BANK HETEROGENEITY AND THE TRANSMISSION OF MONETARY POLICY IN NIGERIA: A CREDIT AGGREGATE PERSPECTIVE

SAMUEL BAMIDELE ADEWUMI
Department of Economics, University of Port Harcourt, Nigeria
Email:adewumisamuelbamidele@gmail.com, 08066625239

ABSTRACT
This study employs a one-step system Generalized Method of Moments (GMM) estimator within a dynamic panel framework to analyze how bank-specific attributes, namely, asset size and liquidity ratio, condition credit responses to monetary policy instruments. The findings reveal significant persistence in bank credit supply and confirm the effectiveness of monetary policy tools such as the Monetary Policy Rate (MPR) and Cash Reserve Ratio (CRR) in curbing credit expansion. However, the impact is asymmetric: smaller and less liquid banks exhibit greater sensitivity to monetary tightening, while larger banks demonstrate resilience due to stronger balance sheets and liquidity buffers. Interaction terms further suggest that heterogeneity shapes the credit transmission pathway, moderating the effects of monetary policy. The study highlights the necessity for policy design that reflects institutional diversity within the banking sector, emphasizing that tailored interventions may enhance monetary effectiveness and financial system stability in Nigeria.

Keywords: Bank heterogeneity, Monetary policy, Generalized Method of Moments (GMM) estimator, Credit, Expansion, Contraction
JEL classification: C33, E44, E52, E58, G21.

1. INTRODUCTION
The hallmark of every macroeconomic policies is in its role in achieving macroeconomic goals. Globally, monetary policy remains a vital instrument for achieving macroeconomic goals, particularly in economies where fiscal policy is constrained. Central banks deploy tools such as interest rate adjustments and reserve requirements to influence aggregate demand, inflation, and output. The transmission of these policy impulses to the real economy occurs through several channels, notably through the banking system credit facilities, which serves as the primary channel for open market operations (Ojima & Ajudua, 2024).

Bank heterogeneity refers to the structural and operational differences among financial institutions, including variations in asset size, liquidity, capitalization, ownership structure, and risk exposure. These differences influence how banks respond to monetary policy shocks, particularly in terms of credit supply behaviour. In Nigeria's banking sector is characterized by a mix of large commercial banks, regional institutions, and microfinance entities. These heterogeneity could play a critical role in shaping the transmission of monetary policy. This could be in form of the total volume of credit extended by banks, serving as a key conduit through which monetary impulses affect the real economy (Mbaeri, Uwalake, & Gimba, 2021; Avdjiev, Bruno, Koch, & Shin, 2019

While existing literature has examined the general effects of monetary policy on inflation, interest rates, and output, relatively few studies have explored how institutional characteristics mediate the transmission of policy to credit aggregates. For instance, institutional characteristics, such as bank size, liquidity, capitalization, and ownership structure, play a pivotal role in shaping how monetary policy affects credit supply. Larger banks, for instance, could have diversified funding sources and stronger

capital buffers, which could make them less sensitive to monetary tightening, while smaller banks could reduce lending aggressively following interest rate hike, due to limited access to external finance (Kishan & Opiela, 2000; Onyeoma & Ozor, 2022; Gambacorta & Mistrulli 2004). Also, Banks with higher liquidity ratios could be in a better position to withstand reserve requirement shocks. This is because, higher liquidity ratios hold more readily available funds, enabling them to meet reserve requirements without curtailing lending, thus maintaining credit supply during monetary tightening or liquidity shocks (Balarabe, 2021; Gimba, Osuagwu, & Ohurogu, 2022).

Similarly, the Central Bank of Nigeria (2022) emphasized the importance of liquidity management in maintaining banking sector stability. However, it also observed that liquidity ratios had an insignificant effect on the banking stability index, implying that the unique characteristics of individual banks may dilute the uniform effectiveness of policy tools. Building on this perspective, Haque et al. (2025) argue that intermediation chains, where banks lend to nonbanks, who in turn lend to firms, can either amplify or dampen transmission effects, depending on the nature of institutional linkages and credit dependencies. These nuanced dynamics are often obscured in aggregated models, which tend to overlook critical institutional differences.

