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Systemic Risk and Return on Equity of Quoted Firms: A Panel Data Study from Nigeria

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ABSTRACT
This study examined the effect of systemic risk and return on equity of quoted manufacturing firms in Nigeria. Panel data was sauced from financial statement of the manufacturing firm's from and Central Bank of Nigeria Statistical Bulletin from 2010-2019. Return on equity was modeled as function of interest rate risk, exchange rate risk, equity price risk and consumer price risk. Panel data methodology was employed while fixed effects and random effects estimates were tested using the Hausman test. Panel unit roots and panel cointegration analysis were conducted on the study. The empirical results found that 83.8 percent variation on return on equity of the manufacturing firms can be explained by variation on the systemic risk indicators as formulated in the model. Interest rate risk has positive but no significant effect on the return on equity, exchange rate risk have positive and significant effect on the return on equity, equity price risk have positive and no significant effect on return on equity while consumer price risk have negative and significant effect on return on equity of the quoted manufacturing firms. From the findings, the study concludes that there is significant relationship between systemic risk and return on equity of the manufacturing firms. It recommends that systemic risk management implementation should not just be formulated but strategic and tactical measures should be put in place to absorb, retain and transfer systemic risk. Systemic risk management should be considered as part of strategic plans which need to be reviewed on a more frequent basis. 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, Return on Equity, Exchange Rate Risk, Interest Rate Risk, Consumer Price Risk, Equity Price Risk

INTRODUCTION

In corporate finance theory, return on equity effectively measures how much profit a company can generate on the equity capital investors have deployed in the business and can be used over time to evaluate changes in a company's financial situation other words, Return on Equity indicates the amount of earnings generated by each dollar of equity (Pandey, 2009). It is valuable insight into a company's operations. Higher the return on equity the better, as high return on equity companies, all other things being equal, will produce more earnings and free cash flow that can be used to support a higher level of growth, keep the company financially strong, and provide cash returns to shareholders. Return on Equity is the ratio between the net incomes of the equity owned by the company. Return on Equity is a ratio that is used to regulate how much profit is the rights owner's own capital. Return on Equity is a ratio that provides information to investors about the extent of the company's return on capital derived from the performance of the company making a profit. The greater the value of the company's Return on Equity is considered more profitable, and therefore investors are likely to look for this stock, causing increased demand and offer prices in the secondary market pushed higher.

The main premise in finance is that there is a connection between risk and return. Higher risk is assumed to lead to higher return on stocks with rationale pricing of stocks, highly profitable firms are riskier than average (Fama and French, 2015). Finance theories suggest that there is a positive connection between risk and returns. However, it is also possible that high risk leads to financial distress which can result in lower future profitability. Risk is the potential that a chosen action or activity (including the choice of inaction) will lead to a loss. The notion implies that a choice having an influence on the outcome exists. Potential losses themselves may also be called risks. In every investment decision, risk is an important thing to consider. These considerations are based on the size of the risk that the investment will affect the revenue to be received by investors in the future, if the risk of investing in stocks higher, while stock returns is fixed then this lead to a decrease in the price of shares owned by investors (Tandelilin, 2010). 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.

The risk-return relationship is a fundamental tenet of finance. According to the risk return theory high level of risk results into greater expected return. Logically an individual would demand a greater return for bearing higher level of risk, as explained by Markowitz (1952) as well as Fama and French (2001) investor decision is determined by the risk and return of a particular asset. The question that arises is whether the risk-return relationship can be a guide to the investment options that an investor or the industry gets into. Capital Assets pricing model uses proportional market risk explaining pricing and asset return. However the model did not explain well the observed market returns, of companies trading at stock market, this is because the model uses one factor to estimate the assets return.

