



Monetary Policy, Digitalisation and Banking Industry Performance in Nigeria

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

In the evolving financial landscape of Nigeria, the interplay between monetary policy and digitalization significantly influences the performance metrics of banks. This study explores the multifaceted impact of these two critical factors on the Nigerian banking sector. Monetary policy, orchestrated by the Central Bank of Nigeria, regulates the economy's money supply, affecting banks' lending behaviors and liquidity. Digitalization, on the other hand, offers a transformative potential for banks to enhance operational efficiency, customer experience, and service delivery through technological advancements. The study examines how money supply, lending rate and digitalization (proxied by mobile cell subscription) affect banks' financial performance, focusing on bank credit and liquid assets, while controlling for inflation and exchange rate variables. It also examines the interaction between digitalization and monetary policy variables on bank performance. Employing an interactive multiple regression model, the study analyzes time series data from 1996 to 2022 sourced from the World Bank. Findings indicate that while stringent monetary policies can

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constrain bank performance by tightening credit and reducing liquidity, digitalization provides an opportunity for banks to counteract these effects through enhanced efficiency. However, the successful integration of digital technologies is contingent upon adequate investment, regulatory support, and strategic alignment with the banks' core objectives. The study concludes that Nigerian banks must adeptly manage monetary policy fluctuations and leverage digitalization to sustain and enhance performance. These insights could guide policy formulation and strategic decision-making within the banking industry.

Keywords: Monetary policy; digitalisation; bank performance; interactive modeling; inflation; exchange rate; policy formulation.

1. INTRODUCTION

The interplay between monetary policy and digitalization has become a pivotal factor in shaping the performance of banks. On the one hand, monetary policy, through its influence on interest rates and liquidity, directly impacts bank profitability and lending capacity. Expansionary measures, while stimulating the economy, can compress net interest margins, thus affecting bank earnings [1,2]. On the other hand, digitalization is revolutionizing the banking landscape, offering a pathway to enhanced efficiency and customer engagement. It enables banks to operate with leaner cost structures, automate service production, and reduce the need for physical branches, which collectively contribute to long-term profitability [3,4]. As banks navigate these dual forces, they must balance the immediate effects of monetary policy with the strategic implementation of digital technologies to sustain and improve performance.

The banking industry in Nigeria is currently at a crossroads, facing the dual challenges of adapting to dynamic monetary policies and embracing the digital revolution. The Central Bank of Nigeria's monetary policy, which includes tools such as the Monetary Policy Rate (MPR), Exchange Rate (EXR), and Cash Reserve Ratio (CRR), has a profound impact on the performance of banks. These policies influence the cost of credit and the availability of funds, which in turn affect the banks' profitability and lending behaviours [5,6,7]. Concurrently, the rapid digitalization of the banking industry promises enhanced efficiency and customer service but also requires significant investment and strategic shifts. Digitalization impacts banks' operational models, cost structures, and revenue streams, with varying effects on growth and profitability [8]. The interplay of these factors presents a complex scenario for Nigerian banks, necessitating a thorough investigation into how monetary policy and digitalization interactively

influence bank performance in a developing economy context. This study aims to unravel the intricacies of this relationship, providing insights that could inform policy decisions and strategic planning for banking institutions in Nigeria. The specific objectives of this study are to:

- Analyse the impact of monetary policy and digitalisation on bank credit;
- Examine the impact of monetary policy and digitalisation on bank liquid assets;
- Investigate the interactive effects of monetary policy and digitalisation on bank performance.

2. THEORY AND LITERATURE REVIEW

There are several theoretical issues that have postulated what determines bank performance. In Uchendu [9], the theories of bank performance hinge on solvency and liquidity. This study is anchored on the Shiftability Theory, Anticipated Income Theory, Commercial Loan Theory, and Liability Management Theory.

