Financial Derivatives and Profitability of Selected Deposit Money Banks in Nigeria

Sulaiman. Luqman Adedamola[1], Ibrahim Oladipupo Shittu[2]

Abstract: The study 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.

Keywords: Derivative Liabilities; Derivative Assets; Loan to Customer; Profit after Tax

JEL Classification: G13; G17; G20; G21

1. Introduction

There has been argument as regards the major goal of a firm being shareholders wealth maximization or profit maximization but what is important to note is that shareholders wealth maximization may be difficult to achieve without maximizing firms profit which makes firms profitability an important objective. There are lots of risks and uncertainties that tend to undermine the achievement of profit maximization if not properly taken care of. Uncertainty has been part and parcel of economic life and business in particular. Outcome of businesses are uncertain as business is all about risk which is, possible deviations from expectations and the

[1] Department of Finance, Ekiti State University, Ekiti State, Address: P.M.B 5363 Ado-Ekiti, Ekiti State, Tel.:+2348038088282, Corresponding author: luqman.sulaiman@eksu.edu.ng.
[2] Department of Accounting & Finance, Abubakar Tafawa Balewa University, Bauchi, Address: Ahmadu Bello Way, Bauchi, Nigeria, Tel.:+2348077223399, E-mail: ibrorofessor@gmail.com

higher the risk, the higher the return (Olowe, 2011). We operate in a situation where prices and profit can increase dramatically and later collapse, where asset prices can reach high level and fall within a moment and with the fact that risk are not equally perceived, investors, banks and even government need to look for alternative in order to minimize their risk and cost as well as to maximize their return which brings about financial derivatives.

Derivative can simply be said to be those items that do not have their own independent values but rather they have derived values. Financial derivative can therefore be said to be a financial instruments whose value depends on the value of some underlying assets. They are risk management and speculative instruments whose value is based on the value of another instrument. It is developed principally as hedging instrument against the risk associated with exposures to interest rate changes, exchange rate changes as well as commodity and stock price movements within a specific period (Bakshi, Cao & Chen, 2000).

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. Some banks use derivatives not just for the purpose of hedging but also for speculation about future rates and returns. It should be noted that managing financial and other risks is critical to successful corporate finance (especially banks) and financial derivative is one of such tools that could be used in managing such risks.

The use of derivative has become a necessity and innovative means of achieving perceived profits by deposit money banks instead of the usual method. 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). Deposit Money Banks therefore uses various forms of financial derivative for their asset-liability management, mostly referring to as off-balance sheet activities (in form of financial derivative asset and financial derivative liability) which help the banks to manage their risk exposures and still achieve their corporate goals of maximizing profitability.

Financial institutions want to ensure that they manages their respective risk exposures related to interest rate, exchange rate, credit and other unsystematic risks that may threatened the objective of the firm. In essence, financial derivatives can help firms in the management of financial risk exposures and can help deposit money banks to manage their interest rate uncertainty, aid their lending capabilities which on the other hand may lead to higher return on their investment, that is, their

profit (Zakaria, 2017). The banks at the developed countries are experiencing a rapid growth on the use of financial derivatives over the years unlike the way it is in the developing countries which it is low and also the information on its usage is rarely available (Chanzu & Gekar, 2014). 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).

As revealed by the annual financial statement of deposit money banks, unlike before 2012, most of the banks now use different forms of financial derivatives as asset and/or liability which are aimed at modifying their cash flows and to maximize their profit. There have been few researches on financial derivatives and the profitability of deposit money banks but majority of such uses primary data like that of Lenee and Oki (2017) and Chanzu and Gekara (2014) which therefore warrant a different method. Despite the agitation for the use of financial derivative, the question is if the use of these financial derivative instruments has in one way or the other has effect on the profitability of the deposit money banks in Nigeria. The study therefore examines the effect of financial derivatives on the profitability of deposit money banks in Nigeria.

The paper therefore looked into various literatures related to the study in section two while the third section discusses the method and materials adopted. Section four explores the results and discussion of findings based on those results while conclusion and recommendations drawn were discussed in section five.

