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CONGLOMERATION AND LEVERAGE: TEST OF AGENCY THEORY'S SPECIAL USE OF DEBTS HYPOTHESIS IN IGERIAN CONGLOMERATES FIRMS

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Abstract

The study is a contribution the large discussion on the determinants of capital structure in firms but with specific focus on conglomerates short term leverage decision. The impetus of the study in based on the need to provide empirical evidence to support the Special Use of Debts Hypotheses (SUDH) proposed by Jensen and Meckling's (1976) agency theory. To test the SUDH, speed of divesture in conglomerates was introduced as a mediating factor to diversification's potency in determining leverage in conglomerates. Short term debt, number of subsidiaries and the Hicks (1950) Acceleration coefficient were used to proxy leverage, diversification and speed of divesture in conglomerates respectively. Using 8 year's data collected from the annual reports of six Nigerian conglomerates covering the period from 2007 to 2014, the study used the Heteroskedasticity Autocorrelation Corrected (HACC) regression technique which produced robust standard errors to analyze the sample data. The study found significant relationship between diversification and leverage while it identified a significant partial relationship between diversification and speed of divesture policy. This *allows us to test for mediating effect of speed of divesture on the relationship between leverage and diversification which was found to be significant. Therefore the study provides evidence to support the claim that as conglomerates increase the number of their subsidiaries (diversification), the corresponding change in their leverage is related to the indirect relationship between the rates at which they invest in fixed assets in response to increase in sales from new subsidiaries. Despite the contribution of this study the wider body of literature on capital structure, we reckon that there is a need for further research with the view for properly accounting for speed of divesture policy of conglomerates.*

Key words: Diversification, Leverage, Conglomerates, Acceleration Coefficient

1. Introduction

Discussions on the capital structure of firms have remained a very important subject in the field corporate finance, economics and accounting literature. This has remained so over the years because the understanding of nature of the various sources of business finance is important in a world where ownership has been effectively divorced from control in most corporate institutions. As such, raising cost effective financing is a daunting task for business owners and managers. Early researcher in the area have investigated relationships between capital structure and a large number of variable in order to establish what drives corporate leverage and the decision to finance firms through debts. Theories that have touched on aspects of firms' capital structure like the agency theory, pecking order theory, trade-off theory have all provided some explanations as to some of the reasons why firms takes on debts despite its potential for diluting ownership.

Modigliani and Miller (1958) were the first to investigate the topic after which notable number of researchers has exerted much effort in continuously extending the capital structure literature. Over more than five decades since the publication of the ground-breaking work Modigliani and Miller (1958, 1963) corporate finance literature continues to expand in the search for the optimal capital structure and identifying the key determinants of the level of financial leverage amongst firms with a view to solving what Myers (1984) referred to as the "capital structure puzzle". Several propositions, theories and hypotheses have been put forwards and tested by experts, analysts and researchers respectively with the aim of understanding, explaining and or predicting firms' leverage decisions. Some of these theories include trade-off theory (Modigliani & Miller, 1963), pecking order theory (Myers & Majluf, 1984), signaling theory (Ross, 1977) and agency theory (Jensen & Meckling, 1976).

At the turn of the century, the emergence of large-scale business operations led to the separation of ownership from control and the creation of the corporate business structure. The contractual tensions created by the separation of ownership and control which exist in a great number of large scale modern firms and the financial implication of managing such tension gave rise to agency cost and ultimately the agency theory discussions. On the other hand, conglomerates (diversified firms) are known to be heterogeneous from focused (undiversified firms) in terms of their financial behaviour. They are known to have greater capacity for accessing external debt due to their lower level of financial risk when compared to focused firms. Furthermore, conglomerates are also known to have an internal capital market structure which allows them to reallocate resources across different business segments within the firm. Based on the foregoing, the seminal work of Jensen and Meckling (1976) on agency theory hypothesized that conglomerates, despite their higher capacity for debts will have lower debts ratio than focused firm. They termed this proposition the special use of debts hypotheses (SUDH).

This study is focused on testing the special use of debts hypotheses from Jensen Meckling's (1976) agency theory. The agency theory is an attempt at explaining both firm and managerial behaviour under a number of diverse economic and organizational conditions. The SUDH is the specific theoretical proposition which predicts the level of debt-equity mix in conglomerates. Under the SUDH, the theory presented the propositions within the agency theory that attempted explains conglomerates' or diversified firms capital structure and their potential for use of debts. The theory predicted that conglomerates will generally maintain a low level of debts (external bond financing) predominantly due to the speed and ease with which they can adjust their divesture policy to diversify away from particular investment assets.

Again, the theory predicts that, conglomerates would have behaved like focused or normal firms if they did not have the advantage of being able to divest easily in order to increase their share of pecuniary benefits. Thus their disposition towards low level use of debts is hinged on ease of divestment and investment as circumstances may warrant. However, divesture policy which '*involves the transfer of real productive assets across markets'* itself is considered as an adjustment mechanism or a gradual process through which the optimal level of diversification is achieved by firms (Haynes, Thompson & Wright, 2000).