The shiftability theory posits that bank performance in terms of liquidity, profitability, and solvency are promoted by keeping adequate cash deposit as reserves with the Central Bank, purchase short-term securities through open market operation (OMO), expand loans to consumers and businesses, and invest in government bonds or other long-term securities. The Anticipated Income Theory states that bank performance is determined by its ability to obtain repayment of loans since it generates cash flow and provides liquidity for the bank. However, the theory noted that loan repayment is a function of the anticipated income of borrower and not the type of borrower or how the funds was utilized. Also, the Commercial Loan Theory proposes that for banks to meet their performance expectations, it should focus on short-term self-liquidating loans to finance productive activities

such as transportation, agriculture, and manufacturing, which would yield profit and ensure safety of funds. More so, the Liability Management Theory established that bank performance depends on the ability to meet liquidity needs, thus, the theory postulates that banks should use money market instruments (liabilities) alongside bank assets to attain its liquidity targets.

From these theories, it evident that bank performance could be measured by liquidity and bank asset, which informed our choice of variables. Despite this extensive review of theories, none of these theories have considered the possibility of bank performance being affected by digitalisation, which is changing the banking industry operation globally. Thus, this study extended these bank performance theories by including digitilisation and its interaction with monetary policy indicators to determine their impact on the performance of Nigerian banks, which earlier studies neglected.

Empirically, there are a plethora of studies on the impact of monetary policy on the performance of banks. For instance, Uchendu [9] used the regression model to establish a strong positive relationship between monetary policy and bank profitability in Nigeria. The study could not have considered the simultaneous impact of digitalisation since mobile cell subscription was not available in Nigeria as at the time of that study. Also, Borio et al. [10] employed data for 109 international banks between 1995 and 2012 in 14 countries to conclude that short-term returns, a monetary policy indicator has a significant positive relationship with bank performance.

Analysing the impact of monetary policy on bank performance during the COVID-19 era, Nguyen et al. [11] utilised system generalized method of moments (S-GMM) to analyse quarterly bank data for Vietnam. The study reported a strong impact of monetary policy on bank performance, while considering the interaction between balance sheet and COVID-19 pandemic. As innovative as their study, the increasing reliance of banks on digital platforms during and after the COVID-19 era was overlooked, a vacuum that necessitated this study. Other studies on the impact of monetary policy on bank performance include [12,13,14,15,16,17,18,19,20,21,22].

3. METHODOLOGY

3.1 Data

We collected annual time series data that spanned 1996 to 2022 from world development indicator of The World Bank. The data were collected based on availability and consistency to avoid spurious results. The variables for which data was collected are described in Table 1.

3.2 Models

The model for this study is adapted from earlier studies that analysed the impact of monetary policy on bank performance [9,12,14,10,15,11,17,18,19,20,21,22] with variations in digitalisation incorporated into the model and interactive effects (see models 3 and 4).

Table 1. Data source and variables description

Variable	Nature of variable	Description	Source
Bank Credit	Dependent	Credit to private sector as a proportion of total asset.	The World Bank www.worldbank.org
Liquid Asset	Dependent	Liquidity to asset ratio	The World Bank www.worldbank.org
Money Supply	Independent	Money supply as a proportion of total reserve	The World Bank www.worldbank.org
Lending rate	Independent	Interest rate on credit	The World Bank www.worldbank.org
Digitalisation	Independent	Mobile cell subscription	The World Bank www.worldbank.org
Inflation	Control	Annual change in price index	The World Bank www.worldbank.org
Exchange rate	Control	Value of Naira to a \$US	The World Bank www.worldbank.org

Source: Authors' design

$$\text{Bank Credit} = \beta_0 + \beta_1 \text{money supply} + \beta_2 \text{lending rate} + \beta_3 \text{digitalisation} + \beta_4 \text{inflation} + \beta_5 \text{exchange rate} + e_t \tag{1}$$

$$\text{Liquid asset} = \beta_0 + \beta_1 \text{money supply} + \beta_2 \text{lending rate} + \beta_3 \text{digitalisation} + \beta_4 \text{inflation} + \beta_5 \text{exchange rate} + e_t \tag{2}$$

