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IMPACT OF MONETARY POLICY ON BANKING SYSTEM FRAGILITY IN NIGERIA

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Abstract: This study examines the impact of monetary policy on banking system fragility in Nigeria over the period from 1986 to 2022. The financial time series approach was use to gather secondary data since the variables investigated are quantitative. These variables include bank distressed levels, prime lending rates, maximum lending rates, savings rates, Treasury bill rates, treasury certificate rates, monetary policy rate, narrow money supply, broad money supply and currency ratio. The data for these variables were obtained annually from the Central Bank of Nigeria (CBN) statistical bulletin from 1986 to 2022. Stationarity of the variables was assessed using the Augmented Dickey Fuller (ADF) unit root technique due to the presence of structural breaks. After confirming the mixed integration nature of the variables, they were transformed to first order and modeled using the vector Auto-regression (VAR) based on co-integration tests using the methodology developed by Johansen (1991, 1995). The study found that 16.8% of the changes in the dependent variable could be attributed to variances in Model 1. This assertion is further supported by the F-statistics and the associated probability value. The result for Model II revealed that the Error Correction Model (ECM) is appropriately aligned, and the independent variables can account for 50.3% of the variations in bank distress levels. Similarly, Model three demonstrated that the independent variables can elucidate 48.7% of the variations in bank distress levels. In contrast, in Model 111, the independent variables elucidated a substantial 72.9% of the variance in the dependent variable, whereas in another context, they accounted for 35.5% of the variance. The investigation determined that a noteworthy 88% of the variations in the dependent variable could be linked to the model's variation, a conclusion that is again supported by the F-statistics and probability value. Furthermore, 80.4% and 50% of the variations in the dependent variable could be attributed to the model's

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fluctuations in distinct instances. The study's results lead to the conclusion that a notable correlation exists between monetary policy and the level of bank distress in Nigeria. In this regard, the study recommends that the central bank should tailor its monetary policies to consider their potential impact on the stability of the banking sector. Striking a balance between growth and stability objectives is crucial.

Keyword: Monetary policy, interest rate, interest rate spread, inflation, money supply, banking system fragility, financial distress.

1. INTRODUCTION

Banking sector fragility has significant impacts on the Nigerian economy. Studies have shown that there is a non-linear relationship between financial fragility and economic growth in Nigeria (Nwosu, Itodo, and Ogbonnaya-Orji, 2021). During periods of financial distress, such as the bank distress era from 1999-2009, high non-performing loan (NPL) ratios can affect bank liquidity and funding growth, leading to a negative impact on the overall economy (Iwedi, 2017). Financial fragility is characterized by vulnerability and liquidity shortages in the banking sector (Nwosu,Itodo, and Ogbonnaya-Orji, 2021). When banks face high levels of non-performing loans, it reduces their ability to lend and support economic activities (Wachukwu, Iwedi and Barisua, 2023). This can result in reduced investments, decreased business expansion, and limited access to credit for individuals and businesses, ultimately hampering economic growth. On the other hand, monetary policy plays a critical role in influencing the stability and fragility of the banking system in Nigeria, as it does in any country. The Central Bank of Nigeria (CBN) is responsible for formulating and implementing monetary policy in the country.Monetary policy refers to the actions and decisions undertaken by the central bank of a country to influence the availability, cost, and use of money and credit. One of the primary objectives of monetary policy is to ensure the stability of the banking system. A stable banking system is essential for the smooth functioning of an economy and promotes economic growth and development (Iwedi and Imegi, 2023).The central bank uses various tools to achieve banking system stability, such as setting interest rates, regulating the money supply, and supervising commercial banks. By adjusting interest rates, the central bank can influence borrowing costs and the availability of credit, thereby impacting the behavior of banks and financial institutions (Iwedi, Igbanibo and Onuegbu, 2015). Additionally, the central bank can regulate the money supply by buying or selling government securities, which affects the liquidity in the banking system (Iwedi, 2016).

