

Assets and Liabilities Derivatives on Financial Performance of Deposit Money Banks in Nigeria: An Entrepreneurial Perspective

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ABSTRACT

This empirical study investigated to determine how assets and liabilities derivatives affected the financial performance of Nigerian deposit money banks (DMBs) over a ten-year period, from 2014 to 2023. The study's specific goal is to investigate the relationship between financial performance as measured by Profit After Tax (PAT) and measures of assets and liabilities derivatives, such as Derivative Financial Assets (DFA), Cash and Cash Equivalent Derivative (CCED), Derivative Trading Income (DTI), Derivative Financial Liabilities (DFL), and Loan and Advance to Customers (LADC). Based on the factors under investigation, the study's data came from the annual reports and accounts of the ten DMBs listed on the Nigerian stock exchange. Descriptive statistics and correlation analysis were used to establish the type of association between the independent and dependent variables. A Panel Least Square (PLS) technique of data analysis was used utilizing the pooling model with the aid of E-VIEW 9.0 computer software. The Profit After Tax (PAT) of deposit money banks in Nigeria was found to be positively impacted by Derivative Financial Assets (DFA), Derivative Trading Income (DTI), Derivative Financial Liabilities (DFL), Loan and Advance to Customers (LADC), and Cash and Cash Equivalent Derivative (CCED). In accordance with the study's conclusions, the following recommendations were made: After taking into consideration the Central Bank of Nigeria's (CBN) regulations to reduce bad debt, limit their financial derivative liabilities and make sure that financial derivative assets are better utilized because they have a strong positive significant effect on profit after tax, and finally put in place adequate risk measuring systems that appropriately create structured limits on risk taking, deposit money banks should increase their loan assets to improve performance.

KEYWORDS: Assets, Liabilities Derivatives, Financial Performance, Profit After Tax (PAT), Deposit Money Banks (DMBs), Derivative Financial Assets (DFA), Cash and Cash Equivalent Derivative (CCED).

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INTRODUCTION

Financial instruments known as derivatives get their value from how well the underlying company performs. This underlying entity may be an interest rate or an asset index. Derivatives are used for a number of things, including trading assets or markets, hedging against future changes in the price of securities, and preventing speculation. Forwards, futures, options, swaps, and variants are a few examples of common derivatives (Orie, Obiora & Orie, 2022). Compared to actual market exchanges, derivative exchanges carry out more intricate tasks. They are also undergoing modernization and transformation. They provide tactics and avenues for socioeconomic transformation in tandem with qualitative shifts in the shareholder's economy (Jalal-Eddeen & Saleh, 2022).

Exchange and interest rate changes are just two of the financial risks that businesses in the financial services sector confront as their operations become more complicated (MacCarthy 2017). The performance of companies in Nigeria's financial services

industry is largely dependent on how well these risks are managed. Every business has risks. However, compared to other businesses like service and product-centric businesses, financial institutions and money market enterprises are more susceptible to business hazards (John, 2017). In order to achieve the intended profitability and prevent financial losses and insolvency, it is crucial to hedge against risks.

Asset and liability derivatives are common tools used by financial institutions and companies in the money market to manage and hedge against business risks. Over the past few decades, Nigeria's financial environment has changed significantly, and the banking industry has been crucial to the nation's economic growth (Kapitsinas, 2018). As major participants in this industry, deposit money banks deal with a variety of difficulties brought on by both domestic and international economic factors. The susceptibility to risks including market volatility, interest rate swings, and currency uncertainties continues to be a major issue among these difficulties (MacCarthy, 2017).

Deposit money institutions are increasingly using financial derivatives, particularly asset and liability derivatives, to manage these difficulties and protect their financial stability. Asset derivatives, such as futures and options, give banks tools to control risks related to fluctuations in the value of financial assets. However, liability derivatives, such interest rate swaps, enable banks to better manage their liabilities and protect themselves from changes in interest rates. The banks' strategic attempts to improve overall financial performance and optimize their risk-return profiles are reflected in the implementation of various financial instruments (Osayi, Kasimu & Nkwonta, 2018).

Since an excess of either asset or liability derivative can lead to sub-optimal performance, the asset-liability mix is the matching of assets and liability derivatives in a proportion that ensures financial performance (Sinha & Sharma, 2016). An essential component of banking strategic decision-making is the asset-liability mix in terms of derivatives. It is a crucial part of strategic banking decisions and aids in the short- and long-term profitability and sustainability of enterprises, including banks. In order to maximize return, a bank must also be able to balance its assets and liabilities. This defines its credit and liquidity risks, both of which have an impact on its financial performance (Sulaiman & Ibrahim, 2020).