$$\text{Bank Credit} = \beta_0 + \beta_1 \text{money supply} * \text{digitalisation} + \beta_2 \text{lending rate} * \text{digitalisation} + \beta_4 \text{inflation} + \beta_5 \text{exchange rate} + e_t \tag{3}$$

$$\text{Liquid asset} = \beta_0 + \beta_1 \text{money supply} * \text{digitalisation} + \beta_2 \text{lending rate} * \text{digitalisation} + \beta_4 \text{inflation} + \beta_5 \text{exchange rate} + e_t \tag{4}$$

where model 1 examines the impact of monetary policy and digitalisation on bank credit, model 2 analyses the impact of monetary policy and digitalisation on bank liquid asset, model 3 determines the interactive effects of monetary policy and digitalisation (measured by mobile cell subscription) on bank credit and model 4 investigates the interactive effects of monetary policy and digitalisation on liquid asset of Nigerian banks.

4. RESULTS AND FINDINGS

The study presents results of econometric analysis that included summary of descriptive statistics, correlation test, regression analysis and post estimation reports for empirical validity.

Table 2 shows the descriptive characteristics of the dependent variable and explanatory variables of our model. The mean values indicate the average scores of the variables over the period under consideration, 1996 to 2022 based on data availability. Average bank credit as a proportion of total asset stood at 11.847%, banks' liquidity to asset ratio averaged 30.733%, with an average of 7.697% annual growth in the number of people with mobile cell subscription, a measure of digitalization in this study. Also, lending rate recorded an average of 17.213%, with inflation rate at 12.884%, exchange rate at ₦203.423/\$

for the period under consideration, and money supply as a proportion of total reserve stood at 2.285%. From the standard deviation estimates, the exchange and liquid assets of banks are the most widely distributed, while other variables appear to be stable for the period. More so, the skewness, kurtosis and Jarque-Bera statistics reveals that digitalization variable (mobile cell subscription) is not normally distributed, while all other variables appear to be independently and normally distributed based on the probability value of the Jarque-Bera estimate.

In Table 3, the study depicts the result of the relationship amongst the variables. Obviously, the correlation coefficients indicate that bank credit is inversely related to bank's liquid assets, which implies that the more credit facility banks give the less they are likely to have liquid assets. Also, bank credit is negatively related to the lending rate and inflation rate. Again, liquid assets are inversely related to lending rate, as it is related to money supply and exchange rate respectively. And inflation and money supply have a weak negative relationship. In furtherance to this analysis, the exchange rate has a significant positive relationship with liquid assets and digitalization. The study also observes a strong positive association between money supply and digitalization, money supply and liquid assets, money supply and exchange rate.

Table 2. Summary of descriptive statistics

Variable	Mean	Standard Deviation	Skewness	Kurtosis	Jarque-Bera	Prob.
Bank Credit	11.847	3.050	0.989	3.755	4.115	0.1278
Liquid Asset	30.733	18.978	0.761	2.359	2.502	0.2862
Digitalisation	7.697	0.779	-1.617	4.738	12.354	0.0021
Lending rate	17.213	3.054	0.620	3.889	2.133	0.3441
Money supply	2.285	1.023	-0.073	1.902	1.125	0.5698
Inflation	12.884	3.686	-0.092	2.296	0.486	0.7844
Exchange rate	203.423	100.356	1.023	2.589	3.984	0.1364

Source: Authors' computation from World Bank Data

Table 3. Correlation coefficients

Variable	Bank Credit	Liquid Asset	Mobile Cell Sub	Lending rate	Money Supply	Inflation	Exchange rate
Bank Credit	1.000						
Liquid Asset	-0.128	1.000					
Digitalisation	0.276	0.799	1.000				
Lending rate	-0.316	-0.581	-0.777	1.000			
Money supply	0.272	0.528	0.813	-0.470	1.000		
Inflation	-0.124	0.217	0.051	0.059	-0.062	1.000	
Exchange rate	0.070	0.904	0.870	-0.682	0.552	0.377	1.000

