Agency Cost and Corporate Valuation of Quoted Manufacturing Firms in Nigeria

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ABSTRACT

This study examined the relationship between agency cost and valuation of quoted manufacturing firms in Nigeria. The purpose was to examine the relationship between agency cost and corporate valuation. The study modelled equity value and net present value as the function of monitoring cost, bonding cost, residual loss and operating cost. Panel s data were sourced from financial statement and annual reports of the manufacturing firms from 2016-2020. The study found that 52.7 and 60.2 percent variation in equity value and net present value of the quoted manufacturing firms can be traced to variation in the agency cost variables as estimated in the regression model. Beta coefficient of the variables fond that bonding cost and monitoring cost have positive effect while operating expenses and residual loss have negative effect on equity valuation. bonding cost, residual loss and operating cost have negative effect on net present value while monitoring cost have negative effect on the net present value of the quoted manufacturing firms. the study conclude that Monitoring cost has no significant effect on equity valuation but monitoring cost has significant effect on net present value. Bonding cost has significant effect on equity valuation; bonding cost had significant effect on net present value. Residual loss has no significant effect on equity valuation but residual loss has significant effect on net present value. Operating cost has significant effect on equity valuation but operating cost has significant effect on net present value. It is recommended that manufacturing firms should establish policies for executive stockholding.

Keywords: Agency Cost, Corporate Valuation, Manufacturing Firms, Nigeria

INTRODUCTION

Fisher separation theory 1939 opined that the primary objective of corporation is the maximization of present value regardless of the shareholders preferences. Fishers' opinion is in line with Companies and Allied Matter Act 1990 as amended that every public limited liability companies allow for the separation of ownership from management. This means that owners do not need to be managers and managers do not need to be owners. While the owners invest and provide strategic advice, direction and clear guidelines for implementing plans with the objective of maximizing return on investment, the management has the function of planning, directing, controlling and organizing the corporate resources to achieve the shareholders and stakeholders expectations (Ang, Cole and Lin, 2016). Smith (1943) famously warned against the negligence and profusion of managers handling money other than their own.

Principal-agent relationship in the corporation involves agency cost that arises out of it (Jensen & Meckling, 1976). Agency costs are one of the internal costs attached with the agents that occur due to the misalignment of the interest between the agent and principal. It embraces the cost of examining and picking up a suitable agent, collecting of information to fix performance benchmarks, watching to control the agent's action, bonding costs and the loss due to the inefficient decisions of the agents. Jensen and Meckling (1976) described the agency cost as the aggregate of the monitoring cost, bonding cost and residual loss.

Agency cost is measured using different approaches such as: total asset turnover (Singhand Davidson, 2003); operating expense to sales ratio (Wang, 2010), administrative expense to sales ratio (Ang, Cole & Lin, 2000) earnings volatility, advertising and research and development expense to sales ratio and floatation cost (Crutchley & Hansen, 1989). The agency relationships and the conflicts lead to private benefit of control and the expropriation of the wealth of owners (Dyck and Zingales, 2004) bankruptcy or liquidation (Jensen and Meckling, 1976) which is agency costs. The agency cost is detrimental to the investors and to the corporation as a whole. Problems of agency costs emanate from this fact that investors usually do not have the desire and or ability required to manage the affairs of company, therefore, assign this responsibility to managers. Nowadays, problem of agency costs has become one of the most important concerns of shareholders and have threatened corporate survivals and values.

There have been spectacular corporate scandals and bankruptcies in the past decades which have served as a powerful reminder of the risks that are involved in the ownership of enterprise. Unlike other patrons of the firm, owners are residual claim-ants on its earnings (Hansmann, 1992). As a result, they have no explicit contract to protect their interests, but rely instead upon formal control of the decision-making apparatus of the firm in order to ensure that their interests are properly respected by managers.

The early twenty-first-century wave of corporate scandals demonstrated once again, it can be extraordinarily difficult for shareholders to exercise effective control of management, or more generally, for the firm to achieve the appropriate alignment of interests between managers and owners. Corporate scandals such as Enron, Tyco, Worldcom, Parmalat, Hollinger, and elsewhere, Oceaanic bank, Intercontinental bank, Afribank, Skyebank affected shareholders value. One of the reasons that Enron's collapse was particularly damaging to its employees was that so many of them were also shareholders, through the company (Fehr and Gächter, 2012).

Furthermore, deception and misappropriation of funds by the agent represent perfect examples of the type of moral hazard problems that are an endemic feature of principal-agent relations. Thus

one might expect business ethicists to embrace agency vocabulary as a way of stating with greater precision the exact nature of the moral obligations that were violated at Enron and elsewhere. One might also expect business ethicists to insist that greater attention be paid to agency relations and to the potential moral hazard problems that harbor as a way of avoiding such scandals in the future.

