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MARKET RISK AND EARNINGS CAPACITY OF AGRICULTURAL FIRMS IN NIGERIA

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ABSTRACT: *The study investigated the effect of Market risk on the performance of Agricultural firms in Nigeria for the period 2014 to 2018. Three objectives were formulated and the study employed Cause-effect research design using secondary data collected from CBN statistical bulletin and financial statement of the firms. Descriptive statistics and panel data analysis were adopted in analyzing the data gathered. Hausman test was used to choose the best estimates between fixed effect and random effect. The results show that interest rate change and exchange rate change have positive and significant effect on firm performance, while commodity price change effect was negative and also significant.. The study therefore recommends among others that government should ensure a favourable and more stable interest rate to a point that it could be attractive to foreign and local investors as it is an indicator of a stable economy.*

KEYWORD: interest rate risk, exchange rate risk, commodity price risk, firm performance.

INTRODUCTION

For any business to thrive, it must have to survive all known and unknown risks that surrounds it. Risk in this case means uncertainties. Several risks surround all businesses which include liquidity risk, credit risk, market risk and other types of non-financial risks (Kassi, Rathnayake, Louembe& Ding, 2019). Market risk particularly is one of the critical components of risk that is non-diversifiable and presents big challenge to all businesses including agricultural sector. Indeed, Market risk is the risk of losses in liquid portfolio arising from the movements in market prices and consisting of interest rate risk, currency risk, equity and commodity risks (Ekinci, 2016).Market risk can cause very severe losses within a short period of time among volatile market conditions thereby could contribute to collapse among institutions in harsh situations (Odubuasi, Deborah &Ifurueze, 2020).Thus, Ekinci (2016) argued that market risk exposure is more volatile than credit risk exposure due to rapid changes in market conditions. In other words, market risk can be seen as a peril within the organization occurring out of activities within market prices.

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High volatility of market risks have posed a threat to growth and sustainability of businesses around the world and it has called for proper evaluation to be able to proffer solution to secure acceptable market risk appetite that can guarantee increased financial performance. The implies that the financial performance of companies has economic growth consequence. Accordingly,. Sertoglu, Ugural and Bekun (2017) argued that agriculture is the bedrock of economic growth, development and poverty eradication in the developing countries. Similarly, Iganiga and Unemhilin (2011) posit that growth and development of any nation depend on agricultural development to a large extent. In affirmation, Agricultural sector in Nigeria is seen as the engine that contributes to the growth of the overall economy (Izuchukwu, 2011). From the National Bureau of Statistics, (2019) data, agricultural sector contributed 21.65 %, In the first quarter of 2018 fiscal year, being the highest to the country's GDP. Notably, Sertoglu, Ugural and Bekun (2017) indicated that agricultural sector is reputed as the mainstay of the economy in the early 1960's as the key driver of growth and development. This assertion holds true because agricultural sector remains the largest contributor in providing raw materials for industrial productions, and food for the citizens. Izuchukwu (2011) continued that agriculture creates inputs, provides employment opportunities and enables foreign earnings from exportation of surpluses. So Nigeria being an emerging market in Africa having highly diversified agro-ecological condition that makes production of wide range of agricultural products possible (Ehui & Tsigas, 2013), needs to have a clue of possible consequence of market risks. Hence the need for study in that sector