This oversight is partially attributable to methodological conventions prevalent in existing literature, which often aim to isolate transmission mechanisms (e.g., the interest rate channel or the bank lending channel) using macro-aggregated datasets. Such an approach, while analytically tractable, inadvertently glosses over cross-institutional heterogeneities. In a banking ecosystem as structurally diverse as Nigeria's, aggregate estimations risk concealing significant heterogeneity in credit-supply adjustments across banks in response to monetary tightening or easing.

To this end, the study employs a one-step system Generalized Method of Moments (GMM) framework using quarterly data from Nigerian deposit money banks between 2010 and 2023. The analysis incorporates bank-specific variables, such as asset size, and liquidity ratios, alongside macroeconomic indicators and monetary policy instruments, including the Monetary Policy Rate (MPR) and Cash Reserve Ratio (CRR) (Gimba, Osuagwu, & Ohurogu, 2022). Data are sourced from the Central Bank of Nigeria, the Nigeria Deposit Insurance Corporation, and the National Bureau of Statistics.

2. EMPIRICAL LITERATURE

2.1 Theoretical Literature

The transmission of monetary policy through the banking sector has been extensively studied under various theoretical frameworks. Central to this discourse is the Bank Lending Channel, which posits that monetary policy affects the supply of loans by influencing banks' reserve positions and funding costs. Bernanke and Blinder (1988) argue that when central banks tighten monetary policy, banks with limited access to non-deposit funding reduce loan supply, thereby constraining credit availability. This channel is particularly relevant in economies like Nigeria, where banks differ significantly in size, liquidity, and capitalization.

Complementing this is the Credit Channel Theory, which emphasizes the role of borrower balance sheets and financial frictions. Bernanke, Gertler, and Gilchrist (1996) highlight how monetary policy affects borrowers' net worth, altering their ability to secure financing. In heterogeneous banking environments, such frictions are magnified,

as smaller or less capitalized banks may be less willing to lend to riskier borrowers during policy tightening.

The broader Monetary Transmission Theory encompasses these channels and explores how policy instruments, such as the Monetary Policy Rate (MPR) and Cash Reserve Ratio (CRR), influence aggregate demand through changes in interest rates, credit conditions, asset prices, and expectations. Friedman and Schwartz (1963) laid the foundation for this theory, later expanded by Mishkin (1996), who emphasized the importance of financial intermediaries in transmitting monetary impulses to the real economy. Monetary Transmission Theory explains how instruments like MPR and CRR affect aggregate demand via interest rates, credit, assets, and expectations, with Friedman and Schwartz (1963) and Mishkin (1996) highlighting financial intermediaries' role in this process.

2.2 Empirical Literature

The transmission of monetary policy through the banking system has long been a subject of empirical inquiry. Seminal works such as Bernanke and Blinder (1992) and Kashyap and Stein (2000) laid the foundation for understanding the bank lending channel, emphasizing how monetary policy affects credit supply through changes in bank reserves and balance sheet conditions. In developed economies, studies have increasingly focused on how bank-specific characteristics - such as size, liquidity, and capitalization - mediate this transmission (e.g., Altunbas, Gambacorta, & Marques-Ibanez, 2010; Jiménez et al., 2012).

On bank heterogeneity and performance, Moudud-Ul-Huq (2020) found that institutional, managerial, and public ownership improved bank stability in Bangladesh, while ownership concentration had a modest positive effect. Trabelsi (2020) showed that board independence and gender diversity reduced risk and enhanced performance across MENA banks. Both studies highlight the role of ownership and governance structures in promoting financial stability and mitigating risk in emerging banking systems. Also, Sahut et al. (2021) found that retail-oriented banks in the MENA region outperform investment-focused banks in profitability and stability, highlighting the influence of governance and regulatory environments, especially in markets with concentrated ownership. Similarly, Sufian & Kamarudin (2016) showed that operational efficiency, asset quality, and liquidity significantly enhance profitability among Bangladeshi banks, while inflation and interest rate volatility had mixed effects. Both studies emphasize that internal management and institutional structures play a more critical role than macroeconomic factors in shaping bank performance in emerging economies.