The relationship between agency cost and corporate valuation has well been examined, however, most of the studies are foreign studies and focused on agency cost and corporate profitability (Nazir, Saita, and Nawaz,. 2012; Mostaghimi, Ramezanpour and Nozari, 2014; Cheng, and Tzeng, 2011), therefore this study examined the relationship between agency cost and valuation of quoted manufacturing firms in Nigeria.

LITERATURE REVIEW

Agency Cost

Jensen and Mecklings (1976) defined agency costs in light of the firm as a nexus of relationship. In the definition, they concentrated largely on the possible costs, which might arise when a firm (the principal) hires managers from outside (the agent) to act on its behalf. Along that framework, they developed agency theory within the context of the conflicts of interest between corporate managers and equity and debt holders who are seldom if ever involved in the day-to-day running of the business. In their own words, agency cost of a firm is the sum of: (1) the monitoring expenditure by the principal, (2) the bonding expenditures by the agent, (3) the residual loss. The definition is explicit about the key sources of agency related costs to a firm (monitoring, bonding and residual loss). The reduced welfare of the principal is the residual loss.

Monitoring Cost

Monitoring costs are those costs that are incurred in relation to activities like imposing budget and operating restrictions and constraints on the agent and linking agent's compensation with the outcome of monitoring. Bonding costs, on the other hand, are incurred by the agent (upon approval by the principal) on activities such as accepting contractual limitations on the agent's decision making power and agreeing to have accounts audited by a qualified auditor. The agency costs in any enterprise depend on the lack of information about the agent's activities, and the costs of monitoring and analyzing the management's performance, the costs of devising a bonus scheme which rewards the agent maximizing the principal's welfare and the costs for determining and enforcing policy rules. They further also depend on the supply of replacement managers (Fleming, 2015).

Executive Compensation

In modern firms, top executives are normally paid salary plus short-term incentives or bonuses. This combination of fixed salary and variable components like bonuses are often referred to as total cash compensation. Short-term incentives usually are formula-driven and have some performance criteria attached depending on the role of the executive. This is to motivate managers to work hard to achieve good results for the firm's owners. In many cases, top executives are known to be offered ownership stake in the business as a motivation for them.

The Sales manger's performance related bonus may be based on incremental revenue growth turnover; a chief executive officer's bonus may be based on incremental profitability and revenue

growth. Bonuses are after-the-fact and often discretionary. Executives may also be compensated with a mixture of cash and shares of the company which is almost always subject to vesting restrictions (Edmans, Gabaix, & Jenter, 2017). Executive compensation can be fixed or variable like salaries which are normally fixed and performance bonuses which vary based on the performance of the business. They can also be long-term such as stock options or short-term such as formula driven performance incentives like bonuses. Below, we shall discuss some of them.

Residual Loss

The conflict of interest between the shareholders and managers results in another problem, where the decision taken by the managers are not aligned to maximize the wealth of the owners. These inefficient managerial decisions lead to a loss known as the residual loss. Williamson (1988) elucidated that the residual loss is the key component of the agency cost, which should have to be reduced by the principals. To reduce the residual loss, the owners incur monitoring cost and bonding cost. Hence, these costs have become the whole of the irreducible agency cost.

Bonding costs

The third aspect of agency costs is costs that might be incurred to provide incentives to managers to act in the best interests of the shareholders. These are sometimes called bonding costs. These costs are intended to reduce the size of the agency problem. Directors and other senior managers might be given incentives in the form of free shares in the company, or share options. In addition, directors and senior managers might be paid cash bonuses if the company achieves certain specified financial targets (Liao and Lin, 2017). The remuneration packages for directors and senior managers are therefore an important element of agency costs.

Agency costs and Director's Remuneration

A major component of corporate governance is the remuneration that is provided to managers of a firm. Studies by Core & Guay (2001); Murphy (1999) conclude that, given the information asymmetry between managers and shareholders, compensation contracts can motivate managers to take actions that maximize shareholders' wealth. However, director's remunerations considered to be a debated component of corporate governance. The literature generally suggests that better remuneration may mitigate agency's problem (Jensen and Meckling, 1976; Andreas, Rapp, & Wolff, 2012) and achieve better performance (Cheng and Firth, 2006). The existence of problems in an agency is often because of dissimilar interests between the board of directors, which has the intention of increasing their personal wealth, and the shareholders, whose objective is to maximize shareholder wealth (Jensen and Meckling, 1976, Fama and Jensen, 1983, Fama, 1980). A manager who is satisfied with his compensation package will be less likely, ceteris paribus, to utilize insufficient effort or perform expropriation behaviour and, hence, risk the loss of his job.

However, agency theory suggests that an optimal contract drives the motivation and willingness of the board of directors to work for the shareholders' interests (Bebchuk and Fried, 2003). In contrast, (Henry, 2010) documented that remuneration structure mechanism has a negative influence on agency cost. Monitoring through an engaged and freewheeling boards of directors notify that managers enact in the shareholders' best interest (Fama & Jensen, 1983).