In order to improve its resilience and bring it into line with global best practices, Nigeria's financial sector has undergone a number of reforms and regulatory adjustments. The implementation of these changes has been spearheaded by the Central Bank of Nigeria (CBN), which has emphasized the importance of deposit money banks using sensible risk management procedures. Although using derivatives gives banks instruments to reduce risks, there are concerns about how this can affect their financial performance (Waswa & Wepukhulu, 2018). The significance of comprehending the intricacies and the hazards linked to financial derivatives was highlighted by the 2008 global financial crisis. As a result, regulatory organizations worldwide have stepped up their monitoring, stressing the importance of accountability, openness, and efficient risk management while using these tools.

The CBN in Nigeria has also put policies in place to control and monitor deposit money banks' use of derivatives, making sure that these financial instruments are used in a way that promotes financial stability (Efanga, 2019). Even though asset and liability derivatives are becoming more and more important, there aren't many thorough studies looking at how they affect Nigerian deposit money banks' financial performance. Derivatives may be used by certain banks as part of their risk management plans, but little is known about the overall and systemic effects of these practices. In order to close this gap, this study thoroughly examines how the usage of asset and liability derivatives affects the overall financial performance of Nigerian deposit money institutions.

In addition to the banks themselves, regulators, legislators, and other stakeholders must comprehend the complexities of this relationship. The study's conclusions can influence risk management procedures, regulatory frameworks, and the larger conversation on how financial derivatives affect the stability and resilience of deposit money banks in Nigeria's financial system. The findings of this study can support ongoing initiatives to strengthen the stability and sustainability of Nigeria's banking industry as it continues to establish itself as a major participant in the world economy. Deposit money institutions in Nigeria's dynamic financial system are vulnerable to market fluctuations, changes in interest rates, and unpredictability in the economy. To mitigate these risks, banks employ asset and liability derivatives.

It is crucial and little researched how much these financial instruments impact the financial performance of Nigerian deposit money institutions. Nigerian banks can benefit from trading derivatives, but there are drawbacks as well. The following are some of the derivatives trading problems facing Nigerian banks: The credit risk associated with these transactions must be efficiently managed by banks. Banks use mathematical models to assess the risks associated with derivatives. Risks associated with model use include model errors and assumptions that might not hold under certain circumstances.

Trades in derivatives require a lot of legal paperwork. Derivatives contracts may have different legal underpinnings and enforceability, which can cause issues for banks, particularly in cross-border operations. Derivatives trading may be perceived by the public as excessive risk-taking, particularly in light of previous financial disasters. Banks risk losing trust if their derivatives activities are not fully disclosed. Additionally, using derivatives is less expensive and could replace costly capital. Nonetheless, a number of writers have examined financial derivatives with conflicting results. The results of Orie, Obiora, and Orie's (2022) investigation of the impact of financial derivatives on the performance of deposit money banks on the Nigerian stock exchange indicate that loans and advances have no discernible impact. The performance of deposit money banks on the Nigerian stock

exchange is significantly impacted by financial derivatives assets and exchange rates. Efanga (2019) investigated how risk management in the Nigerian banking industry was affected by derivative instruments between 2014 and 2018.

According to the inferential result, risk management in the Nigerian banking industry was positively and considerably impacted by financial derivatives. John (2017) investigated how financial derivatives affected Ghanaian financial sector companies' performance. Financial derivatives and controllable company risks were found to be strongly positively correlated. Sulaiman and Ibrahim (2020) investigate how financial derivatives affect some Nigerian deposit money institutions' profitability. The outcome shows that the model is substantial and beneficial. This study aimed to determine the impact of financial derivatives of deposit money banks listed on the Nigerian stock exchange in light of the conflicting findings from previous research utilizing Nigerian data.

Strong regulatory frameworks, better risk management, and ongoing efforts to provide institutions with the knowledge and tools necessary to manage derivatives trading are all necessary to address these problems. Transparency and stakeholder communication are essential for managing challenges related to public perception and reputation. In order to educate policymakers, regulators, banking professionals, and academics on the efficient and responsible use of financial derivatives in Nigerian banks, the study tackles four research topic areas.

The main objective of the study is to examine the effect of assets and liabilities derivatives on financial performance of deposit money banks in Nigeria.

REVIEW OF RELATED LITERATURE

The Concept of Derivatives

According to Bendob, Bentour, and Bellaouar (2015), derivatives are a broad category of financial instruments whose value is derived from the value of an underlying asset or market variable. They derive their value from the claim they make to own other financial assets or securities; they have no intrinsic value. Financial tools used in hedging are called derivatives. One type of hedging tool that takes the shape of contracts or agreements between two parties is derivatives. To derive something from something else is the fundamental definition of derivatives. Butter, a derivative of milk, is a straightforward illustration of a derivative. The cost of butter is influenced by the cost of milk, which is influenced by both supply and demand. Businesses' decisions to use derivatives are significantly influenced by their size (Kapitsinas, 2018). Therefore, small businesses may be deterred from employing derivatives due to their high initial cost (Kapitsinas, 2018). However, when used properly, derivatives are a great way to manage risks related to the operations of the financial services industry.