Impliedly, the agency theory's prediction about the debt appetite of conglomerates could be broken down to suggest two key tentative expectations, which forms our *apriori* for this study thus:

i. That conglomeration (diversification) in firms is a significant predictor of firms' level of debt, and by extension a determinant of firms' capital structure.
ii. Secondly that, the speed with which conglomerates can divest or invest in assets portfolios has a significant mediating effect on the predicted relationship between conglomeration and the level of debt or leverage in (1) above.

Despite the fact that the above propositions have presented clearly testable research hypotheses which will provide evidence to either support the proposition or otherwise, to the best of our knowledge, only a few studies have tested the impact of conglomeration on leverage with none from Nigeria. Furthermore, our search through both classical and contemporary corporate finance studies yielded no evidence that the proposed relationship has been tested with the consideration of 'speed of divesture' as a mediator to the proposed relationship between diversification and leverage as proposed in the agency theory's special use of debts hypotheses. Given the foregoing, the impetus for this study therefore lies in the need to further investigate and test these hypotheses formulated purely based on the theoretical propositions regarding the relationship between conglomeration and Leverage and the suggested mediating effect of speed of adjustment in divestment policy on the relationship between diversification and leverage in conglomerates suggested by the SUDH. Therefore based on the above research gap, this study seeks to provide empirical answers to two key research questions:

i. To what extent does conglomeration significantly impact on the capital structure of diversified firms?
ii. To what extent does the speed with which firms can divest from investment portfolios mediate the relationship between conglomeration and the capital structure of firms?

In view of the research questions of this study, the main objective of the study therefore is to investigate if firms' conglomeration significantly impacts on its capital structure and if speed of divesture mediates the relationship between leverage and conglomeration. However, two specific objectives have been formulated in line with the study's hypotheses with a view to answering the research questions, thus:

i. To investigate the extent to which firms' conglomeration predicts the capital structure of firms listed on the conglomerate sector of the Nigerian Stock Exchange.
ii. To determine if the speed with which firms can divest and/ or investment in assets mediates the relationship between conglomeration and the capital structure of firms listed on the conglomerate sector of the Nigerian Stock Exchange.

1.1 Hypotheses: To test for mediation, a number of hypotheses need to be tested, the first to confirm the direct effect of the independent variable on the predicted variable, then to determine the partial effect between the mediator variable and the independent variable and finally, to determine the joint effect of the independent and mediator variable on the dependent variable. Therefore the following testable hypotheses have been formulated for the purpose of achieving the main and specific objectives of this study.

Hypotheses 1: To test for direct effect of diversification on leverage:
H_{O1}: The extent of firm's diversification is not a significant predictor of the capital structure of firms listed on the conglomerate sector of the Nigerian Stock Exchange.

Hypotheses 2: To test for partial effect of diversification on speed of adjusting divesture policy:
H_{O2}: The extent of firm's diversification is not a significant predictor of their speed of divestment in firms listed on the conglomerate sector of the Nigerian Stock Exchange.

Hypotheses 3: To test for the mediating (indirect) effect of speed of divesture on the relationship between diversification and leverage:
H_{O3}a: extent of diversification does not significantly predict the capital structure of firms listed on the conglomerate sector of the Nigerian Stock in the presence of speed divestment.

H_{O4}b: Speed of divestment does not significantly mediate relationship between firm diversification and the capital structure of firms listed on the conglomerate sector of the Nigerian Stock.

The reminder of this paper is organized in following order. The next section provides a concise literature review and highlights of the major concepts and their measurement under this study and also presents a review of related empirical literatures. Within the first and second section, the view is to provide sufficient theoretical underpinning for the study. Section three presents the detailed methodology of the study covering methods, population and sample and the studies tool of data analysis. The penultimate section in the work presents extracts of analysis and a discussion of results. And in the final section, we present our conclusion and recommendations based on the findings of the study.

2. Review of Related Empirical Literature:

Sequel to Modigliani and Miller's (1958) irrelevance theory, a great number of both theoretical and empirical seminal works on the determinants of capital structure have been published. The current large body of extant literature has covered a wide number of variables that are either known to, or are suspected to determine the capital structure of firms. However, within the agency theory framework, Jensen and Meckling (1976) the conglomerates should have low level of debt largely due to diversification policy. Our search into the literature revealed that there is paucity in the investigation of this hypothesis and specifically no Nigerian work has investigated it. The extant literature search also revealed that there is a there are a number of studies that contradicted the theory, thus creating the impetus for use to add to the body of literature that explored the relationship. Below is a review of some of the studies that has investigated the relationship between leverage and conglomeration or extent of firm diversity.