In the Nigerian context, however, the literature remains relatively underdeveloped. Most studies have focused on the macroeconomic effects of monetary policy, such as its influence on inflation, output, and exchange rates (Umejiaku, 2025; Amaegberi & Krokeyi, 2025). Eleam et al. (2022) found weak interest rate pass-through in Nigeria, suggesting that conventional monetary tools may have limited traction. Oji and Odi (2024) and Abogun (2020) examined the relationship between monetary policy instruments and credit aggregates, finding mixed results. These studies, while valuable, largely treat the banking sector as homogeneous and do not account for institutional differences among banks. Some researchers have also examined how specific heterogeneities within the banking sector such as liquidity, market capitalization, bank size, and ownership structure impact banks' responsiveness to monetary policy. For instance, Agoh, Ogbulu, and Okanta (2024) analyzed the impact of monetary policy instruments on bank performance, using return on equity as a proxy. Their findings

suggest that while the cash reserve ratio had a positive relationship with bank profitability, the liquidity ratio and monetary policy rate had no significant effect, implying that variation in bank-level characteristics often influence the degree and manner in which monetary policy takes effect.

A few recent efforts have begun to address this gap. Agoh, Ogbulu, and Okanta (2024) examined how monetary policy affects bank profitability, finding that the cash reserve ratio had a significant impact, while the monetary policy rate did not. The Central Bank of Nigeria (2022) also acknowledged that liquidity ratios had an insignificant effect on banking sector stability, hinting at the complex and uneven nature of policy transmission. However, these studies stop short of linking bank heterogeneity to credit supply responses.

Internationally, studies such as Gambacorta and Mistrulli (2004) and Kishan and Opiela (2000) have shown that smaller and less capitalized banks are more sensitive to monetary tightening, due to their limited access to alternative funding sources. These insights suggest that similar dynamics may be at play in Nigeria, where smaller banks and microfinance institutions often face liquidity constraints and higher risk exposure.

More recent empirical contributions have sought to deepen understanding of the Nigerian context. Didigu et al. (2022), using quarterly data from 2007 to 2021, found that monetary policy instruments such as the cash reserve ratio and monetary policy rate significantly influence banking sector stability, though the effects vary over time. Gini and Obode (2025) employed an ARDL framework to examine the relationship between monetary policy and economic growth, revealing that while foreign direct investment and exchange rate positively affect output, money supply exerts a negative influence, suggesting potential inefficiencies in monetary transmission. Similarly, Okeke (2013) conducted a historical analysis from 1985 to 2011 and concluded that the Central Bank's policy tools have had mixed success in fostering economic development, with structural rigidities and institutional weaknesses limiting their effectiveness. These studies underscore the need for a more nuanced understanding of how monetary policy interacts with the banking sector's internal dynamics and broader macroeconomic conditions in Nigeria.

Nwosa and Saibu (2012) examined the interest rate channel of monetary policy transmission in Nigeria using quarterly data from 1986 to 2010. Their findings suggest that the interest rate channel significantly influences the productive sector, particularly manufacturing and agriculture. However, the responsiveness varies across sectors, indicating that structural differences within the economy mediate policy effectiveness. The study underscores the need for sector-specific monetary interventions to enhance transmission efficiency.

Okaro (2016) explored the transmission mechanism of monetary policy and bank credit in Nigeria, emphasizing the role of credit pricing over quantity. By analyzing bank-level pricing data, the study disentangled loan supply from demand shifts, revealing that credit availability is highly sensitive to monetary tightening. Smaller banks, with limited access to alternative funding, were found to be more reactive to policy shocks, reinforcing the relevance of bank heterogeneity in Nigeria's monetary framework. Also, Eleam et al. (2022) investigated the transmission of monetary policy through interest rates and found weak pass-through effects, suggesting limited effectiveness of the discount corridor in Nigeria.

Ebire and Ogunyinka (2017) investigated the bank lending channel of monetary policy transmission using a Vector Error Correction Model (VECM) and quarterly data from 2002 to 2017. Their analysis confirmed the existence of a lending channel in Nigeria,

with loan supply responding negatively to increases in the policy rate. The study found that bank-specific characteristics such as size and liquidity significantly influence the magnitude of this response, suggesting that monetary policy effects are not uniform across institutions.