In view of the above, the extant literature reviewed show that authors had done great work on the market risk. In Zambia, Musawa and Mwaanga (2017) studied the effect of exchange rate, interest rate and commodity price on stock exchange performance In Indonesia, Risman, Salim, Sumiati and Indrawati (2017) studied effect of commodity prices, exchange rate and investment on firms listed. Ekinci (2016) worked on the effect of credit and market risk on the bank performance in Turkey, and Muriithi, Muturi and Waweru (2016) worked on market risks and financial performance of commercial banks in Kenya. Norhafiza, Sabariah and Rusmawati (2014) anchored their study on the impact of commodity prices, interest rate and exchange rate on the stock market performance of Malaysian economy. In Nigeria, Odubuasi, Deborah and Ifurueze (2020) investigated the effect of market risk on Oil and Gas sector of Nigeria economy; Agubata and Odubuasi (2018), Okereke (2017) and Offiong, Riman and Akpan (2016) studied the influence of exchange rate changes on manufacturing firms in Nigeria, Nwandu (2016) studied the effect of interest rate, Alao and Oloni (2015) studied the commodity price changes on drink service industry in Nigeria. In all these studies, none had considered the effect of the entire components of market risk in agricultural sector of Nigerian economy which is the bedrock of growth, development and poverty eradication in most developing nations. Hence our study sought to ascertain the effects of market risk on performance of agricultural firms in Nigeria and the specific objectives include to;

1. Ascertain the effect of interest rate change on the performance of firms in Nigeria,
2. Examine the effect of commodity price changes on the performance of firms in Nigeria.
3. Investigate the effect of exchange rate change on the performance of firms in Nigeria.

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The result will provide agricultural firms with the foreknowledge of possible consequences of market risk on their performance to enable them draw up measures to guard against it. The government can also formulate relevant monetary policy that can offer conducive interest rate for agricultural sectors. The study is structured such that next section contains the review of related literature. Section three buttressed on the methodology, followed by data analysis and hypotheses testing. Section five has the findings and recommendation.

REVIEW OF RELATED LITERATURE

Interest Rate Changes and firm performance

Interest rate is the price charges placed for the use of money, which is usually expressed as an annual percentage of the principal. Interest rate is an economic tool used by CBN to control inflation and boost economic development (Corb, 2012). Odubuasi et al (2020); Papa (2014) opine that high interest rate leads to slow growth and development as a result of high cost of capital. Zuhaib and Nizam (2015) in their work on inflation, interest rate and firms' performance with evidence from textile industry of Pakistan, they found that interest rate has significant positive effect on return on assets. Odubuasi et al (2020); Nwandu (2016) found that interest rate changes have negative effect on Oil and Gas sector and manufacturing sector of Nigerian economy respectively. Kisseih (2017) found interdependence between profitability and interest rate when they investigated the impacts of interest rate fluctuations on the growth of small and medium enterprises in Accra. Odalo, Achoki and Njuguna (2016) differently applied descriptive design as they investigated the influence of interest rate on the financial performance of agricultural firms in Kenya. They administered 220 questionnaires and the result of their analysis indicate a positive and significant relationship between interest rate and firm performance.

Commodity Price change and firm performance

Ildirar and Iscan (2015) opine that commodity prices consist of the prices of basic materials and natural resources used in virtually all products and manufacturing process, notably among commodities are oil, wheat, iron and robber that are the main components of many common goods in our lives. More conveniently, commodities are classified into industrial crops (Timber), Fisheries, Cereals, Beverages, Livestock, Precious metals, Coal and Petroleum products (Farooki & Kaplinsky, 2012). Most of the commodities as mentioned above are agricultural output and products, in which case there must be an effect which the changes in the prices can cause to the performance of firms in agricultural sector. But then some authors had conducted research on these variables; Ildirar and Iscan (2015) examined the interaction between stock prices and commodity prices on Eastern Europe and central Asia. They proxy commodity price with price of cereal, vegetable oils, meat, seafood, sugar, bananas and oranges. The result shows a strong evidence of correlation between commodity prices and stock prices. Gyasi (2016) looked at commodity price shock and African stock market with evidence from Ghana. He used cocoa, crude oil and gold price for measuring commodity prices and found that strong bi directional linkage exists between Ghana equity market and gold, and crude oil prices. Mongale and Eita (2014) investigated commodity prices and stock market performance in south Africa, they used

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prices of Platinum and gold as a measure of commodity price found that increase in commodity prices is positively associated with increase in stock market performance. Risman, Salim, Sumiati and Indrawati (2017) examined commodity prices, exchange rates and investment on firm's value mediated by business risk from Indonesian stock exchange. Commodity price was proxy with crude oil, coal, crude palm oil, gold, nickel and tin for a period 2010 to 2014. They found that oil price affects firm's value. Therefore, our study will proxy commodity price using palm oil.