Junior and Funchal (2013) Investigated whether firm diversification affects the capital structure of Brazilian firms listed on the São Paulo Stock Exchange and those firms with American Depositary Receipts (ADRs) by increasing their debt capacity by means of cross-pledging. They used a panel data model, to estimate the association between leverage and the degree of corporate diversification taking two groups of samples, that is those of companies listed on the São Paulo Stock Exchange (Bovespa) between 2009 and 2011 and Brazilian companies with access to international markets through American Depositary Receipts (ADRs) in the period 2003-2011. The study found that no statistically significant relationship exists between corporate diversification and leverage in either of the two samples. Gill and Mathur (2011) investigated the factors that influence financial leverage of one hundred and sixty six Canadian listed service firms. Secondary data from audited annual reports were obtained from this sector, using a correlational and non- experimental research design, panel data with ordinary least square regression was employed as techniques of data analysis within a period of three years from 2008-2010. Leverage was used as dependent variable measured as total liabilities divided by total asset while collateralized asset, profitability, effective tax rate, firm size, growth opportunity, industrial dummy and conglomeration measured as number of subsidiaries of a firm. The result revealed that, financial leverage of Canadian firms is influenced by profitability, effective tax rate, firm size, growth opportunity, industrial dummy and number of subsidiary. Specifically, number of subsidiaries was found to be significant and positively related with financial leverage of Canadian manufacturing firms while on the contrary, the same variable was found to be insignificant and negatively related with financial leverage of service firms in Canada.

Rocca, Rocca, Gerace & Smark (2009) investigated the financial strategy of Italian multi-segment business firms. They used secondary data in panel form spanning a period of 27 yeasrs for the study. The Generalize Method of Moment (GMM) model was used to explore the dynamic nature of capital structure decisions at firm level. Leverage was measured as total debt divided by total debt plus equity while return on asset, non-debt tax shield, firm size, tangibility, ownership concentration, growth opportunity and product diversification inform of business segment were used as independent variable. They found a significant relationship between diversification and leverage. The findings of the study are in tandem with the propositions of the SUDH supporting the hypotheses that diversification is a significant predictor of firm leverage.

Kooij (2013) examined the effect of firm diversification on leverage using a sample of 998 publicly traded U.S. firms before and during the financial crisis. The study used Ordinary Least Squares and Logit models as tools of analysis. At the end it established that diversified firms on the average are more levered than focused firms within the sample and found a positive significant relationship between diversification and leverage.

Berger and Ofek (1995) investigated the effect of corporate diversification on firm value using a sample 3,659 firms and 16,181 observations between 1986 and 1991. First, the industry adjusted leverage mean for single-segment and multi-segment firms was calculated. As a measurement of leverage they took total debt over total assets. After that, a t-test was performed to see if the means statistically differ. The average leverage ratio for diversified firms which was found to be 1.4% was found to be much higher that of focused firms within the sample. They classified a firm as multi-segment when it is found that at least 1% of total sales came from different segments. Their finding was consistent with the special use of debt hypotheses although they didn't specifically investigated whether conglomeration is a determinant of that difference in debt capacity between focused firms and diversified firms.

Singh et al. (2003) researched the effect of product and geographic diversification on capital structure of firms between 1994 and 1996. They took a sample of 1,127 firms which were classified as diversified using their SIC Code. Within their study, a product-focused firm is taken to be one that operates in a single business segment while a product diversified firm is one that operates in multiple business segments. The General Least Squares (GLS) technique was used to estimate the impact of product diversity, geographic diversification, asset turnover, firm size, and profitability, realized growth and expected growth on the leverage of the firms. The study found no statistical significant relation between leverage and product diversity but geographic diversification interacted with geographical diversification, they both tend to lead to low level of debt use. This result was attributed to coinsurance effect which helps create greater capacity for debt. The authors also claim that when no other variable is in the equation, product diversification turned out significant. However, when the proxy for size, that is, sale and log of total asset were added to the model, product diversification became in significant. This suggests some sort of partial relationship implying that the effect of diversification on leverage may vary given changes in firm size. Since size is a product of continuous acceleration, then this study may provide a lead into resolving that anecdotal part of their findings.

Investigating a total sample of 2108 firm-year observations through the period 1993 to 1999, Anderson and Reeb (2003) studied the relation between founding-family ownership, corporate diversification and firm leverage. They used both the Ordinary Least Square (OLS) and Logit models regressions as tools of analysis. Long-term debt over total assets was used as the measure for firm leverage. The study used dummy variable for family firms, dummy variable for CEO founder, dummy variable for CEO descendant, dummy variable for CEO hired, family control to ownership, block holders board independence, diversification dummy, size, growth, profitability, risk, firm age and cash ratio were all tested against firm leverage. Anderson and Reeb (2003) classified firm as diversified when a firm operates in two or more business segments. The study however, found no significant association between the diversification dummy and leverage of the studied firms. The evidence form the finding of this study contradicts the SUDH by Jensen and Meckling (1976). The study considered diversification from a narrow point of view which led to the authors dummy coding it. The study did not consider the proportion of the contribution of each segment to revenue in measuring diversification as may be found in the work of Berger and Ofek (1995).

Denis, Denis and Sarin (1997) provide evidence on the agency cost of corporate diversification. They found that the level of diversification is negatively related to managerial equity ownership and to the equity ownership of outside block-holders. In addition, they reported that decreases in diversification are associated with external corporate control threats suggesting that rather than leverage decision, financial distress, and management turnover are the greater considerations that drive diversification. These findings suggest that wider agency problems and not SUDH are accountable for firms continuing with value-reducing diversification strategies and that increase in corporate focus should be attributable to market disciplinary forces.