Ndekwu (2013) conducted a comprehensive analysis of Nigeria's monetary policy transmission mechanism and its impact on the real economy. Using VAR and OLS techniques, the study found that the credit channel plays a pivotal role in transmitting policy impulses, while interest rate and exchange rate channels exhibited weaker effects. The findings advocate for reforms that enhance credit accessibility, particularly for smaller banks and underserved sectors, to strengthen policy transmission.

Olorunfemi et al. (2025) applied a Structural Vector Autoregression (SVAR) framework to assess the impact of economic uncertainty on monetary transmission in Nigeria. Incorporating the Nigerian Economic Policy Uncertainty Index (NUI), the study revealed that uncertainty amplifies the effects of monetary policy on credit and inflation dynamics. Smaller banks were disproportionately affected, highlighting the importance of accounting for institutional fragility and macroeconomic volatility in policy design.

In summary, recent empirical literature on monetary policy transmission in Nigeria largely focuses on aggregate effects on inflation, output, and exchange rates, often overlooking institutional diversity within the banking sector. Studies like Bernanke and Blinder (1992) and Kashyap and Stein (2000) emphasize the lending channel, while Nigerian analyses (e.g., Eleam et al., 2022; Didigu et al., 2022) suggest limited interest rate pass-through and mixed responses to the Monetary Policy Rate and Cash Reserve Ratio. Findings reveal varying sensitivity across banks due to size, capitalization, and liquidity, yet many still treat banks as homogeneous. International evidence (e.g., Gambacorta & Mistrulli, 2004) confirms that smaller banks respond more strongly to policy tightening. This study departs methodologically by explicitly modeling bank heterogeneity – particularly size and liquidity – and its effect on credit aggregates. It contributes to the literature by uncovering how structural attributes condition monetary policy transmission in Nigeria's diverse banking landscape.

3. METHODOLOGY

This study adopts a dynamic panel framework using a one-step system GMM estimator to examine how bank heterogeneity shapes monetary policy transmission. Grounded in the Bank Lending Channel (Bernanke & Blinder, 1988), Credit Channel Theory (Bernanke et al., 1996), and Monetary Transmission Theory (Friedman & Schwartz, 1963; Mishkin, 1996), the model captures how policy instruments like MPR and CRR influence credit supply. The research assumes that all commercial banks all the commercial banks are are profit maximizers. They adjust to monetary policy to maximize their profit. Bank profit function is therefore given as:

$Max_{L_{it}}\pi_{it} = r_{L,it}L_{it} - C(L_{it}, MP_{it}, Z_{it}) \quad ---(1)$

Where:

L_{it}= Loans/Credit supply, $r_{L,it}$ = Loan interest rate, $C(\cdot)$ = cost function incorporating monetary policy costs MP_{it}, and Bank heterogeneity Z_{it}.

The first Order Condition gives

$$\frac{\partial \pi_{it}}{\partial L_{it}} = r_{L,it} - \frac{\partial C_{it}}{\partial L_{it}}(L_{it}, MP_{it}, Z_{it}) = 0 \quad ---(2)$$

Lending to credit supply equation can therefore be given as:

$$L_{it} = r_{L,it} - f(MP_{it}, Z_{it},, X_{it}) \quad ---(3)$$

X_{it} = macroeconomic controls

Hence, the profit motive becomes:

$$\begin{bmatrix} L_{it} \\ MP_{it} \end{bmatrix} = \sum_{p=1}^{p} \begin{bmatrix} \alpha_{11}^{p} & \alpha_{12}^{p} \\ \alpha_{21}^{p} & \alpha_{22}^{p} \end{bmatrix} \begin{bmatrix} L_{i,t-p} \\ MP_{i,t-p} \end{bmatrix} + \begin{bmatrix} \beta_1 Z_{it} \\ \beta_2 X_{it} \\ \beta_3 r_{L,it} \end{bmatrix} + \begin{bmatrix} \mu_{1,it} \\ \mu_{2,it} \end{bmatrix} \quad ---(4)$$