Hypothesis

H_o: Financial derivatives has no effect on the profitability of deposit money banks in Nigeria

2. Literature Review

Financial derivative has been described as a popular instrument used by financial institution for mitigating risks and possible loss (Lenee & Oki, 2017). It is used for hedging against risks and sometimes for speculation purpose. All derivatives in deposit money banks are classified as derivatives held for trading and risk management purposes. Derivative held for trading may be derivative instruments trade by banks on its own behalf or a sometimes on behalf of customers or both.

The term ‘derivative’ can be linked to the English word ‘derive’ that is, to obtain or attain something from something else. They are instrument that does not have value of its own but derive its value from the value of another thing. Afolabi and Olaoye (2017) defined derivative as a contract which describe the rights and obligations of two parties to receive or deliver future cash flows which may be an

exchange of other securities or assets but based on some future events while Osayi, Kasimu and Nkwonta (2018) described it as contracts whose value is determine by the value of one or more underlying assets. They are used to hedge risks associated with the instruments on which they have been derived.

According to Osuoha, Martin and Osuoha (2015), derivatives are financial instruments that derive their value from the value of another instrument. Derivative can be categorized as financial derivative or commodity derivative. Financial derivatives are derived from instruments such as interest rates, exchange rate, shares, bonds, treasury bills among others while commodity derivatives are derived from commodities like agricultural produce, precious metals, oil and gas among others. International Financial Reporting Standard (IFRS) 9 (2014) which replaced International Accounting Standard Board (IASB) 39 described derivative as a financial instrument that change value in related to a specific interest rate, price, exchange rate, credit ratings among others.

Financial derivatives are financial instruments that derive its value from another financial instrument through which an identified risk is tradable in the financial market. It is an instrument that its price is linked with another underlying asset. They serve as risk management tool used by banks to curtail unforeseen circumstances that may hinder their desirable profit (Osayi, Kasimu and Nkwonta, 2018). In same vein, Osayi, Kasimu and Nkwonta (2018) describes financial derivatives as a financial instrument linked to a definite financial instrument or commodity, through which specific financial risk can be traded in the financial market. Banks therefore enter into various forms of financial derivatives instruments in order to manage risks related to interest rate, foreign exchange rate including foreign exchange forward contracts, interest rate swaps and foreign currency options.

There are four (4) basic forms of financial derivatives. These are forwards, futures, options and swaps (Fadun, 2013; Afolabi & Olaoye, 2017; Lenee & Oki, 2017). Forward is a contract between two (2) parties referred to as buyers and sellers, who agreed to buy or sell at an agreed price and an agreed future date. It is the simplest form of derivative where there is an agreement today that a specific underlying asset is to be bought or sold at a predetermined price and at an agreed date in the future. Upon agreement of forward contract, price is agreed today while the delivery of the asset is at a later date. The buyer in forward contract assume a long position as he/she agrees to buy at a predetermined price in a future date while the seller assumes a short position as he/she agrees to sell the underlying asset at a predetermined price in a future date.

Futures is a standardized forward contact to buy or sell an underlying asset at a predetermined price and a agreed future date through a specified exchange. The buyer also assume a long position under future contract as he/she agrees to buy at a

predetermined price in a future date while the seller also assumes a short position as he/she agrees to sell the underlying asset at a predetermined price in a future date but both parties are under obligation to perform their respective obligations as spelt out by the contract.

An Option is the right but not an obligation to buy or sell an underlying asset at a specified price within a specified period of time. An Option is a type of contract between two people, where one person grants the other person, the right to buy a specific asset at a specific price within a specific time. It represents a special kind of financial contract under which the option holder enjoys the right but has no obligation. The person who has received the right and thus has a decision to make is known as the Option buyer or Option holder, since he or she must pay for the right. The person who has sold the right to the buyer and thus must respond to the buyer's decision is known as the Option writer.

This is an agreement between two parties as regards an exchange of payments of different kind in the future at a predetermined arrangement. There three major types of swaps; these are interest rate swaps, currency swaps and credit swaps. Interest rate swaps can be said to be an agreement between two parties to exchange interest rate of the same currency within a given period. Currency swap on the other hand is an agreement between two parties to exchange cash in one currency which is to be settled in another currency. Currency swap can also be in form of Foreign Exchange swap where transaction involved a domestic and foreign bank. In this situation, the foreign bank makes a foreign deposit in the domestic bank while the domestic bank simultaneously makes a domestic currency deposit in the foreign bank. Another important form of swap is credit swap, which is described by Eliana (2012) as a tool used to transfer credit risk of an individual or organization from one party to another. It involves a party buying protection against loss arising from credit given to another party. All these are respective forms of trading derivative instruments.