However, in Nigeria, several key factors contribute to the fragility of its banking sector which includes macroeconomic Instability: Nigeria's economy is highly dependent on oil exports, which makes it vulnerable to fluctuations in global oil prices. When oil prices are low, the government's revenue decreases, leading to reduced economic activity, currency devaluation, and increased inflation. These macroeconomic imbalances can strain the banking sector and impact the repayment ability of borrowers.Non-Performing Loans (NPLs): Non-performing loans are loans that borrowers are not repaying as per the agreed terms. In Nigeria, high NPL ratios have been a persistent issue in the banking sector. This is often due to inadequate credit risk assessment, weak loan recovery mechanisms, and economic challenges faced by borrowers. High NPL ratios weaken banks' balance sheets, erode their capital base, and increase the risk of insolvency.Weak Corporate Governance: Ineffective corporate governance practices within Nigerian banks can lead to mismanagement, lack of accountability, and unethical behavior. This can result in poor decision-making, risky lending practices, and exposure to fraudulent activities, all of which contribute to banking sector fragility.Regulatory and Supervisory Challenges: Regulatory and supervisory bodies play a critical role in maintaining the stability of the banking sector. In Nigeria, regulatory frameworks and supervisory practices have faced challenges in effectively monitoring and addressing risks in the sector. Inadequate regulatory oversight can allow risky practices to go unchecked, leading to increased fragility.Foreign Exchange Volatility: Nigeria has faced challenges in maintaining exchange rate stability. Fluctuations in the value of the Nigerian Naira can impact the value of assets and liabilities held by banks, potentially leading to solvency issues and increased vulnerability in the banking sector.

Therefore, the pursuit of achieving stability within the realm of finance has become a topic of significant concern among various authors, both within the realm of theory and empirical analysis. Financial stability, in essence, pertains to the stability of pivotal institutions and markets that collectively constitute the financial system. The essential criterion for these institutions in the financial system is that they maintain stability. This denotes a high level of confidence that they will consistently fulfill their contractual commitments without disruptions or external assistance. On the contrary, instances of financial instability can arise when disturbances within the financial system impede the flow of information to an extent that the financial system can no longer fulfill its core function of directing funds toward those possessing worthwhile investment prospects (Toby, 2006).The presence of financial risk often leads to a state of financial paralysis within the economy. Consequently, addressing this necessitates the effective implementation of monetary policy tools. These tools play a role in regulating, stabilizing, repositioning, and redirecting objectives, all in the pursuit of maintaining a resilient banking sector. This is achieved through the application of macro-prudential guidelines and supervision, as noted by Iwedi and Onuegbu (2014).For a financial system to stand strong, dependable, and steady, an efficient monetary policy becomes indispensable. It serves the purpose of mitigating shocks, preventing runs, curbing panic, managing crises, and averting bankruptcies, all of which have affected diverse financial sectors and the broader global financial market. To preclude potential issues and proactively monitor signs of financial vulnerability, and to bolster the liquidity, assets, capital, and structures of the banking sector, the implementation of robust and functional monetary policy frameworks is essential. Consequently, these frameworks and tools facilitate the subjecting of banks to stress tests, allowing for the swift identification of shocks that could endanger earnings and profitability. Moreover, this approach aids in identifying specific problems within individual bank balance sheets and macroeconomic conditions that could potentially lead to banking sector instability.

Given this context, the objective of this paper is to delve into the investigation of the influence exerted by monetary policy on the fragility of the banking system in Nigeria.

2. LITERATURE REVIEW

2.1. Theoretical Framework

Various theories have been proposed to explain the factors that contribute to the vulnerability of the banking system. Here are some key theories that underpin banking system fragility and monetary policy:

2.1.1. Agency Theory and Moral Hazard

This theory emphasizes the principal-agent relationship between depositors (principal) and bankers (agents) (Jensen &Meckling, 1976). Depositors entrust their funds to banks, and bankers are expected to manage those funds prudently. Moral hazard arises when bankers take excessive risks with depositors' funds because they are shielded from the full consequences of their actions (Gomez-Mejia &Balkin, 1992). The expectation of bailouts or government intervention can lead to reckless behavior, assuming that losses will be socialized while profits remain private.

2.1.2. Theory of Bank Run

These theories focus on the vulnerability of banks to "bank runs," where a sudden rush of depositors seeking to withdraw their funds can lead to a liquidity crisis for the bank(Santos, 2001).Bank runs can be triggered by rumors, panic, or a lack of confidence in the bank's ability to meet its obligations.The Diamond-Dybvig model, developed by economists Douglas Diamond and Philip Dybvig, provides a framework for understanding the dynamics of bank runs and the role of deposit insurance in mitigating these risks (Diamond and Dybvig, 1983).