Source: Authors' computation from World Bank Data

Table 4. Regression results

Independent variable	Coefficient	Standard error	t-statistic	P-value
Money Supply	-2.093	0.995	-2.105	0.0475
Lending rate	0.047	0.306	0.155	0.8782
Digitalisation	8.433	3.200	2.633	0.0155
Inflation	0.094	0.138	0.686	0.5004
Exchange rate	-0.036	0.017	-2.066	0.0514
Constant	13.181	6.170	2.136	0.0446
Adjusted R-squared	0.59			
F-statistic	4.720			0.0278
Durbin-Watson	1.599			

Dependent variable: Bank Credit

Source: Authors' computation using World Bank Data

The preliminary results reveal that the variables chosen for the study are empirically related and the relationship among the independent variables would not lead to multicollinearity as revealed by the correlation matrix. So, we proceeded to estimate the regression models for the objectives of the study.

4.1 Impact of Monetary Policy and Digitalisation on Bank Credit

In the first model, we used bank credit as a measure of bank performance and money policy is proxied with money supply and lending rate, mobile cell subscription is used as a measure of digitalisation, and we controlled for inflation and exchange rate, with results presented in the Table 4.

Table 4 shows the regression outcome of the impact of monetary policy variables and digitalisation on bank credit in Nigeria. The estimates reveal that monetary policy has mixed effects on bank performance. This result is evident in the coefficients of money supply (-2.093; p-value = 0.04575) and lending rate (0.047; p-value = 0.8782), an indication that

money supply has a significant negative impact on bank credit, while lending rate has a positive but statistically insignificant impact on the performance of banks in Nigeria.

More so, digitalisation with a coefficient of 8.433 and p-value of 0.0155 appears to bear a statistical positive impact on bank credit, which implies that access to mobile devices promotes access to services, reduces financial exclusion and promotes the performance of banks in Nigeria.

Also, bank credit is significantly affected by the exchange rate. The regression estimates reveal that the exchange rate bears an adverse impact on bank credit, this is because as the exchange rate increases, the value of the local currency depreciates, and the credit value is significantly reduced. Thus, banks would prefer to lend in hard currency than in local currency, which is volatile in value and subject to depreciation. In addition, inflation has a positive impact on bank credit, but it is not statistically significant.

From this discussion of results, it is evident that money supply and digitalisation are significant

variables that affect bank performance in Nigeria through their credit creation abilities. The adjusted R-squared of the models reveals a good fit of 59%, the F-statistic of 4.720 (p-value=0.0278) shows that at 5% level of significance, the model is adequate. The Durbin-Watson statistic of 1.599 indicates the absence of serial correlation in the model.

To examine whether these variables could have more impact on other banks' performance indicator, the study estimated their impact on liquid assets of banks, and the results are presented in Table 5 below.

4.2 Impact of Monetary Policy and Digitalization on Liquid Asset of Banks

In the second model, we used liquid assets to measure of bank performance and money policy is proxied with money supply and lending rate, mobile cell subscription is used as a measure of digitalisation, and we controlled for inflation and exchange rate in the model.

In Table 5, the regression estimates are consistent with the earlier findings on bank credit

with reference to the mixed effects of monetary policy. As regards how liquid assets of banks are affected by monetary policy indicators, the study found that money supply has a positive effect on liquid asset, which means that the expansive monetary policy would result in more liquid asset for banks, this is consistent with theory. Also, lending rate has an adverse effect on liquid assets, but this effect is not statistically significant. What is more interesting in this result is that access to digital devices bears a significant negative impact on the liquid asset of bank with a coefficient of -14.712 and p-value of 0.0042. This result is justified by the increasing demand for online loans and improved access to digital finance through mobile cell subscription, which could reduce the liquidity of banks. In addition, inflation and exchange rates have significantly affected bank liquid assets, while the effect of inflation is negative, that of exchange rate is positive.

The adjusted R-squared of the models reveals a good fit of 88%, the F-statistic of 33.225 (p-value=0.0000) shows that at 1% level of significance, the model is adequate. The Durbin-Watson statistic of 1.672 indicates the absence of serial correlation in the model.