Exchange rate risk and firm performance

Oladipupo and Onotaniyohuwo (2011) say that exchange rate fluctuations have ripple effect on economic activities of a nation and brings to mind the definition giving to exchange rate by Ordu and Nwoha (2013), as the product of interaction between the demand for and supply of foreign exchange. They continued that the fluctuations in exchange rate can have favourable or unfavourable effect on companies' operations. Agubata and Odubuasi (2018) worked on exchange rate fluctuation and firm performance in Nigeria, and found exchange rate to have positive and insignificant effect on firm performance. In Mexico, Flota (2014) found exchange rate to have significant effect on equity value after investigating the impact of exchange rate movement on firm value in emerging markets. Enekwe, Ordu and Nwoha (2013) regressed exchange rate with manufacturing gross domestic product, manufacturing foreign private investment and manufacturing employment rate, they found that exchange rate has significant and positive effect on manufacturing sector. More so, Okereke (2017), Ikechukwu (2016) and Lagat and Nyandema (2016) found statistical significant relationship between foreign exchange rate and firms' performance. This current study adopted annual average inter-Bank-Rate as a measure of exchange rate.

METHODLOGY

The study used cause-effect research design. This design is employed as it made it easier to establish the cause and effect relationship that existed between the dependent and the independent variables. The area of study considered is agricultural sector because the current Federal government under the President Mohammadu Buhari (Rtd) centers its focal programme on massive campaign of increasing revenue generation through agriculture against the usual revenue generation from oil and gas. All the five companies listed under agricultural sector on Nigerian Stock Exchange as 2019 formed our population. Secondary data were generated from the Central Bank of Nigeria (CBN) Statistical Bulletin and the financial statements of the firms studied for the period 2014 to 2018.Data were analysed using descriptive statistics to obtain the mean, minimum, maximum, kurtosis, skewness, standard deviation to describe and summarise the behaviour of the variables. Pearson correlation was used to test for the degree of association among the variables and for multicollinearity, Ordinary Least Square (OLS) regression analysis was used to determine the effect of independent variables on the dependent variables.

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Model Specification

The model used for this study was adopted from the work of Norhafiza, Sabariah and Rusmawati (2014) as presented:

ROA = f (INTR, XCHR, COMP)

$$ROA_{i.t} = \alpha_0 + \alpha_1 INT_{i.t} + \alpha_2 XCHR_{i.t} + \alpha_3 COMP_{i.t} + \mathcal{E}_{i.t} \text{---------- equ (1)}$$

Where;

ROA = Return on Assets; INTR = Interest Rate; EXCR = Exchange Rate; COMP = Commodity Price; α_0 = The model constant or the intercept; α_1 = Coefficient of the independent model; $\mathcal{E}_{i.t}$= Error term.

DATA ANALYSIS AND HYPOTHESES TESTING

Table 4.1: Descriptive statistics

Stats	ROA	COMP	INTR	XCHR
Mean	5.10378	32	1.02	60.37571
Max.	64.05253	66	1.86	88.01
Min.	-16.05618	1	.14	25.77
Sd	14.37863	20.97618	.481175	22.14373
N	35	35	35	35

Source: Researchers' computation (2021)

The above table, shows that the mean value of ROA among the sampled firms was 5.10%, the highest performed companies have 64% while least performed within the study period had -16%. The average change in commodity price is by 32%, the maximum change as well as the minimum change is 66% and 1% respectively for the periods. There was an average change of 1% in interest, minimum change of 0.14% and maximum change of almost 2% within the periods of the study. Finally, foreign exchange rate witnessed a high volatile movement within the periods as its average change was by 60%, the maximum change was 88% and it minimum change was 26%. The total number of observation is 35.

