Systemic Risk and Capital Budgeting Decisions of Quoted Industrial Goods Manufacturing Firms in Nigeria

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ABSTRACT
The purpose of this study was to examine the effect of systemic risk on capital budgeting decisions of quoted industrial goods manufacturing firms in Nigeria. Panel data were collected from annual reports of 15 industrial goods manufacturing firms. Capital budgeting was modeled as the function of exchange rate risk, interest rate risk and consumer price risk. Ordinary least square method of multiple regressions was used as data analysis method. After cross examination of the models, the fixed model was adopted. The regression summary produced adjusted R^2 from the fixed effect regression model implied that 69.9 percent variation in capital budgeting decision of the quoted manufacturing firms were attributed to changes in systemic risk while the model is statistically significant by the value of F-statistics and F-probability. The Durbin Watson statistics implies absence of serial autocorrelation. The study found that exchange rate risk is negative and significant; interest rate risk is positive and significant while consumer price risk is positive but not significant effect on capital budgeting. from the findings, it recommend that There is need for management of the manufacturing firms to formulate strategies of managing systemic risk and the implementation should not just be formulated but strategic and tactical measures should be put in place to absorb, retain and transfer systemic risk and there should be policy to fully deregulate interest rate in the financial market. Systemic risk management should be considered as part of strategic plans which need to be reviewed on a more frequent basis and macroeconomics policies should directed towards stabilizing Nigerian exchange rate to avoid depreciating naira exchange rate against key currencies that exposes the firms to exchange rate risk

Keywords: *Systemic Risk, Capital Budgeting Decisions, Quoted Industrial Goods, Manufacturing Firms*

INTRODUCTION

The business environment is very risky, this is because to the uncertainties that characterized the operating environment. Some of the risks emanate from the business known as systemic risk while others emanate from the external environment known as unsystematic risk. The cost of bearing risk is a crucial concept for any corporation most of financial policy decision whether capital structure, dividend policy, investment or capital budgeting and hedging policies revolves around the benefits and cost of corporation holding risks (Daunfeldt and Hartwig, 2012). The investment functions of the finance managers such as the capital budgeting requires an analysis

of the future cash flows, uncertainties of future cash flows and values of these future cash flow (Adler,2000). Capital budgeting decision is characterized by the exchange of current fund for future benefits, funds are invested in long term assets and the future benefits will occur to the firm over a series of years. Capital budgeting decision influence the firm's growth in the long-run, affect the risk of the firm, involves commitment of large amount of firms, they are inevasible and among the most difficult decision to make (Pandey, 2005).

Total project risk consists of systematic risk and unsystematic risk. In terms of capital budgeting projects, systematic risk, also called market risk, is the part of a project's risk that is common to all projects of the same general class. A firm cannot eliminate systematic risk by diversification because it tends to affect all investments. The beta coefficient is the measure of systematic risk. Unsystematic risk, also call non-market or diversifiable risk, is risk unique to a particular firm or investment and can be reduced or eliminated by combining various investments in a portfolio. Investors can diversify away the unsystematic portion of total risk. Thus, only systematic risk should concern a firm's shareholders who hold fully diversified portfolios. Three general perspectives for evaluating risk in capital budgeting are a single-project, a company, and a shareholders' perspective. The single-project perspective assesses an investment's total risk as a stand-alone unit. The company perspective considers each project according to its contribution to the firm's total risk. This perspective focuses on diversification and portfolio effects. The shareholders' perspective views each project according to its contribution to the riskiness of a diversified shareholder's portfolio. This perspective focuses on market risk.

Risk in capital budgeting has three levels: the project's stand-alone risk, its contribution to-firm risk, and systematic risk. Stand-alone risk measures a project's potential without factoring in the potential risk that it adds to the company's assets and other projects. Contribution-to-firm risk measures the project's potential effect on other projects and assets. Systematic risk assesses the project's effects on the organization as a whole (Keller, 2014; Li & Wu, 2009). Typically, the analytical methods used for risk analysis in capital budgeting include sensitivity analysis, scenario analysis, simulation analysis, correlation analysis, and decision trees. Businesses undertake capital projects after carefully analyzing the potential risks involved and taking adequate measures to reduce them.