2.1.3. Theory of Liquidity Mismatch

Banks often engage in maturity transformation by borrowing short-term funds and lending for longer terms. This creates a liquidity mismatch: if depositors demand their funds back suddenly, banks might struggle to meet those demands without selling illiquid assets at a loss.This liquidity risk can lead to a solvency crisis, where a bank's assets are worth less than its liabilities, making it unable to meet its obligations(Silva, 2019 and Iwedi, 2019).

2.1.4. Theory of Macroprudential Policies and Regulation

These theories focus on the role of regulatory and supervisory measures in preventing and mitigating banking system fragility(Borchgrevink, Ellingsrud, and Hansen, 2014).Macroprudential policies aim to identify and address systemic risks that can emerge from the interactions between financial institutions and markets(Basso, and Costain, 2016).

2.2. Empirical Review

Fowowe (2010) investigated how the liberalization of the Nigerian banking sector between 1980 and 2002 impacted the state of Nigerian banks, aiming to determine whether this transformation resulted in increased vulnerability of the banking system. The study revealed a noteworthy connection between the liberalization efforts and heightened fragility within the Nigerian banking system throughout the examined timeframe.In a research effort carried out by Aliero and Ache (2017) to explore the factors contributing to the occurrence of banking system failures in Nigeria, the scholars employed the auto-regressive distributed lag (ARDL) method along with Granger causality analysis. This approach was used to scrutinize the interplay between exchange rates, interest rates, capital adequacy ratios, non-performing loans, liquidity ratios, and instances of bank failure spanning the period from 1970 to 2013. The study's findings underscored the notable influence of these variables on long-term bank failure. Moreover, the research revealed a bidirectional causal relationship between these variables and occurrences of bank failure.

In their investigation into the impact of size on the performance of Nigerian banks, as outlined by Kayode and Adaramola (2018), it was conveyed that size did not yield a significant enhancement in bank performance; in fact, it appeared to hinder it. This effect was particularly noticeable in relation to the quantity of branches and employees. The research noted that Nigerian banks were functioning with suboptimal size configurations, resulting in an unfavorable influence on their overall profitability.Bolarinwa and Soetan (2019) conducted research into the impact of corruption on the profitability of a total of 111 banks spanning 33 African nations, which encompassed Nigeria for countries exhibiting high corruption indices, as well as 56 banks originating from 10 developed countries featuring low corruption indices. The study spanned the period from 2011 to 2018. Utilizing the Generalized Method of Moments (GMM), the study's findings revealed that corruption significantly influenced profitability within both developed and developing countries. Specifically, the research noted that in the selected African nations, corruption acted as a detriment to profitability, whereas a decrease in corruption indices in the developed countries corresponded with an increase in bank profitability.

Applying the threshold regression modeling methodology, Ben-Ali (2020) conducted an examination across 38 African nations and noted that during the period spanning from 2000 to 2017, corruption played a significant role in contributing to the vulnerability of banks within the chosen countries. Similarly, to the observations made by Bolarinwa and Soetan, these researchers identified that the impact of corruption on bank stability was more pronounced in low-income countries featuring high corruption indices compared to their high-income counterparts.In a separate study, Ayşegül (2021) delved into the realm of early warning systems (EWSs) concerning the fragility of selected Islamic banks. The goal was to predict potential bank fragility within certain countries. The study amassed data from 81 banks originating from 12 different countries, spanning the time frame of 2008 to 2018. The outcomes of this research revealed that Banking System Fragility Indicators (BSFIs) emerged as potent predictors of crises within the banking sector.

Enebeli-Uzor and Ifelunini (2021) conducted an assessment of the Nigerian financial system's diversity and stability. The researchers utilized various analytical techniques, including the Hirschman Herfindahl (HH) Index, Principal Component Analysis (PCA), Simpson Index, Simple Regression, and Granger causality modeling. Their analysis focused on quarterly data from the banking sector spanning the years 2006 to 2015. The primary goal was to construct an "Aggregate Financial Stability Index" that would provide insight into the condition of the financial system.In their findings, two key points emerged. Firstly, the study highlighted that the presence of diversity within the financial system contributed positively to its overall stability. Secondly, a bidirectional causal relationship was identified between financial system stability and diversity. The authors proposed two main recommendations based on their findings. Firstly, they advocated for banks to adopt a more diversified portfolio as a strategy to enhance stability. Secondly, they emphasized the necessity for stricter regulatory measures within the Nigerian banking system.