Table 4.2: Correlation Analysis

	ROA	**COMMP**	**INTR**	**XCHR**	
	1.0000				COMMP -0.1438
	1.0000				
INTR	0.0722	0.1125	1.0000		
XCHR	-0.0797	0.5777	-0.3683	1.0000	

Source: Researchers' computation (2021)

The above result show that there is no strong correlation among the independent variables as commodity price change shows a positive and weak correlation with interest rate (COMMP/INTR = 0.1125), and positive and moderate correlation with exchange rate changes

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(COMMP/XCHR= 0.5777). Interest rate changes on the other hand show a moderate and negative correlation with exchange rate (INTR/XCHR= -0.3683). The table finally indicate that ROA has a very weak and inverse correlation with commodity price change and foreign exchange rate change but positive and weak correlation exists between ROA and Interest rate change.

Table 4.3- Summary of Panel regression result of the model

	Market risk (RANDOM EFFECT)	**Market risk (FIXED EFFECT)**
Commodity Price change	**-0.24 {0.023}**	**-0.35 {0.024}**
Exchange rate change	**0.045 {0.057}**	**0.075 {0.064}**
Interest rate change	**0.83 {0.004}**	**0.38 {0.041}**
F-statistics	**1.94{0.0045)**	**2.64{0.0397}**
HAUSMAN TEST		**Prob>chi2 = 0.0740**

Source: Researchers' computation (2021)

The F-statistic value of 1.94(0.0045) and 2.64(0.0397) for random and fixed effect models respectively shows that both models are valid for drawing inference since they are both statistically significant at 1% and 5% respectively.

In testing for the cause-effect relationship between the dependent and independent variables, the two widely used panel data regression estimation techniques (fixed effect and random effect) were adopted. The table above presents the two panel data estimation techniques results (fixed effect and random effect). The estimation of the fixed effect panel regression was based on the assumption of no correlation between the error term and explanatory variables, while that of the random effect, considers that the error term and explanatory variables are correlated. In selecting from the two panel regression estimation results, the Hausman test was conducted and the test is based on the null hypotheses that the random effect model is preferred to fixed effect model. A look at the p-value of the Hausman test at (0.074), implies that we should accept the null hypothesis and reject the alternative hypothesis at 10% level of significance. This implies that we should adopt the random effect panel regression results in drawing our conclusion and recommendations. This also implies that the random effect results tend to be more appealing statistically when compared to the fixed effect. Following the above, the discussion of the random effect result becomes imperative and preferred.

In testing our hypotheses, we provide the below specific analysis for each of the independent variables using the random effect regression.

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Hypotheses Testing

Commodity price changes (*random effect = - 0.24* (0.023)as an independent variable to market risk appears to have a negative and significant effect on performance of agricultural sector at 5% level of significant. This therefore implies that we accept the alternate hypothesis 2, which says that commodity price change has significant effect on performance of firms in Nigeria. This result agrees with prior empirical results of (Alao & Oloni, 2015; Risman, Salim, Sumiati & Indrawati, 2017; Musawa & Mwaanga, 2017) which shows that commodity price is a major driver of the performance of firms. It however disagrees with the work of Odubuasi, Deborah and Ifurueze (2020) that found commodity price to have insignificant effect on performance of Oil and Gas sector in Nigeria.

Interest rate change (*Random effect* = 0.83(0.0047))as an independent variable to market risk appears to have a positive and significant effect on market risk at 1% significant level. This therefore means that we should accept alternate hypothesis 1, which posits that interest rate has significant effect on the performance of firms in Nigeria. This result agrees with prior empirical results of (Odubuasi et al, 2020; Musawa & Mwaanga, 2017; Maranga & Nyakundi, 2017; Ekinci, 2016; Muriithi, Muturi & Waweru, 2016; Norhafiza, Sabariah & Rusmawati, 2014) which show that interest rate is a major driver of firm performance.