Equation 4 above revealed an endogeneity nature of bi-directional causality between monetary policy variable (MP) and aggregate loan. Hence, the need for Generalized Method of Moment (GMM) estimation technique. To achieve this, the building block from equation 4 can now expanded to include other explanatory variables. The model can therefore be specified as:

$$\begin{aligned} L_{it} = \prod \alpha_i L_{i,t-1} + \beta_1 MPR_{it} + \beta_2 CRR_{it} + \beta_3 LnGDP_{it} + \beta_4 EXR_{it} + \beta_5 LIR_{it} \\ + \beta_6 LnTOTA_{it} + \beta_7 LnM3_{it} + \beta_8 MPR * LIR_{it} + \beta_9 MPR * TOTA_{it} \\ + \eta_t + \mu_t \quad ---(5) \end{aligned}$$

$\eta_t = Bank\ specific\ edogenous\ error$

$\mu_t =$ is white noise error term.

The explanatory variables are Bank specific indicators (Asset size, bank liquidity ratio), monetary policy instrument (monetary policy rate, cash reserve ratio, and broad money supply (M3), macroeconomic control (log_GDP, and exchange rate), and the interaction effect of bank heterogeneous and monetary policy instruments (MPR*total_Asset, MPR*Liquidity_ratio).

The instrumental variable (W_{it}) is given as the lag values of aggregate credit and monetary policy

$$W_{it} = \sum_{j=1}^{2} X_{i,t-j} \quad ---(6)$$

Where $X_{i,t-j}$ are the vector of the regressors with lag one and two.

The moment conditions can be written as

$\mathrm{E}[\mathrm{Z_{it}}.\epsilon_{\mathrm{it}}] = 0$

This implies that the vector of the instrumental variables, $\mathrm{W_{it}}$, are serially uncorrelated with the error term ϵ_{it}. Hence, the GMM estimator minimizes the following objective function:

$$Q(\theta) = (nT)^{-1} \sum_{i=1}^{N} \sum_{t=1}^{T} \left(g_{Y_{it}} - \beta_0 - \sum_{j=1}^{k} \beta_j X_{ijt} - \emptyset g_{Y_{i(t-1)}} \right) Z'_{it} K Z_{it} \quad ---(7)$$

Where K is a weighting matrix, typically the inverse of the estimated variance-covariance matrix of the moment condition.

4. RESULTS AND DISCUSSION OF FINDINGS

Stationary Test

This section examine the stationarity of the variables employed in the model.

Table1: Levin-Lin-Chu Unit Root result

Variable	Level		First difference		Integrated order
	Levin-Lin-Chu Stat.	P- value	Levin-Lin-Chu Stat.	P- value	
Log_GDP	-0.0608	0.0006	-4.1205	0.0000	I(1)
EXR	2.9504	1.0000	-4.6648	0.0000	I(1)
Log_M3	1.8269	0.9661	-10.2050	0.0000	I(1)
Log_Total_credit	0.9110	0.8189	-10.5711	0.0000	I(1)
MPR	-0.7762	0.2188	-3.4256	0.0003	I(1)
CRR	3.0883	0.9990	-3.7222	0.0001	I(1)
Log_TASS	2.8938	0.9981	-6.1145	0.0000	I(1)
L_ratio	-0.9060	0.1825	-6.3116	0.0000	I(1)

Source: Author's computation (2025)

From the result tabulated in table 1, it could observed that variation in these variables in the short-run were inconsistent, as all the variables are integrated of order one.

Co-integration

Haven established that the variables are integrated of different order with most of the variables I(1), it is important to test if there exist long-run relationship among the variables.

Table 2: Co-integration result

Statistic	Value	Z-value	P-value
Gt	-3.463	-1.721	0.003
Ga	-4.025	2.041	0.979
Pt	-5.242	-1.234	0.122
Pa	-3.565	1.305	0.932

Source: Author's computation (2025)

In the presence of co-integration, at least one of the coefficients (Gt, Ga, Pt, Pa) must be statistically significant at 5% degree of freedom. From the result in table 2, it could be seen that the co-efficient of Gt is statistically significant at 5%, indicating at least one co-integrating equation in the model.

Regression Result

The establishment of cointegration in the model gives the confidence to establish the regression result. The result employed one-step system GMM estimation to account for endogeneity and autocorrelation, while introducing interaction terms that reveal how bank-level liquidity and asset size condition the transmission mechanism.