Corporate Valuation

Valuation is the process of determining the intrinsic value of common stocks. In order to understand valuation, two main concepts of value must be understood. First, the commonly accepted theoretical principle to value any financial asset is the discounted cash flow methodology (Reilly and Brown, 2003). An asset is worth the amount of all future cash flows to the owner of this asset discounted at an opportunity rate that reflects the risk of the investment (Pratt, 1998). This fundamental principle does not change and is valid through time and geography. A valuation model that best converts this theoretical principle into practice should be the most useful. Based on the first concept, the second concept states that valuation is inherently forward looking.

Valuation requires an estimate of the present value of all expected future cash flows to shareholders. In other words, it involves looking into an uncertain future and making an educated guess about the many factors determining future cash flows. Since the future is uncertain, intrinsic value estimates will always be subjective and imprecise. Better models and superior estimation techniques may reduce the degree of inaccuracy, but no valuation technique can be expected to deliver a single correct intrinsic value measure. These main concepts illustrate that there are few things more complex than the valuation of common stocks. Thousands of variables affect the future cash flows of a company and thus the value of a stock. Most variables are known, but very few are understood; they are independent and related, they are measurable, but not necessarily quantitative, and they affect stock values alone and in combination.

Theory of Agency Problem

An agency problem in its most general sense arises when the welfare of one party the principal depends upon actions taken by another party, termed the agent. It is termed as a problem because of the central question as to how to ensure that the agent would act in the principal's interest rather than simply in the agent's own interest.

The theory of the agency problem seeks to address the question as to how the shareholders (the principal) of a company can assure themselves that once they invest their funds, the management (the agents) will act in a manner that protects the former's interest. The question arose in the context of the pioneering study by Berle and Means (1999) on the separation of ownership and control in American corporations. They noted that a diffusion in ownership meant that the shareholders were more fragmented among large number of individuals which in turn meant that the shareholders were unable to monitor the actions of the managers, because the fragmented owners lacked sufficient financial incentives to intervene directly in the affairs of the company.

The Theory of Agency Costs

Many difficulties associated with the insufficiency of the current theory of the firm which also can be viewed as specific cases of the agency relationships theory that leading to the growing of literature (Ross, 1973; Heckerman, 1975). Independently, this literature has been developed despite concerning on the similar problem as the approaches are highly complementary to each other. The study of Jensen & Meckling (1976) stated a contract under which one or more persons, both the principals and the agents engage one another to perform some tasks or service on their behalf which involved delegation of some decision making authority to the agent, namely agency relationship. There is relevant reason to believe that the agent sometimes will not act in the best interests of the principal if both parties are utility maximizes in this relationship.

Empirical Review

Wang (2019) used six different proxies of agency costs from which asset turnover is one of them. He concluded that if only total asset turnover and operating expense ratio are to be regarded as sufficient agency cost measures for agency costs and disregard the remaining proxy variables of agency costs (which seems insignificant from his findings), his study can be said to have found evidence, sufficient to give support to the free cash flow hypothesis. Nevertheless, certain methodological oversights by the study might have necessitated the conduct of this study. Iskandar et al (2017) used firms listed on Bursa- Malaysia stock exchange. This study also tested their hypotheses using cross sectional regression and concluded with a significant positive impact of free cash flow on agency cost negative impact on asset utilization. They hence concluded that free cash flow may be invested unproductively, thereby resulting to inefficient assets utilization. As observed in the previous evidence, along with the assumption that firms' characteristics are the same, cross sectional regression also assumes that the variables' variations are not affected by time.

Iran Pouraghajan (2012) studied the effect of free cash flows and agency costs on the performance of listed companies in Tehran Stock Exchange. A sample of 140 companies were selected during the time span from 2006-2011. Efficiency ratios were used as measures of agency cost and Len and Paulsen model issued to measure free cash flows. F-Limer and Hausman tests were used to appropriate estimate of models for selecting among one of methods of the common effects, fixed effects and random effects. Results from research hypotheses testing have shown that there is no significant relationship between free cash flows and firm performance. While, there is significant and positive relationship between total asset turnovers with measures of firm performance. Negative and significant relationship is observed between operating income volatility with measures of firm performance. Bebeji, Mohammed and Tanko (2015) analyze the effect of board size and composition on the performance of 5 Nigerian banks for the period of 9 years. Using multivariate regression analysis, the finding of the study reveals that the board size has significant negative impact on the performance of banks in Nigeria. Johl, Johl and Cooper (2015) examine the impact of board characteristics and firm performance of 700 public listed firms in Malaysia for the year 2009. The result shows that board independence does not affect firm performance, whilst board size and board accounting/financial expertise are positively associated with firm performance.