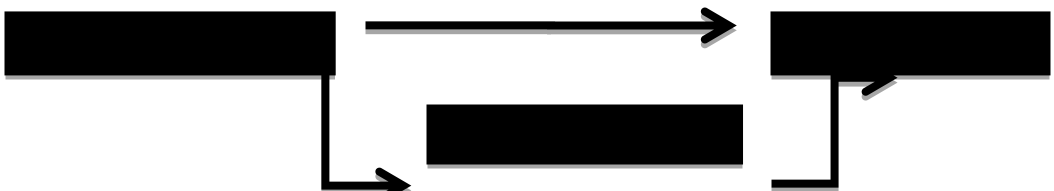
Dimitrov and Tice (2006) examined whether diversified firms have superior access to capital and consequently invest more in inventories, sales, and assets than their focused competitors during recessions using a multivariate regression analysis based on both segmental and USA firm level data from COMPUSTAT and SIC Code for over 7,000 diversified and focused firms. The period of the study was broken into recession and normal economic period which were further broken down into two years observations periods between 1979 and 1995. The study's findings were consistent with the prediction of higher agency costs of borrowing for focused firms, but documented a larger drop in growth in debt through recessions for focused firms when compared to diversified firms. Largely, the study suggested that focused firms are more financially constrained during recessions than their diversified competitors which imply that during normal times, focused firms have slightly lower debt/assets ratios than diversified firms. They concluded that ceteris paribus, debt rises at a quicker rate for focused firms than for diversified firms during normal economic times. The finding of Dimitrov and Tice (2006) is largely consistent with Lewellen's (1971) hypothesis that diversified firms have a higher debt capacity in general but under normal circumstance will be less levered than focused firms in line with the SUDH.

Comment and Jarrell (1995) investigated the firm's ratio of debt to financial liability for the 12 year period between 1978 and 1989. They calculated the average ratios for focused firms who operated in one segment and multi-segment firms who operated in two segments and those who operated in three segments and so on. Their findings revealed that diversified firms or multi-segment firms who operated in more than one segment had relatively higher level of debt than the observed focused firms. The measurement for conglomeration in this study is simply based on number of business segments or subsidiaries with no consideration for the level of revenue contribution from each segment.

The extant literature on diversification and leverage in conglomerates have increased over time however, none of the works have explored the potential effect of speed of divestiture on the relationship between them as proposed by the postulates of agency theory. This work intends to fill that gap in the literature by presenting empirical evidence on the mediating effect of speed of divestiture on relationship between diversification and leverage.

The study is underpinned by agency theory's special use of debts hypotheses (Jensen & Meckling, 1976). The theory provides a predictive framework for determining the leverage of conglomerates under the SUDH. The variables adopted for this study are proxied based on what is present in extant literature. Based on the SUDH leverage was proxied with short term debts and conglomeration loosely used as diversification is proxied by number or firm subsidiaries. However, the speed of divesture proxied by acceleration coefficient is included because the AC is a measure of how quick the firm has to invest in capital goods (PP&E).

Figure 1: Special Use of Debts Hypotheses Theoretical Framework



Source: Author's depiction based on Jensen and Meckling (1976) SUDH

The above framework suggests that the impact of any change in number of subsidiaries on short term debts in conglomerates will be mediated by the firm's acceleration coefficient which serves as a conduit for partial effects transmission from changes in number of subsidiaries to short term debt.

3. Methodology and Data

The study utilizes a design which is targeted at determining the relationship between variables and investigating the extent and nature of their association as confirmation of theoretical propositions via hypotheses testing. The study is confirmatory, thus, adopts the positivist research paradigm, which observes reality objectively and independent of the researcher's feelings and perceptions. Positivism investigates phenomenon objectively with the view of providing rational explanations about them which are aimed at establishing causal association amongst the variables being studied by relating them to specific theories or practices (Saunders, Lewis & Thornhill, 2012). In line with the study's research paradigm, the study is based on a deductive research approach and a mono-method quantitative methodology leading to a descripto-explanatory quasi-experimental research strategy to be used in the analysis of the secondary panel data of up to 7 years (2007 to 2013) collected from the audited annual reports of the 6 cross-sectional units of conglomerates quoted on the NSE as at 31st December 2013.

The Heteroskedasticity and Autocorrelation Corrected (HACC) Pool Ordinary Least Squares regression technique of data analysis and estimation was used in analyzing the relationship between the capital structure, conglomeration and . Three functional equations were estimated for the study with a view of identifying mediation and treatment effect of the explanatory variable. The study used the approach to estimating mediation as described by Muller, Judd and Yzerbyt (2005) for estimating and identifying conditional effects amongst variables.

The first equation estimated the direct treatment effect of conglomeration on capital structure while the second equation estimates indirect effects, that is, the effect of conglomeration on the mediating variables (ease of divestment). The third equation estimates the total relationship where both the treatment variable (conglomeration) and the mediator (ease of divestment) are regressed against the explained variable (capital structure). Statistical analysis was done with the use of GNU Regression, Econometrics and Times-series Library (Gretl) 1.9.92 statistical package.