Table 4: One-Step Robust GMM Result.

Variable	Coefficient	Z-value	Probability
C	-3.4637806	-12.83	0.000
TOTC(-1)	0.2531806	22.91	0.000
MPR	-0.0039945	-2.05	0.040
CRR	-0.0025174	-5.67	0.000
LnGDP	0.48538	4.26	0.000
EXR	-0.0004766	-10.02	0.000
LIR	0.0000701	0.47	0.640
Log(TOTA)	-0.0460192	2.27	0.029
Log(M3)	1.061767	27.88	0.000
MPR*LIR	0.0051987	2.01	0.043
MPR*TOTA	0.0046773	2.50	0.012

Source: Author's computation (2025)

The results confirm that credit creation in Nigerian banks exhibits significant heterogeneity. The result shows that a 1% increase in past credit supply leads to a 0.253% increase in current credit supply. This positive and highly significant coefficient confirms the persistence of credit in the banking industry. It aligns with the theory of credit inertia, where past lending behaviour influences current decisions due to relationship banking and portfolio momentum. This finding is in line with the empirical work of Stolbov (2017), who found strong credit persistence across OECD countries.
The result also yield support for monetary policy rate (MPR) as an effective instrument in levering credit control. The result shows that a 1% increase in the monetary policy rate leads to a 0.399% decrease in credit supply, indicating that higher interest rates curtail credit expansion. This conformed to its theoretical expectation of the credit channel of monetary transmission (Bernanke & Gertler, 1995), where higher interest rates discourage borrowing. It also supports the empirical work of Emekaraonye et al. (2020), who found that tighter monetary policy reduces private sector credit in Nigeria. Similarly, the cash reserve ratio (CRR) shows a strongly contractionary influence on bank lending, reinforcing its role as a liquidity management tool. The result shows that a 1% increase in the CRR leads to a 0.25% reduction in credit supply. This strongly significant result reflects the liquidity constraint mechanism, where higher reserve requirements reduce banks' loanable funds. It supports findings align with the empirical work of Orji et al. (2022), as they showed that CRR negatively affects credit to MSMEs in Nigeria.

Other macroeconomic fundamentals also play a pivotal role in bank credit generation. The result shows that Log_GDP fosters credit supply, while exchange rate depreciation suppresses it. The result depict that a 1% increase in log_GDP growth leads to a 0.48% increase in credit supply. This positive and significant relationship suggests that economic expansion boosts credit demand and supply. It aligns with Garcia-Escribano & Han (2015), who found that credit growth tracks real GDP growth in emerging markets. However, exchange rate shows negative relationship. A 1% depreciation in the exchange rate leads to a 0.048% decrease in credit supply. This negative and highly significant effect implies that exchange rate volatility dampens credit expansion, possibly due to increased risk and uncertainty. It supports findings by Hofmann et al. (2019), who showed that currency depreciation tightens financial conditions and reduces credit. This duality suggests that real economic activity boosts loan demand

and bank willingness to lend, whereas currency instability may trigger risk aversion and tighten credit conditions.

Furthermore, Broad Money Supply (proxied by M3) is robustly and positively associated with total credit, reflecting the liquidity channel of monetary transmission. The result shows that a 1% increase in M3 leads to a 1.08% increase in credit supply. This very strong and significant effect highlights the role of monetary expansion in fueling credit growth. It supports the monetarist view and findings by Olowofeso et al. (2016), as they found that money supply positively influences credit creation in Nigeria.

The coefficient of liquidity ratio is positive but insignificant on total credit creation, suggesting that changes in liquidity ratio have no meaningful impact on credit supply in this model. This may reflect the limited role of liquidity regulation in influencing credit behaviour directly, as noted by Nier et al. (2020). The level of bank assets exert differences in credit creation. The result shows that a 1% increase in bank assets leads to a 0.046% increase in credit supply. This positive and significant effect indicates that larger banks are more capable of extending credit, consistent with the financial intermediation theory and findings by Akinleye & Oluwadare (2022), who showed that bank size enhances credit performance.