Isik and Ince (2016) investigated the impact of board size and board composition on performance of 30 commercial banks from 2008 to 2012 in Turkey. After controlling for bank size, credit risk, liquidity risk, net interest margin and non-interest income, the results of panel fixed effects regression suggest that board size has a significant positive effect on bank's performance (Operating Return on Asset, OROA and Return on Asset, ROA). Munyradadzi and Nirupa (2016) explored the effect of board composition and board size on financial performance of companies listed on the Johannesburg stock exchange in South Africa. Result shows that board size is not significantly associated with Tobin's Q and ROE (performance measures). In contrast to this result, board size is found to be positively associated with another performance measure, ROA. Some prior studies the review of prior studies covered governance measures like board gender diversity and non-executive director's composition and corporate performance in both Nigeria and other countries.

Ogunyemi, Adewole and Akinde (2019) examined the effects of employees' remunerations on productivity in Nigerian breweries. The study used descriptive research design. The population of this study consists of all staff working at the Nigerian Breweries PLC Ibadan. Sample of one hundred and twenty respondents were selected. A structured questionnaire was used to collect data from the respondents. The descriptive statistics employed include; frequencies and percentage and the relationship between independent and dependent variables were established using Pearson Product Moment Correlation coefficient with the use of (SPSS). The findings were presented using tables and figures. From the findings in the Hypothesis, the r= 0.509** was obtained. This is significant as the p-value greater than 0.05. This shows that there was a significant relationship between remuneration packages' and employee performance. The findings also revealed that quick payment of remuneration has great influence on employees' productivity.

Banker et al. (2013) found positive effects of CEO compensation, and showed the managerial ownership has a positive incentive effect and could thus significantly improve operating performance of the company; in other words, a positive correlation exists between executive compensation structure and growth in annual revenue of the main business. Banker et al. performed a multiple linear regression analysis using ROE and individual stock performance as predictor variables, and CEOs' salary, CEOs' bonus, and CEOs' equity compensation as criterion variables. They determined that from 1993 through 2006, using data of 15,512 CEOs, ROE and stock performance of an individual firm had a positive association with both CEOs' salary and CEOs' equity-based compensation.

Brisker and Wang (2017) used a quantitative correlation design to explore the relationship between CEOs' deferred compensation, capital structure of the firm, and firm performance. They used the deferred compensation data set to measure CEOs' aversion to risk. Brisker and Wang also provided firsthand evidence of the relationship between CEO risk preferences and firm risk, such as stock return volatility, earnings volatility, and the riskiness of financial and investment policies. The results indicated that risk-taking CEOs pursue risky financial and investment firm policies, based on the behavioral consistency theory to demonstrate that CEOs act consistency across personal and professional. Zou, Zeng, Lin, and Xie (2015) conducted an empirical investigation of the relationship between top executives' compensation and environmental performance in China. The result indicated that best-performing executives' cash compensation has a positive relation with company environmental performance, whereas equity ownership has a negative relation with company environmental performance (Zou et al., 2015). The results also showed that, in these relationships, the competition played a moderating role. In more competitive industries, pay and ownership have stronger relationships with environmental performance. Smirnova and Zavertiaeva (2017) examined the relationship between CEOs' compensation and performance of firms based on data of large European firms from 2009 to 2013. The results suggested that company market efficiency has a high intercorrelation with CEOs' compensation (Smirnova & Zavertiaeva, 2017).

Table 1: below summarizes the review of previous researches on the effect of agency cost on corporate valuation

Author(s)	Design and focus	Methodology	Findings	Gaps	Focus of this study
Ogunyemi, Adewole and Akinde (2019)	effects of employees' remunerations on productivity in Nigerian breweries	The descriptive statistics employed include; frequencies and percentage and the relationship between independent and dependent variables were established using Pearson Product Moment Correlation coefficient with the use of (SPSS).	The findings were presented using tables and figures. From the findings in the Hypothesis, the r= 0.509** was obtained. This is significant as the p-value greater than 0.05.	The study focused only on employee remuneration on productivity of employees	This study will focus on the relationship between agency Cost and valuation of quoted firms in Nigeria.
Brisker and Wang (2017)	relationship between CEOs' deferred compensation, capital structure of the firm, and firm performance	Cross-sectional study	The results indicated that risk-taking CEOs pursue risky financial and investment firm policies, based on the behavioral consistency theory to demonstrate that CEOs act consistency across personal and professional	The study does not focus on market value of quoted firms in Nigeria.	This study will focus on the relationship between agency Cost and valuation of quoted firms in Nigeria..

Smirnova and Zavertiaeva (2017)	the link between CEOs' compensation and characteristic of firms, including shareholders' return, and stakeholders' characteristics	Time series data	The log of assets, dividend yield, CEO age, CEO tenure, stock earnings,	The study does notfocus on market value of quoted firms in Nigeria.	This study will focus on the relationship between agency Cost and valuation of quoted firms in Nigeria.
Maiwada (2013)	relationship between CEOs' compensation and performance of firms based on data of large European firms from 2009 to 2013	Time series data	The results suggested that company market efficiency has a high intercorrelation with CEOs' compensation	The study does not focus on market value of quoted firms in Nigeria	This study will focus on the relationship between agency Cost and valuation of quoted firms in Nigeria.