The research used quantitative data on firms' leverage, extent of diversification and acceleration were collected from all the annual report of all the six conglomerates listed on the Nigerian Stock Exchange as at 31st December 2013 for the purpose of this study. To reduce the potential for multicolinearity in the data set, the data was mean-centered across each cross section. Kim et al., (2001) suggested that mean-centering of the independent non-categorical data may be used to dampen the level of multicolinearity in the data and Dawson (2014) reckoned that it could even improve the estimations of variables within the regression model.

The general model for the study can be represented by the functional equation of the relationship hypothesized between leverage and firm's diversification with acceleration as a mediating condition. These specifications are in line with the general approach to the method of measuring indirect effects or mediation using regression equations as recommended by Muller, Judd and Yzerbyt (2005) which requires that:

i. The independent variable is a significant predictor of the dependent variable. This is called direct effect, it is can be determined using captured in Model 1.
ii. The independent variable is a significant predictor of the mediating variable. This is used to determine the existence of any partial effects between the independent variable and the mediator. It is expressed in Model 2.

iii. Both the independent variable and the mediator are statistically significant predictors of the dependent variable. This is relationship will be estimated using Model 3.

Hence the three required functional relationships that need to be determined in order to achieve the objective of this study are expressed as below:

i. **Direct effect functional equation:**
Short Term Leverage = *f*(Diversification of business)

ii. **Indirect effect functional equation 1:**
Acceleration = *f*(Diversification of business)

iii. **Indirect effect functional equation 2:**
Leverage = *f*(Diversification of business, acceleration)

The specific equations for the main effect and the interaction effects are presented as follows:

Main effect (Model 1)

$LEV_{it} = \alpha_0 + \alpha_1 CoBc_{it} + \varepsilon_{it}$ ………………….…………………………… i

Partial effect (Model 2)

$Accelc_{it} = \alpha_0 + \alpha_1 CoBc_{it} + \varepsilon_{it}$ ……………………..………………………... ii

Indirect effect (Model 3)

$LEV_{it} = \alpha_0 + \alpha_1 CoBc_{it} + Accelc_{it} + \varepsilon_{it}$ …………………………………… iii

Table 1: Variable definition and Measurement

Variable	**Type**	**Measurement**
Leverage (Lev)	Dependent	Short term debts (current liabilities) scaled by total asset
Diversification of Business (DoBC)	Independent	Mean-centered value of number of subsidiaries
Acceleration (AccelC)	Mediator	Mean-centered change in Fixed assets scaled by Change in Gross Sales
α_0	Constant	common intercept of the equation
α_1 *and* α_2	Coefficients	coefficients of independent variables
C	Centered Variable	Absolute value of X less Mean of X of firm *i* at time *t*
I	Cross-sections	Firm *i*,
T	Time series	Years
ε_{it}	Error term	Model residual

4. Discussion and Analysis of Results

The analysis of the study's data is broken down into two categories of analysis, first the descriptive statistics which describe the general nature of the data and subsequently the inferential analysis which analyses behaviour of the data. The results are presented and discussed below:

4.1 Descriptive Statistics

The descriptive statistics of the collected data are presented in Table 2 below:

Table 2: Summary Statistics

Variable	**Mean**	**Minimum**	**Maximum**
Leverage	0.184874	0.000188006	0.946721
Diversification	5.05063	0.456625	12.5845
Acceleration	0.711315	-6.31884	28.4972
Variable	**Std. Dev.**	**Skewness**	**Ex. kurtosis**
Leverage	0.211751	1.70006	2.73129
Diversification	3.24441	0.849607	-0.243337
Acceleration	4.70167	5.04358	27.7138

Source: Author's computation

The summary statistics table provides the general description of the data which includes mean, median, mode, skewness, kurtosis etc. The data revealed that short-term leverage amongst conglomerates listed on the NSE has a maximum of approximately 0.95 and a minimum of as low as 0.0001. This indicates that although some conglomerates may have a high level of leverage most have very low level of leverage considering that both mean and the median are crowded around the minimum at 0.18 and 0.12 respectively. This is indicative of a high range in the level of leverage amongst Nigerian conglomerates. This is also indicative of a slight positive skew in the leverage which is confirmed by the skewness 1.7 and a kurtosis of 2.7. Although this slight skew may be observed, it is not sufficient to confirm the approximate normality of the residuals of the data (Hair et al., 2010).

The data also revealed that the maximum number of subsidiaries held any conglomerate is approximately 13 with the minimum being 1. This shows a wide range of difference in number of subsidiaries between the larger and smaller conglomerates. The average number of subsidiaries is 6 and a skewness of 0.85 and a kurtosis of -0.24 respectively. This is indicative that the data is evenly distributed with no skew, thus can be said to be approximately normal in distribution. Acceleration which measures the speed of divesture policy in conglomerates has a minimum of -6.3 and a maximum of 28.5, this shows a very wide distribution in the rate at which listed conglomerates increases their investment or divestment in assets. The mean acceleration of 0.711 is rather close to zero indicating that the data might be a slightly skewed, which is confirmed by the skewness score of 5.04 and the kurtosis of 27.71 respectively. Overall, although the data has shown element of slight skewness, it has yet appeared balance for the purpose of parametric testing.