However, there has been point of departure among scholars on risk return relationship. Behavioral finance researches have criticized the basic capital assets pricing model assumptions. In behavioral finance not all investors are mean variance optimizers and securities are not all analyzed by the same opinion about the economic outlook. Chen et al. (1986) in their notable work in United States of America analyzed macroeconomic financial variables using monthly data to investigate the systematic factor influence on US firm stock prices. The variables used in their study were industrial production, inflation, risk premium, term structure, market index, and consumption and oil prices. The authors found that the factors had a significant influence in the stock prices with inflation showing particularly high significance particularly in periods of high volatility. The above observations and findings were established in the developed financial market while such study is lacking in the developing financial market like Nigeria. Again existing study on risk and performance focused on commercial banks (Kithinji, 2010; Kolapo, Ayeni, Kolade and Ojo, 2012; Kargi, 2011; Ogboi and Unuafe, 2013), this study examined systemic risk and return on equity of quoted manufacturing firms in Nigeria.

LITERATURE REVIEW

Conceptual Review

Concept of Risk

Conceptually, risk is the profitability of loss or failure. In finance the concept of risk relate to variability of earnings. Risk is inherent in every business, but organization that have the right risk management strategies into business planning and performance management are more likely to achieve their strategies and operational objectives. The concept of risk and return relationship is based on two realities of investments and investment performance. First, investments are susceptible to some degree of risk because an investor stands the risk of losing all his cash when buying stocks, bonds, mutual funds or other investments. Second the more risk an investor assumes the greater the investment returns he may achieve. As indicated earlier there are different kind of risks but risk return trade off encompasses volatility as the basic measure of risk. Volatility is the degree to which an investment changes in price. Price fluctuations will depend on the category of the asset thus stocks prices change widely from one year to another as compared to swing in bonds prices which tend to be less dramatic (Harvey et al, 2005). Unsystematic

risks are likely to affect at most small number of assets, because it can be reduced by diversification, which entails investing in a numerous assets in a portfolio

The view that a higher book return on equity (ROE) implies a higher required equity return is common in asset pricing research in finance, for example in Voulteenaho (2002), Fama and French (2006), Novy-Marx (2012), and Ball Linnainmaa, and Nikolaev (2015). Chen and Zhang (2010), Hou, Xue, and Zhang (2015), and Fama and French (2015) build asset pricing models where higher book rates of return indicate higher expected stock returns, along with other attributes. The positive relationship is consistent with economic intuition that connects return to risk: A higher book rate of return results from taking on more risk.

Return on Equity

Return on equity is another measure of firm performance that shows how well a company has used the capital from its shareholders to generate profits. Investors use return on equity as a measure of how well a company is using its money. Evidently, numerous empirical studies have employed this measure in quest to observe the predicted relationship between financial structure and firm performance

Theoretical Foundation

The study is built on the Portfolio theory developed by Harry Markowitz (1952). Portfolio theory provides an avenue to generate the optimal portfolio for the investor. Investors aim at maximizing returns while minimizing risks, this is achieved by diversifying investments. The total risk of a portfolio is different from the risk of the assets of the portfolio aggregated; consequently the portfolio return is the weighted average of the individual asset. Markowitz asserts that investors should select portfolio on the basis of overall risk reward effects and not constructing portfolios based on the individual securities risk rewards characteristics. APT is offered as one way of estimating risk and return in the market, but the most understood model is Capital Assets Pricing Model. The Capital Assets Pricing Model uses three elements i.e. the anticipated return of a security, risk-free rate and Beta which is the risk factor to measure the possible return in comparison with the risk the asset presents. Capital Assets Pricing Model has been widely used by analysts to determine whether risk is or is not worth the expected return.

The study is also built on management efficiency theory. The efficiency theory was formulated by Demsetz (1973) as an alternative to the market power theory. The efficiency theory presupposes that better management and scale efficiency results to higher concentration thus greater and higher profits. Accordingly, the theory posits that management efficiency not only increases profits, but also results to larger market share gains and improved market concentration (Athanasoglou, Brissimis & Delis, 2005). The efficiency theory also states that a positive concentration profitability relation may be a sign of a positive connection relating to efficiency and size. The theory postulates that positive association between the concentration and profit arise from a lower cost which is mainly achieved through production efficient practices and increased managerial process (Birhanu, 2012).

Empirical Review

Fryndenberg (2011) stated that high return on equity is a result of low indebtedness. This argument is economically grounded in the pecking order theory hypothesis, where firms prefer financing through retained earnings to debt financing. Although profitable companies could increase their indebtedness in order to take advantage of the tax shield, empirical studies usually do not confirm this. A negative impact of indebtedness on business profitability is a major argument against the validity of the trade-off theory.