Study on capital budgeting decision have received increased research attention over the past few decades with a focus on firms of different sizes, in various industries, and in various countries (Bennouna, Geoffrey, & Allport, 2010; Pike, 2005; Dutta & Fan, 2012). Some studies focused on firms of local dimensions, while others concerned multi-national corporations (MNC). While some studies have focused on investment decisions and financial theory (e.g., Brookfield, 1995; Drury & Tayles, 1997; and Arnold & Hatzopoulos, 2000), other studies have focused on behavioral aspects of capital budgeting (Berry, 1984; Pike, 2005). Studies on the effect of systemic risk on capital budgeting is limited in literature most especially emerging financial

market, therefore this study examined the effect of systemic risk on capital budgeting of quoted industrial goods manufacturing firms in Nigeria.

LITERATURE REVIEW

Systematic Risk

The risk inherent to the entire market or an entire market segment, systematic risk, also known as undiversifiable risk volatility or market risk, affects the overall market, not just a particular stock or industry. This type of risk is both unpredictable and impossible to completely avoid (Pandey, 2005). It cannot be mitigated through diversification, only through hedging or by using the right asset allocation strategy.

Inflation Rate

Inflation is one of the most important macroeconomic indicators to analyze the economic conditions of the economy. Few studies have addressed the linkage between the stock market and inflation, Famma (1990) suggested that macroeconomic variables have projecting power for the stock exchange performance, although he did not consent to the anticipating authority of stock performance for the economy. Agawam (1981) Soenen and Hennigar (1988) measured the relationship between inflation rates and stock prices.

A common expectation is that the stock prices and inflation should be positively related. This is done with the mind that, common stocks should be a hedge against inflation because stocks represent the ownership of the real assets. Earlier on, Schwert (1981) found that consumer price index (CPI) has significant influence on stock market. This was reaffirmed by Gunasekarage et al. (2004) using the Sri Lanka's stock market. A negative effect has been found between consumer price index and stock prices. This can be explained as the results of the higher risk of future profitability. The increase in prices level will increase the cost of production, which in turn would reduce future profitability. However, there are still some other opinions that higher price level can also have a positive effect on stock prices due to the use of equity itself as equipment for hedging inflation.

Exchange Rate

This is the risk incurred when there is an unexpected change in exchange rate altering the amount of home currency need to repay a debt denominated in foreign currency. Bessis (2010) defined foreign exchange risk as incurring losses due to changes in exchange rates. Such loss of earnings may occur due to a mismatch between the value of assets and that of capital and liabilities denominated in foreign currencies or a mismatch between foreign receivables and foreign payables that are expressed in domestic currency. According to Greuning and Bratanovic (2009), foreign exchange risk is speculative and can therefore result in a gain or a loss, depending on the

direction of exchange rate shifts and whether a bank is net long or net short (surplus or deficit)in the foreign currency.

Exchange rate risk arises from the potential loss emanating from the inherent fluctuation nature of exchange rates, particularly, since the Naira started depreciating steadily against the major international currencies, corporate bodies that require foreign productive inputs have been exposed to loss arising from changes in the relative value of the Naira vis-à-vis foreign currencies. Exchange rate risks would arise if the naira rises in value before a firm sell off its stock of foreign exchange. Conversely, exchange gains are realized as the naira depreciates.

In principle, the fluctuations in the value of domestic currency that create currency risk result from long-term macroeconomic factors such as changes in foreign and domestic interest rates and the volume and direction of a country‘s trade and capital flows. Short-term factors, such as expected or unexpected political events, changed expectations on the part of market participants, or speculation based currency trading may also give rise to foreign exchange changes. All these factors can affect the supply and demand for a currency and therefore the day-to-day movements of the exchange rate in currency markets.

Foreign exchange risk is generally considered to comprise of transaction risk, economic risk and revaluation risk. Transaction risk is the price-based impact of exchange rate changes on foreign receivables and foreign payables, that is, the difference in price at which they are collected or paid and the price at which they are recognized in local currency in the financial statements of a bank or corporate entity. Alternatively known as business risk, economic risk relates to the impact of exchange rate changes on a country‘s long-term or a company‘s competitive position. With increasing globalization, capital moves quickly to take advantage of changes in exchange rates and therefore devaluations of foreign currencies can lead to increased competition in both overseas and domestic markets. This phenomenon makes this component of foreign exchange risk very critical for its management. The third component, revaluation or translation risk arises when a bank‘s foreign currency positions are revalued in domestic currency, and when a parent institution conducts financial reporting or periodic consolidation of financial statements.