Correlation Matrix

The correlation coefficients, using the observations 5% critical value (two-tailed) for a total of 42 observations are presented below in Table 3:

Table 3: Correlation Matrix

Leverage	Diversification	Acceleration	
1.0000	-0.3343	-0.2209	Leverage
	1.0000	0.1532	Diversification
		1.0000	Acceleration

Source: Author's computation

The correlation matrix is used to assess the extent of joint variation or inter-correlation amongst independent variables in the study. Although high level of collinearity based on the correlation matrix might be indicative of multicolinearity, it is not the conclusive test for the existence of harmful multicolinearity in the data set (Gujarati, 2005). In this case the data set has shown low level of correlation amongst the variables, with the correlation coefficient between diversification and acceleration 0.1532. Correlation may only be deemed to high where the coefficient is as high as 7 and above, but harmful multi-collinearity will tested using the Variance Inflation Factor (VIF) to confirm the presence of harmful multi-collinearity.

Table 4: Variance Inflation Factors

Variable	**VIF**
Diversification	1.024
Acceleration	1.024

Source: Author's computation

Table 4: shows the multicolinearity test for the independent variables using the Variance Inflation Factor (VIF). The VIF for Diversification and Acceleration is 1.024 which is far less than the 10 benchmark before harmful multicolinearity can be contemplated (Hair et al., 2010; Gujarati, 2005). This there is taken as evidence of the absence of harmful level of multicolinearity in the variables which according to Watsham and Parramore (1997) may lead to unstable estimates of parameters.

4.2 Inferential Statistics:

In order to examine the causality that exists between the dependent variable and independent variables for the purpose of testing of the formulated hypotheses the Heteroskedasticity and Autocorrelation Corrected (HACC1) regression analysis. Each of the three models as specified in the previous section was estimated and the results are discussed in the sub-section that follows. The analysis results from the main or direct effect model (model 1), partial effect model (model 2) and the indirect effect model (model 3) are shown below in Table 5.

Table 5: Heteroskedasticity Autocorrelation Corrected Regression Results[1]

	Direct Effect (Model 1)			**Partial Effect (Model 2)**			**Indirect Effect (Model 3)**		
	Co-eff.	**T-value**	**P-value**	**Co-eff.**	**T-value**	**P-value**	**Co-eff.**	**T-value**	**P-value**
Constant	0.6349	9.290	0.000	-1.659	-4.031	0.0046	0.6241	9.031	0.000
Diversification	−0.0224	-2.692	0.010	0.1139	2.9312	0.0007	-0.002	-2.362	0.023
Acceleration							-0.008	-3.085	0.003
R-Square	**0.1533**			**0.2558**			**0.3079**		
F-statistics	**7.246**		0.0103	**8.5919**		0.007	**8.6787**		0.000
Std Error	**2.029**			**1.769**			**2.0756**		

Source: Researcher's computation using Grtle

4.3 Discussion of Results and Findings

The results discussed above are based on a Heteroskedasticity Corrected models, this means that the results are corrected for any inherent Heteroskedasticity inherent in the data which can make the results unreliable. However, with the use of the HACC model, the residuals are adjusted to be consistently homoscedastic which fulfills the requirement of equal variance in the residuals to enable us draw reliable inferences from the model results. The analysis of the studied data revealed that models 1, 2 and 3 were all statistically significant with F-statistics values of 7.246 (P-value <0.0103), 8.592 (P-value <0.007) and 8.679 (P-value <0.000) respectively. The F-stat., for all the models has provided evidence that the level of variability observed between the dependent, independent and moderating variables (short-term loans, diversification, acceleration) are not equal to zero, therefore the models are all fit to provide predictions based on the hypothesized relationships proposed for testing the particular agency proposition on the special use of debts by conglomerates using data from Nigerian conglomerates.

[1] Short term debt is the dependent variable in equation 1 & 3 while Acceleration is the dependent variable in equation 2.

However, consequent upon the F-stat results, the R-squared which represents the overall predictive power of the models and measure of the extent to which the variability in leverage (proxied as short term loans) is explained by the variability in the independent (diversification) and moderating (speed of divestment, proxied as acceleration) variables, also shows that short term debts varies with diversification and leverage are at different levels in each of the models. Models, 1, 2 and 3 produced R-squares of values 0.1533, 0.2558 and 0.3079 indicating that 15.33% of the variability in short term debt is explained by diversification alone holding all other covariates constant. The data also revealed in Model 2 that, an estimate of 25.58% of the changes in level of Nigerian conglomerate firms' acceleration is explained by their extent of diversification. Finally, in the third model, we tested the joint effect of both diversification and acceleration on leverage; the results from our analysis provide evidence that about 30.9% of the variability in leverage is explained by diversification and acceleration.