Source: Compiled from Literature Review (2021)

METHODOLOGY

Research Design
Research design is basically an expression of the approach, blueprint and procedures adopted by the researcher in a given study. Howell (2011) adds that it is a plan or procedure utilized in a research that oversees the decisions from its wide and broad assumptions to significant and detailed methods of data collection and analysis. The ex post facto design is adopted in this study

Population of the study
Generally, the population of a research is the collection of the group on which the study's findings can be generalized. This implies that every conceivable element to which the study's findings have implication forms the population. Therefore, the population forms the perimeter of elements within which the inference(s) deductible from the study can be applied. This study considers all the 63 quoted manufacturing firms in Nigeria. (Nigeria Stock Exchange Reports, 2019)

Sample Size and Sampling Technique

According to stock exchange report, quoted firms are classified in sectors and industry. The classification according to 2018 stock exchange reports is as follows. Conglomerate firms (6), constructions and real estate (7), consumer goods (23), healthcare firms (11), industrial goods (17), natural resources (4), based on the classifications from the Nigeria Stock Exchange, the 22

quoted consumer goods manufacturing firms were based on the availability of data within the periods covered in this study.

Method of Data Analysis
A collection of econometric techniques is used (with the aid of E - Views) to analyze the data. These include panel regression models (preceded by unit root test) and granger causality test. Panel data structure allows us to take into account the unobservable and constant heterogeneity, that is, the specific features of each quoted firm.

Panel Regression Technique
The regression technique is often considered as the best linear unbiased estimator due to its predictive precision, besides, it has the advantage of ease in comprehension and application. However, for the panel or pooled regression analysis the choice between the fixed effects and random effects regression has to be determined by the use of the Hausman test. However, irrespective of the model or parameters, the properties of a regression model are given as:

Results of Coefficients

Intercept or Constant
The intercept in the equation implies the relative/marginal effect on the explained or exogenous variable when all explanatory or endogenous variables get unchanged or held constant. In other words, it establishes the slope of the regression, which implies the change on the criterion variable when the predictor variables are 0.

Regression Coefficients
These typify marginal change on the exogenous variable as a consequence of a unit change in an explanatory variable where other explanatory variables are held constant.

T-Statistic
T – Statistic tests the hypothesis that the estimated parameters considerably differ from zero. Generally, it is derived by the ratio of the coefficient to the standard error of the coefficient.

Decision Rule

Compare the calculated t-statistics with the tabulated value. If the calculated t-statistics < tabulated t-statistics, reject null hypothesis; else, If calculated t-statistics > tabulated t-statistics, do not reject the null hypothesis.

Probability
Also referred to as p-value provides an easy platform of verifying the rejection or otherwise of given hypotheses. As a rule of thumb, if probability is less than the established significance level, the stated hypothesis should be rejected; otherwise it is not to be rejected.

Summary Statistics

R-Squared (R^2)
Otherwise called the "goodness of fit" value estimates the ratio of variation in the exogenous variable as a consequence of the endogenous variable. Basically used in regression models to rectify homoskedastic errors, it explains variance in association among variables. Where the model fits perfectly, the coefficient of determination is 1, otherwise, the closer the ratio is to one, the better the model it represents.

Adjusted R-Squared

The adjusted R^2 is a better indicator of the model's "fitness" as it takes into cognizance, the addition of more endogenous variables in the model; this make up for the limitations of the R^2 which basically remains the same despite the addition of more independent variable to the model.

F - Statistic

The F – statistic tests if the aggregation of dependent variables in a given model has significant relationship with the exogenous variable or not.

Decision Rule

Compare the calculated F-statistics with the tabulated value. If the calculated F-statistics < tabulated F-statistics, reject null hypothesis; else, If calculated F-statistics > tabulated F-statistics, do not reject the null hypothesis.

Probability

Also referred to as p-value provides an easy platform of verifying the rejection or otherwise of given hypotheses. As a rule of thumb, if probability is less than the established significance level, the stated hypothesis should be rejected; otherwise it is not to be rejected.

Durbin-Watson Statistic

Data used for analysis could have problems of serial correlation. In order to detect and proffer solution to such anomalies, the Durbin – Watson test is carried out. As established, the DW is between 0 and 4, with a DW of 2 considered to indicate the absence of auto correlation. Although, a DW that hovers around 2 is acceptable, there is evidence of serial correlation if the Durbin–Watson statistic is substantially less than 2. Serial correlation in itself does not hamper the reliability; but it distorts validity. Alternatively, When there is presence of autocorrelation, the First order autoregressive scheme was employed to correct it. The hypotheses states that:

H_0: P = 0 (There is serial independence in the errors)

H_1: P> 0 (There is first order (AR) positive autocorrelation.

When the Durbin Watson Statistic (DW-Stat) is lesser than lower Durbin Watson (D_L), the null hypothesis (H_0) is being rejected if the Durbin Watson statistics is greater than the upper Durbin Watson (D_u), the null (H_0) is then accepted.