Kayode & Oluwole (2023) undertook an examination into the condition of the Nigerian banking system with regard to its stability and vulnerability over the timeframe spanning from 1981 to 2020. The researchers employed the banking system fragility index (BSFI) introduced by Kibritçioğlu (2003) to scrutinize aggregate data from the Nigerian banking industry across three critical risk dimensions: credit, market, and liquidity.Their analysis revealed that, out of the 40-year duration under scrutiny, the Nigerian banking system displayed fragility for a total of 23 years, as indicated by BSFI values falling below 0. Conversely, the system demonstrated non-fragility for 17 years, corresponding to instances where BSFI equaled or exceeded 0.The researchers made significant observations. Firstly, they discerned that the periods marked by fragility within the Nigerian banking system coincided with phases of lenient monetary policies, deregulation, and an expansion of credit. Secondly, the years characterized by stability in the banking system correlated with periods of stringent regulation and the process of consolidation within the country's banking sector.Given the substantial duration during which the banking system exhibited fragility, the researchers drew a pertinent conclusion. They highlighted that sustaining economic growth and development necessitates a robust banking system, operating at its fullest strength for extended periods.

In the context of Nigeria, this vital objective appeared to face challenges, as the prevailing conditions did not seem conducive to achieving it.

3. METHODOLOGY

3.1. Data and Estimation Techniques

The financial time series approach was use to gather secondary data since the variables investigated are quantitative. These variables include bank distressed levels, prime lending rates, maximum lending rates, savings rates, treasury bill rates, treasury certificate rates, monetary policy rate, narrow money supply, broad money supply and currency ratio. The data for these variables were obtained annually from the Central Bank of Nigeria (CBN) statistical bulletin from 1986 to 2022. Stationarity of the variables was assessed using the Augmented Dickey Fuller (ADF) unit root technique due to the presence of structural breaks. After confirming the mixed integration nature of the variables, they were transformed to first order and modeled using the vector Auto-regression (VAR) based on co-integration tests using the methodology developed by Johansen (1991,1995).

3.2. Model Specification

The monetary policy on banking system fragility in Nigeria is modelled as follows:

$$BDL = \alpha + \beta_1 TBR + \beta_2 TCR + \beta_3 MPR + e_i \quad (1)$$

$$BDL = \alpha + \beta_1 TBR + \beta_2 TCR + \beta_3 MPR + e_i \quad (2)$$

$$BDL = \alpha + \beta_1 M1R + \beta_2 M2R + \beta_3 CR + e_i$$

Where:

BDL= Bank distressed Levels

MLR= Maximum Lending Rate

PLR= Prime Lending Rate

SR= Saving Rate

TBR= Treasury Bill Rate

TCR= Treasury Certificate Rate

MPR= Monetary Policy Rate

M1 =Money Supply (Narrow Money)

M2= Money Supply (Broad Money)

CR= Currency Ratio

4. RESULTS AND DISCUSSION

Table 1: Unit Root Test

Variable	*ADF*	*1%*	*5%*	*10%*	*PROB.*	*Order of Integration*	*Decision*	*Remark*
MODEL 1: $BDL = \alpha + \beta_1\, M1R + \beta_2\, M2R + \beta_3\, CR + e_i$								
BDL	-6.393375	-3.653730	-2.957110	-2.617434	0.0000	1(I)	Sig	Reject H0
MLR	-7.627294	-3.653730	-2.957110	-2.617434	0.0000	1(I)	Sig	Reject H0
PLR	-6.927757	-2.967767	-2.967767	-2.622989	0.0000	1(I)	Sig	Reject H0
SR	6.894187	-3.670170	-2.963972	-2.621007	0.0000	1(I)	Sig	Reject H0
MODEL 2: $BDL = \alpha + \beta_1 TBR + \beta_2 TCR + \beta_3 MPR + e_i$								
BDL	-5.287597	-3.737853	-2.991878	-2.635542	0.0003	1(I)	Sig	Reject H0
TBR	-9.458566	-3.670170	-2.963972	-2.621007	0.0005	1(I)	Sig	Reject H0
TCR	-8.949490	-3.661661	-2.960411	-2.619160	0.0000	1(I)	Sig	Reject H0
MPR	-6.883521	-3.724070	-2.986225	-2.632604	0.0000	1(I)	Sig	Reject H0
MODEL 3: $\mathrm{BDL} = \beta + \beta_1\, M1R + \beta_2\, M2R + \beta_3\, CR + e_i$								
BDL	-6.393375	-3.653730	-2.957110	-2.617434	0.0000	1(I)	Sig	Reject H0
M1	-6.571366	-3.699871	-2.976263	-2.627420	0.0005	1(I)	Sig	Reject H0
M2R	-4.531520	-3.653730	-2.957110	-2.617434	0.0010	1(I)	Sig	Reject H0
CR	-6.206602	-3.661661	-2.960411	-2.619160	0.0000	1(I)	Sig	Reject H0