Interest-Rate

In general, interest rate risk is the potential for changes in interest rates to reduce a bank‘s earnings or value. Most of the loans and receivables of the balance sheet of banks and term or saving deposits, generate revenues and costs that are driven by interest rates and since interest rates are unstable, so are such earnings. Though interest rate risk is obvious for borrowers and lenders with variable rates, those engaged in fixed rate transactions are not exempt from interest rate risks because of the opportunity cost that arises from market movements (Bessis, 2010). According to Greuning and Bratanovic (2009), the combination of a volatile interest rate

environment, deregulation, and a growing array of on and off-balance-sheet products have made the management of interest rate risk a growing challenge. At the same time, informed use of interest rate derivatives such as financial futures and interest rate swaps can help banks manage and reduce the interest rate exposure that is inherent in their business.

Greuning and Bratanovic (2009) posits that corporate organizations encounter interest rate risk from four main sources namely repricing risk, yield curve risk, basis risk, and optionality. The primary and most often discussed source of interest rate risk stems from timing differences in the maturity of fixed rates and the repricing of the floating rates of assets, liabilities, and off-balance sheet positions. The basic tool used for measuring repricing risk is duration, which assumes a parallel shift in the yield curve. Also, repricing mismatches expose a firms to risk deriving from changes in the slope and shape of the yield curve (nonparallel shifts).

Yield curve risk materializes when yield curve shifts adversely affect a corporate organizations income or underlying economic value. Another important source of interest rate risk is basis risk, which arises from imperfect correlation in the adjustment of the rates earned and paid on different instruments with otherwise similar repricing characteristics. When interest rates change, these differences can give rise to unexpected changes in the cash flows and earnings spread among assets, liabilities, and off-balance-sheet instruments of similar maturities or repricing frequencies (Wright and Houpt, 1996). An increasingly important source of interest rate risk stems from the options embedded in many firm asset, liability, and off-balance-sheet portfolios. If not adequately managed, options can pose significant risk to corporate organizations because the options held by customers, both explicit and embedded, are generally exercised at the advantage of the holder and to the disadvantage of the firm.

Capital Budgeting

Capital budgeting is the process in which a business determines and evaluates potential expenses or investments that are large in nature. These expenditures and investments include projects such as building a new plant or investing in a long-term venture. Often times, a prospective project's lifetime cash inflows and outflows are assessed in order to determine whether the potential returns generated meet a sufficient target benchmark, also known as investment appraisal. Capital budgeting is a process used by companies for evaluating and ranking potential expenditures or investments that are significant in amount. The large expenditures could include the purchase of new equipment, rebuilding existing equipment, purchasing delivery vehicles, constructing additions to buildings. The large amounts spent for these types of projects are known as capital expenditure (Pandey, 2005). Capital budgeting usually involves the calculation of each project's future accounting profit by period, the cash flow by period, the present value of the cash flows after considering the time value of money, the number of years it takes for a project's cash flow to pay back the initial cash investment, an assessment of risk, and other

factors. Capital budgeting is a tool for maximizing a company's future profits since most companies are able to manage only a limited number of large projects at any one time.

However, because the amount of capital available at any given time for new projects is limited, management needs to use capital budgeting techniques to determine which projects will yield the most return over an applicable period of time. Various methods of capital budgeting can include throughput analysis, net present value (NPV), internal rate of return (IRR), discounted cash flow (DCF) and payback period. There are three popular methods for deciding which projects should receive investment funds over other projects. These methods are throughput analysis, discounting cash flow analysis and payback period analysis (Eljelly, and AbuIdris, 2001).

Distribution Theory

There are two important measures in a practical application of distribution theory: mean and standard deviation. Mean represents the summation of all possible values in the population (sample) divided by the population (sample) size. Standard deviation represents the square root of the variance (Variance is the sum of the squared difference between the mean and each value in the population (sample) divided by the population (sample) size). Distribution theory becomes a practical analytical tool when a mean and standard deviation can be reasonably estimated. An Excel spreadsheet template, discussed later in this paper, shows how to capture the mean and standard deviation data points and incorporate them into a capital budgeting analysis. A discussion of distribution theory naturally begins with a reference to a normal distribution. The normal distribution is represented with a bell shaped curve and is the most popular of all distributions. Think about this area as all the possible NPV outcomes that could result with the many different combinations of cash flows.