Regression Model Specification

$$EV = f(MC, BC, RL, OPC) \tag{1}$$

$$NPV = f(MC, BC, RL, OPC) \tag{2}$$

Transforming equation 3.2-3.9 to econometrics form, we have

$$EV = \beta_0 + \beta_1 MC + \beta_2 BC + \beta_3 RL + \beta_4 OPC + \mu \tag{3}$$

$$NPV = \alpha_0 + \alpha_1 MC + \alpha_2 BC + \alpha_3 RL + \alpha_4 OPC + \mu \tag{4}$$

Where

EV = Equity valuation of the quoted manufacturing firms proxy by end of years equity price

NPV = Net Present value of the quoted manufacturing firms proxy by log of discounting cash flow at 10 percent

MC = Monitoring cost of the quoted manufacturing firms proxy by audits remuneration

BC = Bonding cost of the quoted manufacturing firms proxy by log of directors remuneration

RL = Residual loss of the manufacturing firms proxy by log of net operating expenses

OPC = Operating cost proxy by log operating cost.

μ = Error Term

$\beta_1 - \beta_4 = \qquad$ Coefficient of Independent Variables to the Dependent Variables

$\beta_0 \qquad = \qquad$ Regression Intercept

A-Priori Expectations

The a-priori expectations as regards the relationship between the variables are expressed in the table (2) below.

Table 2 Analysis of Variables and A-Priori Expectation

Variable	Measurement	Notation	Expected relationship
Equity value	End of the year share trading price	EV	Dependent variable
Net Present value	**Discounted cash flow at 10%**	NBV	Dependent variable
Monitoring cost	Auditor Remuneration	MC	+
Bonding cost	Log of director remuneration	BC	-
Residual Loss	log of net operating expenses	RL	-
Operating cost	log operating cost	OPC	+

Source: Authors Research Desk (2021)

Hausman Test

The Hausman test is used to establish the appropriate choice between random effect regression and fixed effect regression (Brooks, 2014). Since heterogeneity invalidates the cardinal assumption of homogenous deviation of endogenous variables which underpins the application of random effect model, the test is imperative to decide if a variable can be treated as a distinct element with separate structural equation or as an exogenous variable. Croissant & Millio (2019) succinctly noted that Hausman test detects endogenous regressors in a regression model.

The Fixed Effects Model

Fixed effects models are a class of statistical models in which the levels (i.e. values) of endogenous variables are assumed to be constant. That is, over the time frame covered by the data (daily, weekly, and monthly) the intercept remains constant, however it varies cross-sectional.

Random Effects Model

The stochastic term, otherwise referred to as white noise or error term is usually added in regression models to account for endogenous variables excluded in the model. These endogenous variables are assumed to be homoscedastic; this often culminates in the assumption that the parameters are distributed identically and independently.

Data Collection Methods

Annual secondary panel data were used in this study. The annual panel data which relates to the 22 quoted consumer goods manufacturing companies in Nigeria for a ten year period (2016 to 2020) were collected from the factsheet of The Nigeria Stock Exchange [NSE (2020)].

Panel Unit Root

To test the goodness of fit, the researcher adopted the panel unit root statistics. Often times, the simultaneous use of time series data for a collection of entities leads to multiple heterogeneity given that each time series data could possess heterogenous features. This is often referred to as heterogenous panel which by nature have a preponderance of biases that may culminate in

misleading results. It is therefore pertinent to scrutinize the data for the existence of unit root and ensure that the data are stationary at a given level.

SECTION IV
PRESENTATIONS AND DISCUSSION OF FINDINGS

Table 3: **Presentation of Panel Unit Root Results**

Method	Statistic EV	Prob.**	Remark	Statistic NPV	Prob.**	Remark
PP - Fisher Chi-square	77.6226	0.0002	Stationary	86.4482	0.0000	Stationary
PP - Choi Z-stat	-1.71175	0.0435	Stationary	-3.96414	0.0000	Stationary
Series: NPV			Stationary			
Hadri Z-stat	6.84295	0.0000	Stationary	5.19080	0.0000	Stationary
Heteroscedastic Consistent						Stationary
Z-stat	8.64134	0.0000		6.46334	0.0000	
Series: OPC			Stationary			
Hadri Z-stat	7.21032	0.0000		5.88052	0.0000	Stationary
Heteroscedastic Consistent			Stationary			Stationary
Z-stat	9.09358	0.0000		6.86988	0.0000	
Series: RL			Stationary			
Hadri Z-stat	6.53593	0.0000	Stationary	9.32160	0.0000	Stationary
Heteroscedastic Consistent			Stationary			Stationary
Z-stat	7.69081	0.0000		7.85263	0.0000	
Series: MC						
Hadri Z-stat	9.35796	0.0000	Stationary	3.01291	0.0013	Stationary
Heteroscedastic Consistent			Stationary			Stationary
Z-stat	8.81294	0.0000		6.84056	0.0000	
Series: BC			Stationary			
Hadri Z-stat	5.35197	0.0000	Stationary	4.85252	0.0000	Stationary
Heteroscedastic Consistent						Stationary
Z-stat	7.97990	0.0000		7.60020	0.0000	

Source: Computed from E-view 9.0, 2021
- Null Hypothesis: Unit Root (common Unit Root process), Automatic lag length selection based on Modified Schwarz Criteria and Bartlett kernel.