Table 5. Regression results

Independent variable	Coefficient	Standard error	t-statistic	P-value
Money Supply	2.740	1.994	1.374	0.1883
Lending rate	-1.230	1.021	-1.204	0.2460
Digitalisation	-14.712	4.410	-3.336	0.0042
Inflation	-1.853	0.536	-3.461	0.0032
Exchange rate	0.223	0.026	8.403	0.0000
Constant	137.449	48.815	2.816	0.0124
Adjusted R-squared	0.88			
F-statistic	33.225			0.0000
Durbin-Watson	1.672			

*Dependent variable: Liquid Asset
Source: Authors' computation using World Bank Data*

Table 6. Regression results

Independent variable	Coefficient	Standard error	t-statistic	P-value
Money Supply*Digitalisation	-7.399	7.266	-1.018	0.3197
Lending rate*Digitalisation	3.255	1.588	2.056	0.0519
Inflation	-0.039	0.121	-0.320	0.7520
Exchange rate	-0.003	0.010	-0.255	0.8012
Constant	9.539	1.817	5.249	0.0000
Adjusted R-squared	0.32			
F-statistic	2.617			0.0628
Durbin-Watson	0.77			

*Dependent variable: Bank Credit
Source: Authors' computation using World Bank Data*

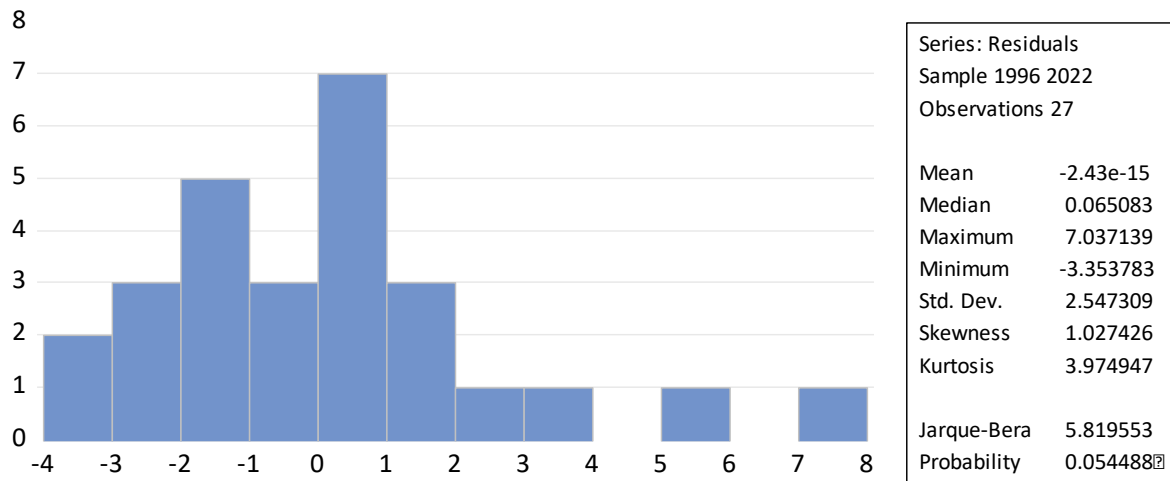


Fig. 1. Normality test

Source: Authors' computation using World Bank Data

Table 7. Regression results

Independent variable	Coefficient	Standard error	t-statistic	P-value
Money Supply*Digitalisation	5.674	4.755	1.193	0.2525
Lending rate*Digitalisation	0.029	1.185	0.025	0.9806
Inflation	-1.969	0.570	-3.454	0.0039
Exchange rate	0.222	0.036	6.218	0.0000
Constant	193.059	226.679	0.852	0.4087
Adjusted R-squared	0.88			
F-statistic	23.081			0.0000
Durbin-Watson	1.900			

Dependent variable: Liquid Asset

Source: Authors' computation using World Bank Data

Having established the mixed effects of monetary policy variables on bank performance in Nigeria, it would be novel to estimate the interactions between monetary policy and digitalisation and its effect on bank performance. The essence is to determine whether digitalisation complements or antagonizes monetary policy stands in Nigeria.