Asset Derivatives

Financial instruments that derive their value from an underlying asset are known as asset derivatives. Financial organizations, notably deposit money banks, frequently use these derivatives for a variety of objectives, including managing overall portfolio risk, speculating on future market movements, and hedging against price variations (Kapitsinas, 2018). The main categories of asset derivatives consist of:

Options: The right (but not the responsibility) to purchase or sell an underlying asset at a fixed price within a given time period is granted to the holder of an option. While put options grant the right to sell, call options grant the right to purchase (Afolabi & Olaoye, 2017).

Futures: Under futures contracts, an item must be bought by the buyer or sold by the seller at a certain future date and price. Standardized contracts known as futures are exchanged on regulated markets (Afolabi & Olaoye, 2017).

Forwards: Forward contracts, like futures, entail a commitment to purchase or sell an asset at a later time and price. But according to Afolabi and Olaoye (2017), forwards are usually tailored contracts that are exchanged over the counter (OTC) between two parties.

Swaps: In a swap, two parties exchange cash flows or other financial instruments. For instance, asset swaps entail the exchange of cash flows with fixed and floating rates (Afolabi & Olaoye, 2017).

Dimensions of Asset Derivatives

Risk Management: Risk management is one of the main aspects of asset derivatives. To protect themselves from possible losses brought on by unfavorable changes in the value of their assets, banks employ options, futures, and other derivatives. For instance, a bank with a stock portfolio might employ options to guard against a market downturn (Lenee & Oki, 2017).

Speculation: Additionally, asset derivatives offer speculative opportunities. In order to profit from price changes in the underlying assets, banks may take positions in derivatives to profit from anticipated market moves (Lenee & Oki, 2017).

Portfolio Diversification: By giving banks exposure to a variety of asset classes and marketplaces, asset derivatives aid in portfolio diversification. The bank's investment portfolio's total risk-return profile may be improved by this diversification technique (Lenee & Oki, 2017).

Liability Derivatives

Conversely, liability derivatives are financial instruments whose value is determined by shifts in interest rates, currency exchange rates, or other variables associated with the bank's obligations. In order to control the interest rate risk related to the bank's funding sources, these derivatives are essential (Osayi, Kasimu & Nkwonta, 2018).

The following are the main categories of liability derivatives:

Interest Rate Swaps: These entail two parties exchanging cash flows with fixed and floating rates. Interest rate swaps allow banks to convert fixed-rate liabilities to floating-rate liabilities or vice versa in order to control interest rate risk on their liabilities (Osayi, Kasimu & Nkwonta, 2018).

Forward Rate Agreements (FRAs): FRAs are contracts that fix an interest rate for a predetermined amount of time. They enable banks to protect themselves against the risk of future changes in interest rates (Osayi, Kasimu & Nkwonta, 2018).

Currency Swaps: Currency swaps can be classified as liability derivatives because they entail the exchange of cash flows associated with debt or interest payments, even if they are frequently linked to managing currency risk (Osayi, Kasimu & Nkwonta, 2018).

Financial Performance of Deposit Money Banks

According to Osuoha, Martin, and Osuoha (2015), deposit money banks' financial performance can be used as a gauge for the general stability and health of the banking industry in a given economy. It includes a thorough assessment of a bank's capacity to make money, control risks, distribute resources effectively, and satisfy the many demands of its stakeholders. awareness how well a deposit money bank is positioned to prosper in a cutthroat and dynamic financial climate requires an awareness of financial performance (Sinha & Sharma, 2016).

Key Components of Financial Performance

Profitability: Profitability is one of the key components of financial performance. This entails evaluating a bank's capacity to make money from its primary banking operations, such as commissions, fees, and interest revenue (Chukwuka et al 2026). A bank's capacity to turn its assets and equity into profits is frequently assessed using profitability ratios like return on equity (ROE) and return on assets (ROA) (Sinha & Sharma, 2016).

Asset Quality: A key factor in determining a bank's financial performance is the quality of its asset portfolio. Indicators that evaluate the asset quality include non-performing loans (NPLs) and the total credit risk in the loan portfolio. To reduce the impact of loan defaults on the bank's financial health, solid financial performance necessitates efficient credit risk management (Sinha & Sharma, 2016).

Liquidity Management: A key component of a bank's financial performance is making sure it has enough liquidity to cover its immediate obligations. A bank's capacity to meet its short-term financial obligations is revealed by liquidity ratios such the quick and current ratios (Sinha & Sharma, 2016).