A derivative can be traded through an Exchange-Traded Derivatives (ETDs), Exchange-Traded Funds (ETFs) and Over-the-Counter Derivatives (OTCs). The ETDs are derivatives that are traded on an exchange platform that is recognized. Their prices are available in the public and terms not negotiable. ETFs are funds that aid in tracking the performance of an underlying asset. They involve trading of shares on the exchange and derive value from the underlying asset they track. OTCs on the other hand are bespoke contract designed to suit the participants need. They have predetermined terms agreed upon by the parties involved and can be exchanged without an intermediary.

In lieu of global acceptance of derivative market and in effort to ensure financial stability and smooth derivative trade, the Central Bank of Nigeria in March, 2011 issues a guideline for FX derivatives in the Nigerian financial market. The

guidelines outlined the approved derivative products, prudential guidelines on the product, trade backed requirements among others. The approved derivative products are FX options, FX forwards (outright and non-deliverable) and Trading liquidity in cross-currency interest rate swap. Also in the guideline, both call and put option are therefore allowed for authorized dealers (CBN, 2011).

Financial derivative activities must be recorded accordingly by deposit money bank as a regulatory requirement with due process laid by the International Financial Reporting Standard (IFRS). The gain or loss of its trading proceeds must be entered in the profit and loss as well as balanced sheet Deposit money banks usually report their financial derivatives in form of derivative financial assets and derivative financial liabilities which indicates if the use of financial derivative instrument is asset based or liability based. It is therefore expected that if appropriately used, financial derivative should aid desired profit maximization which is the main goal of banks like any other company (Chanzu & Gekaru, 2014; Lenee & Oki, 2017).

An important role of financial derivative is to minimize risk and maximize expected return which is underpinned by the modern portfolio theory (MPT). The theory is opined by Harry Markowitz in 1952 through his work on portfolio selection. It emphasized the utilization of portfolios in an efficient manner to maximize return on investment on a given level of risk. It assumes that investors are risk averse, rational, have access to same information and returns are normally distributed. MPT focus on diversification and weighing risks to achieve an expected return which makes it a background for financial derivative as a risk management instrument.

Rivas (2006) studied whether the use of derivatives increase bank efficiency: evidence from Latin American banks. It uses envelopment and regression analysis with focus on all Latin American banks and the study found that the use of derivatives increases the efficiency of Brazilian, Chilean and Mexican banks. The effects of the use of derivatives on financial performance of companies listed in the Nairobi security exchange was studied by Chanzu and Gekaru (2014) in Kenya. The study deployed survey design where questionnaires were distributed to the finance officers of 11 companies listed on the Nairobi Security Exchange. Correlation analysis was used to test the tested hypothesis which founds that unlike price stabilization, risk management efficiency and price discovery had positive contribution to financial performance of the listed companies studied.

Bendob, Bentouir and Bellaouar (2015) also conducted a research on the effect of financial derivatives use on the performance of commercial banks: empirical study in GCC Countries during 2000-2013. Nineteen (19) commercial banks in four (4) CC countries between 2003 and 2013 were studied and following the hypothesis tested with the aid of unbalanced panel regression model. The study concludes that

the use of financial derivatives aid in reduction of unsystemic risks which improves the performance of commercial banks especially in the crisis period.

Financial derivative and capital structure of firms was studied by Afolabi and Olaoye (2017) with evidence from Nigeria. Descriptive and survey design was adopted where six hundred (600) respondents chosen from the academia, financial analysts and stockbrokers from Lagos, Ogun, Oyo, Osun, Ekiti and Ondo states were distributed using a convenience sampling method. The study found that there is a positive and significant relationship between financial derivatives and capital structure of firms which thereby determines firms' profit.