Steklá et al. (2015) analyzed development of the capital structure and capital disparity across the farmers' cooperatives from fourteen regions of the Czech Republic during the financial and economic crisis (2009 – 2013). They found out that the financial and economic crisis lowered the debt to equity ratio and debt to assets ratio and the profitability ratios as well, and the indicators reported the V-shaped trend. The impact of the capital structure indicators on profitability of cooperatives did not prove to be not significant during the period monitored. Firms operating in the same industrial sector tend to have similar external conditions for their business activities. Therefore, it is also possible to find a correlation between the business sector and the capital structure of companies - as shown, for example, by Bradley, Jarrell and Kim (1984). At the same time, the average indebtedness may be a factor that influences the indebtedness

of a particular company: Chevalier (1995) found out that individual companies compare their own debt ratios with industry averages and directly (by setting target debt levels) or indirectly adjust their own financial policy to these averages.

Talberg et al. (2008) dealt with the debt within a particular industrial sector and discovered the differences within individual industries. He explains these inter-sectoral differences in a capital structure by a different level of risk within industries. In accordance with the theory of financial distress, the company with higher risk levels should get less indebted. Bauer (2004) examines the correlation of indebtedness with the company size, industry and profitability, liquidity of assets, growth opportunities, tax rates, tax shield and volatility in his study. First, he focuses on cross-country comparison of corporate leverage and other factors, including return on assets. According to this comparison, the leverage of Czech companies measured in book values is relatively low, but leverage measured in the market values can be higher. The author did a regression analysis between leverage and return on assets, but no statistically important relationship was confirmed.

Chadha and Sharma (2015) analyzed the impact of capital structure or financial leverage on firm financial performance on a sample of 422 listed Indian manufacturing companies on Bombay Stock Exchange (BSE). They found out that financial leverage has no impact on the firm's financial performance parameters of return on asset and Tobin's Q. However, they revealed a negative and significant correlation with return on equity.

Bauer (2004) examined the correlation of indebtedness with the company size, industry, and profitability, liquidity of assets, growth opportunities, tax rates, tax shield and volatility in his study. First, he focuses on cross-country comparison of corporate leverage and other factors, including return on assets. According to this comparison, the leverage of Czech companies measured in book values is relatively low, but leverage measured in the market values can be higher. The author did a regression analysis between leverage and return on assets, but no statistically important relationship was confirmed.

Akingunola (2007) studied capital Asset Pricing Model (CAPM) and shares value in the Nigerian Stock Market. His findings confirmed the importance of reward volatility analysis in security investment decision and management. Also that correlation test between market beta and systematic risk at 1% level affirmed that the assessment of securities beta as their contribution to the portfolio is undeniable therefore it provided the necessary measure of the systematic risk to be compensated by the market. Furthermore, he also discovered that beta impinges on expected return in responses to changes in the macro-economic environment. Thus, the recent reforms in Nigeria economy significantly affected firms' performance, the stock returns variability, beta instability as well as the presence of high diversifiable risk in holding individual assets.

Girard & Sinha (2008) studied risk and return in the next frontiers. A frontier Market is a market with a class of small, illiquid, less accessible and less known emerging market that has escaped the attention of many researchers. They found that small and valued stocks are less risky investment avenues than large and growth stocks.

Menggen (2007) studied the risk-return relationship in Chinese emerging stock markets with sample of daily, weekly and monthly market return series, using a class of variant GARCH-M model. Menggen found that the dynamic risk-relationship is quite different between Shangahai and Shenghen Stock Markets. A positive and statistically significant risk-return relationship is only found for daily returns in Shenghen Stock Exchange. He discovered also that this positive relationship became insignificant for the lower frequency returns, contrary to these findings in Shenghen Stock Exchange, Monggen discovered that the conditional mean of the stock return is negatively but insignificantly related to its conditional variance in Shanghai Stock Exchange in most cases except for a positive and insignificant relationship in the C-GARCH-M model for the daily returns. Meggen concluded the C-GARCH-M Model seems to describe the dynamic behaviour of the stock returns better than other GARCH type models. Mayanja & Legesi (2007) studied cost of equity capital and risk on Uganda securities Exchange to determine the cheaper source of finance between equity finance and bank finance. They found that the assumption often made by stock brokers that all stocks have the same risk is erroneous.