The reminder of the results from presented in Table 5 are interpreted as follows: Model 1 measures the extent to which diversification directly predicts the level of leverage in conglomerates in Nigerian conglomerates. The result reveals that as conglomerates increase the number of their subsidiaries one firm, their level of short term debts decreases by N0.0224 Billion. This relationship is found to be significant at 1% level of statistical significance. This finding does not support and thus provides evidence for us to reject the null hypotheses1 (H_0:1) which postulated that firm number of subsidiaries (diversification) in Nigerian conglomerates does not significantly predict the level of their leverage (short term debts) and leads us to accept that diversification is a statistically significant predictor of leverage in conglomerates in Nigeria. As a condition is determining mediation or indirect effect amongst variables it is required that in model 2 firm diversification should be a statistically significant predictor of acceleration as a precondition for acceleration to be considered an effective conduit through which diversification can transmit indirect effect to the dependent variable (leverage). Model 2 reveals that firm diversification is indeed a statistically significant predictor of firm acceleration at 1% level of significance. Furthermore, it can be inferred that, N1Billion increase in the short term debts of conglomerates in Nigeria will lead to 11.39% increase in the speed at which they accelerate their investment in fixed asset as a ratio of their revenue. This result does not support and provide evidence for us to reject the study's null hypotheses 2 (H_0:2) which predicted that number of subsidiaries in Nigerian conglomerates is not a statistically significant predictor of their rate of acceleration, albeit, change in investment in fixed assets as a ratio of change in their revenue. Further to the rejection of this hypothesis, we can impliedly accept that, acceleration is fit to be tested as a conduit for the transmission of indirect effects between firm diversification and leverage.

Finally, the result from Model 3 which predicts the relationship between short term debts, diversification and acceleration provides evidence to supports that both acceleration and diversification are statistically significant predictors of firms' level of leverage in conglomerates at 1% and 5% level of significance respectively. This allows us to reject null hypotheses 3a and 3b (H_o:3a and H_o:3b) and alternatively accept that; (1) in the presence of speed of divesture (acceleration) diversification is a statistically significant predictor of the short term debts of conglomerates and, (2) acceleration is statistically significant mediator of the relationship between diversification and leverage. The evidence showed that, as both diversification and acceleration increases by one subsidiary and one unit of rate of change in investment in fixed assets as a ratio of change in their revenue, leverage decreases by N0.002 billion and N0.008 billion respectively.

From the result of this study, empirical evidence has been found to support Agency Theory's proposition on the special use of debts by conglomerates as presented by the ground breaking work by Jensen and Meckling (1976). Among other things, it has also been found that the number of subsidiaries controlled by a conglomerate is a determinant the of its short term debts. In line with Jensen and Meckling (1976), we that, as number of subsidiaries increases, short term debts tend to decrease. This relationship could be explained from the point of view of tunneling and propping literature like Cheung et al. (2006) that argued that, conglomerates will normally use their internal capital market structure to prop up weak subsidiaries during bad time and tunnel funds from performing subsidiaries during good economic times. This finding provides a point of intersection between agency theory and Myer and Majluf's (1984) pecking order theory which proposed internal capital market to be the first point of call for firms in need of fresh funding. This finding is in line with and further emphasizes the assertions and findings of studies like Kooij (2013), Berger and Ofek (1995) and Gill and Mathur (2011) which found a significant relationship between conglomeration and leverage but is in contrast with the findings of Singh et al (2003) Anderson and Reeb (2003), Denis, Denis and Sarin (1997) and Junior and Funchal (2013) which found insignificant relationship between diversification and leverage.

This study has also found empirical evidence to support the existence of significant relationship between the number of subsidiaries in conglomerates and the rate at which they accelerate or increase their investment in fixed assets in response to changes in level of sales. It provides evidence to support the claim that as conglomerates increase the number of their subsidiaries (diversification), the corresponding change in their leverage is related to the indirect relationship between the rates at which they invest in fixed assets in response to increase in sales from new subsidiaries. This finding is confirmatory to the "Acceleration Theory" as proposed by Hicks (1950) that suggest a link between a positive relationship between output and investment in capital goods. And finally, the study has documented that speed of divesture is a mediating condition for conglomeration to impact firm's leverage. This is to the best of our knowledge the first study to document such evidence as a confirmation to Agency theory's proposition on the special use of debts.

5.1 Conclusion

The study is confirmatory to the proposition by Jensen and Meckling (1976) that in the case of special use of debts by conglomerates that the speed and ease with which conglomerates can change their divesture policy to enjoy some advantage against bond holders is a mediating factor that on the extent to which conglomeration determine the use of debts in diversified firms. The study provides empirical evidence to why the internal capital market structure assumption that has explained the low use of debts by conglomerates should remain an important aspect in determining the optimal capital structure in conglomerates. Also, that the larger the number of subsidiaries in conglomerates the better it is positioned to take advantage of its internal capital structure through tunneling and propping as economic conditions changes from boom to recession and vice versa.