The height of the curve represents the frequency of a particular NPV outcome, similar to a histogram. The height and spread of the normal distribution is determined by the frequency of possible NPV outcomes in a capital investing analysis. A very high and tight looking normal distribution represents a set of NPV outcomes very close to the mean NPV. This type of distribution for capital investment analysis represents limited risk because the range of NPV outcomes is reasonably narrow. A wide and flat looking distribution represents a set of NPV outcomes not very close to the mean. This type of distribution in a capital investment analysis represents high risk because the range of NPV outcomes is reasonably wide, spread away from the mean. Thus, a narrow distribution of NPV outcomes signals limited risk and a wider distribution of NPV outcomes signals greater risk in a capital investing decision. Putting risk into a visual picture helps the business professional apply science and gut feel in the capital investment decision making process. Distribution theory tells us that approximately 99% of the area under a normal distribution curve falls within three standard deviations from each side of the mean.

Distribution theory also tells us that one standard deviation from the mean in the approximately normal distribution represents 34% of the area from the mean. Thus, one standard deviation on each side of the mean represents approximately 68% (34% + 34%) of the area under the normal distribution curve. Two standard deviations from the mean of an approximately normal distribution represent 48% of the area from the mean. Thus, two standard deviations on each side of the mean represent approximately 96% (48% + 48%) of the area under the normal distribution curve. Three standard deviations from the mean of an approximately normal distribution represent slightly more than 49% of the area from the mean. Thus, three standard deviations on each side of the mean represent approximately 99% of the area under the normal distribution curve. Building upon this insight about distribution theory, it is possible to generate better information from a range of net present value outcomes, link theory to practice (Later in this paper we show how to easily generate the necessary values for using distribution theory in a Excel template). For now assume in a capital investment analysis we know the approximate worst case NPV scenario is (79,000) and a best case NPV scenario is 149,000. These NPV estimates represent the approximate extreme outcomes from a capital investment decision. Another way of interpreting this would be to say that the range from the best case to worst case NPV outcomes represent approximately 99% of the area under the normal distribution curve, or standard deviations from each side of the mean.

A distinct benefit to this information is that the consumer of the NPV analysis can clearly see a range of possible outcomes with specific parameters provided by a practical application of distribution theory. The output shows capital investment risk in a picture improving the analytics of a decision. The mean represents the accountants' best judgment in a traditional capital investing analysis situation. Basic distribution theory enriches the analysis by providing a range of possible outcomes with supporting percentages of possible NPV estimates. The model makes explicit the risk of a capital investment decision.

The Capital Asset Pricing Model

The Capital Asset Pricing Model is a model for pricing an individual security or a portfolio. The Capital Asset Pricing Model model was developed independently by William Sharpe (1964), and Parallel work was performed by Lintner (1965) and Mossin (1966) these model marks the birth of asset pricing theory. The CAPM suggests that the only variables that we need in calculating the expected return on security are: the risk-free rate (a constant), the expected excess return on the market, and the security's beta (a constant). The Capital Asset Pricing Model model is attractive because of its effectively simple logic and intuitively pleasing predictions relating to how it measures risk and the relation between expected return and risk. Unfortunately, the Capital Asset Pricing Model simplicity causes the empirical record of model to be poor, poor enough to invalidate the method used in the application of the model. The models empirical problems may reflect true failings or they may also be due to the shortcomings of the empirical

tests, most notably, poor proxies for the market portfolio of invested wealth, which plays a crucial role in the models predictions.

Risk Bearing Theory of Profits

This theory was propounded by Shackle, (1963) holds that profit is the reward to the entrepreneur for successfully accomplishing the activity bearing the related risks. Thus profit is the price paid for the risk bearing 'function' of the entrepreneur, hence it is a functional theory of profits. This is also a windfall theory of profits since windfall profits result as a result of increase in the price while the costs of production remain unchanged. The price increases are caused, as per this theory, by expected movements in price and income of consumers, inventory management, and reimbursement for risks, differences in efficiency, and differences in the nature of production, monopoly profits, windfall profits in a branch of industry, and general windfall profits.