Sizova, Bollerslev, Osterrieder, Tauchen (2011) investigated the relationship between risk and return, Also Fractional Cointegration based on daily data for the S&P 500 and the VIX volatility index, Their series were divided into different components. Their finding indicates that the relationship between volatility and the volatility-risk reward is strongly direct and positive. They also find that a fractionally cointegrated VAR. in addition they find that corresponding the qualitative conceptions from that same theoretical and their study represent variance risk premium estimated as the long-run equilibrium relationship within the fractionally cointegrated system results in non-trivial return predictability over longer inter daily and monthly return horizons.

Pollet, Kräussl and Jegadeesh (2010) investigated the risk and returns of PE investments and LPEs using the market Prices of FOFs that invest in unlisted private equity funds. Their findings indicate that the market expects for PE to earn abnormal return is approximately 0.5 percent and for LPEs is approximately close zero after fees. Private equity fund returns are negatively related to the credit expand and positively related to Gross Domestic Product growth. In addition they find that both listed and unlisted PE has betas near to one.

Chudhary and Chudhary (2010) examined the relationship between stock returns and systematic risk based on capital asset pricing model (CAPM) in the Bombay Stock Exchange. The sample search is 287 top companies of Bombay (BSE) Stock Exchange that the data were collected over a thirteen years period from January 1996 to December 2009. Their findings (about intercept and slop of CAPM equation that states intercept should be equal from zero and slop should be excess returns) rely on negate hypotheses of capital asset pricing model and offer evidence against the CAPM. In addition, this paper investigated whether the CAPM adequately captures all-important determinants of returns including the residual variance of stocks. The results represent that residual risk has no effect on the expected returns of portfolios.

McCurdy and Morgan (2011) investigated equilibrium model for the inter temporal evolution of the basis in foreign currency markets. The weights are specified in a hedged by the prices of futures and spot contracts position and by Internal and external interest rates. Evaluating this hedged position using an inter temporal asset pricing model leads to a testable equilibrium model of the futures basis. Systematic risk will be commensurate to the conditional covariance of the basis with a generalized discount factor. Empirical implementation uses a conditional (CAPM) in which both the quantity and the price of covariance risk are free to vary over time. However, for this application, the estimated inter temporal risk is insignificantly different from zero the risk in the futures market offsets that in the spot, providing an effective hedge.

METHODOLOGY

This study uses quasi experimental research design approach was adopted for the study. The researcher's aim in this study was to ascertain whether systemic risk have effect on the return on equity of quoted manufacturing. Data were sourced from financial statement and stock exchange factsheet. The study employed a panel data regression analysis. This is because the data set consists of observations of multiple variables over multiple time periods. Thus panel data combines time series and cross sectional data. It allowed the researcher the flexibility in modeling differences in behaviour across individuals firm, it is also appropriate for this study because of its ability to take into account heterogeneity problem or individual effects in cross sectional data and give more informative data. The panel regression equation is different from a regular time-series or cross section regression by the double subscript attached to each variable. The general form of the panel data model is specified as:

$$y_{i}, \alpha + \beta X_{i,t} + \varepsilon_{i,t} \qquad 1$$

The subscript *i* denotes the cross-sectional dimension and *t* represents the time-series dimension. The left-hand variable *y* represents the dependent variable in the model which represents the value relevance of firms listed on the Nigeria Stock Exchange, βx contains the set of explanatory

variables in the estimation model, α is taken to be constant overtime *t* and specific to the individual cross-sectional unit

Model Specification

$$ROE = f(ITRR, EXRR, EPR, CPR) \quad 2$$

The regression models are thus formulated as

$$ROE_1 = \beta_0 + \beta_1 ITR_i + \beta_2 EXRR_i + \beta_3 EPR_i + \beta_4 CPR_i + \varepsilon \quad 3$$

Where

ROE = Return on Equity

ITR = Interest rate risk proxy by variation in real interest rate

EXRR = Exchange rate risk proxy by variation in naira exchange rate per US dollar