At the initial level, the unit root test indicates that the variables lack stationarity. This implies that the alternate hypothesis favoring non-stationarity is rejected in support of the null hypothesis of non-stationarity. The absence of stationarity in the variables at this level allows us to conduct a stationarity test on their first differences.Upon subjecting the unit root test to the first differences of the variables, it becomes evident that all the variables exhibit stationarity. This infers the rejection of the null hypothesis advocating non-stationarity, in favor of the alternate hypothesis supporting stationarity.Additionally, the information presented in the aforementioned table suggests that the variables are co-integrated at a 1(1) order. This discovery facilitates the presentation of the regression outcomes.

Table 2: Johansen Co-Integration Test Results

Hypothesized No. of CE(s)	*Eigenvalue*	*Trace Statistic*	*0.05 Critical Value*	*Prob.***
MODEL 1: $BDL = \alpha + \beta_1 MLR + \beta_2 PLR + \beta_3 SR + e_i$				
None	0.410805	35.74270	47.85613	0.4094
At most 1	0.315591	18.81477	29.79707	0.5063
At most 2	0.170584	6.680387	15.49471	0.6151
At most 3	0.021494	0.695317	3.841466	0.4044
MODEL 2 : $BDL = \alpha + \beta_1 TBR + \beta_2 TCR + \beta_3 MPR + e_i$				
None	0.439452	37.34559	47.85613	0.3314
At most 1*	0.276774	31.82270	29.79707	0.0457
At most 2	0.170770	8.453613	15.49471	0.4182
At most 3	0.074034	2.461362	3.841466	0.1167
MODEL 3: $BDL = \alpha + \beta_1 M1R + b2M2R + \beta_3 CR + e_i$				
None *	0.511699	52.88434	47.85613	0.0156
At most 1 *	0.434921	29.94600	29.79707	0.0481
At most 2	0.296884	11.68075	15.49471	0.1729
At most 3	0.012709	0.409304	3.841466	0.5223

In the realm of trace statistics, the models demonstrated the existence of a single co-integrating equation. This indicates the existence of a long-term relationship among the variables. As a result, the initial hypothesis of no co-integration is dismissed in favor of the alternative hypothesis. Moreover, the maximum Eigen value also confirms the validity of the three statistics, each revealing one co-integrating equation within the models. This validates the notion that a long-term relationship among the variables is indeed present.

Table 3: Pairwise Granger Causality Tests

Null Hypothesis:	*Obs*	*F-Statistic*	*Prob.*
MODEL 1: $\alpha = \beta_1 MLR + \beta_2 PLR + \beta_3 SR + e_i$			
MLR does not Granger Cause BDL	32	2.27858	0.1218
BDL does not Granger Cause MLR		0.84329	0.4413
PLR does not Granger Cause BDL	32	4.89562	0.0153
BDL does not Granger Cause PLR		0.41362	0.6654
SR does not Granger Cause BDL	32	0.29431	0.7474
BDL does not Granger Cause SR		1.64093	0.2125
Model II : $\alpha + \beta_1 TBR + \beta_2 TCR + \beta_3 MPR + e_i$			
MPR does not Granger Cause BDL	32	14.6132	5.E-05
BDL does not Granger Cause MPR		0.57945	0.5670

Null Hypothesis:	*Obs*	*F-Statistic*	*Prob.*
TBR does not Granger Cause BDL	32	0.33823	0.7160
BDL does not Granger Cause TBR		0.21938	0.8044
TCR does not Granger Cause BDL	32	1.56732	0.2270
BDL does not Granger Cause TCR		1.51237	0.2385
Model III : BDL = $\alpha + \beta_1$ M1R + β_2 M2R + β_3 *CR* + e_i			
CR does not Granger Cause BDL	32	3.57912	0.0418
BDL does not Granger Cause CR		1.80863	0.1832
M1 does not Granger Cause BDL	32	1.33679	0.2795
BDL does not Granger Cause M1		1.90089	0.1689
M2R does not Granger Cause BDL	32	1.51322	0.2383
BDL does not Granger Cause M2R		0.67808	0.5160
M1 does not Granger Cause CR	32	0.82655	0.4483
CR does not Granger Cause M1		3.87082	0.0333