Empirical Review

Nurullah and Kengatharan (2015) investigated capital budgeting of companies in Sri Lanka. The study revealed that net present value (NPV) was the most preferred capital budgeting method, followed closely by the payback (PB) method and the internal rate of return (IRR). Sensitivity analysis was the dominant tool for incorporating risk in capital budgeting. Singh, Jain, and Yadav (2012) examined the capital budgeting of companies in India. Using responses from a questionnaire of 166 nonfinancial companies, data were collected from the period 2001-2011. The study found that sophisticated techniques and sound capital budgeting were common among Indian firms. All respondent firms used discounted cash flow (DCF) techniques. IRR was used by more than three quarters of the sample companies, while NPV was used by half. Real options were also used by half. In a study of capital investment in the United States, Souder and Bromiley (2012) found that firms with profits below expected levels were more risk-averse. The study also concluded that rather than undertaking long-term capital investment, the firms lobbied either to induce the government to reduce regulations or to frame other companies as anticompetitive to increase their own short-term profits.

Arnold and Hatzopoulos (2000) analyzed the extent to which the most significant UK corporations were employing modern investment appraisal techniques. Using responses from 96 structured questionnaires which were sent to finance directors of the sample 30 companies, they found that UK companies increasingly used discounted cash flow methods and formal risk analysis techniques when investing in capital. Dutta and Fan (2012) analyzed conditions in which centralized and decentralized capital budgeting work best. For projects where the manager needed innovation, decentralization was more effective if incentive contracts were in place to share the profits created by individuals. But for projects requiring limited innovation from management, centralization worked better

Ahmed (2013) examined relationships between use and independent variables that affect the selection of the method have been studied. The study attempts to fill a gap in the existing literature of capital budgeting practice in the developed and developing economies. The study analyzes the questionnaire collected from 35 companies out of the 61 listed in DFM. The study found a sizable number of UAE companies that use capital budgeting techniques in their capital investment decisions. The widely used methods are: PB, NPV, and IRR by most of the UAE companies. The study also revealed that many financial and nonfinancial factors influence the selection of capital budgeting technique such as the size of the company, revenues, profitability, leverage level, expenditure, familiarity with the project, availability of cash, and the level of education of decision makers. Significant differences were found between the methods selected and the factors influencing the selection of the technique. It has been found that there is a positive association between most of the financial factors and the methods but negative with majority of the nonfinancial variables.

Karanovic, Baresa and Bogdan (2010) examined capital budgeting process and techniques of risk analysis in the process of selecting optimal project. Corporate manager in process of capital budgeting uses numerous techniques some of them are based on intuition and experience of manager, and some of them are analytic based on sensitive, scenario, decision tree and Monte Carlo method. All methods are used to determinate and to predict risk influence on the projects. Article deals with analytical techniques and real problems that can arise in capital budgeting process. Trough case study in article we analyzed risks that may emerge from different techniques.

Kareem (2006) investigated the link between capital costs using a sample of 37 industrial firms for the period between 1994 –2000. The findings of the research revealed that a substantial correlation exists between cost of weighted average capital and stocks market firms returns, where external (debt) financing has more influence than internal (owned) financing on stocks market return.

METHODOLOGY

Quasi-experimental research design was used to study whether this relationship exists between systemic risk and capital budgeting decision of quoted industrial goods manufacturing firms. The population of interest in the study constitute15 industrial goods manufacturing firms quoted on the Nigeria Stock Exchange for the period of ten years from 2012 to 2021. There are 15 quoted industrial goods manufacturing firms in the Nigeria Stock Exchange. Due to the small nature of the population, the study adopted purposive sampling method; therefore the 15 quoted industrial goods manufacturing firms form the sample size. The study used Secondary data extracted from annual financial reports of the listed industrial manufacturing firms

Model Specification

Pooled regression model specification

$$CB = \beta_0 + \beta_1 EXRR_{it} + \beta_2 INTR_{it} + \beta_3 CPR_{it} + \mu_{it} \quad (1)$$

Fixed Effect Model Specification

$$CB = \alpha_0 + \alpha_1 EXRR + \alpha 2 INTR + \alpha_3 CPR + \sum_i^9 = 1\alpha_i idum\varepsilon 1_{it} \quad (2)$$

Random effect model specification

$$CB = \alpha_0 + \alpha_1 EXRR + \alpha INTR + \alpha_3 CPR + \mu i + \varepsilon 1_{it} \quad (3)$$

Where
CB = Capital budgeting proxy by capital assets

EXRR= Exchange rate risk changes in exchange rate
INTR = Interest Rate Risk proxy by changes in interest rate
CPR = Consumer price risk proxy by changes in inflation rate
$\varepsilon 1$= Stochastic or disturbance/error term.
t = Time dimension of the variables
α0 = Constant or intercept.