EPR = Equity price risk proxy by variation in equity value of the quoted manufacturing firms

CPR = Consumer price risk proxy by variation in real inflation rate

Method of Estimation and Testing

i. Panel data regression model specifications

Panel data can be estimated and analyzed in three different specification models. These are the correlation matrices the Fixed Effect Model (FEM) and the Random Effect Model (REM). In this study the fixed effect model is chosen over pooled OLS regression because of the advantages the former has over the latter.

ii. Pooled Regression Model

Albrigim Zappe and Winston (2011) stipulated that the error term should be independently and normally distributed with zero mean and constant variance and more importantly must not correlated with the independent variables pooled OLS linear regression is given as follows:

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{4it} + U_{it} \quad 4$$

Where $Y_{it}$is the dependent variable; β_0 is a constant term: X_1, to X_4, are the independent variables; β_1 *to* β_4 are slope parameters: i...n refer to the cross-sectional units and t is the time period.

ii. The fixed effect model

The fixed model can be specified as

$$Y_{it} = \alpha_i + \beta_1 X_{1it} + \beta_2 X_{it} + \beta_3 X_{it} + \beta_4 X_{it} + U_{it} \quad 5$$

Where I in refers to the cross-sectional units representing the intercept value for each cross-sectional unit.

A-Priori Expectation

Based on theories such as management efficiency theory and empirical results examined in this study, the variables are expected to have a positive effect on the dependent variables. The mathematical implication is stated as follows: β_1, β_1, β_1, β_1 >0

RESULTS AND DISCUSSION OF FINDINGS

Table 1: Presentation of Panel Unit Root

Method: Series: D(ROE,2)	Statistic	Prob.**	Cross-sections	Obs
Levin, Lin & Chu t*	-4.01127	0.0000	19	114
Im, Pesaran and Shin W-stat	-6.08099	0.0000	19	114
ADF - Fisher Chi-square	117.208	0.0000	19	114
PP - Fisher Chi-square	282.246	0.0000	19	133
Series: D(ITR,2)				
Levin, Lin & Chu t*	2.09307	0.9818	20	120
Im, Pesaran and Shin W-stat	-6.70393	0.0000	20	120
ADF - Fisher Chi-square	133.880	0.0000	20	120
PP - Fisher Chi-square	333.976	0.0000	20	140
Series: D(EXRR,2)				
Levin, Lin & Chu t*	4.62237	0.0000	20	120
Im, Pesaran and Shin W-stat	5.04427	0.0018	20	120
ADF - Fisher Chi-square	20.2050	0.000	20	120
PP - Fisher Chi-square	66.1183	0.0058	20	140
Series: D(ERR,2)				
Levin, Lin & Chu t*	8.60105	0.0001	20	120
Im, Pesaran and Shin W-stat	-7.35784	0.0073	20	120
ADF - Fisher Chi-square	57.2881	0.0000	20	120
PP - Fisher Chi-square	182.453	0.0000	20	140
Series: D(CPR,2)				
Levin, Lin & Chu t*	18.2239	0.0000	20	120
Im, Pesaran and Shin W-stat	7.58083	0.0003	20	120
ADF - Fisher Chi-square	25.0515	0.0000	20	120
PP - Fisher Chi-square	145.406	0.0000	20	140