According to the findings displayed in table 3, it can be observed that model I demonstrates absence of causal connection between the variables, with the exception of a one-way causality stemming from the prime lending rate. Similarly, within the time series data, the variables exhibit no causal interplay. As a result, the research validates the null hypothesis. The absence of causal correlation between the variables goes against the initial assumptions and the monetary policy objective.

Table 4 VAR Lag Order Selection Criteria

Lag	*LogL*	*LR*	*FPE*	*AIC*	*SC*	*HQ*
BDL = $\alpha + \beta 1$ *MLR* + β_2 *PLR* + β_3 *SR* + e_i						
0	-363.1195	NA	108395.7	22.94497	23.12819	23.00570
1	-311.1000	87.78294*	11528.37*	20.69375*	21.60984*	20.99741*
2	-307.5568	5.093417	26452.36	21.47230	23.12125	22.01888
BDL = $\alpha + \beta 1$ TBR + β_2 *TCR* + β_3 *MPR* + e_i						
0	-359.7144	NA	87616.27	22.73215	22.91537	22.79288
1	-296.6815	106.3679*	4681.678*	19.79260*	20.70868*	20.09625*
2	-285.8017	15.63980	6791.370	20.11260	21.76156	20.65919
BDL = $\alpha = \beta_1$ TBR + β_2 TCR + β_3 MPR + e_i						
0	-359.7144	NA	87616.27	22.73215	22.91537	22.79288
1	-296.6815	106.3679*	4681.678*	19.79260*	20.70868*	20.09625*
2	-285.8017	15.63980	6791.370	20.11260	21.76156	20.65919
HQ: Hannan-Quinn information criterion						

The LM test conducted to assess residual serial correlation in the VAR model yields a result indicating the absence of serial autocorrelation. This finding suggests that the variables incorporated into the VAR model exhibit favorable behavior, consequently bolstering the predictive prowess of the VAR model's outcome. Moreover, the outcome's reliability for forecasting purposes is affirmed. The data presented in table 4 illustrates a probability value exceeding 0.05, leading to the retention of the null hypothesis, which posits the lack of serial correlation within the model. As a result of the aforementioned observations, lag 1 is chosen as the suitable lag length.

Table 5: Error Correction Model

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
$BDL = \alpha + \beta_1 MLR + \beta_2 PLR + \beta_3 SR + e_i$				
C	0.128873	0.558656	0.230684	0.8197
D(BDL(-1))	0.283046	0.367262	0.770691	0.4491
D(MLR(-1))	-0.316973	0.222682	-1.423434	0.1686
D(MLR(-2))	-0.134434	0.135868	-0.989448	0.3332
D(PLR(-1))	0.255474	0.211370	1.208655	0.2396
D(PLR(-2))	-0.116876	0.211396	-0.552874	0.5859
D(SR(-1))	-0.028872	0.126096	-0.228968	0.8210
D(SR(-2))	0.038673	0.125401	0.308394	0.7607
ECM(-1)	-0.345611	0.300933	-1.148468	0.2631
R-squared	0.390211	Mean dependent var		-0.107742
Adjusted R-squared	0.168469	S.D. dependent var		3.252741
F-statistic	3.759756	Durbin-Watson stat		1.776230
Prob(F-statistic)	0.040166			
$BDL = \alpha + \beta_1 TBR + \beta_2 TCR + \beta_3 MPR + e_i$				
D(BDL(-1))	-0.358132	0.344283	-1.040227	0.3137
D(BDL(-2))	0.184274	0.321366	0.573409	0.5743
D(BDL(-3))	0.271126	0.241463	1.122850	0.2781
D(MPR(-1))	0.687728	0.184124	3.735130	0.0018
D(MPR(-2))	0.355305	0.266718	1.332138	0.2015
D(MPR(-3))	0.153149	0.245577	0.623628	0.5417
D(TBR(-1))	-0.319776	0.176206	-1.814788	0.0883
D(TBR(-2))	-0.308513	0.172484	-1.788647	0.0926
D(TBR(-3))	-0.188813	0.170148	-1.109702	0.2835
D(TCR(-1))	0.279730	0.205779	1.359375	0.1929
D(TCR(-2))	-0.015724	0.166963	-0.094174	0.9261
D(TCR(-3))	-0.145670	0.177592	-0.820247	0.4241
C	-0.137560	0.476223	-0.288856	0.7764

