
Effect of Financial Derivatives on the Performance of Deposit Money Bank in the Nigerian Stock Exchange

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Abstract: *This study examined the effect of financial derivatives on the performance of deposit money bank in the Nigerian stock exchange between the periods of 2015-2021. The following were the objectives of the study to; determine the effect of loan and advances on the performance of deposit money bank in the Nigerian stock exchange. Ascertain the effect of exchange rate on the performance of deposit money bank in the Nigerian stock exchange. Examine the effect of financial derivative assets on performance of deposit money bank in the Nigerian stock exchange. Panel Least Squared (PLS) method of data analysis was used. The interested variables were culled from the annual report of the quoted deposit money bank in Nigeria stock exchange. The following variables used were: loan and advances, exchange rate and financial derivative assets. Secondary sourced of data were employed in those study. The findings show that loan and advances has no significance effect on performance of deposit money bank in the Nigerian stock exchange. Exchange rate has significance effect on performance of deposit money bank in the Nigerian stock exchange. Financial derivatives assets have significance effect on performance of deposit money bank in the Nigerian stock exchange. The study recommends that sound risk management process such as ensuring that procedures and policies that delineate clearly the lines of responsibility for managing risk. Deposit money bank should put in place adequate risk measuring systems and appropriately create structured limits on risk taking.*

Key Word: *financial derivatives exchange rate, financial derivatives assets, Nigerian stock, exchange, risk management*

INTRODUCTION

Much financial institutions faced several risks in their daily operations. As firms in financial service sector operating activities become complex, the firms in the financial service sector find themselves increasingly exposed to business risks, with the exchange and interest rate fluctuations being just some of the financial risks they face (MacCarthy 2017).. The management of these risks is fundamental to the performance of firms in the financial services sector in Ghana. Risks are part and parcel of every business. Yet, financial institutions and firms operating in money markets are more vulnerable to business risks relative to other firms such as service and product-centric firms (Gibson, 2007; Fadun, 2013). It is, therefore, paramount to hedge

against risks to pave way for desired profitability, in order to avoid financial losses and bankruptcy. Common instruments used to manage and hedge against business risks by the financial institutions and firms in the money market are financial derivatives (Hon, 2012). According to Cole (2009) the use of derivative instruments in corporate risk management is rapidly increasing in recent years and a situation that is caused by financial deregulations at a global scale and the evolvement of risks of higher weights in financial activities of financial firms during and after the global economic recession (Whitemann, 2003; Cole, 2009)

The nature of the banking sector expose them to various risks ranging from credit, interest rate, exchange rate among others, which makes them adopting financial derivative instruments as a mean of managing their risks. The objective of banks for using derivatives therefore is to reduce their cash flows volatility and thereby reducing their distress costs (Sulaiman. & Ibrahim 2020).. It has been identified as a viable tool of managing systematic risks in an organization in order to maximize the desired profit of deposit money banks. The global growth in the use of financial derivatives in recent time, mostly by banks cannot be underemphasized (Bendob, Bentouir & Bellaouar, 2015). Financial Derivative is therefore paramount to Deposit money banks in order to safeguard them from any kind of unexpected future events which might have effect of the level of their profit (Sinha & Sharma, 2016).

Statement of the Problem

The commercial banks are working on innovative ways to achieve profits instead of traditional methods, and hedging of systemic risks by using financial derivatives because of the uncertainty and high volatility in the global and domestic financial markets. Compared to on-balance sheet asset-liability management, managing risks by using financial derivatives, normally known as off-balance sheet activities, gives the commercial banks the flexibility to attain their preferred risk exposures without changing their original business goals. derivative use is also less costly could substitute for expensive capital. However many authors has analyzed financial derivatives with inconclusive findings Efanga, et al. (2019) examined the impact of derivative instruments on risk management in the Nigerian banking sector, between 2014 and 2018. The inferential result suggested that financial derivative impacted positively and significantly on risk management in the Nigerian banking sector. John, (2017) examined the impact of financial derivatives on the performance of firms in the financial sector in Ghana. A strong positive correlation between financial derivatives and controlled business risks is found, Sulaiman and Ibrahim (2020) examines the effect of financial derivatives on the profitability of selected deposit money banks in Nigeria. The result indicates that the model is positive and significant. Waswa, and Wepukhulu, (2018) examined the effect of derivative financial instrument utilization on the financial performance of non-financial firms recorded at the Nairobi Securities Exchange. The study found that use of derivatives in price stabilization is statistically significant and utilization of derivatives in price discovery does not influence the financial performance of the firms. By and large, the performance of the recorded non-financial firms at the NSE amid the time of study was 8.13 with a standard deviation of 10.67.