4.3 Interactive Effect of Monetary Policy and Digitalization on Bank Performance

To address the third objective of the study, we estimated the interactive effects of each monetary policy variable with digitalisation on bank credit and liquid assets. Our results shows that money supply and digitalisation are antagonist in driving bank credit in Nigeria, while lending rate and digitalisation are complementary in their effect on bank credit as shown in Table 6. Estimates in Table 7 reveal that digitalisation complements monetary policy indicators to promote banks' liquidity. These later findings are

important since banks cannot implement monetary policy without the influence of digitalisation. Unfortunately, earlier studies have neglected this obvious practical gap in literature.

The post estimation tests to validate our models are presented in Fig. 1 and Table A (see Appendix) for normality assumption test and the absence of heteroskedasticity. The Jarque-Bera statistic with estimate of 5.819 and p-value of 0.0545 indicates that at 5% level of significance the models appear to have satisfied the normality assumption. More so, the Breusch-Pagan-Godfrey's test (see Appendix) with Chi-square value of 0.2298 and p-value of 0.2526, established that the models are free from heteroskedasticity and therefore, are homoscedastic.

5. CONCLUSION AND POLICY IMPLICATIONS

This study examined the impact of monetary policy and digitalisation on banking sector

performance in Nigeria. The aim of this study was to establish whether the interaction between digitalisation and monetary policy is complementary or antagonistic for Nigerian banks, these gaps have been disregarded by earlier studies despite its plausible policy implications.

Using multiple regression analysis, the study established that monetary policy indicators have mixed impact on various measures of bank performance. First, the study arrived at the conclusion that money supply has a negative impact on bank credit but bears a positive impact on banks' liquid assets in Nigeria. The positive impact of money supply on bank performance corroborates earlier findings [12,13,14,15,16]. Second, lending interest rate promotes bank credit but hurts banks' liquid assets. The positive impact of lending interest rate on bank performance agrees with earlier studies [17,18,19,20,21,22]. Third, digitalisation is significant driver of bank credit, and it hinders banks liquid assets in Nigeria. Fourth, digitalisation complements lending rate to promote bank credit and liquid asset respectively. Based on the conclusions established above, the study suggests that banks should constantly interact with monetary authorities and digital firms to ensure that the level of money supply, lending rate and mobile cell subscription growth are not harmful to banks credit and liquid assets. Also, banks can create more credit by leveraging digital technologies through awareness creation on online credit eligibility and availability.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Cruz-García P. The impact of monetary policy on bank profitability. *Banking and Beyond: The Evolution of Financing along Traditional and Alternative Avenues*. 2020; 105-135.
2. Ozili PK. Impact of monetary policy on financial inclusion in emerging markets. *Journal of Risk and Financial Management*. 2023;16(7):303.
3. ALshubiri F, ALmaashani AA, Thuaar SM. The impact of the digital economy paradigm on the productivity and monetary system of Oman. *Journal of Science and Technology Policy Management*. 2023; 14(5):830-858.
4. Ekinci R. The impact on digitalization on financial sector performance. *The Impact of Artificial Intelligence on Governance, Economics and Finance*. 2021;1:99-119.
5. Ademola AO. Monetary policy and performance of deposit money banks in Nigeria. *Nigerian Journal of Accounting and Finance*. 2022;14(1):146-156.
6. Olaifa OI. Effect of monetary policy on bank performance in Nigeria (1988-2015). *International Journal of Humanities and Social Science Invention (IJHSSI)*. 2022; 11(9):142-150.
7. Monday RE. *Monetary Policy and Financial Performance of Commercial Banks Listed on The Nigeria Exchange Group*; 2024.
8. Agboola MG, Awobajo KA, Oluwatobi SO, Akinbode MO, Fagbohun MO, Esse UC, Betek CM. Effect of digitalization on the performance of commercial banks in Nigeria. In *IOP conference series: Earth and environmental science*. IOP Publishing. 2019;331(1):012014.
9. Uchendu OA. Monetary policy and the performance of Commercial Banks in Nigeria. *Economic and Financial Review*. 1995;33(2):4.
10. Borio C, Gambacorta L, Hofmann B. The influence of monetary policy on bank profitability. *International Finance*. 2017; 20(1):48-63.
11. Nguyen HH, Nguyen TP, Tram Tran AN. Impacts of monetary policy transmission on bank performance and risk in the Vietnamese market: Does the Covid-19 pandemic matter? *Cogent Business and Management*. 2022;9(1):2094591.
12. Udeh SN. Impact of monetary policy instruments on profitability of commercial banks in Nigeria: Zenith bank experience. *Research Journal of Finance and Accounting*. 2015;6(10).
13. Mamatzakis E, Bermpei T. What is the effect of unconventional monetary policy on bank performance? *Journal of International Money and Finance*. 2016; 67:239-263.
14. Nguyen TN, Vu NH, Le HT. Impacts of monetary policy on commercial banks' profits: The case of Vietnam. *Asian Social Science*. 2017;13(8):32.
15. Altavilla C, Boucinha M, Peydró JL. Monetary policy and bank profitability in a low interest rate environment. *Economic Policy*. 2018;33(96):531-586.
16. Bats JV, Giuliodori M, Houben AC. *Monetary policy effects in times of*