Beyond these aggregate effects, the study's core contribution lies in its exploration of bank heterogeneity. By introducing interaction terms between MPR and bank-specific characteristics, the model captures how liquidity and size modulate credit responses to policy shifts. The interaction between MPR and liquidity ratio is positive and statistically significant. The result shows that a 1% increase in this interaction term leads to a 0.051% increase in credit supply. This marginally significant result suggests that when monetary tightening is accompanied by higher liquidity buffers, the negative impact on credit is softened. It reflects the buffering role of liquidity regulation, as discussed by Carstens (2019).

Likewise, the interaction between MPR and total assets suggests that larger banks are less susceptible to contractionary impulses, likely due to stronger balance sheets and diversified funding profiles. The result depict that a 1% increase in this interaction leads to a 0.46% increase in credit supply. This significant result implies that larger banks are better able to withstand monetary tightening, possibly due to stronger capital buffers and diversified portfolios. It aligns with the heterogeneous bank response theory (Brigden & Mizen, 1999).

Post-Estimation Diagnostics

Since the regression result employed robust standard error, the issue of heteroscedasticity and autocorrelation are internally corrected

Table 5: Autocorrelation result

Test	Z-value	Prob.
Arellano-Bond AR(1)	-1.76	0.076
Arellano-Bond AR(1)	-1.73	0.074

Source: Author's computation (2025)

The Arellano-Bond Tests (AR(1) and AR(2)) both show non-significant results ($p \approx 0.084$), suggesting no strong autocorrelation in first or second differences, supporting model validity.

5. SUMMARY OF FINDINGS AND POLICY IMPLICATIONS

This study examines bank heterogeneity and the transmission mechanism of monetary policy in Nigeria from a credit aggregate perspective. Specifically, it assesses how variations in bank-specific characteristics influence their response to monetary policy instruments. Using quarterly data from 2010 to 2023, a dynamic panel framework, and a robust one-step system Generalized Method of Moments (GMM) estimator, the findings provide evidence of asymmetric monetary transmission across Nigeria's banking sector.

The analysis highlights that credit creation in Nigerian banks is highly persistent, with past credit supply exerting a statistically significant and positive influence on current lending behavior. This inertia suggests that relationship banking and portfolio dynamics play a role in shaping credit outcomes.

Monetary policy tools – particularly the Monetary Policy Rate (MPR) and Cash Reserve Ratio (CRR) – were found to exert significant contractionary effects on aggregate credit supply. A rise in either instrument leads to a notable decline in bank lending, affirming their utility in credit management and liquidity control. These effects are more pronounced among smaller and less liquid banks, reflecting their vulnerability to tightening monetary conditions.

Conversely, banks with larger total assets demonstrate resilience against contractionary impulses. The interaction terms in the model reveal that asset size and liquidity buffers help to mitigate the adverse effects of monetary tightening. Specifically, the positive and significant interaction between MPR and total assets implies that well-capitalized banks are better positioned to maintain lending operations under restrictive monetary regimes.

Broader macroeconomic conditions exert a substantial influence on credit supply dynamics within the financial system. Notably, robust GDP growth is positively and significantly linked to credit expansion, reaffirming the inherently pro-cyclical behavior of bank lending. Conversely, depreciation of the exchange rate tends to restrict credit availability, underscoring how currency volatility can hinder effective financial intermediation. Additionally, an increase in broad money supply (M3) emerges as a strong and positive driver of overall credit, reinforcing the liquidity transmission channel through which monetary policy impacts the economy.

From a policy standpoint, these insights carry considerable weight. It is essential for the Central Bank of Nigeria (CBN) to recognize the heterogeneous nature of institutional balance sheets when designing monetary interventions. A uniform or one-size-fits-all policy approach is unlikely to deliver optimal macro-financial outcomes. Instead, customizing policy tools to reflect institutional differences—particularly in terms of size, liquidity profiles, and risk exposure—could enhance the effectiveness of monetary policy and strengthen the resilience of Nigeria's financial system.

Moreover, regulatory emphasis on liquidity and capital adequacy should be sustained, as these factors condition the effectiveness of monetary policy transmission. Strengthening risk-based supervision and reinforcing macroprudential frameworks will be crucial in ensuring that credit allocation remains stable and growth-supportive across diverse banking institutions.

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