Lenee and Oki (2017) studied financial derivatives and firm performance: empirical evidence from financial and non-financial firms. The study examine the effect of the use futures, swaps, forwards and options to hedge against interest rate and foreign exchange rate risks of five (5) selected financial and five (5) non-financial firms from UK FTSE 100 index. With the aid of Panel Least Square, the study indicates that the use of one or more of any financial derivatives to hedge foreign exchange rate risk is seems to decrease the performance of firms meanwhile, hedging interest rates risk with forward and futures found to increase firm performance.

Study on Financial derivatives market and the performance of Deposit money banks in Nigeria was also conducted by Osayi, Kasimu and Nkwonta (2018). The study covers financial activities of 5 year period of 10 Deposit money banks in Nigeria and deploys Ordinary Least Square linear regression model with first order autoregressive errors by using cochrane orcutt. The study concludes that financial derivatives have effect on the performance of Deposit money banks in Nigeria.

3. Methodology

The study examines the effect of financial derivatives on the profitability of deposit money banks in Nigeria. To achieve this, the eight (8) 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 five (5) year period of between 2012 and 2017 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 banks studied. The data (with emphasis on financial derivative assets, financial derivative liabilities and loan and advances to customers) used is gathered from different banks over a period of 5 years (between 2012 and 2017). 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 where cross section random and cross

section fixed effect are being compared using correlated random effects of Hausman test.

The model used for this study was adapted from the work of Osayi, Kasimu and Nkwonta (2018). Their model uses derivative financial assets, derivative financial liabilities and total asset as a function of 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(FD)

PAT = f(FDA, FDL, LTC)

$PAT_{it} = \alpha + \beta_1 FDL_{it} + \beta_2 FDA_{it} + \beta_3 LTC_{it} + e$ eqn1

Where: FD = Financial Derivatives

PAT = Profit After Tax

FDA= Financial Derivative Assets

FDL = Financial Derivative Liabilities

LTC = Loan and advances To Customers

α = Constant Parameter

β_1, β_2, β_3 = Parameters to be estimated

e = Error Term

i = 1, n; t=1, T

The expected relationship between financial derivatives variables within the model and deposit money banks profitability could be:

$\alpha >< 0$; FDA $>< 0$, FDL $>< 0$, LTC >0.

In other word, constant parameter (α) is expected to be positive or negative; FDA and FDL are expected to be positive or negative while LTC is expected to be positive

5. Results and Discussion

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 3.54 which is not that far from 3 and the data has a skewness value of 0.65 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 3.97 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.

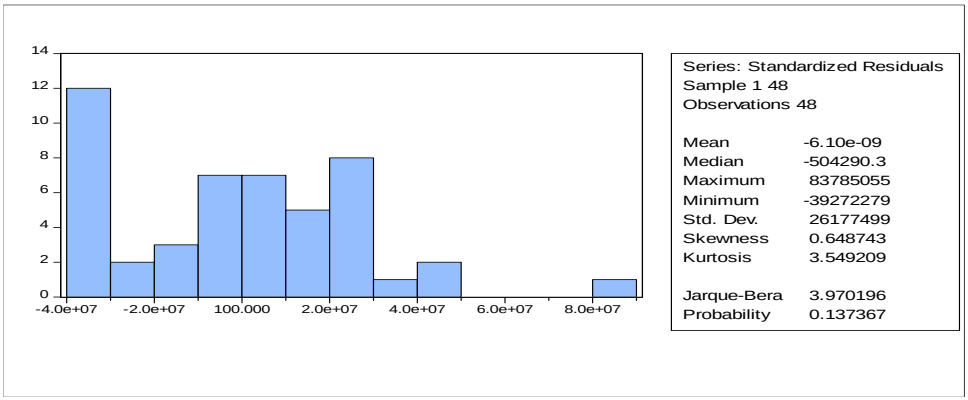

Figure 1. Histogram and Descriptive Statistics of Standardized Residuals for Normality

Source: Extracted from Eview V. 10 Output, 2019.

The test on the cross-sections fixed effects and random effects were conducted and the result of the Hausman test conducted as revealed in table 1 indicates the preference of random effect over the fixed effect. The test is conducted to detect if endogenous variables exists as its presence in a model will make OLS estimator to fail. The result has a chi-square value of 1.33 with a probability value of greater than 0.05. As stated by Torres-Reyna (2010), if probability value is significant (> 0.05) accept fixed effects but if otherwise, random effect is preferred. Therefore the study preferred random effect as the probability value is not significant (>0.05).

