A flawed mix of finance can result in sub-optimal return to the firm and in the risk of bankruptcy ultimately. Balancing the risk of sub-optimal return and bankruptcy requires that managers should establish the evaluation criterion for financing decisions to enhance achievement of objectives and thereby satisfy the best interest of shareholders. However, one of the thorny issues bedeviling financial managers is the controversy associated with the effect of debt-equity ratio on the value of the firm. This study looks at the diverse mix of debt and equity capital in the capital structure by evaluating the agency cost of equity and growth rate as its determinants and the returns on capital employed of comparatively high and low leveraged firms.

Modigliani and Miller (1958) pioneered the work on the relationship of debt and equity through a proposition of no optimal capital structure and irrelevance of financing decisions in perfect capital markets. This is popularly referred to as the irrelevance theory of capital structure. They suggested that the firm could not alter the value of its securities by splitting cash flow into debts and equity streams, maintaining that real assets determine firms' value and not the securities issued to finance their acquisition. This proposition has generated controversy over the years. Later, Modigliani and Miller (1963) (*M&M*) amended the irrelevance theory removing the previous assumption of no tax and transaction cost and thus provided evidence that the cost of raising capital impact its structure and firm value. They further proposed that borrowing provide tax benefits, and the tax subtracted from interest results in tax shields, thereby mitigating borrowing costs and maximizing firm performance (Miller, 1977). This requires the firm to make a trade- off between the cost of debt and benefits of using debt.

In practice however, there are market imperfections such as corporate taxes, bankruptcy costs, and the type of assets a firm holds. Corporate taxes affect value of the firm. A geared firm has to pay interests on its debt. Interest is tax deductible and therefore shareholders benefit from the reduced level of taxes paid by a geared firm. As the gearing increases, the risk of bankruptcy also makes the capital structure relevant because a firm can borrow limitlessly subject only to the extent a lender is willing to give. A lender would properly evaluate all the risks before lending to a firm. Therefore the extent that a firm can borrow is limited by the risk of bankruptcy. Also, the type of assets to be acquired by a firm is equally relevant to the capital structure decision. A significant part of a firm's market value is accounted for by the present value of future growth opportunities arising from asset acquisitions. Therefore, growth opportunities support the relevance of capital structure. Thus, diversifying the cash flows of large firms through a proper mix of debt and equity in the capital structure make them less vulnerable to bankruptcy which contribute to the imperfections in markets.

Mitigating the drawbacks of *M&M* propositions are the trade-off theory and pecking order theory. Wealth maximization objective can be achieved through a lower cost of capital, tax shield benefits from debt financing, reduction of agency cost of capital and growth rate. The effect of these determinants on the returns and benefit to a firm is as controversial as the issue of capital structure optimization. In addition, there is also the problem of lack of consensus in the definition of capital structure. This study contributes to the literature by showing empirical

evidence of how determinants of capital structure affect returns on capital employed. Specifically, the study provide answer to the question: how does agency cost of capital and growth rate affect returns on capital employed of highly geared and lowly geared firms? Although the above question is of paramount importance, academic theories and literatures have not been very emphatic in providing cogent answers on such practical question. Rather, the theories of capital structure remain controversial and its determinants are still subject of rigorous research. Not only is there no universal theory of capital structure, but also the assumptions of the several conditional theories contradict each other. Empirical results show no consensus despite decades of intensive research. Such controversies over basic empirical results in turn provides opportunities for deeper exploration of the sources of disagreement about desirable features for theories thus creating gaps for further studies. Although there are myriads of research on the subject, most of these studies are of foreign origin. This could affect generalization as the degree of technological advancement, ease of borrowing, stage of economic development and cultural disparity can influence results. Attempts by researchers in Nigeria are mostly industry specific and even then, it does not address how the degree of association of the determinants of leverage and equity can affect performance. Hence the approach of this study is to classify firms into low and high geared firms which assisted in filling the gap created by previous studies. The study thus adopted a comparative approach to cogently dissect the problem and provide solutions.

1.1. Theoretical Framework

Contemporary research has issues with the *M&M* proposition of no optimal capital structure. The existing literature of capital structure presents conflicting result about the agency cost of equity and growth rate, and its relation to debt equity mix for financing a firm. These predictions however will ultimately affect the theoretical perspectives and its relationship to returns on capital employed. Agency theory and trade off theory predicts a negative relationship of cost of equity and growth rate with capital structure while Pecking order theory predicts a positive relation of both agency cost of equity and growth rate with capital structure. The theoretical predictions are shown on Table 1:

Table-1. Summary of theoretical predictions of the relationship between debt ratio and its determinants.

Independent variables	Expected sign		
	Agency theory	**Trade-off theory**	**Pecking order theory**
Agency cost of equity (*AGCE*)	(-)ve	(-)ve	(+)ve
Growth rate (*GRWR*)	(-)ve	(-)ve	(+)ve

Based on the foregoing propositions, the above mentioned theories upon which this study is anchored are discussed forthwith. Agency theory developed by Jensen and Meckling (1976) suggest that an optimal capital mix exist and that an optimal debt level in capital structure can be achieved by minimizing agency costs arising from the divergent interest of managers in relation with shareholders and debt holders. This suggests negative or inverse relation of agency cost to debt equity ratio. It was further proposed by Jensen (1986) that free cash flow is an anomaly causing excesses of managers. These free cash flows can reduce, and managers' excesses curtailed through the increase of equity stake of managers in the firm to align with the interest of shareholders. Managers' interest or those of debt holders should be used as control mechanism to undermine managers' tendency for excessive consumption of perks. Pinegar and Wilbricht (1989) suggested that this negative impact could be mitigated through increasing debt in the capital structure without increasing agency cost thus compelling managers to focus on profitable investments that yield returns to investors. Any deviation from profitable investments will cause the

firm to violate debt interest payment embedded in the debt covenant and the firm risk being cAGCEced into bankruptcy by creditors with the consequence of causing managers to forfeit their decision rights or be relieved of their jobs.