Capital Adequacy: Adequate capital is the backbone of a bank's stability. A ratio that evaluates the ratio of a bank's capital to its risk-weighted assets is the capital adequacy ratio (CAR). A bank with adequate capital is thought to be financially sound and is better equipped to withstand unforeseen losses (Sinha & Sharma, 2016).

Efficiency: Efficiency ratios assess how successfully a bank makes use of its assets to produce income. Operating efficiency and cost-to-income ratios assess how well operational procedures, cost control, and resource utilization contribute to profitability (Sinha & Sharma, 2016).

Risk Management: Financial performance depends critically on effective risk management. Banks have to manage market risk, operational risk, and other inherent risks related to their operations in addition to credit issues (Abude et al 2026). A strong framework for risk management guarantees that a bank can recognize, evaluate, and reduce risks in order to safeguard its financial stability (Sinha & Sharma, 2016).

For deposit money banks, the idea of financial performance is a thorough evaluation that goes beyond simple profitability. It includes a comprehensive assessment of several financial measures, risk management procedures, and the capacity to adjust to outside circumstances. The success of individual banks as well as the general stability and resilience of the banking industry within a country's economy depend on strong and sustainable financial performance (Sinha & Sharma, 2016).

THEORETICAL REVIEW

Modern Portfolio Theory (MPT) of Investment

An investment theory known as the Modern Portfolio Theory (MPT) enables investors to put together an asset portfolio that optimizes expected return for a specific degree of risk. According to the hypothesis, investors would always choose the less risky portfolio for a given level of projected return because they are risk averse. MPT outperforms conventional investment models. It is a significant development in the mathematical modeling of finance. Asset diversification is encouraged by the MPT to protect against both market and company-specific risk.

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In order to choose a group of investment assets with a lower overall risk than any single asset, the MPT mathematically formulates the notion of investment diversification.

Because the value of different kinds of assets frequently fluctuates in opposing ways, the likelihood of this is intuitively apparent. However, diversification reduces risk even in cases when the returns of assets are positively connected rather than negatively correlated.

Capital Structure Irrelevance Theory

Modigliani and Miller (1958) initially proposed the immateriality of hedging, which is related to this theory. According to the notion, a company's capital structure, which consists of debt, equity, and/or preference stock, is independent of its financial performance, which is primarily influenced by its underlying assets. In other words, "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."

To put it another way, the irrelevance proposition theorem is a theory of corporate capital structure that asserts that if income tax and distress costs are absent from the economic environment, financial leverage has no effect on a company's value. Given that a perfect market economy is unattainable, it is understandable why Frankfurter and McGoun (1999), referenced in Zakaria (2017), argue that the theory is needlessly loaded. It elaborates on the study's research objective (i) and research question (i) by drawing conclusions from this theory. Additionally, by providing additional insights into its hedging capacity, this theory shows how to engage the variables under investigation in risk management.

EMPIRICAL REVIEW

Orie, Obiora, and Orie (2022) looked at how financial derivatives affected deposit money banks' performance on the Nigerian stock exchange between 2015 and 2021. The study's goals were to ascertain the impact of loans and advances on deposit money banks' performance on the Nigerian stock exchange, ascertain the impact of exchange rates on deposit money banks' performance on the Nigerian stock exchange, and investigate the impact of financial derivative assets on deposit money banks' performance on the Nigerian stock exchange. Data analysis was done using the Panel Least Squared (PLS) approach. The relevant variables were selected from the quoted deposit money bank's annual report on the Nigerian stock exchange. The currency rate, financial derivative assets, and loans and advances were the factors used. The study used data from secondary sources. The results demonstrate that advances and loans have no discernible impact on deposit money banks' performance on the Nigerian stock exchange. The performance of deposit money banks on the Nigerian stock exchange is significantly impacted by exchange rates. The performance of deposit money banks on the Nigerian stock exchange is significantly impacted by financial derivatives assets. According to the survey, good risk management practices include making sure that policies and procedures clearly define who is responsible for what. Deposit money banks should establish proper structured limitations on risk-taking and implement sufficient risk-measuring systems.

Jalal-Eddeen, and Saleh, (2022). Financial Derivatives: The Ideas, Functions, and Effect on the Nigerian Economy. This systematic review synthesized literature from pertinent publications and visited a number of pertinent websites. The article covered the expansion of financial derivatives, particularly in the last 20 years, as well as advancements in financial theory, shifts in international markets, and growing computerization. The review's findings indicate that since financial derivatives were first introduced in the early 1970s, a number of instruments have developed and are now regarded as crucial. Futures contracts, forward markets, options, swaps, and hybrids are a few of these instruments. The derivatives market's complexity is unquestionably growing every day. Nigeria's economy is neither unique nor exempt. Government officials, legislators, financial regulators, and academics must comprehend this fluidity in the global financial markets since this study is important and timely. This article would aid in raising awareness among policy makers and financial regulators when they adopt major legislative or regulatory changes pertaining to the nation's financial dealings in the international arena, given the fluidity of global economies and the changing nature of financial transactions in the global arena.