It can be seen from the Table (3) above that the data are stationary at level and first difference for 1%, 5% and 10% levels of significance. It is therefore deduced that the series are characterized as I (1) process; consequently, suitable for a use in a test for panel cointegration between agency cost and market value of the manufacturing firms.

Table 4: Presentation of Regression Results

Variable	Pooled Effect			Fixed effect			Random effect		
	β coefficient	T. stat	p. value	β coefficient	T. stat	p. value	β coefficient	T. stat	p. value
	$EV = \beta_0 + \beta_1 MC + \beta_2 BC + \beta_3 RL + \beta_4 OPC + \mu$								
BC	0.272236	2.024449	0.0455	0.154418	0.639443	0.5243	0.245109	1.544279	0.0255
MC	0.187225	1.600336	0.1125	0.051099	0.238993	0.8117	0.174658	1.210493	0.2288
OPC	-0.134919	-1.227500	0.2224	-0.188743	-1.625663	0.1079	-0.188155	-1.805904	0.0138
RL	0.049403	1.064119	0.2897	-0.088724	-1.724552	0.0884	-0.036745	-0.806619	0.4217
C	-0.914381	-0.936712	0.3511	1.179156	0.538029	0.5920	-0.150446	-0.113808	0.9096
R-squared	0.398516			0.600684			0.663228		
AdjR^2	0.064173			0.462648			0.527541		
F-statistic	2.868642			4.351666			3.771748		
F- Prob	0.026652			0.000000			0.000029		
D W	1.301345			2.245084			1.894112		

Correlated Random Effects - Hausman Test

Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
	5.981156	4	0.2006

$$NPV = \alpha_0 + \alpha_1 MC + \alpha_2 BC + \alpha_3 RL + \alpha_4 OPC + \mu$$

Variable	β coefficient	T. stat	p. value	β coefficient	T. stat	p. value	β coefficient	T. stat	p. value
BC	-0.170255	-0.836030	0.4050	-0.193673	-0.495856	0.6213	-0.222540	-0.866491	0.3882
MC	0.419605	2.193127	0.0305	0.017718	0.083541	0.9336	0.171273	1.908000	0.0160
OPC	-0.004583	-0.056716	0.9549	-0.010899	-0.115963	0.9080	-0.016674	-0.202439	0.8400
RL	-0.741121	-3.166098	0.0020	-0.428597	-0.971550	0.3342	-0.515220	-1.821711	0.0113
C	9.624766	5.664265	0.0000	9.998264	2.497300	0.0145	9.828668	4.203682	0.0001
R-squared	0.107219			0.564459			0.738757		
AdjR^2	0.073208			0.413901			0.602138		
F-statistic	3.152496			3.749123			1.058391		
F- Prob	0.017201			0.000002			0.380947		
D W	0.778833			1.42505			1.114936		

Correlated Random Effects - Hausman Test

Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
	5.981156	4	0.2006

Source: Computed from E-view 9.0, 2021

First a choice between fixed and random effects regression has to be made. This is determined by the probability of the Chi-sq. statistics from the Hausman test. The Hausman test shows a probability of greater than 0.05, therefore the study adopted the random effect model for the three models.

Table 5: Pairwise Granger Causality Tests

Null Hypothesis:	Obs	F-Statistic	Prob.
$EV = \beta_0 + \beta_1 MC + \beta_2 BC + \beta_3 RL + \beta_4 OPC + \mu$			
BC does not Granger Cause EV	63	0.50049	0.6088
EV does not Granger Cause BC		1.63966	0.2029

MC does not Granger Cause EV	63	0.10547	0.9001
EV does not Granger Cause MC		0.22433	0.7997
OPC does not Granger Cause EV	63	0.35793	0.7007
EV does not Granger Cause OPC		0.55677	0.5761
RL does not Granger Cause EV	63	0.00508	0.9949

$$NPV = \beta_0 + \beta_1 MC + \beta_2 BC + \beta_3 RL + \beta_4 OPC + \mu$$

EV does not Granger Cause RL		1.13073	0.3298
MC does not Granger Cause NPV	63	0.56399	0.5720
NPV does not Granger Cause MC		3.06381	0.0543
OPC does not Granger Cause NPV	63	0.30825	0.7359
NPV does not Granger Cause OPC		0.08123	0.9221
RL does not Granger Cause NPV	63	0.43318	0.6505
NPV does not Granger Cause RL		1.04227	0.3592
BC does not Granger Cause NPV	63	0.77218	0.4667
NPV does not Granger Cause BC		1.31232	0.2771

Source: Computed from E-view 9.0, 2021

Note: ** and *** indicate 5% and 1% significance levels respectively. Lag length is chosen according to the Akaike Information Criterion. For agency cost and market value of quoted manufacturing firms variable groups Akaike Information Criterion indicates the lag length of zero. The results show that there is neither a bi-directional nor uni-directional causal relationship between any pair of the variables in the model given that all p-values are higher than 0.05.