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
ECM(-1)	-0.048547	0.255710	-0.189850	0.8518
R-squared	0.726096	Mean dependent var		-0.238667
Adjusted R-squared	0.503549	S.D. dependent var		3.224199
F-statistic	3.262668	Durbin-Watson stat		2.044755
Prob(F-statistic)	0.013817			
$BDL = \alpha + \beta_1 M_1R + \beta_2 M2R + \beta_3 CR + e_i$				
D(BDL(-1))	-0.128345	0.202276	-0.634504	0.5342
D(BDL(-2))	-0.153443	0.202658	-0.757155	0.4593
D(BDL(-3))	0.223915	0.207564	1.078776	0.2958
D(CR(-1))	-0.083756	0.221119	-0.378784	0.7095
D(CR(-2))	0.353474	0.226526	1.560414	0.1371
D(CR(-3))	-0.418127	0.215872	-1.936921	0.0696
D(M1(-1))	0.024516	0.079447	0.308581	0.7614
D(M1(-2))	0.080243	0.084767	0.946629	0.3571
D(M1(-3))	-0.021223	0.066949	-0.317003	0.7551
D(M2R(-1))	-0.016864	0.058785	-0.286875	0.7777
D(M2R(-2))	0.030854	0.071623	0.430785	0.6720
D(M2R(-3))	0.037778	0.056206	0.672139	0.5105
C	-0.326422	0.611696	-0.533635	0.6005
R-squared	0.487503	Mean dependent var		0.238667
Adjusted R-squared	0.125740	S.D. dependent var		3.224199
F-statistic	3.347577	Durbin-Watson stat		1.971661
Prob (F-statistic)	0.049464			

An over-parameterized outcome is exhibited in table 5 to assess remedies for short-term inconsistencies in the models. In the case of model 1, the ECM reveals a negative indication. The R2 value signifies that 16.8% of the fluctuations in the dependent variable can be attributed to variances in the model. This observation gains further support from both the f-statistics and the associated probability value. The findings provided in the results offer substantiation that the variables can adapt at an annual rate of 34.5%.Turning to Model II, the ECM also demonstrates a negative sign, and the independent variables elucidate 50.3% of the variances in the level of bank distress. The f-statistics additionally bolster the assertion that the independent variables contribute to the variations in the dependent variables. The model also indicates a yearly adjustment pace of 4.85% over the examined timeframe.As for Model III, the independent variables account for 48.7% of the variations in the bank distress level. The f-statistics once again reinforce the notion that the independent variables play a role in explaining the fluctuations in the dependent variables. The model further illustrates an annual rate of adjustment of 48.7% over the duration covered by this investigation.

4.2. Discussion of Findings

Model One discovered that the independent variables accounted for 39 percent of the variability in the level of bank distress across the study's time periods. The model exhibited statistical significance. Analyzing the beta coefficients of the variables revealed that while the maximum lending rate yielded a negative impact, it was not statistically significant. Conversely, the prime lending rate demonstrated a positive influence but lacked statistical significance. Similarly, the savings rate displayed a negative effect without statistical significance on the level of bank distress.The outcomes indicated that during the study's time spans, the aforementioned variables contributed to reducing bank distress by 0.31 percent, 0.26 percent, and 0.02 percent, respectively. The adverse influence of these variables aligned with the anticipated expectations and validated the aims of monetary policy. Furthermore, the results upheld the notions of incomplete markets in general equilibrium theory, highlighting the necessity of employing a macroprudential approach to manage bank resources. Empirically, the findings substantiated the earlier work of Akanbi&Ajagbe (2012) and Toby (2011), affirming the positive impact of net profit, liquidity ratio, cash ratio, and interest rate on savings as expected. The study also supported the conclusions of Akomolafe, Danladi, Babalola&Abah (2015), indicating a positive correlation between banks' profits and monetary policies, proxied by money supply and interest rate. Furthermore, the research aligned with Amidu & Wolfe's (2008) findings, which emphasized the significant influence of economic conditions and changes in money supply on Ghanaian banks' lending behavior.