In the light of those contradictory results obtained from existing literature conducted using Nigerian data, this study sought to find out the effect of financial derivatives of listed

companies in Nigeria. The study provided up to date knowledge of empirical evidence from samples collected from deposit money bank most previous related studies in Nigeria did not consider. Furthermore, several related studies had analysed the impact of financial derivatives but only a handful studies used profit after tax as the dependent variables. Hence, this study was motivated by two key ideas: expanding sectoral coverage of prior related studies and introducing a rare measure of derivate which is management risk which will be proxy by exchange rate.

Objective of the Study

The general purpose of this study was to determine the effect of financial derivatives on the performance of deposit money bank in the Nigerian stock exchange. Specifically, the study sought to:

4. Determine the effect of loan and advances on the performance of deposit money bank in the Nigerian stock exchange
5. Ascertain the effect of exchange rate on the performance of deposit money bank in the Nigerian stock exchange
6. Examine the effect of Financial Derivative Assets on performance of deposit money bank in the Nigerian stock exchange

2. LITERATURE REVIEW

Derivatives

Derivatives refer to a broad class of financial instruments which derive their value from the value of an underlying asset or market variable (Fadun, 2013). They do not have worth of their own, but derive their value from the claim they give to their owners to own some other financial assets or security. Derivatives are financial instruments used in hedging. Derivatives are just one form of hedging instruments which comes in form of contracts or agreements between two parties. The basic meaning of derivatives is to derive something from something else. A simple example of derivative is butter, which is a derivative of milk. The price of butter depends upon the price of milk, which also depends upon the demand and supply of milk. Size is an important factor influencing the decision of firms to use derivatives (Halter, 2010). Hence, the huge initial cost of establishing a derivative position can discourage small firms from using them (Kapitsinas, 2018). Nevertheless, derivatives are highly suitable managing risks associated with the FSS operations, if appropriately employed.

Theoretical Review

Capital Structure Irrelevance Theory

This theory relates to the immateriality of hedging first posited by Modigliani and Miller (1958). The theory expresses that the capital structure of a firm comprising of equity, debt and/or preference stock is autonomous of its financial performance which is mainly affected by the company's underlying assets. Put differently, "regardless of how a company chooses to fund its operations will not affect its financial value or performance with the assumptions that there is absence of government intervention, quality and quantity of information is the same, and no taxes or other unnecessary fees are present." Little wonder Frankfurter and McGoun (1999),

contend that the theory is unnecessarily impregnated, as it is impossible to have a perfect market economy. A study by Carter, Rogers and Simkins (2004) on 26 airline companies in the US between the years of 1994—2000 refutes the irrelevancy of firm hedging based on their findings that there was a 14.94-16.08% increase in the Tobin's Q ratios used to represent the value of these firms. They concluded that the cost of jet fuel significantly affected cash flow, in that high jet fuel costs led to lower cash flows and contrariwise.

Jin and Jorion (2006) strongly supported this theory in their study which was a composition of a dataset of 119 U.S. companies, with 330 firm year observations in the oil and gas industry between years 1998—2001. They used a pooled-OLS estimation technique with the Tobin's Q ratio as the dependent variable, and hedging activity dummies as the independent variables. They concluded that there were no differences between the Tobin's Q ratios representing firm values of firms that hedged with those that did not. Therefore, "hedging does not confer a special advantage since investors can hedge on their own." This relationship became negatively effective on firm value when the exposures were hedged although more than 90% of the firms in the sample showed a significant relationship between exposures to oil and gas commodity prices and stock prices, in that an increase in commodity prices led to an increase in stock prices. Deducing from this theory in informing the study, it will expound on the research objective (i) and research question (i) of this study. Moreover, this theory will explicate to inform on the variable under study on Risk Management by giving more insights to its functionality on hedging.