Sulaiman and Ibrahim (2020) investigated how financial derivatives affected the profitability of a few Nigerian deposit money banks. Data from the yearly financial reports of all eight (8) Nigerian banks with international license status was gathered for the panel regression model, which spans five years from 2012 to 2017. Financial derivative liabilities (FDL) and financial derivative assets (FDA) were used as proxies for the independent variable, financial derivative, while loan and advances to customers (LTC) served as a controlling variable. The variables underwent fixed effects, random effects, pooled ordinary least squares (OLS), and the Hausman test to determine the best estimator. The outcome shows that the model is substantial and beneficial. The profitability of deposit money institutions in Nigeria is positively and significantly impacted by FDA and LTC, but negatively and insignificantly by FDL. Thus, the study comes to the conclusion that financial derivatives significantly and favorably impact the profitability of Nigerian deposit money institutions. According to the study's conclusions, deposit money institutions should

restrict their financial derivative liabilities, raise their loan assets, and make sure that financial derivative assets are better employed.

Efanga (2019) investigated how risk management in the Nigerian banking industry was affected by derivative instruments between 2014 and 2018. The Central Bank of Nigeria Statistical Bulletin of 2018 and the Nigerian Stock Exchange Statistical Bulletin of 2018 provided the data that was analyzed and inferred using the Ordinary Least Squares (OLS) model. The study used exchange rates as a gauge of risk management in the Nigerian banking industry (dependent variable) and foreign exchange derivatives as a stand-in for derivative instruments (independent variable). According to the inferential result, risk management in the Nigerian banking industry was positively and considerably impacted by financial derivatives.

Waswa, and Wepukhulu, (2018) investigated how the use of derivative financial instruments affected non-financial companies' financial performance as reported by the Nairobi Securities Exchange. The regression model was adopted by the investigation. Only 11 listed non-financial enterprises used financial derivative instruments, according to a census of all 47 non-financial firms listed at the NSE as of December 2017. Both qualitative and quantitative research methods were used in the study, particularly the descriptive research design. Questionnaires, audited financial statements, and annual reports from specific companies were used to gather data for this study during a multi-year period from 2013 to 2017 (the two years comprehensive). The study found that for financial risk management, a larger percentage of the enterprises (66.67%) use forwards, 22.22% use swaps, and 11.11% use futures and options. The study's findings were as follows: the presence of debt in the financial structure of non-financial companies listed on the NSE does not affect their financial performance as measured by return on assets (ROA); the use of derivatives in trading efficiency affects the firms' financial performance; the use of derivatives in price stabilization is statistically significant; and the use of derivatives in price discovery has no effect on the firms' financial performance. With a standard deviation of 10.67, the overall performance of the non-financial companies listed on the NSE throughout the study period was 8.13. According to the report, companies should incorporate both debt and equity into their financial structure. Therefore, it is the responsibility of managers and financial advisors of businesses to keep an eye on the market and provide advice on the suitability of the ratios of the different sources of funding depending on the conditions of the market at any particular moment.

John (2017) investigated how Ghanaian financial sector companies performed in relation to financial derivatives. For the years 2011–2015, secondary data on financial derivatives, managed business risks, and company performance in terms of return on investment were utilized. 23 randomly chosen financial firms in Accra, Ghana, provided the data. Four hypotheses were tested using a quantitative research approach. Financial derivatives and controllable company risk were found to be strongly positively correlated ($r(92) = .703, p < .05$). Additionally, financial derivatives and business performance in terms of ROI have a substantial positive association ($r(92) = .961, p = .000$). This indicates that trading financial derivatives significantly boosts a company's financial performance. At the 5% significance level ($t = 32.87, p = .000$), financial derivatives significantly predict business performance, accounting for 92.3% of the variation in business performance. Therefore, in order to promote financial growth, financial firms should prioritize financial derivatives and their management.

RESEARCH METHODOLOGY

The Ex-Post Facto approach was used to conduct the study. Because the fact or event has already happened, this design was chosen. The design featured ten banks in Nigeria's banking industry, and secondary data was gathered from their financial statements and annual reports, which were then analyzed using the appropriate instruments. The data source was the annual reports and accounts for the ten listed banks from fiscal years 2014 to 2022 published by the Nigeria Exchange Group (NEG). The kind of association between the independent and dependent variables was identified through the use of correlation analysis and descriptive statistics. The pooled Panel Regression Model (Panel Least Square) was selected as the data analysis method in light of the research's assumptions with the help of E-VIEW 9.0.