The trade-off theory recognizes the existence of optimal capital structure and is based on a proposition that a firm sets its target debt level and then gradually moves towards it. The theory asserts that a firm's optimal debt-equity ratio is achieved at the point when the marginal present value of the tax on additional debt is equal to the increase in the present value of financial distress costs. According to Myers (1984) marginal benefits of additional debt increases as debt decreases and vice versa just as cost increases as debt increases. The theory thus recognizes three competing forces of taxes, costs of financial distress (bankruptcy costs) and agency costs as the drivers of the financing mix of an entity. According to Kraus and Litzenberger (1973) an optimal leverage exist that depict the trade-off between the cost of bankruptcy and the tax benefits of debt. A firm balances the cost of equity and debt financing with the tax benefits of debt (Margaritis and Psillaki, 2010). A study by Kim (1978) confirms that capital structure choice affects performance. Miller (1977) arguing in support of the theory recognized the existence of cost of debt though small in comparison to the savings.

Pecking order theory suggested by Donaldson (1961) captured the effect of asymmetric information on mispricing of new securities and it is premised on a hierarchy of financing options. The proposition is that there is no well-defined target debt ratio and that investors perceive that managers possess superior information about the firm and also well informed on the market price of the firm. The argument was enthused that investors believe that managers issue risky securities when they are overpriced resulting in underpricing of new equity issue. They argued further that underpricing occasionally is severe resulting in substantial loss to existing shareholders. To mitigate problem arising from information asymmetry firms fulfill their financing needs by preferring retained earnings as their main source of financing, then debt and finally external equity financing as a last resort suggesting that the finance mix of a firm is arranged by a hierarchy of preferences.

1.2. Conceptual Framework

1.2.1. Capital Structure

Diverse authors, as illustrated on Table 2, define capital structure differently.

Table-2. Definitions of capital structure by different authors.

Author	Definition
Brealey and Myers (2003)	A blend of different securities.
Kochhar (1997)	A mix of finance resources for business that determines how firms operate.
Brockington (1990)	Components of financing delineated into equity and debt.
Nirajini and Priya (2013)	Ways of funding long term capital and short tem debts.
Kennon (2010)	the percentage of capital (money) at work in a business by type; two forms of capital: equity capital and debt capital.
Alfred (2007)	the proportion of debt and equity in the total capital structure of the firm.
Inanga and Ajayi (1999)	Does not include short-term credit, but means the composite structure is described as the capital mix of both equity and debt capital in financing its assets.

The basic take away from the definitions advanced by various authors is that the plank of financing activities is debt and equity. Debt holders are shielded by contractual covenants and rewarded through fixed payments although they exercise minimal control and play no role in operational actions of the entity. In contrast equity shareholders as residual risk bearing owners, exercise control, and play dominant roles in decision making and overall running of the entity.

1.2.2. Concept of Performance

Many yardsticks have been deployed to gauge performance with little consensus. There is the argument as to which is most appropriate between market and accounting based methods. While some authors prefer the use of accounting-based methods others argue that it has the deficiency of evaluating past performance and is basically historical. Conversely other authors prefer market-based methods and premised their support on the notion that it measures future performance, while critics oppose it that it is flawed and it reflects only investors' perspective of the market. To circumvent the anomalies associated with these two perspectives some other authors use both accounting and market-based methods. Return on asset, return on equity, return on capital employed, profit margin are some of the accounting-based methods employed while price earnings ratio, Tobin's q, earnings yield are some of the market-based methods. The commonly deployed performance evaluation methods used by researchers are return on assets (ROA), return on equity (ROE) and/or return on investment (ROI) (see (Gorton and Rosen, 1995; Mehran, 1995; Krishnan and Moyer, 1997; Ang *et al*., 2000; Tian and Zeitun, 2007)).

1.3. Conceptual Model

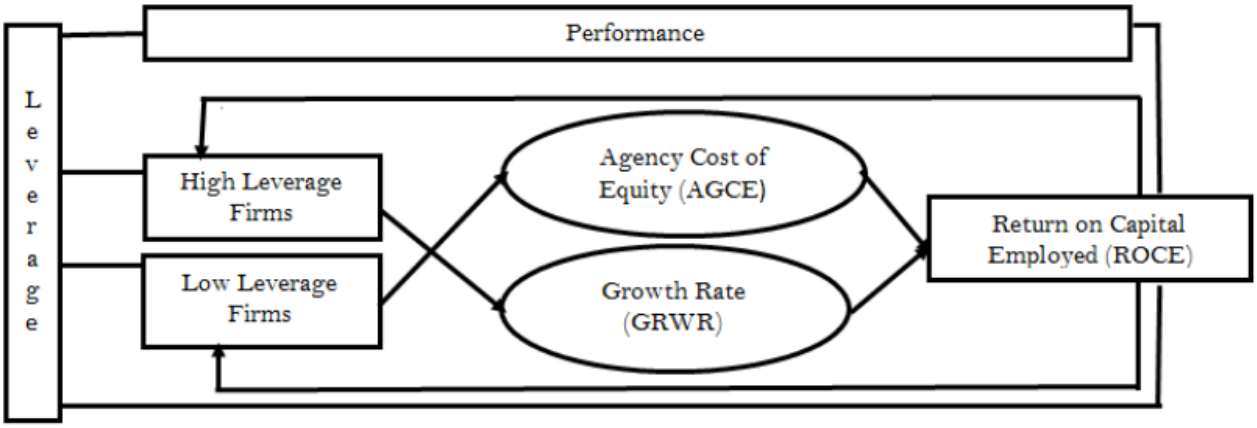

Figure-1. Conceptualized framework of leverage, agency cost of equity, growth rate and return on capital employed.