Empirical Review

Efanga, et al. (2019) examined the impact of derivative instruments on risk management in the Nigerian banking sector, between 2014 and 2018. Ordinary least squares (OLS) model was employed to analyze data and draw inference; data used were elicited from Central Bank of Nigeria Statistical Bulletin of 2018 and Nigerian Stock Exchange Statistical Bulletin of 2018. The study employed foreign exchange derivative as proxy for derivative instruments (independent variable), while exchange rate was employed as a measure of risk management in the Nigerian banking sector (dependent variable). The inferential result suggested that financial derivative impacted positively and significantly on risk management in the Nigerian banking sector.

Jalal-Eddeen, and Saleh, (2022) *Financial Derivatives: The Concepts, Operations, and Impact on the Nigerian Economy* This systematic review visited various relevant sites and synthesized literature from relevant publications. The write-up discussed the growth of financial derivatives, especially in the past two decades, the innovations in financial theory, changes in the foreign markets, and increased computerization. The outcome of this review has shown that since the inception of financial derivatives in the early 1970s, there are various instruments that have evolved and are considered critical. Some of these instruments include futures contracts, forward markets, options, swaps, and hybrids. Undeniably, the complexities of the derivatives market keep increasing and on a daily basis; the Nigerian economy is not an exception or spared. This review is critical and timely, hence the need for government officials, policymakers, financial regulators, and academia to effectively understand this fluidity in the global financial markets. Given the fluidity of the global economies and evolving nature of financial transactions in the

global space, this write-up would help in sensitizing help policymakers and financial regulators when adopting significant legislative or regulatory changes regarding the country's financial dealings in the global space.

John, (2017) examined the impact of financial derivatives on the performance of firms in the financial sector in Ghana. Secondary data on financial derivatives, controlled business risks and business performance in terms of return on investment are used for the period 2011-2015. Data are sourced from 23 randomly selected financial firms in Accra, Ghana. A quantitative research technique is used to test four hypotheses. A strong positive correlation between financial derivatives and controlled business risks is found, $r(92) = .703, p < .05$. Also, there is a strong positive correlation between financial derivatives and business performance in terms of ROI, $r(92) = .961, p = .000$. This means that the financial performance of businesses improves largely when they trade in financial derivatives. Financial derivatives significantly predict business performance at 5% significance level ($t = 32.87, p = .000$), where they account for 92.3% of the variation in business performance. Financial firms would, therefore, have to give priority to financial derivatives and their management to boost financial growth.

Sulaiman and Ibrahim (2020) examines the effect of financial derivatives on the profitability of selected deposit money banks in Nigeria. Panel regression model was used by collecting data from the annual financial report of all the eight (8) banks with international authorization status in Nigeria and covers a period of five years between 2012 and 2017. The independent variable, financial derivative was proxies using financial derivative liabilities (FDL) and financial derivative assets (FDA) with loan and advances to customers (LTC) as a controlling variable. Pooled Ordinary Least Square (OLS), fixed effects and random effects tests were conducted on the variables and were also subjected to the Hausman test to choose the preferred estimator. The result indicates that the model is positive and significant. FDA and LTC have positive and significant effect on the profitability of deposit money banks in Nigeria while FDL is negative and insignificant. The study therefore concludes that financial derivative has positive and significant effect on the profitability of deposit money banks in Nigeria. Based on the findings, the study recommends that deposit money banks should increase their loan asset to better improve their profit. Limit their financial derivative liabilities and ensure that financial derivative assets are better utilized.