Prior Expectation of the Result

The a-priori expectation of the variables that an increase in the explanatory variables lead to increase in the dependent variables corporate value, therefore it can be mathematical stated as follows:- a_1, a_2, a_3 $a_4 > 0$.

Technique for Data Analysis

In analyzing the data, both the inferential and descriptive statistics was adopted. Descriptive statistics was used to summarize the basic characteristics of the data. The statistics included mean, median, minimum and maximum. Also, correlation matrix was used to explain the relationship between each of the firm characteristics and firm value. Panel data regression was considered appropriate in view of the fact that it helps in establishing relationship, cause and effect between the variables.

In order to determine the best choice of analysis technique, the study run three types of regression; Ordinary Least Square (OLS), Fixed Effect and Random Effect regression. All these method have various assumptions and conditions that must be fulfilled in order to achieve efficient estimates. However, the best techniques were decided by the Hausman Specification test (either fixed effect or random effect regression) and Lagrangian Multiplier Test (either random effect or OLS). The random effect has the advantage of accounting for the panel effect in

the data as opposed to OLS, which pools the data and treats it as if it were obtained from a single entity.

In order to achieve reliability of the result, robustness tests like Multicolinearity test, Hausman test, Lagrangian multiplier test for random effect and Heteroscedasticity test will be conducted.

T-test The t-test was used to test the hypothesis that a particular coefficient is significantly different from zero or whether the estimated coefficient value occurred by chance in equation (2). The tests were performed at both 95% and 99% levels of confidence.

F-test The F-statistic is important to test the hypothesis that the whole relationship provided by the equation (2) is significantly different from zero, i.e. whether the independent variables' characteristics scores explain the variation in growth indicators for each of the individual firms. The test will be performed at both 95% and 99% levels of confidence.

R2 - Change The R-squared (R^2) value ranging from '0' to '1' or the 'corrected R-squared' (R2) which is adjusted for degrees of freedom indicates the explanatory power (goodness of fit) of the model.

ANALYSIS OF RESULTS AND DISCUSSION OF FINDINGS

Table 1: Correlated Random Effects - Hausman Test

Test Summary		Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random		11.493155	5	0.0424
Redundant Fixed Effects Tests				
Equation: Untitled				
Test cross-section fixed effects				
Effects Test		Statistic	d.f.	Prob.
Cross-section F		0.919535	(19,155)	0.5598
Cross-section Chi-square		19.224891	19	0.4425
Variable	Fixed	Random	Var(Diff.)	Prob.
D(EXRR)	0.007754	0.007582	0.000002	0.9082
D(INTR)	-0.164805	-0.141273	0.000361	0.2156
D(CPR)	-0.060377	-0.072947	0.000493	0.5715
ECM(-1)	-1.018829	-0.950414	0.000463	0.0015

Source: Computed From E-View Statistical Package 9.0

The fixed effects model is more appropriate than the random effects model. As the result found that the results of this test were significant (p-value = 0.0424). Hence, we reject the null hypothesis and conclude that the fixed effects model is the most appropriate of the three models.

Table 2: Regression Results from the Pooled Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(EXRR)	-2.586320	0.503069	-5.141085	0.0000
D(INTR)	0.881660	0.375686	2.346801	0.0283
D(CPR)	0.354122	0.196676	1.800534	0.0855
ECM(-1)	0.011166	0.416882	0.026785	0.9789
C	-0.364051	0.152170	-2.392407	0.0237

R-squared	0.169721	Mean dependent var	-0.096167
Adjusted R-squared	0.140068	S.D. dependent var	1.676212
S.E. of regression	1.554393	Akaike info criterion	3.784388
Sum squared resid	67.65185	Schwarz criterion	3.877801
Log likelihood	-54.76582	Hannan-Quinn criter.	3.814271
F-statistic	5.723609	Durbin-Watson stat	1.847161
Prob(F-statistic)	0.023691		

Source: Computed From E-View Statistical Package 9.0

Table 2 above, presents the effect of systemic risk on the capital budgeting of quoted industrial goods manufacturing firms in Nigeria. The regression summary produced adjusted R^2 of 0.140068 from the pooled effect regression model which implies that 14 percent variation capital budgeting of the manufacturing firms can be attributed to changes in systemic risk while the model is statistically significant by the value of F-statistics and F-probability. The Durbin Watson statistics is less than 1.847161, which means the absence of serial autocorrelation. The effect of the independent variables found that exchange rate risk is negative and significant; interest rate risk is positive and significant while consumer price risk is positive but not significant.