The model in Figure 1 demonstrates the link between leverage and performance based on the proxy of the accounting measure of return on capital employed. It shows that firms adopt high leverage as an expansionary strategy for achieving growth goals which has the tendency to maximize return on capital employed. On the other hand firms that rely on low leverage tend to experience agency cost of equity, a strategy that ensures that performance is defined by the capacity of the assets employed. Therefore, leverage through the combined effect of both agency cost of equity and growth rate affects return on capital employed in the direction defined by the scale of either the high or the low.

1.4. Empirical Review

Meyer and Allen (1991) and Donaldson (1984) reported that firms follow a pecking order with respect to funding sources and also report policies of maintaining spare debt capacity thus providing explanation of why debt levels and firm profitability might be inversely related. Fama and French (2002) contributed that the negative effects of profitability on leverage is consistent with pecking order model but acknowledged that offsetting response of leverage to flexibility in earnings exist and that profitability impacts are partly caused by transitory changes in leverage instead of target changes.

Björkman *et al.* (2004) agreed with pecking order theory after examining growth opportunities, profitability, size, tangibility, non-debt tax shields and volatility as determinants of debt and leverage and found a negative relation. Salawu (2007) concluded that growth opportunity, management control, profitability, ownership structure, issuing cost and tax exert significant effect on capital structure. Titman and Wessels (1988) agreeing with pecking order concluded that firms with high earnings prefer internal financing to debt. Prior studies (Kolodny and Suhler, 1985; Asquith and Mullins Jr, 1986; Masulis and Korwar, 1986; Mikkelson and Partch, 1986) observed that markets react negatively and classify equity issue as bad news thus supporting pecking order theory that firms will equity issue as a source of finance as the last resort. Other studies indicate higher leverage mitigate agency cost and enhance performance (Kochhar, 1997; Aghion *et al.*, 1999; Akintoye, 2008).

Agency cost is believed to play diverse roles and impose restrictions on issue of debt and equity. Firms with peculiar assets are limited by agency cost from incurring more debt. Titman and Wessels (1988) confirmed that the existence of agency cost and asset uniqueness significantly relate to leverage. Prior studies at firm, industry and country levels (King and Levine, 1993; Demirgüç-Kunt and Maksimovic, 1998; Rajan and Zingales, 1998) indicate that lower growth rate is associated with poor and weak financial markets. Many previous studies from agency theory angle suggest a negative relation of earnings to capital structure (Rao *et al.*, 2007; Tian and Zeitun, 2007).

Theoretically, agency theory predicts a negative relation of growth opportunities with leverage while pecking order theory (*POT*) expects a positive relationship. Prior studies provide mixed outcome about relation of growth opportunities and leverage. Liu and Ning (2009), Klapper *et al.* (2002) and Malinic *et al.* (2013) found positive correlation between the two variables while Mateev *et al.* (2013) and Bauer (2004) found negative relation. In support of the negative relation proponents, Miller (1977) explained that firms with high growth opportunities should mitigate conflict of interest by using less debt. The argument is enthused that agents will seek to increase wealth as the firm is growing by indulging in risky projects and trying to pass the cost of debt to debt holders. However, growth opportunities are intangibles and cannot be securitized and further rise in growth opportunities increases the cost of bankruptcy thus mitigating further debt thereby producing an inverse and negative relation.

The tradeoff model predicts a positive relation of earnings with leverage suggesting that firms high in earnings have a higher capacity to absorb additional debts and face less risk of bankruptcy. Pecking order theory in contrast to trade-off predicts a negative correlate between earnings and leverage. Thus, according to the proposition profitable entities use more retain earnings and less debt to satisfy financing needs. Studies by different authors (Friend and Lang, 1988; Gonedes *et al.*, 1988; Titman and Wessels, 1988; Wald, 1999; Frank and Goyal, 2003; Daskalakis and Psillaki, 2009) justify this proposition based on *POT* and concur that high earnings and leverage are negatively related. An examination of previous studies reveals lack of concurrence on the relationship between leverage and performance; some results suggest a negative relation while others suggest positive relationship. For instance, Fosu (2013) in a study of firms in South Africa suggested a positive relationship between financial leverage and performance. Saeed *et al.* (2013) in a study of Pakistani financial institutions and Nirajini and Priya (2013) in a study of Sri Lanka firms confirmed positive relationship of capital structure and performance. Also, Abor (2007); Frank and Goyal (2003); Simerly and Li (2000); Champion (1999); Ghosh *et al.* (2000); Hadlock and James (2002) reported positive relation of leverage and performance. Margaritis and Psillaki (2010) using quartile regression methods found positive significant correlation between leverage ratios and performance.

Studies in Nigeria also confirmed positive relationship of the subjects of study. Maude *et al.* (2016) using return on assets (*ROA*) and return on equity (*ROE*) as measures of profitability, found positive significant relation of these variables with leverage. Similarly, Akinyomi (2013) in a study of food and Beverage firms in Nigeria found that debt to common equity, short term debt to total debt and age of the firms are significantly and positively related to

return on asset and return on equity. The same study also indicate that long-term debt to capital significantly relates positively to return on asset and return on equity. Oke and Afolabi (2011) in a study from the static trade-off and agency cost theory perspectives found a positive relationship of firm performance with equity source of finance, and debt-equity ratio. In the same study, they confirmed a negative relation of performance and debt financing and concluded that high cost of borrowing in Nigeria could be responsible for this result. Also, Semiu and Collins (2011) found a significant positive correlation of performance and leverage.