Source:Author's computation from E-view 9.0

Table 2: Presentation of Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Fixed Effect Regression Model				
ITR	0.264333	1.284712	0.205753	0.8372
EXRR	11.53534	3.241694	3.558429	0.0005
EPR	2.874142	1.814513	1.583974	0.1150
CPR	-8.213144	4.076558	-2.014725	0.0455
C	-8.151794	8.009925	-1.017712	0.3102
	Effects Specification			
Cross-section fixed (dummy variables)				
R-squared	0.857012	Mean dependent var		13.44537
Adjusted R-squared	0.838219	S.D. dependent var		14.08160
S.E. of regression	5.663895	Akaike info criterion		6.418788
Sum squared resid	5613.949	Schwarz criterion		6.815970
Log likelihood	-614.6694	Hannan-Quinn criter.		6.579538
F-statistic	45.60348	Durbin-Watson stat		1.503514
Prob(F-statistic)	0.000000			
Random Effect Regression Model				
ITR	0.287214	1.283805	0.223721	0.8232
EXRR	11.47752	3.238731	3.543832	0.0005
EPR	2.604914	1.706308	1.526637	0.1285
CPR	-8.374780	4.061119	-2.062185	0.0405
C	-7.526799	8.436779	-0.892141	0.3734
	Effects Specification			
			S.D.	Rho
Cross-section random			13.67595	0.8536
Idiosyncratic random			5.663895	0.1464
	Weighted Statistics			
R-squared	0.774648	Mean dependent var		1.747350
Adjusted R-squared	0.555568	S.D. dependent var		5.806680
S.E. of regression	5.643876	Sum squared resid		6179.548
F-statistic	3.912472	Durbin-Watson stat		1.345348
Prob(F-statistic)	0.004444			
	Unweighted Statistics			
R-squared	0.504778	Mean dependent var		13.44537
Sum squared resid	39074.13	Durbin-Watson stat		0.208429
Correlated Random Effects - Hausman Test				
Test Summary		Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random		8.906843	4	0.0000

Source:Author's computation from E-view 9.0

Table 3: Pedroni Residual Cointegration Test

		Statistic	Prob.	Weighted -Statistic	Prob.
Panel v-Statistic		-2.896232	0.9981	-3.582658	0.9998
Panel rho-Statistic		2.653526	0.9960	2.505207	0.9939
Panel PP-Statistic		-11.83533	0.0000	-12.02188	0.0000
Panel ADF-Statistic		-4.997899	0.0000	-4.005954	0.0000
		Statistic	Prob.		
Group rho-Statistic		4.304166	1.0000		
Group PP-Statistic		-14.01553	0.0000		
Group ADF-Statistic		-2.753270	0.0030		
Cross section specific results					
Phillips-Peron results (non-parametric)					
Cross ID	AR(1)	Variance	HAC	Bandwidth	Obs
Champion Brewries	-0.355	0.855019	0.855019	0.00	9
seven up Bottl. Co. plc	-0.389	1.217672	0.214689	6.00	9
Ashaka Cement plc	-0.348	0.721927	0.134890	8.00	9
Cadbury Nig. Plc	-0.110	2.569745	0.565321	8.00	9
UAC plc	-0.612	2.283390	1.678345	3.00	9
Pharma Deko plc	-0.805	3.016946	3.016946	0.00	7
Dangotee Sugar plc	-0.265	4.557940	4.557940	0.00	9
Flour Mills plc	-0.249	2.900946	0.978077	8.00	9
Guinness Nig Plc	-0.249	4.241200	1.144702	8.00	9
Glaxomithline plc	-0.568	0.909673	0.524100	2.00	9
Lafarge Wapco plc	-0.585	0.612770	0.463202	2.00	9
May and baker plc	-0.096	8.161120	5.605770	3.00	9
Nestle NIG. PLC	-0.384	2.040086	1.433974	5.00	9
Nigerian Ropes plc	-0.331	71.79484	10.86301	6.00	9
Nigerian Enamelware plc	-0.584	0.452437	0.342399	2.00	9
Nigerian Breweries plc	-0.337	1.735419	2.053888	1.00	9
PZ Cussoons plc	-0.459	4.350712	1.678509	6.00	9
Unilever Nig. Plc	-0.169	1.948621	2.119797	1.00	9
University press plc	-0.397	40.41626	31.65986	4.00	9
Vita Foam plc	-0.462	10.52215	10.58927	1.00	9

Source:Author's computation from E-view 9.0

Table 4:Pairwise Granger Causality Tests

Null Hypothesis:	Obs	F-Statistic	Prob.
ITR does not Granger Cause ROE	157	2.68898	0.0312
ROE does not Granger Cause ITR		0.58322	0.5593
EXRR does not Granger Cause ROE	157	0.24075	0.7863
ROE does not Granger Cause EXRR		2.55365	0.0811
EPR does not Granger Cause ROE	157	3.03313	0.0011
ROE does not Granger Cause EPR		0.44991	0.6385
CPR does not Granger Cause ROE	157	1.36919	0.2574
ROE does not Granger Cause CPR		0.14456	0.8655