Table 3: Regression Results from the Fixed Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.432488	0.676849	5.071276	0.0000
D(EXRR)	-1.428240	0.577218	-2.474353	0.0212
D(INTR)	0.726628	0.384686	1.888887	0.0716
D(CPR)	0.364454	0.170472	2.137910	0.1434
ECM(-1)	0.134395	0.204855	0.656047	0.5183
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.714518	Mean dependent var		-0.102250
Adjusted R-squared	0.699651	S.D. dependent var		3.416542
S.E. of regression	1.082288	Akaike info criterion		3.156464
Sum squared resid	26.94099	Schwarz criterion		3.394358
Log likelihood	-39.19050	Hannan-Quinn criter.		3.229191
F-statistic	6.581535	Durbin-Watson stat		1.221494
Prob(F-statistic)	0.000000			

Source: Computed From E-View Statistical Package 9.0

Table 3 above, presents the fixed effect results on effect of systemic risk on the capital budgeting of quoted industrial goods manufacturing firms in Nigeria. The regression summary produced adjusted R^2 of 0.699651 from the fixed effect regression result which implies that 69.9 percent variation capital budgeting of the manufacturing firms can be attributed to changes in systemic risk while the model is statistically significant by the value of F-statistics and F-probability. The Durbin Watson statistics is less than 1.221494, which means the absence of serial autocorrelation. The effect of the independent variables found that exchange rate risk is negative

and significant; interest rate risk is positive and significant while consumer price risk is positive but not significant effect on capital budgeting.

Table 4: Regression Results from the Random Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.880835	1.308998	4.492624	0.0002
D(EXRR)	-4.491539	1.078281	-4.165464	0.0005
D(INTR)	3.178084	0.812958	3.909287	0.0009
D(CPR)	1.851110	0.525088	1.525335	0.2623
ECM(-1)	0.610158	0.240668	2.535265	0.0202
Effects Specification				
			S.D.	Rho
Cross-section random			0.000000	0.0000
Idiosyncratic random			0.093616	1.0000
Weighted Statistics				
R-squared	0.594048	Mean dependent var		-2.735000
Adjusted R-squared	0.460590	S.D. dependent var		41.83808
S.E. of regression	0.627136	Sum squared resid		1.511543
F-statistic	6.727119	Durbin-Watson stat		1.000928
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.477192	Mean dependent var		0.000111
Sum squared resid	1.511543	Durbin-Watson stat		1.991359

Source: Computed From E-View Statistical Package 9.0

Table 3 above, presents the fixed effect results on effect of systemic risk on the capital budgeting of quoted industrial goods manufacturing firms in Nigeria. The regression summary produced adjusted R^2 of 0.460590 from the fixed effect regression result which implies that 46 percent variation capital budgeting of the manufacturing firms can be attributed to changes in systemic risk while the model is statistically significant by the value of F-statistics and F-probability. The Durbin Watson statistics is less than 1.000928, which means the absence of serial autocorrelation. The effect of the independent variables found that exchange rate risk is negative and significant; interest rate risk is positive and significant while consumer price risk is positive but not significant effect on capital budgeting.

CONCLUSION AND RECOMMENDATIONS

The study investigated the effect of systemic risk on capital budgeting decision of quoted industrial goods manufacturing firms in Nigeria using panel data. Capital budgeting decision was modeled as the function of exchange rate risk, interest risk and consumer price risk. Based on the validity of the fixed effect model, the regression summary produced adjusted R^2 of 69.9 percent which implies that 69.9 percent variation in capital budgeting of the manufacturing firms was attributed to changes in systemic risk. The study found that exchange rate risk is negative and

significant; interest rate risk is positive and significant while consumer price risk is positive but not significant effect on capital budgeting. From the findings, the study makes the following recommendations:

i. There is need for management of the manufacturing firms to formulate strategies of managing systemic risk and the implementation should not just be formulated but strategic and tactical measures should be put in place to absorb, retain and transfer systemic risk.
ii. Systemic risk management should be considered as part of strategic plans which need to be reviewed on a more frequent basis and macroeconomics policies should directed towards stabilizing Nigerian exchange rate to avoid depreciating naira exchange rate against key currencies that exposes the firms to exchange rate risk.
iii. There is need for management of manufacturing firms in Nigeria to formulate risk management strategies and integrate it with the operational philosophy of management. This will leverage the institutions challenges of inevitable risk around the business environment.

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