Conversely, other authors found negative relation of leverage with performance. Tharmila and Arulvel (2013) in a study of Colombo firms and He (2013) in a study of Chinese, Swedish and German firms confirm negative correlation of leverage with performance. Salim and Yadav (2012) studied Malaysian firms, using *ROA*, *ROE*, *EPS* (earnings per share) and Tobin *Q* and concluded that leverage impacts negatively on performance. In addition, Chunhua and Meiyan (2013) in a study of Shanghai and Shenzhen firms confirmed negative relation of leverage to performance. Chakraborty (2010) using ratio of profit before interest, taxes and depreciation to total assets and ratio of cash flows to total assets and proxy ratio of leverage total debt to total assets and ratio of liability and equity confirmed the same result or negative relationship with performance measures. Khan (2012) studied the relationship of capital structure decisions with the firm's performance of 36 engineering firms in Pakistan listed on the Karachi Stock Exchange (*KSE*) as sample for the period 2003 -2009 using the panel econometric technique, pooled ordinary least square regression. His findings show that financial leverage measured by short term debt to total assets (*STD:TA*) and total debt to total assets (*TD:TA*) has a significant negative relationship with the firm's performance measured by return on assets (*ROA*), gross profit margin (*GM*) and Tobin's *Q*.

In Nigeria, numerous authors confirmed negative relation of leverage to performance. Amah and Ken (2016) studied the brewery industry, using retained earnings, net asset value per share, market price per share and Tobin's *Q* as performance proxy. The study also used current liability to total assets, debt to equity, total liability to total assets and debt to total assets as capital structure composition and found negative relation of capital structure composition with performance agreeing with pecking order. Muritala (2012) using unit root test confirmed negative relationship between leverage and firm performance. Salawu (2007) also found negative relationship of leverage with earnings. Olaniyan *et al.* (2017) examined leverage and performance using return on assets (*ROA*), returns on equity (*ROE*), earnings per share (*EPS*) and Tobin's *Q* as measures of firm performance; and debt ratio (*DR*) as a measure of leverage and confirm significant negative relationship with firms' performance. The authors further suggested that high agency cost of equity amongst African firms is accountable for recurring negative performance.

Exacerbating the controversy is the result of other studies which indicate that the yardstick of measurement influence outcome. For instance (Taani, 2013) in studying Jordanian firms found short term debt to total assets and long term debt to total assets relates negatively with return on assets and profit margin while total debt to equity is positively related with return on assets and negatively related with profit margin. Salteh *et al.* (2012) studied Iranian firms using return on equity, return on assets, earning per share, and market value of equity to the book value of equity (*MBVR)* and Tobin's Q as performance yardstick while leverage was proxied as short-term debt, long- term debt and total debt to total assets, and total debt to total equity. Results indicate *ROE*, *MBVR* & Tobin's *Q* positively significantly correlate leverage while *ROA* and *EPS* negatively relate with leverage.

In Nigeria mixed results are also reported based on yardsticks. Olokoyo (2012) carried out a study in capital structure and corporate performance of Nigeria quoted firm and found leverage has a significant negative impact on accounting performance measure (*ROA*). Contrastingly, the study also found leverage have a positive and highly significant relationship with the market performance measure (Tobin's *Q*). Also, the maturity profile of debt significantly influence performance.

1.5. Research Gap

Many studies have been carried out globally on the relation of leverage and performance; determinants of capital structure and performance and composition of leverage and performance. Some of these studies are of foreign origin and does not reflect the peculiar circumstance of third world countries and particularly the West Africa sub region. The economic, social, cultural and technological disparity could affect generalization of result hence the need for a study in emerging economies. Studies in Nigeria on the above relation are mainly industry specific without considering the cross subsectors of firms listed on the exchange. The problem is more pronounced that none of these studies considered how the degree of leverage affect performance. These create gaps for further studies on the need to do a comparative study on how the degree of leverage affect performance. This study therefore fills this gap by making a comparison on how the degree of determinants of leverage affect performance. Specifically, how the degree of two determinants of leverage- agency cost of equity and growth rate affect Returns on capital employed of high geared and low geared firms.

2. MATERIALS & METHOD

2.1. Research Design and Data

This study adopted the cross sectional, ex-post facto design using secondary data obtained from the subsectors of manufacturing and financial services firms quoted on Nigeria stock exchange. The population consisted of all manufacturing and financial services (banking and insurance) firms in Nigeria however since a cross section of the firms are being examined, the census method which require no sampling of the population was applied. Data of firms studied were collected from financial statements, firm websites and Nigeria Stock Exchange *Fact Book*. The data covered a period of five years, 2013 – 2017. The study focused on how agency cost of capital and growth rate of firms affect financial leverage and return on capital employed of high and low leverage firms.

2.2. Variable

The independent variable in the study for the debt equity relation are agency cost of equity and growth rate while the dependent variables are debt ratio and return on capital employed. We proxied capital structure with debt equity ratio. This is to enable us establish actual relationship and make a comparison with theoretical predictions before assessing the outcome of model 2 on the scenario formed by findings in model 1.

2.2.1. Measurement of Variables

The dependent and independent variables in the model are defined as tabulated in Table 3.

Table-3. The definition of dependent and independent variables.

Variable	Measure
Debt/Equity ratio	Total debt/Total asset
Returns on capital employed	Earnings before interest and tax/Total capital employed.
Agency cost of equity	Following McMahon (2004), (1) Operating expense ratio (2) Asset turnover ratio
Growth rate	Lagged total asset/Current total asset

Firms were classified into high and low leverage firms and the effect of each of the determinants (agency cost of equity and growth rate) is tested on performance variables. Highly geared firms, for the purpose of this study, are firms with leverage ratio of 0.51 and above while lowly geared firms are firms with leverage ratio of less than 0.50 The relationship between the variables was measured using multiple regression analysis ordinary least square. The Hausman test was used for selection of model. Hausman test is suitable for panel data as it eliminates multi-

colinearity and heterodaskicity. Causality test is not conducted for each group of leverage to ascertain the cause effect relationship on performance. This may be the subject of future studies.