A linear function of the independent variables in the model is the dependent variable. The regression model was modified to fit the study's variables after being adapted from Orie, Obiora & Orie, (2022). The model that claims asset and liability derivatives measures, represented by Derivative Financial Assets (DFA), Cash and Cash Equivalent Derivative (CCED), Derivative Trading Income (DTI), Derivative Financial Liabilities (DFL), and Loan and Advance to Customers (LADC), have a significant impact on financial performance, represented by Profit after Tax (PAT), is built as follows.

$$PAT = f(DFA, CCED, DTI, DFL, LADC)$$

$$\text{LogPAT} = \beta_0 + \beta_1 \text{LogDFA} + \beta_2 \text{LogCCED} + \beta_3 \text{LogDTI} + \beta_4 \text{LogDFL} + \beta_5 \text{LogLADC} + E$$

Where:

PAT=Profit After Tax,

DFA=Derivative Financial Assets,

CCED=Cash and Cash Equivalent Derivative (CCED),

DTI=Derivative Trading Income,

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DFL=Derivative Financial Liabilities,

LADC=Loan and Advance to Customers,

E=Error Term,

B_0 =Intercept and β_1 - β_5 =Coefficient of the Independent Variables.

A priori expectations:

B_1 is lesser or greater than zero($\beta_1 > 0$)

β_2 is lesser or greater than zero($\beta_2 > 0$)

β_3 is lesser or greater than zero ($\beta_3 > 0$)

β_4 is lesser or greater than zero($\beta_4 > 0$)

β_5 is lesser or greater than zero ($\beta_5 > 0$)

In Latin a priori means "what comes first". A priori expectations are the assumptions that come before the rest of the assessment, argument or analysis.

RESULTS AND DISCUSSION

Overview of Statistics

Below are the summary statistics:

Table 4.1: Summary of statistics

	LogPAT	LogDFA	LogCCED	LogDTI	LogDFL	LogLADC
Mean	5.615151	13.64000	0.516605	0.401667	5.960000	0.474167
Median	0.120740	14.00000	0.500000	0.333333	6.000000	0.500000
Maximum	149.0832	20.00000	0.857143	0.833333	6.000000	0.750000
Minimum	-3.943182	8.000000	0.166667	0.333333	4.000000	0.333333
Std. Dev	25.15611	2.721111	0.179075	0.115676	0.281411	0.126295
Skewness	4.546322	0.337761	0.481335	1.873435	-6.857143	0.307537
Kurtosis	22.58966	2.635093	2.469479	6.420002	48.02041	1.917997
Jarque-Bera	1943.462	2.456194	5.034105	107.2310	9228.828	6.454357
Probability	0.000000	0.292849	0.080697	0.000000	0.000000	0.039669
Sum	561.5151	1364.000	51.66051	40.16667	596.0000	47.41667
Sum Sq. Dev	62650.16	733.0400	3.174729	1.324722	7.840000	1.579097
Observations	100	100	100	100	100	100

Source: E-VIEW 9.0 Output, 2025

A total of 100 observations for ten (10) DMBs listed in the Nigeria Exchange Group (NEG) throughout a ten-year period (2014-2023) for [DFA, CCED, DTI, DFL, and LADC] and financial performance proxied with PAT were included in the data set, as shown in Table 4.1. DFA has a minimum value of 8,0000 and a maximum value of 20,0000. The DFA has a mean of 13.6400 and a standard deviation of 2.7211. This suggests that the DFA of the ten (10) banks in Nigeria's DMBs differed up to 1,091.89% from the mean ($13.6400 - 2.7211 = 10.9189 \times 100$). Additionally, CCED has a minimum value of 0.1667 and a maximum value of 0.8571. CCED has a standard deviation of 0.1791 and a mean of 0.5166.

Because the Std. Dev. number is lower than the average, this result indicates that the banks' CCED has rapidly increased over time. This suggests that CCED's volatility is 17.91%.The DTI's minimum and maximum values were 0.333 and 0.8333, respectively, according to the summary statistics. The mean and standard deviation, according to DTI, were 0.4017 and 0.1157, respectively. Since the Std. Dev. number is lower than the mean, it indicates that the banks' DTI has increased over time. This suggests that DTI's volatility is 11.57%. The DFL provided mean and standard deviation values of 5.9600 and 0.2814, respectively, with minimum and maximum values of 4.0000 and 6.000.