5.2 Recommendation

Based on the findings of this study, we make the following recommendations with a view to pointing to likely beneficiaries of the study to draw from in implementing the findings of the study:

i. This study recommends that, regulators like Central Bank of Nigeria (CBN), National Deposit Insurance Corporation (NDIC), Security and Exchange Commission (SEC), Federal Inland Revenue Service (FIRS) and Corporate Affairs Commission (CAC) should focus, closely monitor and regulate conglomerates with high divesture rates whenever there is a sudden change in their number of subsidiaries. Particularly, the tax authorities should closely identify the use of changes in conglomerates that affects the use of debts which may give firms pecuniary benefits in the form of debt tax shield against public interest. While the SEC and CAC should close regulate the registration and listing of subsidiary firms by conglomerates in order to ensure that "shell companies" are not being established only with the view of short-changing the government in revenue remittance through tunneling of funds or propping.

ii. Particularly, small investors that may not be well informed about the operation of the conglomerates they have invested in should constantly monitor significant changes in the diversity of such firms in order to avoid being short changed by managers through propping of value to higher firms where that have no interest by adjusting their personal divesture policy.

iii. Management of conglomerates should take advantage of good economic conditions by expanding and increasing their number of subsidiaries so as to extract maximum economic benefit from internal capital market. The funds raised through the internal capital structure should be ploughed back to ensure that the benefit firm acceleration is not lost by the firms.

5.3 Limitations and Suggestion for Further Research

The study heavily relied on the Hicksian acceleration theory to proxy speed of divesture. Although we have not found in the literature this was used in the past it yet a major thing of concern. This therefore requires that future researchers in this area should exert much effort in finding a proxy for speed of divesture to enable a more accurate, valid and reliable result.

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Appendices

Summary Statistics

Variable	**Mean**	**Median**	**Minimum**	**Maximum**
STL/TA	0.184874	0.115178	0.000188006	0.946721
Diversification	5.05063	3.63448	0.456625	12.5845
Acceleration	0.711315	0.0198331	-6.31884	28.4972
Variable	**Std. Dev.**	**C.V.**	**Skewness**	**Ex. kurtosis**
STL/TA	0.211751	1.14538	1.70006	2.73129
Diversification	3.24441	0.642376	0.849607	-0.243337
Acceleration	4.70167	6.60982	5.04358	27.7138
Variable	**5% Perc.**	**95% Perc.**	**IQ range**	**Missing obs.**
STL/TA	0.000215681	0.639005	0.225666	0
Diversification	1.45663	12.4345	3.77351	0
Acceleration	-3.56377	6.20132	0.786723	0

Current Asset =f(diversification)………………………………… i

Heteroskedasticity-corrected, using 42 observations
Dependent variable: CULIB_TA

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
Const	0.634924	0.0683445	9.2900	<0.00001	***
Complx_C	−0.0223757	0.00831247	-2.6918	0.01033	**

Statistics based on the weighted data:

Sum squared resid	164.6864	S.E. of regression	2.029078
R-squared	0.153366	Adjusted R-squared	0.132200
F(1, 40)	7.245891	P-value(F)	0.010325
Log-likelihood	−88.28926	Akaike criterion	180.5785
Schwarz criterion	184.0539	Hannan-Quinn	181.8524

Statistics based on the original data:

Mean dependent var	0.520794	S.D. dependent var	0.266664
Sum squared resid	2.600988	S.E. of regression	0.254999

Test for normality of residual -
Null hypothesis: error is normally distributed
Test statistic: Chi-square(2) = 18.2729 with p-value = 0.000107669

Acceleration =f(diversification)…………………………………………. ii

Model 82: Heteroskedasticity-corrected, using 27 observations
Dependent variable: l Acceleration

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	−1.65992	0.411844	-4.0305	0.00046	***
ComplxC	0.113893	0.0388555	2.9312	0.00712	***

Statistics based on the weighted data:

Sum squared resid	78.25553	S.E. of regression	1.769243
R-squared	0.255774	Adjusted R-squared	0.226005
F(1, 25)	8.591934	P-value(F)	0.007119
Log-likelihood	−52.67727	Akaike criterion	109.3545
Schwarz criterion	111.9462	Hannan-Quinn	110.1252

Statistics based on the original data:

Mean dependent var	−1.044198	S.D. dependent var	1.540104
Sum squared resid	57.48938	S.E. of regression	1.516435

Test for normality of residual -
Null hypothesis: error is normally distributed
Test statistic: Chi-square (2) = 4.30044 with p-value = 0.116459

Current Liability = f(diversification, Acceleration)……………………iii

Model 113: Heteroskedasticity-corrected, using 42 observations
Dependent variable: CULIB_TA

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	0.62413	0.0691072	9.0313	<0.00001	***
ComplxC	−0.0210461	0.00890901	-2.3623	0.02325	**
AccelC	−0.00851407	0.0027591	-3.0858	0.00372	***

Statistics based on the weighted data:

Sum squared resid	168.0256	S.E. of regression	2.075656
R-squared	0.307988	Adjusted R-squared	0.272500
F(2, 39)	8.678706	P-value(F)	0.000762
Log-likelihood	−88.71079	Akaike criterion	183.4216
Schwarz criterion	188.6346	Hannan-Quinn	185.3324

Statistics based on the original data:

Mean dependent var	0.520794	S.D. dependent var	0.266664
Sum squared resid	2.517676	S.E. of regression	0.254078

Test for normality of residual -
Null hypothesis: error is normally distributed
Test statistic: Chi-square (2) = 19.0998 with p-value = 7.12099e-005