2.3. Model specification

The relationship of debt ratio with its determinants was formulated in Model 1 below. Equation 1 illustrates debt ratio (*DR*) as a function of agency cost of equity (*AGCE*) and growth rate (*GRWR*). Similarly, Model 2 was formulated to capture the nature of relationship of retun of capital employed (*ROCE*) as a function of *AGCE* and *GRWR* as in Equation 3. These were designed to ascertain and compare the actual relationship with the theoretical predictions and thereby shed light on how the determinants of leverage affect profitability. Both Equation 2 and 4 elaborate the functional relationships described above and includes the intercept, co-efficient and the disturbance terms. The models also include control variables of average total asset (*AVASS*) and asset turnover (*ASTR*). The relationships are tested with the econometric models specified as follows:

Model 1

$$DR = f(AGCE, GRWR) \quad (1)$$

$$DR = \alpha_0 + \alpha_1 AGCE + \alpha_2 GRWR + AVASS + ASTR + U_{it} \quad (2)$$

Model 2:

$$ROCE = f(AGCE, GRWR) \quad (3)$$

$$ROCE = \alpha_0 + \alpha_1 AGCE + \alpha_2 GRWR + AVASS + ASTR + U_{it} \quad (4)$$

Where,

DR	=	Debt ratio.
ROCE	=	Return on capital employed.
AGCE	=	Agency cost of capital proxied by operating expenses ratio (*AGCE*).
GRWR	=	Growth rate.
AVASS	=	*Average asset.*
ASTR	=	*Asset turnover.*
U_{it}	=	Error term.
α_0,	=	Intercept.
α_1	=	Slope coefficients.

3. RESULTS

Data was drawn from financial services and manufacturing sectors of the Nigerian stock exchange represented respectively as 1 and 0 dummy variables. To classify the sample into high and low leveraged firms, the average leverage for the five-year period is calculated and firms that scored more than 0.50 are classified as high leverage and represented by the dummy variable of 1 and those that have average score of less than 0.50 are classified as low leverage and assigned the dummy variable of 0. The first test of the period and cross section fixed effects as reported in Table 4 and Table 5 respectively below revealed that the cross section fixed effects model has a better fit with an R-squared of 69% and a coefficient of determination of 60%. The period fixed effects model returned R-squared and coefficient of determination of 39.7% and 37% respectively. Furthermore, a comparison of the cross section fixed effects model Table 5 and the cross section random effects model Table 6 shows that the former has a better fit than the later that returned an R squared of 19.9% and 17.9% respectively. The result of the Hausman Test reported in Table 6 is used to econometrically determine the best model between the cross section fixed effects model and the cross section random effects model. which shows that the null hypothesis that the random effects

model is most appropriate measure is rejected given that the p-value of 0.6372 > α = 0.05. The alternative hypothesis that the fixed effects model is most appropriate is accepted. The result of the cross section fixed effects model in Table 6 shows the r-squared statistic of 0.690318 and when adjusted for the number of variables, the adjusted R-squared returned 0.605859 suggesting that the model explains more than 60% of the variations in the dependent variable contrary to what is obtainable from the result of the random effects model reported in Table 5. The F-statistics also shows that the fixed effects model is very robust and significant with a p-value of less than 0.05 at 0.00000.

Table-4. Result of panel least squares test of period fixed effects of agency cost of equity and growth rate on debt ratio.

Dependent variable: DR				
Method: Panel least squares				
Variable	**Coefficient**	**Std. error**	**t-statistic**	**Prob.**
C	0.258128	0.030345	8.506386	0.0000
AGCE	0.000273	0.001328	0.205929	0.8370
GRWR	0.000146	0.000175	0.835975	0.4040
AVASS	2.25E-11	1.21E-11	1.851513	0.0653
ASTR	1.66E-06	1.91E-06	0.866715	0.3870
SCTR	0.096600	0.026360	3.664665	0.0003
HILOW	0.349148	0.028674	12.17658	0.0000
Effects specification				
Period fixed (dummy variables)				
R-squared	0.397476	Mean dependent var		0.571097
Adjusted R-squared	0.372578	S.D. dependent var		0.252089
S.E. of regression	0.199680	Akaike info criterion		-0.341701
Sum squared resid	9.649006	Schwarz criterion		-0.188075
Log likelihood	54.22517	Hannan-Quinn criter.		-0.279892
F-statistic	15.96439	Durbin-Watson stat		0.757437
Prob(F-statistic)	0.000000			

Source: *Eviews* Data Analysis Application.

Table-5. Result of panel least squares test of cross section random effects of agency cost of equity and growth rate on debt ratio.

Dependent variable: DR
Method: Panel EGLS (Cross-section random effects)
Date: 07/07/19 Time: 20:52
Sample: 2013 2017
Periods included: 5
Cross-sections included: 51
Total panel (unbalanced) observations: 253
Swamy and Arora estimator of component variances

Variable	**Coefficient**	**Std. error**	**t-statistic**	**Prob.**
C	0.260031	0.048563	5.354491	0.0000
AGCE	-8.31E-05	0.001136	-0.073151	0.9417
GRWR	4.05E-05	0.000149	0.272047	0.7858
AVASS	2.19E-11	1.88E-11	1.165778	0.2448
ASTR	7.15E-07	1.71E-06	0.418946	0.6756
SCTR	0.097490	0.042156	2.312587	0.0216
HILOW	0.349232	0.045553	7.666580	0.0000
Effects specification				
			S.D.	Rho
Cross-section random			0.125209	0.3850
Idiosyncratic random			0.158263	0.6150
Weighted statistics				
R-squared	0.199160	Mean dependent var		0.281717
Adjusted R-squared	0.179628	S.D. dependent var		0.174067
S.E. of regression	0.157739	Sum squared resid		6.120860
F-statistic	10.19627	Durbin-Watson stat		1.193387
Prob(F-statistic)	0.000000			
Unweighted statistics				
R-squared	0.392272	Mean dependent var		0.571097
Sum squared resid	9.732350	Durbin-Watson stat		0.750544

Source: *Eviews* Data Analysis Application.