Table 1. Result of the Correlation Random Effects - Hausman Test

Test Summary	Chi-Square Stat.	Chi-Square d.f	Prob.
Cross-section random	1.326463	3	0.7229

Source: Extracted from Eview V. 10 Output, 2019.

The panel regression result of the pooled Ordinary Least Square (OLS), fixed effects and random effects is revealed in table 2. The result shows that pooled OLS,

fixed effects and random effects have an R^2 of 62.2%, 70.8% and 59.8% respectively, which indicates the rate at which the systematic variations in the profitability of deposit money banks is being accounted for by financial derivatives assets, financial derivatives liability and loan and advances to customers. Following the preference of the random effects, the study therefore indicates that derivative financial assets, derivative financial liabilities and loan and advances to customers contributed 59.8% of the systematic variations in the profitability of deposit money banks in Nigeria, that is financial derivatives have positive and significant effect on the profitability of deposit money banks in Nigeria. As revealed by the F-Statistics, the model is also significant at 0.000 ($P<0.01$) which signifies a fitness of fit model.

The panel regression estimations results in table 1 also revealed a coefficient result of loan and advances to customers at pooled OLS, fixed effects and random effects to be 0.065498, 0.056159 and 0.061634 respectively with significance level of less than 1% for all. This indicated that loan and advances to customers is positive and significant to the profitability of deposit money banks in Nigeria and shows that more loan and advances given to customers increases bank profit which is in line with the appriori expectation and the work of Rivaz (2006).

Financial derivatives liabilities has pooled OLS, fixed effects and random effects coefficient result of -2.025112, -2.358034 and -2.138696 with probability value of greater than 0.05 ($P>0.05$) for all. The result therefore shows that financial derivatives liability is negative and insignificant to the profitability of deposit money banks in Nigeria which translate that more financial derivatives liabilities used will decrease bank profit which is consistent with the work of Osayi, Kasimu and Nkwonta (2018).

The result of the pooled OLS, fixed effects and random effects of the financial derivatives assets shows a coefficient value of 1.631067, 1.997231 and 1.788007 respectively with all having a significant value of less than 0.05. This indicates that the financial derivatives assets have and significant effect on the profitability of deposit money banks in Nigeria which means that more financial derivatives assets used by deposit money banks in Nigeria lead to an increase in their profit. That is, the higher the value of financial derivatives assets the higher the profitability of deposit money banks in Nigeria which is also in line with the study carried out by Osayi, Kasimu and Nkwonta (2018).

Table 2. Panel Regression Estimations Results

Variables	Pooled OLS	Fixed Effects	Random Effects
C	-19033119*** (6666821)	-14417042* (7671744.)	-17183865** (7754496)
LTC	0.065498*** (0.011172)	0.056159*** (0.013138)	0.061634*** (0.011771)
FDL	-2.025112 (2.487417)	-2.358034 (2.669098)	-2.138696 (2.521446)
FDA	1.631067** (0.801825)	1.997231** (0.874325)	1.788007** (0.818643)
R^2 Adjusted R^2 F Statistics Prob. (F-Stat) Durbin-Watson	0.6224465 0.596724 24.18186 0.000000 1.359717	0.708104 0.629214 8.975765 0.000000 1.821125	0.595758 0.568196 21.61526 0.000000 1.553549

*Note: Standard error is the value in parenthesis while *, **, and *** are significance level at 10%, 5% and 1% respectively.*

Source: Extracted from Eview V. 10 Output, 2019.

6. Conclusion and Recommendations

Profit is considered as a priority for every business survival in which bank is not an exception but being affected by risks. Risk is described as a factor that causes deviations from the objective of maximizing banks' profit which is can be hedged through financial derivatives. The financial derivatives instruments of futures, forwards, options and swaps used by banks are categorized as financial derivative assets and financial derivative liabilities. The study having examined the effect of financial derivatives on the profitability of deposit money banks in Nigeria concludes that financial derivatives have positive and significant effect on the profitability of deposit money banks in Nigeria. Meanwhile 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.

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