Waswa, and Wepukhulu, (2018) examined the effect of derivative financial instrument utilization on the financial performance of non-financial firms recorded at the Nairobi Securities Exchange. The study embraced the regression model. A census of all the 47 non-financial firms listed at the NSE as at December 2017 constituted the target population where only 11 listed non-financial firms were financial derivative instruments users. The study utilized qualitative and quantitative research techniques especially the utilization of descriptive research design. The data for this study was collected using questionnaires, audited financial statements and annual reports of individual firms for the multi year time frame covering 2013-2017 (the two years comprehensive). The study discovered that greater part of the firms (66.67%) utilizes Forwards, 22.22% utilize Swaps and 11.11% utilize Futures and Options for financial risk management. From the study the outcomes were as per the following: presence of debt in the financial structure of the non-financial firms listed at the NSE does not influence its financial performance

as estimated by return on assets (ROA), use of derivatives in efficiency in trading influences the financial performance of the firms, use of derivatives in price stabilization is statistically significant and utilization of derivatives in price discovery does not influence the financial performance of the firms. By and large, the performance of the recorded non-financial firms at the NSE amid the time of study was 8.13 with a standard deviation of 10.67. The study recommended that firms should combine both debt and equity in their financial structure. It is therefore incumbent on firms' managers and financial advisors to continuously study the market and advice on the appropriateness of the proportions of the various sources of finance based on market circumstances at any given time.

3.METHODOLOGY

The study examines the effect of financial derivatives on the profitability of deposit money banks in Nigeria. To achieve this, the five (5) deposit money banks in Nigeria with international authorization status were selected and on the basis of availability of the variables data in their financial statement. The study covers seven (7) year period of between 2015 and 2021 because most of the banks rarely use financial derivative prior 2012. The study deployed secondary data which are collected from the annual financial report of the selected deposit money banks studied. The data (with emphasis on financial derivative assets, exchange rate and loan and advances to customers) used is gathered from different banks over a period of 7 years (between 2015 and 2021). The study therefore employed a panel data technique to examine the study. Descriptive statistics like mean, mean, histogram, skewness, kurtosis and Jarque-Bera are being used. The hypothesis earlier stated is further subjected to Panel Least Square. The model used for this study was adapted from the work of Sulaiman. & Ibrahim .(2020) who studied financial derivatives and profitability of selected deposit money banks in Nigeria Their model uses financial derivative liabilities (FDL) and financial derivative assets (FDA) with loan and advances to customers (LTC) and deposit money bank profitability. Meanwhile this study considers loan and advances given to customers which warrant derivative itself to be a control variable in enhancing profitability. There are several measurements of bank profitability which could be gross profit ratio, profit margin, return on investment, return on equity, and profit after tax among others (Kurfi, 2003; Osayi, Kasimu and Nkwonta, 2018). The study therefore adopts profit after tax being a direct measurement of profitability and as used in the adapted model. Therefore the model is specified as thus:

$$PAT = f(LA, EXCH, FDA)$$

PAT = Profit after tax

LA = Loan and advances

EXCH = Exchange rate

FDA=Financial derivative

F= functional notation

Econometric form of the model being

$$PAT = \beta_0 + \beta_1 LA + \beta_2 EXCH + \beta_3 FDA + \mu$$

Where

B_0 = constant

Where

B_0 = Autonomous Intercept

B_1 = Coefficient of parameter LA

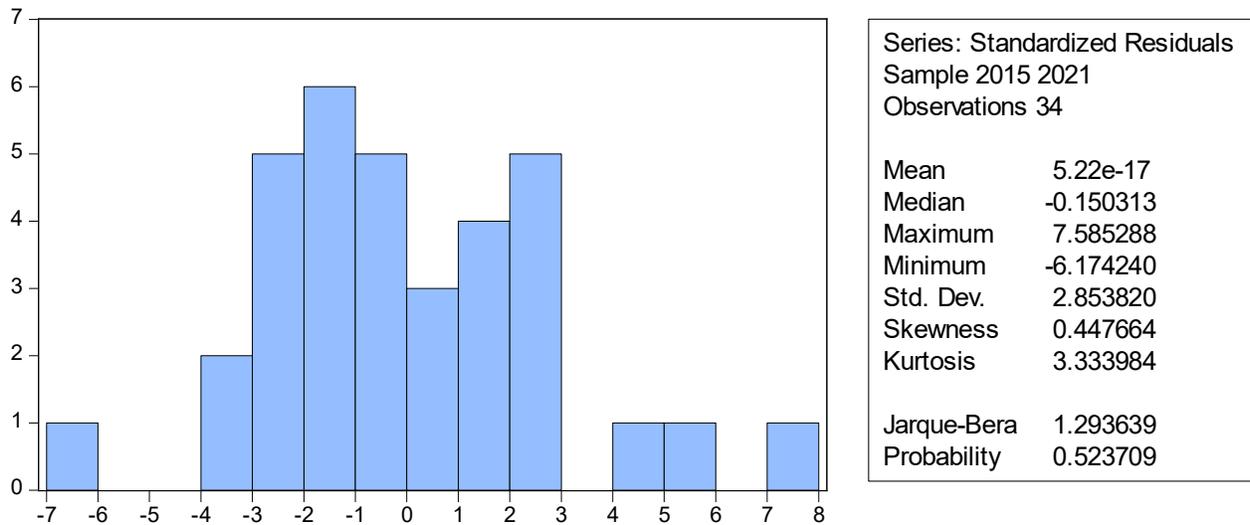
B_2 = Coefficient of parameter EXCH

B_3 = Coefficient of parameter FDA

U = Stochastic error term

4. DATA PRESENTATION AND ANALYSIS

The study deployed descriptive statistics in determining the normality of the variables in the model. As shown in figure 1, the kurtosis has a value of 3.3 which is not that far from 3 and the data has a skewness value of 0.44 which shows it is moderately skewed as the value lies between 0.5 and 1 and therefore revealed that the data is normal. The Jarque-Bera result also has a coefficient value of 1.29 with a probability of < 0.05 . The null hypothesis is that the data is normally distributed and since the significance value is greater than 5%, therefore the study fail to reject the null hypothesis and therefore concludes that the data is normally distributed.



Dependent Variable: PAF
 Method: Panel Least Squares
 Date: 03/18/22 Time: 04:52
 Sample: 2015 2021
 Periods included: 7
 Cross-sections included: 5
 Total panel (unbalanced) observations: 34
 White cross-section standard errors & covariance (d.f. corrected)
 WARNING: estimated coefficient covariance matrix is of reduced rank

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LA	0.112858	0.889450	0.126885	0.9003
EXCH	-0.242641	1.160305	-5.380170	0.0000
FDA	0.031555	0.061899	2.509779	0.0058
C	0.291372	13.97503	2.355181	0.0288

Effects Specification

Cross-section fixed (dummy variables)
 Period fixed (dummy variables)

R-squared	0.865129	Mean dependent var	45.08824
Adjusted R-squared	0.777463	S.D. dependent var	7.770838
S.E. of regression	3.665799	Akaike info criterion	5.728871
Sum squared resid	268.7616	Schwarz criterion	6.357372
Log likelihood	-83.39080	Hannan-Quinn criter.	5.943208
F-statistic	9.868476	Durbin-Watson stat	1.773129
Prob(F-statistic)	0.000005		

Sources: E-view output 2022

The table above shows the Panel least square regression analysis of deposit money bank in Nigeria. As shown in table 4.3 above, the F-statistics of 9.868476 and their P-value of 0.0000 showed that all our regression models are generally significant at 1% level and well specified. The dramatic change in profit after tax could not have been dictated by a corresponding provision of minimum liquidity. This model implies that loan and advances, exchange rate and financial derivatives on assets were very crucial and relevant for indices and financial performance measures. The result also revealed that the R-squared value of 0.865120 which is equivalent to 87% approximately, it indicates that the independent variables explains about 87% of the systematic variation in the financial performance of selected deposit money banks over the seven (7) year period observed while the remaining 13% is explained outside the unspecified variables thereby captured by the error terms, thus, exogenously explained. The value of R-squared which is the coefficient of determination that stood at 87% implies that about 87% of the systematic variation in dependent variables was explained in the model while about 13% were unexplained.

In the table above, we observed from the Panel least Square regression that the R-squared adjusted value was 0.777 which means that about 77% of the predictive power in the dependent variable was jointly explained by the independent variables. This implies that dependent variable

in Nigerian banking environment cannot be 100 percent explained by all the variables used in this study. The unexplained part of the dependent variable can be attributed to exclusion of very important independent variables that can explain the dependent variable but are outside the scope of this study.