Table-6. Result of hausman test of correlated random effects of agency cost of equity and growth rate on debt ratio.

Correlated random effects - Hausman test				
Equation: EU7				
Test cross-section random effects				
Test summary		**Chi-Sq. statistic**	**Chi-Sq. d.f.**	**Prob.**
Cross-section random		2.541680	4	0.6372
Cross-section random effects test comparisons:				
Variable	Fixed	Random	Var(Diff.)	Prob.
AGCE	-0.000247	-0.000083	0.000000	0.5518
GRWR	-0.000006	0.000041	0.000000	0.2080
AVASS	0.000000	0.000000	0.000000	0.8601
ASTR	0.000000	0.000001	0.000000	0.4396
Cross-section random effects test equation:				
Dependent variable: DR				
Method: Panel least squares				
Date: 07/07/19 Time: 21:09				
Sample: 2013 2017				
Periods included: 5				
Cross-sections included: 51				
Total panel (unbalanced) observations: 253				
Warning: estimated coefficient covariance matrix is of reduced rank				
Variable	**Coefficient**	**Std. error**	**t-statistic**	**Prob.**
C	0.568367	0.021012	27.04937	0.0000
AGCE	-0.000247	0.001169	-0.211148	0.8330
GRWR	-5.82E-06	0.000153	-0.037910	0.9698
AVASS	1.17E-11	6.12E-11	0.190547	0.8491
ASTR	2.97E-07	1.79E-06	0.165774	0.8685
Effects specification				
Cross-section fixed (dummy variables)				
R-squared	0.690318	Mean dependent var		0.571097
Adjusted R-squared	0.605859	S.D. dependent var		0.252089
S.E. of regression	0.158263	Akaike info criterion		-0.659456
Sum squared resid	4.959344	Schwarz criterion		0.108672
Log likelihood	138.4212	Hannan-Quinn criter.		-0.350413
F-statistic	8.173438	Durbin-Watson stat		1.470793
Prob(F-statistic)	0.000000			

Source: *Eviews* Data Analysis Application.

The result of the cross section fixed effects model further shows that both agency cost of equity (*AGCE*) proxied by operating expenses ratio and growth rate (*GRWR*) are decreasing functions of debt ratio (*DR*). This indicates that as the Debt ratio increases, the agency cost of equity and the growth rate decreases. This result is consistent with *apriori* expectations and supports the agency theory and the trade-off theory.

A further test of sample of only high leverage (36) firms as shown in the result of the cross section fixed effects of agency cost of equity and growth rate in Table 7 show that the model explains more than 36% of the variations in debt ratio compared to the 60% returned by the cross section fixed effects model comprising both high and low leveraged (51) firms presented in Table 6. This indicates that the sample of low leverage (15) firms accounted for 24%. What this means is that on average a high leveraged firm contribute 1 percentage point, while on average a low leverage firm contribute 1.6 percentage point to the explanation of the variation in the debt ratio. Low leverage firms therefore contribute more to the determination of the debt ratio. The signs of *AGCE* and *GRWR* variables in the sample of high leverage firms Table 7 are also like those in the sample comprising both high and low leverage firms Table 6 suggesting that the sample of lower leverage reinforces the negative signs of both agency cost of equity and growth rate much more that higher leverage. This result supports that of perking order theory that indicates that profitable firms have less need for external financing hence the low levels of financial leverage. The ratio of the composition of low and high leveraged firms in the sample in previous empirical studies might therefore

explain the disparity of the signs. Consequently, where the sample comprise more high leverage firms, then agency cost of equity might tend to be low but when the sample comprise more low leveraged firms then agency cost of might tend to be high. This perhaps explains the riddle surrounding the inconsistency in result in extant empirical studies.

Table-7. Result of panel least squares test of cross section fixed effects of agency cost of equity and growth rate on debt ratio of high leverage firms.

Dependent variable: DR
Method: Panel least squares
Date: 07/08/19 Time: 23:15
Sample: 2013 2017
Periods included: 5
Cross-sections included: 36
Total panel (unbalanced) observations: 179

Variable	Coefficient	Std. error	t-statistic	Prob.
C	0.678014	0.027123	24.99780	0.0000
AGCE	-0.000622	0.001538	-0.404355	0.6866
GRWR	-6.11E-06	0.000263	-0.023231	0.9815
AVASS	-5.12E-11	1.14E-10	-0.450824	0.6528
ASTR	2.83E-07	2.03E-06	0.139686	0.8891
Effects specification				
Cross-section fixed (dummy variables)				
R-squared	0.505824	Mean dependent var		0.665552
Adjusted R-squared	0.367170	S.D. dependent var		0.225405
S.E. of regression	0.179311	Akaike info criterion		-0.405375
Sum squared resid	4.469187	Schwarz criterion		0.306890
Log likelihood	76.28106	Hannan-Quinn criter.		-0.116557
F-statistic	3.648110	Durbin-Watson stat		1.522135
Prob(F-statistic)	0.000000			

Source: *Eviews* Data Analysis Application.

Table-8. Result of panel least squares test of cross section random effects of agency cost of equity and growth rate on return on capital employed.