Exchange rate change (*Random effect= .045*(0.037)*)* as an independent variable to market risk appears to have a positive and significant effect on market risk at 5% level. This therefore means we should accept alternate hypothesis 3 that states that market risk has significant effect on the performance of firms in Nigeria. This result agrees with the prior empirical results of (Norhafiza, Sabariah & Rusmawati, 2014; Ekinci 2016; Okereke 2017; Harley 2018; Agubata & Odubuasi 2018; Odubuasi, Deborah & Ifurueze, 2020) which show that exchange rate is a major driver of performance of firms.

DISCUSSION OF FINDINGS

The result of the hypothesis one indicate that if every other variable is held constant, a unit change in interest rate would cause 0.83 unit change in the performance of firms in Nigeria. That shows that interest rate movement is a great limitation to profitability of firms especially in Nigeria where interest rate tends to move up and down freely. Though the result show that collectively all the independent variables caused seventy percent of the changes in firm performance, an indication that the model is fit to explain what happens to the dependent variable. As has stated earlier the finding is in collaboration with those of Maranga & Nyakundi, 2017; Muriithi, Muturi & Waweru, 2016; Norhafiza, Sabariah & Rusmawati, 2014; Ekinci, 2016; Musawa & Mwaanga, 2017, whose result indicate that interest rate has significant effect on firm performance.

More so, commodity prices change is seen to have inverse and insignificant effect on the performance of firms in Nigeria. The result in table 4.3 indicates that an increase in commodity price change will cause a decrease in the financial performance of firms in Nigeria. The result

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provides that a unit change in commodity price will cause .24 unit change in firm performance if all other variables are held constant. The implication is so obvious that when commodity price decreases, cost of goods sold will automatically decrease and this will cause an increase in the profitability position of the firm. The result of this study agrees with the findings of Alao & Oloni, 2015; Risman, Salim, Sumiati & Indrawati, 2017, who found that commodity price is a significant changer of firm performance.

Finally, the outcome of the study indicates that increase in exchange rate increases firm performance. The result shows that a unit change in exchange rate can cause approximately 5% change in profitability of the firms under study if other independent variables are held constant. An increase in exchange rate can result from depreciation and devaluation of naira which will create a higher nominal value and higher volume of naira. This result is in line with the findings of Agubata & Odubuasi 2018; Norhafiza, Sabariah & Rusmawati, 2014;Ekinci 2016; Okereke 2017; Harley 2018 whose work show that exchange rate has significant effect on firm performance.

CONCLUSION AND RECOMMENDATION

This study empirically x- rayed the effect of market risk on the performance of firms in Nigeria, as a way to sort out the market uncertainties that confront the businesses in Nigeria. it involved the skill of panel data analytical technique in its processes. The study brought out empirical indication that interest rate, exchange rate and commodity price changes are market factors that constitute economic obstacle to the profitability goal of firms in Nigeria. Complete consideration of these factors in decision and operational stages of the businesses will help it come out stronger in achieving its profit maximization plans.

Recommendations

Sequel to the findings made from the empirical analysis of this study, the under listed policy recommendations were made;

1. Government should place interest rate to a level that could be attractive to inclusively foreign investors and local producers and make it stable because it's one of the macro economic indicator that tells of economic stability of a nation over time.
2. Firms should make adequate provision for speculative fund which could be used to purchase commodities each time the price drops as it appears to increase their profit.
3. The firms should take advantage of the changes in foreign exchange rate by having a team that will specifically anchor on forecasting exchange rate or can stick to hedging as a way to take advantage of exchange rate fluctuations.

Suggestion for further study

Having noticed that market risk affects firm performance (agriculture sector) in Nigeria, we urge interested researchers to compare the level of absorption or management of this risks by firms in Nigeria with the firms in other great and leading economies in Africa. That study might throw light to why one nation does better or takes the market lead against others.

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