The F-Statistic value of 84.47 and its associated P-value of 0.00000 shows that the regression model on the overall is statistically significant at 1% level, this means that the regression model is valid and can be used for statistical inference. Moreover, the Durbin Watson statistic of 1.77 showed that the model is well spread since the value is approximately 2 and that there have not been self or auto correlation problem and that error are independent of each other. In testing our hypotheses, we provide thus, the specific analysis for each of the independent variables as follows:

The a’p priori criteria are determined by the existing finance theory and state the sign and magnitude of the variables. From the regression result above, it was observed that loan and advances to customers has a positive sign given its sign as 0.112858, this implies that increase in loan and advances to customers’ increases profit after tax by 11%. This suggests that it conform to a’p priori expectations. Again, Exchange rate has a negative sign given its value as -0.242641 this further suggest it conform to theoretical expectation, that is an decreases in Exchange rate increases the profit after tax, this conform to apriori criteria.

Lastly, financial derivatives of assets has a positive sign given its value as 0.509779 this further suggest it conform to theoretical expectation, that is an increases in financial derivatives of assets increases the profit after tax, this conform to apriori criteria.

T-statistic, this is the measure use to determine the individual statistical significance of the variables in the model. From the model, it is obtained that the level of loan and advances by customers in Nigeria is statistically significant given the value as 0.126885. This implies that it does not contributes bank performance. Furthermore, exchange rate is statistically significant given its value as -5.380170 adding that it has a high probability value of 0.1527. Lastly financial derivatives on assets are statistically significant at 5% level of significant. This implies it has contributed significantly to deposit money bank performance in Nigeria.

Hypotheses Testing

H₀₂ loan and advances has no significance effect on performance of deposit money bank in the Nigerian stock exchange

From the regression result we discovered that in the t-statistics loan and advances is 0.126885 is while its probability is 0.9003 Since its probability is less than 0.05 desired level of significance, we reject the null hypothesis and accept the alternative hypothesis, which state that loan and advances has no significance effect on performance of deposit money bank in the Nigerian stock exchange.

H₀₃: Exchange rate has no significance effect on performance of deposit money bank in the Nigerian stock exchange.

Drawing inference from the t-statistics Colum for Exchange rate is -5.380170 while its probability is 0.0000 since its probability is greater than 0.05 desired level of significance, we reject the null hypothesis and accept the alternative hypothesis, which state that Exchange rate has significance effect on performance of deposit money bank in the Nigerian stock exchange

H₀₃: Financial derivatives assets have no significance effect on performance of deposit money bank in the Nigerian stock exchange.

Drawing inference from the t-statistics Colum for Financial derivatives assets is 2.509779 while its probability is 0.0058 since its probability is greater than 0.05 desired level of significance, we reject the null hypothesis and accept the alternative hypothesis, which state that Financial derivatives assets have significance effect on performance of deposit money bank in the Nigerian stock exchange

5. Conclusion and Recommendation

The study's results indicated that there were significant relationship between financial derivatives and the deposit money banks in Nigeria. However, given the positive nature of the relationship it means that a unit change (increase) in financial derivatives will result to an increase in financial performance of deposit money banks in Nigeria. Consequently, therefore, financial derivatives should be properly utilized in a manner that is instrumental to the goal of a sound and safe banking system in Nigeria. The relationship between financial derivative and PAT was in addition found to be significant at as indicated by the p-value using exchange rate and financial derivatives .This crucial finding is consistent with the literature and is in particular consonance with Efanga, et al. (2019) Jalal-Eddeen, and Saleh, (2022) and John, (2017) among others. the study recommends that derivative accounting and valuation procedures and derivative educational programs be established and embraced to demystify Nigeria derivative market. This would enable the finance offices to understand each and every hedging practice advantages and disadvantages as currently most deposit money banks do not have a steady policy on derivative utilization and financial risks management is merely left on the whims and devices of managers and thus making investors incur agency costs. Clearly, the banking system's soundness is an issue of essential concern to society. The study therefore recommends that regulators carefully and continuously monitor the banks 'derivative activities to assure that the increasingly popular instruments are used in a manner that is instrumental to the goal of a sound and safe and banking system. This study recommends that sound risk management process such as ensuring that procedures and policies that delineate clearly the lines of responsibility for managing risk. This study also recommends that commercial banks put in place adequate risk measuring systems and appropriately create structured limits on risk taking.

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