Dependent variable: ROCE
Method: Panel EGLS (Cross-section random effects)
Date: 07/08/19 Time: 22:26
Sample: 2013 2017
Periods included: 5
Cross-sections included: 51
Total panel (unbalanced) observations: 253
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. error	t-statistic	Prob.
C	1.441013	0.847985	1.699338	0.0905
AGCE	-0.118936	0.041249	-2.883336	0.0043
GRWR	-0.000190	0.005422	-0.034965	0.9721
AVASS	-2.20E-10	7.31E-10	-0.300820	0.7638
ASTR	-6.45E-06	6.23E-05	-0.103595	0.9176
Effects specification				
			S.D.	Rho
Cross-section random			5.152648	0.4466
Idiosyncratic random			5.735617	0.5534
Weighted statistics				
R-squared	0.032163	Mean dependent var		0.439341
Adjusted R-squared	0.016552	S.D. dependent var		5.832130
S.E. of regression	5.783762	Sum squared resid		8296.071
F-statistic	2.060350	Durbin-Watson stat		1.238417
Prob(F-statistic)	0.086584			
Unweighted Statistics				
R-squared	-0.009355	Mean dependent var		0.985905
Sum squared resid	15429.26	Durbin-Watson stat		0.665877

Source: *Eviews* Data Analysis Application.

The unpresented result of the test of both the period fixed effects and the cross section fixed effects of agency cost of equity and growth rate on return on capital employed indicate that they were not significant as indicated by the *F*-statistical probability of 0.6645 > α = 0.05 and 0.076006 > α = 0.05 respectively.

Also the result of the cross section random effects of agency cost of equity and growth rate presented in Table 8 show that the model is not significant as F-Statistics returned a p-value of 0.086584 > α = 0.05.

On the other hand, the result of the Hausman Test used to econometrically determine the best model between the cross section random effects model and the cross section fixed effects revealed that the later was better than the former. The result of the test reported in Table 9 revealed that the null hypothesis that the random effects model is most appropriate measure is rejected given that it returned the p-value of 0.0787 > α = 0.05. The alternative hypothesis that the fixed effects model is most appropriate is accepted.

The result of the cross section fixed effects shows the r-squared statistic of 0.573875 and when adjusted for the number of variables, the adjusted R-squared returned 0.460384 suggesting that the model explains more than 46% of the variations in the dependent variable. The *F*-statistics also shows that the cross section fixed effects model is very robust and significant with a p-value of less than 0.05 at 0.00000. The result further revealed that the agency cost of equity is a decreasing function of and growth rate an increasing function of return on capital employed. This indicates that an increase in agency cost of equity decreases the return on capital employed and vice versa. On the other hand, an increase in growth rate increases the return on capital employed.

Table-9. Result of hausman test of correlated random effects of agency cost of equity and growth rate on return on capital employed.

Correlated random effects - Hausman test
Equation: EQ05
Test cross-section random effects

Test summary		**Chi-Sq. statistic**	**Chi-Sq. d.f.**	**Prob.**
Cross-section random		8.376521	4	0.0787
Cross-section random effects test comparisons:				
Variable	Fixed	Random	Var(Diff.)	Prob.
AGCE	-0.146516	-0.118936	0.000092	0.0040
GRWR	0.000094	-0.000190	0.000002	0.8179
AVASS	0.000000	-0.000000	0.000000	0.8997
ASTR	-0.000005	-0.000006	0.000000	0.9362
Cross-section random effects test equation:				
Dependent variable: ROCE				
Method: Panel least squares				
Date: 07/08/19 Time: 22:30				
Sample: 2013 2017				
Periods included: 5				
Cross-sections included: 51				
Total panel (unbalanced) observations: 253				
Variable	**Coefficient**	**Std. error**	**t-statistic**	**Prob.**
C	1.454144	0.761504	1.909568	0.0576
AGCE	-0.146516	0.042351	-3.459593	0.0007
GRWR	9.35E-05	0.005559	0.016825	0.9866
AVASS	4.37E-11	2.22E-09	0.019724	0.9843
ASTR	-5.00E-06	6.49E-05	-0.077050	0.9387
Effects specification				
Cross-section fixed (dummy variables)				
R-squared	0.573888	Mean dependent var		0.985905
Adjusted R-squared	0.457675	S.D. dependent var		7.788440
S.E. of regression	5.735617	Akaike info criterion		6.520928
Sum squared resid	6513.666	Schwarz criterion		7.289056
Log likelihood	-769.8974	Hannan-Quinn criter.		6.829972
F-statistic	4.938265	Durbin-Watson stat		1.572204
Prob(F-statistic)	0.000000			

Source: *Eviews* Data Analysis Application.

Table-10. Result of panel least squares test of cross section fixed effects of agency cost of equity and growth rate on return on asset employed of high leverage firms.

Dependent variable: ROCE				
Method: Panel least squares				
Date: 07/09/19 Time: 07:12				
Sample: 2013 2017				
Periods included: 5				
Cross-sections included: 36				
Total panel (unbalanced) observations: 179				
Variable	Coefficient	Std. error	t-statistic	Prob.
C	2.158757	1.024435	2.107266	0.0369
AGCE	-0.197719	0.058090	-3.403663	0.0009
GRWR	0.000386	0.009936	0.038820	0.9691
AVASS	4.70E-11	4.29E-09	0.010950	0.9913
ASTR	-6.75E-06	7.66E-05	-0.088065	0.9300
	Effects specification			
Cross-section fixed (dummy variables)				
R-squared	0.580626	Mean dependent var		1.352916
Adjusted R-squared	0.462960	S.D. dependent var		9.241677
S.E. of regression	6.772582	Akaike info criterion		6.857657
Sum squared resid	6375.634	Schwarz criterion		7.569922
Log likelihood	-573.7603	Hannan-Quinn criter.		7.146475
F-statistic	4.934517	Durbin-Watson stat		1.580299
Prob(F-statistic)	0.000000			

Source: *Eviews* Data Analysis Application.

A test of the sample comprising only high leverage (36) firms as shown in the result of the cross section fixed effects of agency cost of equity and growth rate in Table 10 indicate that the model explains more than 46% of the variations in return on capital employed compared to the 45.7% returned by the model comprising both high and low leveraged (51) firms presented in Table 9.

This indicates that low leverage (15) firms accounted for -0.03%. What this means is that high leveraged firms contributed much more to the determination of the return on capital employed than the sample comprising both high and low leveraged firms.