Since the Std. Dev. value is lower than the average, it indicates that the banks' DFL has been steadily rising over time. This suggests that DFL's volatility is 28.14%.Additionally, the summary statistics above indicate that LADC's minimum value is 0.3333 and its maximum value is 0.7500.LADC has a standard deviation of 0.1263 and a mean of 0.4742. Since the Std. Dev. value is less than the mean, the result indicates that the banks' LADC value has grown over time. This suggests that LADC's volatility is 12.63%. Additionally, the summary statistics indicate that the PAT has a minimum value of -3.9432 and a high value of 149.0832.PAT has a standard deviation of 25.1561 and a mean of 5.6152.

Given that the Std. Dev. number is higher than the mean, this indicates that the banks' PAT has gradually increased over time. Lastly, PAT is the most volatile variable, followed by DFA, according to the standard deviation. DFA, CCED, and LADC are leptokurtic, meaning their distributions are peaked in relation to the normal distribution, while PAT, DTI, and DFL are

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platykurtic, meaning their distributions are flat in relation to the normal distribution, according to the kurtosis, which measures the peak of the distribution.

Correlation Results

Any linear relationships between independent and dependent variables, as well as within independent variables, can be examined using the correlation matrix. The study employed the Pearson correlation coefficient to assess the strength of the association between the pertinent variables. The table below Table 4.2 shows the relationship between the PAT and DFA, CCED, DTI, DFL, and LADC.

Table 4.2: Correlation Output

	LogPAT	LogDFA	LogCCED	LogDTI	LogDFL	LogLADC
LogPAT	1.000000					
LogDFA	0.091335	1.000000				
LogCCED	-0.173331	-0.324399	1.000000			
LogDTI	0.095303	0.009413	-0.030765	1.000000		
LogDFL	0.031307	-0.124523	0.138590	-0.432349	1.000000	
LogLADC	0.010765	0.075538	-0.088994	0.021222	-0.171473	1.000000

Source: E-VIEW 9.0 Output, 2025

The aforementioned finding shows that DFA and PAT have a significant positive correlation. The DFA correlation coefficient ($r=0.0913$) is more above the 0.05 cutoff. The correlation coefficient of DFA provides a clear indication that DFA helps banks determine their PAT capability. Table 4.2 showed the marginally negative correlation between CCED and PAT. A statistically significant relationship between CCED and PAT is indicated by the correlation coefficient of -0.1733. Therefore, it can be said that there is a significant negative correlation between CCED and PAT. In other words, a decrease in the banks' PAT will follow an increase in CCED, and vice versa.

A statistically significant strong positive link between bank DTI and PAT is indicated by the correlation coefficient, which shows a very positive correlation between DTI and PAT. The correlation coefficient ($r=0.0953$) exceeds the 0.05 cutoff. Thus, it follows that an increase in bank DTI would lead to an increase in bank PAT. Additionally, the coefficient of correlation ($r=0.0313$), which is less than the threshold value of 0.05, indicates a statistically modest positive relationship between DFL and PAT. Thus, it is believed that there is a weak positive correlation between LADC and PAT. In other words, a slight increase in LADC will lead to an increase in PAT.

Furthermore, as the correlation values are less than 0.7, the correlation matrix shown in Table 4.2 demonstrates the lack of multicollinearity among the variables. In conclusion, the findings indicate that while DFA, DTI, DFL, and LADC have a favorable association with PAT, CCED has a severe negative correlation.

Table 4.3: Regression Results

Dependent Variable: LogPAT

Method: Panel Least Squares

Date: 11/11/24 Time:16:35

Sample: 2014 -2023

Periods included: 10

Cross-sections included: 10

Total panel (balanced) observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob
C	15.01229	7.118775	2.1088310	.0004
LogDFA0.386099	0.191443	2.016782	0.0478	
LogCCED	-23.4445015.09421	-1.5532120.1237		
LogDTI20.41531	9.441461	2.162304	0.0003	
LogDFL	21.31575	10.29291	2.070915	0.0005
LogLADC48.25348	20.497822.354079	0.0002		
R-squared0.342416	Mean dependent Var	5.615151		
Adjusted R-squared	0.117259	S.D. dependent Var		25.15611
S.E. of regression25.26304		Akaike info criterion		9.354687
Sum squared resid59992.81		Schwarz criterion	9.510997	
Log likelihood -461.7343		Hannan-Quinn stat	9.417948	
F-statistic	0.832737	Durbin-Watson stat		1.734658

Prob (F-statistic)	0.000654
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Source: E-VIEW 9.0 Output, 2025

The Pooled Panel Least Square (PLS) result for the dependent variable, PAT of 10 DMIBs specified in the NEG, was given in Table 4.3 along with the coefficient and p-value for the independent variables, DFA, CCED, DTI, DFL, and LADC. The results of the test of hypotheses are discussed in this section. In relation to the theoretical and empirical reviews, this was carried out in great detail. The regression coefficient value for DFA on PAT is 0.3861 in Table 4.3 above, and the corresponding P-value is $0.0478 < 0.05$. This shows that DFA and PAT have a good relationship. As a result, the PAT will rise by 38.61% for every unit increase in the DFA of DMBs.