Source:Author's computation from E-view 9.0

DISCUSSION OF FINDINGS

This study examined the effect of systemic risk on the return on equity of quoted manufacturing firms in Nigeria. The panel data analysis is employed to prevent the occurrence of spurious regression estimated in the study, the stationarity of data should be examined first. The LLC Test, Fisher-ADF Test, Im, Pesaran and Shin W-stat and PP - Fisher Chi-square are run in the E-Views statistic software, and the results of each variable are exhibited in Table 1 which show the P-value of each test is significant at the 5% level. The null hypothesis was rejected, and the data are stationary.

Hausman specification test was used to determine which one of the alternative panel analysis methods (fixed effects model and random effects model) among the 3 panel regression models should be applied (Table 2). The results of the Hausman specification show that fixed effect model was appropriate. The model found that 83.8 percent variation on return on equity of the manufacturing firms can be explained by variation on the systemic risk indicators as formulated in the model. The f-statistic and probability justifies that the model is significant while the Durbin Watson statistic found that there is serial autocorrelation among the variables. From the fixed effect model, the study found that interest rate risk have positive but no significant effect on the return on equity of the quoted manufacturing firms such that a unit increase on interest rate risk add 0.26 percent to return on equity of the quoted manufacturing firms, exchange rate risk have positive and significant effect on the return on equity of the manufacturing firms such that a unit increase on exchange rate risk add 11.5 percent to return on equity while equity price risk add 2.8 percent. However, consumer price risk reduces return on equity of the firms by 8.2 percent. The positive effect of systemic risk on return on equity of the quoted manufacturing firms is in line with the findings of Sizova, Bollerslev, Osterrieder, Tauchen (2011), Pollet, Kräussl and Jegadeesh (2010), the findings of Chudhary and Chudhary (2010) and the findings of McCurdy and Morgan (2011). The results of the cointegration test (table 3) proved that the variables are cointegrated as the probability coefficient of the variables are greater than 0.05, we accept the alternate hypotheses that there is no presence of long run relationship between the dependent and the independent variables. A variable is said to granger cause the other if it helps to make a more accurate prediction of the other variable than if only the past data of the latter was used as predictor Zou, Guo and Feng (2010). Granger tests for the direction of cause between two variables. The result in table 4 shows that there is causality from interest rate risk to return on equity of the firms and from equity price risk to return on equity.

CONCLUSION

The study empirically analyzed the relationship existing between systemic risk and return on equity in Nigerian manufacturing firms using panel data analysis. From the empirical investigation conducted, the study concludes that there is positive and no significant relationship between interest rate risk and return on equity of the quoted manufacturing firms. This implies that increase in interest rate risk lead to little increase on return on equity. That there is positive and significant relationship between exchange rate risk and return on equity of the quoted manufacturing firms. This implies that increase in exchange rate risk lead to significant increase on return on equity. That there is positive and no significant relationship between equity price risk and return on equity of the quoted manufacturing firms. This implies that increase in equity price risk lead to little increase on return on equity and that there is negative and significant relationship between consumer price risk and return on equity of the quoted manufacturing firms. This implies that increase in consumer price risk lead to significant decrease on return on equity.

RECOMMENDATIONS

1. All operational efficiency need to be properly integrated into management system of the firms as this can aid the firms in managing the systemic risk and have positive return on equity for shareholders. Financial analysts should consider macro-economic factors, such as instability that results in systemic risk in the general environment that could affect negatively return on equity.
2. There is need for the manufacturing firms to adopt more appropriate measures for reducing systemic risks and ensuring compliance at all times and at all levels. Systemic risk management implementation should not just be formulated but strategic and tactical measures should be in

pursuing best practice and long-term survival. Systemic risk management should be considered as part of strategic plans which need to be reviewed on a more frequent basis.

3. Managers the manufacturing firms should mitigate systemic risk by using appropriate risk management strategies through derivatives, forwards, futures, swaps, options, and insurance as well as securitization techniques. 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 and its effects on return on equity of quoted Nigeria firms.

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