Low leverage firms' contribution was negative. The signs of the other variables are also like those in the overall sample suggesting that the higher leverage reinforces the negative sign of agency cost of equity and the positive sign of growth rate much more than lower leverage.

This result supports the notion that financial leverage increases agency cost because of expropriation of the free cash remaining after the interests of the external finance have been met as expounded in the free cash flow theory. It also shows that high leverage drives the higher growth rate in the firm. The ratio of the composition of the sample in terms of low and high leverages might therefore aptly explain the signs in previous empirical studies.

4. DISCUSSION AND CONCLUSION

The first objective of the study is to ascertain how the firms in the study conform to theoretical predictions of agency theory, trade-off and pecking order theory when combining debt and equity in the capital structure. Theoretically agency cost and trade-off theory predict a negative relation of agency cost and growth rate to debt-equity ratio.

The implication of this prediction is that an increase in debt equity ratio decreases agency cost and firm growth rate. Also, a decrease in debt equity ratio increases growth rate and agency cost of equity. The result of the study showed that as the Debt ratio increases, the agency cost of equity and the growth rate decreases. This result is consistent with *apriori* expectations and supports the agency theory and the trade-off theory. The result showed

that low leverage (15) firms accounted for 24%. What this imply is that while on average a high leveraged firm contribute 1 percentage point, on average one low leverage firm contribute 1.6 percentage point to the explanation of the variation in the debt ratio amongst firms in the study.

The signs of the other variables are also like those in the overall sample suggesting that the lower leverage reinforces the negative signs of both agency cost of equity and growth rate much more that higher leverage.

The result of the study also reveal that highly profitable firms use less of debt in the capital structure. This outcome supports that of perking order theory that indicates that profitable firms have less need for external financing hence the low levels of financial leverage.

This finding collaborates studies by other authors (Donaldson, 1984; Kolodny and Suhler, 1985; Asquith and Mullins Jr, 1986; Masulis and Korwar, 1986; Mikkelson and Partch, 1986; Friend and Lang, 1988; Gonedes *et al*., 1988; Titman and Wessels, 1988; Meyer and Allen, 1991; Singh and Hamid, 1992; Wald, 1999; Fama and French, 2002; Frank and Goyal, 2003; Salawu, 2007; Daskalakis and Psillaki, 2009).

The second objective of the study is to ascertain the contribution of agency cost of equity and growth rate to performance.

The outcome of study confirm that Agency cost of equity is a decreasing function of Return on capital employed and growth rate an increasing function of return on capital employed. This imply that an increase in agency cost of equity decreases the return on capital employed and a decrease in agency cost of equity increases Return on capital employed.

This is not unexpected as an increasing cost is expected to mitigate and dampen profits. On the other hand, an increase in growth rate increases the return on capital employed and a decrease in growth rate decreases return on capital employed. The result is as expected growth of the firm generally is expected to impact positively on earnings.

This study confirmed that high leveraged firm contributed much more to the determination of the return on capital employed than the sample comprising both high and low leveraged firms. Low leverage firms' contribution was negative.

The implication of this finding is that an increase in leverage increases firm performance. This finding is in sync with other studies from Nigeria (Oke and Afolabi, 2011; Semiu and Collins, 2011; Akinyomi, 2013; Maude *et al*., 2016) which found a significant positive correlation of performance and leverage perhaps because most firms in Nigeria have been found to be highly levered and the high cost of funds contributes to the negative relations with performance (Oke and Afolabi, 2011). Findings by the outcome of the study however negates studies by (Chakraborty, 2010; Khan, 2012; Salim and Yadav, 2012; Chunhua and Meiyan, 2013; Tharmila and Arulvel, 2013). The key contribution here is that the direction of the sign of the relations of leverage and performance is swayed by the dominating subsample between high and low leveraged firms. In this study 36 firms in the sample were high geared while 15 firms were low geared hence explaining the negative direction of the overall result.

The signs of the other variables are also like those in the overall sample suggesting that the higher leverage reinforces the negative sign of agency cost of equity and the positive sign of growth rate much more than lower leverage. This result supports the notion that financial leverage increases agency cost because of expropriation of the free cash remaining after the interests of the external finance have been met as expounded in the free cash flow theory. It also shows that high leverage drives the higher growth rate in the firm.

4.1. Implication to Theory and Practice

Theoretically our study supports the postulation that agency cost of equity and growth rate are negatively related to leverage as predicted by agency theory and trade-off theory. It further showed that profitable firms use less of debt financing and prefer internal financing thus supporting Pecking order theory. It also supports findings by other authors that leverage impacts performance and hence firm value.

High leverage supports higher Return on capital employed. Practically, firms should use a combination of equity and leverage to enhance performance as agency cost falls as leverage increases. Enhancing growth rate will enhance return on capital employed. Regulators should redesign monitoring strategies as the higher the degree of leverage the higher the risk of bankruptcy and potential for earnings management especially when firms are close to violating debt covenants.

4.2. Conclusion

Leverage impacts returns on capital employed and highly profitable firms make use of internal financing. There is a direct and proportional relation of leverage and return on capital employed. The higher the leverage the higher the return on capital and the lower the leverage the lower the return on capital employed. Growth rate and agency cost of equity are negatively related to leverage and conform to the predictions of agency theory and Trade-off theory.

4.3. Contribution to Knowledge

Prior empirical studies confirmed that leverage enhances performance without determining the effect the degree of leverage has on performance. This study fills that gap by clearly stating how the degree of leverage impacts performance.

Higher leverage increases performance while lower leverage lowers performance. The key contribution here is that the direction of the sign of the relations of leverage and performance is swayed by the dominating subsample between high and low leveraged firms. This finding offers explanation to the conflicting result found in the literature. Furthermore, the study provided underlying econometric model for growth rate, agency cost of equity and return on capital employed.

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