- negative interest rates: What do bank stock prices tell us? *Journal of Financial Intermediation*. 2023;53: 101003.
17. Caselli G, Figueira C. Monetary policy, ownership structure, and risk-taking at financial intermediaries. *Financial Review*. 2023;58(1): 167-191.
 18. Lukonga I. Monetary policy implications central bank digital currencies: Perspectives on jurisdictions with conventional and Islamic banking systems; 2023.
 19. Peykani P, Sargolzaei M, Takaloo A, Valizadeh S. The effects of monetary policy on macroeconomic variables through credit and balance sheet channels: A dynamic stochastic general equilibrium approach. *Sustainability*. 2023;15(5):4409.
 20. Anwar CJ, Okot N, Suhendra I, Indriyani D, Jie F. Monetary policy, macroprudential policy, and bank risk-taking behaviour in the Indonesian banking industry. *Journal of Applied Economics*. 2024;27(1): 2295732.
 21. Emekaraonye CF, Dick EI, Agu C. An empirical analysis of the interaction between monetary policy and commercial bank lending in Nigeria. *African Economic Research Consortium*; 2024.
 22. Shuja SM, Tunio FH. Effects of Monetary Policy on Emerging Market Economies: Study Perspective from Bank Lending Channel. *Journal of Development and Social Sciences*. 2024;5(1):481-493.

APPENDIX

Table A. Test for heteroskedasticity

Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

F-statistic	1.435781	Prob. F(5,21)	0.2526
Obs*R-squared	6.878566	Prob. Chi-Square(5)	0.2298
Scaled explained SS	6.189538	Prob. Chi-Square(5)	0.2882

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 04/20/24 Time: 10:15
Sample: 1996 2022
Included observations: 27

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	25.25559	22.96321	1.099828	0.2839
M2_TOTAL_RESEV	-9.335075	3.701689	-2.521842	0.0198
LENDING_RATE	-0.128155	1.137282	-0.112685	0.9114
MOBILE_CELL_SUB	2.64E-07	1.19E-07	2.220472	0.0375
INFLA	0.724752	0.512262	1.414807	0.1718
EXCH	-0.150235	0.065080	-2.308482	0.0312
R-squared	0.254762	Mean dependent var	6.248459	
Adjusted R-squared	0.077324	S.D. dependent var	10.98267	
S.E. of regression	10.54951	Akaike info criterion	7.743166	
Sum squared resid	2337.136	Schwarz criterion	8.031130	
Log likelihood	-98.53275	Hannan-Quinn criter.	7.828793	
F-statistic	1.435781	Durbin-Watson stat	1.759865	
Prob(F-statistic)	0.252634			

Source: Authors' computation using World Bank Data

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