The MPT, which promotes asset diversification to protect against both market and company-specific risk, supports this conclusion. A sophisticated method for making investment decisions, the theory (MPT) helps investors categorize, evaluate, and manage the type and quantity of expected risk and return. Another name for it is Portfolio Management Theory. This is consistent with research by Orie, Obiora, and Orie (2022), Efanga (2019), and Sulaiman and Ibrahim (2020), who all concluded that DFA significantly affects DMB performance.

Additionally, Table 4.3 shows that the regression coefficient value for CCED on PAT is -23.4445, with a corresponding P-value of $0.1237 > 0.05$. This suggests that there is a significant negative correlation between CCED and PAT.

This finding implies that the PAT will drop by 2344.45% for every unit increase in CCED of DMBs. John (2017) discovered a high positive association between regulated business risks and financial derivatives, which is in contrast to this. The fluctuation can be explained by variations in the study setting. Additionally, Table 4.3 showed that DTI on PAT had a regression coefficient value of 20.413 and a corresponding P-value of $0.0003 < 0.05$. This suggests that DTI and PAT are positively correlated. This is consistent with earlier research by Efanga (2019), who discovered that financial derivatives had a favorable and substantial influence on risk management in the Nigerian banking industry.

The regression coefficient value for DFL on PAT is 21.3158 in Table 4.3, and the corresponding P-value is $0.0005 < 0.05$. This suggests that DFL and PAT are positively correlated. This indicates that the PAT will rise by 2131.58% for every unit increase in the DFL of DMBs. In an effort to maintain profitability, it may be stated that banks with significant liabilities have the experience to deal with them. The capital structure irrelevance theory supports this conclusion. According to this idea, a company's capital structure—which consists of debt, equity, and/or preference stock—is independent of its financial success, which is primarily influenced by its underlying assets.

Lastly, Table 4.3 shows that the regression coefficient value for LADC on PAT is 48.2535, with a corresponding P-value of $0.0002 < 0.05$.

This implies that LADC has a positive connection with PAT. This implies that 1% increase in LADC would result to 4825.35% increase in PAT.

SUMMARY OF REGRESSION RESULT

According to the results shown in Table 4.3, the coefficient of multiple determination (R^2), which is used to assess the goodness of fit, is (0.3424)34.24%, meaning that DFA, CCED, DTI, DFL, and LADC determined 34.24% of the variations or changes in PAT. The p-value (0.0006) and F-Statistics (0.8327) indicate a positive and significant relationship with the total p-value. The joint effect of all independent variables on the dependent variable indicates that the model is good. The test of hypotheses revealed that, with the exception of CCED, DFA, DTI, DFL, and LADC have positive connections on PAT.

CONCLUSION

Every business must prioritize profit in order to survive, and banks are no exception. However, there are hazards involved. Financial derivatives can be used to hedge against risk, which is defined as a factor that results in deviations from the goal of maximizing banks' profit. Financial derivative assets and financial derivative liabilities are two categories for the financial derivatives instruments employed by banks, such as futures, forwards, options, and swaps. This study examined the impact of asset and liability derivatives on the financial performance of DMBs in Nigeria over a ten-year period from 2013 to 2022. The study's data was gathered based on the factors under investigation using the annual reports and accounts of the ten DMBs. The study discovered that the Profit After Tax (PAT) of deposit money banks in Nigeria is positively impacted by Derivative Financial Assets (DFA), Derivative Trading Income (DTI), Derivative Financial Liabilities (DFL), and Loan and Advance to Customers (LADC), with the exception of Cash and Cash Equivalent Derivative (CCED). The study concluded that the presence of asset and liability derivatives will improve the accuracy of financial statements of listed banks in Nigeria.

RECOMMENDATION

The subsequent recommendations were made in line with the study's findings as follows:

1. In order to ensure that the increasingly common instruments are employed in a way that is essential to the objective of a sound and safe banking system, the study advises regulators to closely and consistently monitor the banks' derivative activities.
2. The banks should make availability of cash and cash equivalent a priority as it is bedrock for bank sustainability.
3. This study suggests that good risk management practices include making sure that policies and procedures clearly define who is responsible for what.
4. DMBs make sure that financial derivative assets are used more effectively and restrict their financial derivative obligations.
5. In order to improve their profit, the study advises deposit money institutions to expand their loan assets. To prevent bad debt, those requirements for loans and advances should adhere to CBN laws. In the event that the borrowers are unable to redeem the aforementioned loans and advances, they must offer collateral.

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