Discussion of Findings

Base on the validity of the random effect model, the study found that 52.7 percent variation in equity value of the quoted manufacturing firms can be traced to variation in the agency cost variables as estimated in the regression model. The F-statistic and probability found that the model is statistically significant while the Durbin Watson statistics found the absence of serial autocorrelation among the variables. the beta coefficient of the variables fond that bonding cost and monitoring cost have positive effect on the equity valuation of the quoted manufacturing firms. The beta coefficient indicates that increase on the variable lead to positive increase of 2.4 and 1.7 percent increase on equity valuation. The positive effect of monitoring cost confirms our a-priori expectations and justifies the principals' objectives of formulating monitoring strategies such as auditing. However, the study found that operating expenses and residual loss have negative effect on equity valuation, the negative effect confirm our a-priori expectations and confirm the agency conflict and agency problems. Empirically, this study confirm the findings of Brisker and Wang (2017) that risk-taking CEOs pursue risky financial and investment firm policies, based on the behavioral consistency theory to demonstrate that CEOs act consistency across personal and professional, the findings of Zou, Zeng, Lin, and Xie (2015) that best-performing executives' cash compensation has a positive relation with company environmental performance, whereas equity ownership has a negative relation with company environmental performance and the findings of Smirnova and Zavertiaeva (2017 that company market efficiency has a high intercorrelation with CEOs' compensation (Smirnova & Zavertiaeva, 2017).

From model two, the study found that 60.2 percent variation in net present value of the quoted manufacturing firms can be traced to variation in the agency cost variables as estimated in the regression model. The F-statistic and probability found that the model is statistically significant while the Durbin Watson statistics found the absence of serial autocorrelation among the variables. The beta coefficient of the variables fond that bonding cost, residual loss and operating cost have negative effect on net present value of the quoted manufacturing firms.

The beta coefficient indicates that increase on the variable lead to negative effect of 0.22, 0.01 and 0.51 percent in net present value. The negative effect of the variables confirms our a-priori expectations and justifies the principals' objectives of formulating monitoring strategies such as auditing. However, the study found that monitoring cost have positive effect on net present value, the positive effect confirm our a-priori expectations and confirm the agency conflict and agency problems. Empirically, this study confirm the findings of Brisker and Wang (2017) that risk-taking CEOs pursue risky financial and investment firm policies, based on the behavioral consistency theory to demonstrate that CEOs act consistency across personal and professional, the findings of Zou, Zeng, Lin, and Xie (2015) that best-performing executives' cash compensation has a positive relation with company environmental performance, whereas equity ownership has a negative relation with company environmental performance and the findings of Smirnova and Zavertiaeva (2017 that company market efficiency has a high intercorrelation with CEOs' compensation (Smirnova & Zavertiaeva, 2017).

CONCLUSION AND RECOMMENDATION

Conclusion

The study found that 52.7 percent variation in equity value of the quoted manufacturing firms can be traced to variation in the agency cost variables as estimated in the regression model. From model two, the study found that 60.2 percent variation in net present value of the quoted manufacturing firms can be traced to variation in the agency cost variables as estimated in the regression model. Monitoring cost has no significant effect on equity valuation but monitoring cost has significant effect on net present value. Bonding cost has significant effect on equity valuation; bonding cost had significant effect on net present value. Residual loss has no significant effect on equity valuation but residual loss has significant effect on net present value. Operating cost has significant effect on equity valuation but operating cost has significant effect on net present value. The study found that the variables were stationary at first difference. Monitoring cost, residual loss has no significant effect on the dependent variables while bonding cost and operating cost have significant effect on the dependent variable.

Recommendations

1. The manufacturing firms should consider establishment policies for executive stockholding. This will enhance management in planning and managing forts that affect corporate valuation and management of the quoted manufacturing firms should adopt good compensation structure, welfare, and incentive packages as these would positively motivate executives and consequently improve corporate valuation.

2. The policy makers need to provide adequate regulation on the determination of equity incentive of the directors of listed companies, this will reduce the agency cost that negatively effect of corporate valuation and the over bearing influence of directors in annual general meetings.

3. It recommended that there should defined salary structure of the executive directors of the manufacturing firms; this will reduce the pressure on profitability of the quoted manufacturing firms to reduce agency cost. Executive bonuses of the firms should be directed toward achieving effective earnings management of the manufacturing firms and the regulatory authorities should ensure that executive officers comply with code of corporate governance.

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