Model two discovered that the autonomous factors accounted for 72 percent of the variance in the level of bank distress observed during the study's timeframes. The model displayed statistical significance, revealing that the beta coefficients associated with the variables demonstrated distinct effects: the monetary policy rate exhibited a positive and significant impact, the Treasury bill rate displayed a negative influence without statistical significance, and the treasury certificate rate indicated a positive influence without statistical significance on the degree of bank distress.Based on the results, the monetary policy rate contributed a 0.68 percent increase to the bank distress level, while the Treasury bill rate led to a reduction of 0.31 in bank distress level. Conversely, the treasury certificate rate was linked to a 0.27 percent increase in the bank distress level. The negative impact of the variables confirmed the anticipated expectations, while the positive impact contradicted them.These findings align with the observations that the detrimental effect of cash reserve ratio on commercial bank liquidity is likely due to insufficient adherence to liquidity regulations and excessive trading. However, the findings oppose the conclusions of Ekpung, Udude&Uwalaka (2015) suggesting a substantial relationship between monetary policy and bank deposit liabilities. Additionally, they differ from the outcomes of Fasanya, Onakoya, and Agboluaje (2013) regarding the existence of a long-term relationship among the variables.Moreover, they contrast with the conclusions of Gambacorta and Lannoti (2005), who noted a notable increase in the speed of bank interest rate adjustment in response to monetary policy changes following the enactment of the 1993 Banking Law. The asymmetric short-term response of interest rates to positive and negative shocks was acknowledged, with the notion that equilibrium is restored in the long run. Furthermore, the findings differ from the outcomes of Aminzadeh&Irani (2015), who identified a weak yet significant correlation between liquidity volume, the issuance of partnership bonds, and the stock returns of private banks listed in the stock market.

The results obtained from the estimated Model 3 indicate that the independent variables accounted for 48.7% of the variance in bank distress levels. The model's statistical significance was established through the f-probability value. By examining the beta coefficients of the variables, the research determined the following effects on bank distress levels:The currency ratio (CR) exhibited a negative impact on bank distress levels. Narrow money supply demonstrated a positive effect, albeit insignificant. Meanwhile, broad money supply showed a negative effect, also deemed insignificant. Notably, a unit increase in these variables corresponded to a 0.08% decrease, a 0.02% increase, and a 0.01% decrease in bank distress levels during the study period. The observed negative impact of the variable aligns with prior expectations and theoretical frameworks. Conversely, the positive effect contradicts initial assumptions and could be attributed to noncompliance with monetary policy regulations. Empirically, the findings validate the conclusions drawn from the positive impact of the cash reserve ratio. This validates the empirical discoveries made by Akanbi&Ajagbe (2012), linking net profit, liquidity ratio, cash ratio, and interest rate on savings to the anticipated outcomes. Moreover, the research by Akomolafe, Danladi, Babalola&Abah (2015) is consistent with the positive relationship between bank profits and monetary policies, as indicated by money supply and interest rate proxies. The study's findings also echo the results of Amidu & Wolfe (2008), highlighting the significant influence of economic conditions and changes in money supply on the lending behavior of Ghanaian banks.

5. CONCLUSION

The study found that 16.8% of the changes in the dependent variable could be attributed to variances in Model 1. This assertion is further supported by the F-statistics and the associated probability value. Model II revealed that the Error Correction Model (ECM) is appropriately aligned, and the independent variables can account for 50.3% of the variations in bank distress levels. Similarly, Model three demonstrated that the independent variables can elucidate 48.7% of the variations in bank distress levels. In contrast, in Model 111, the independent variables elucidated a substantial 72.9% of the variance in the dependent variable, whereas in another context, they accounted for 35.5% of the variance. The investigation determined that a noteworthy 88% of the variations in the dependent variable could be linked to the model's variation, a conclusion that is again supported by the F-statistics and probability value. Furthermore, 80.4% and 50% of the variations in the dependent variable could be attributed to the model's fluctuations in distinct instances. The study's results lead to the conclusion that a notable correlation exists between monetary policy and the level of bank distress in Nigeria.In this regard, the following recommendations are made:

(i) The central bank should tailor its monetary policies to consider their potential impact on the stability of the banking sector. Striking a balance between growth and stability objectives is crucial.

(ii) Implement macroprudential policies to mitigate the adverse effects of monetary policy on bank distress. These measures can include higher capital requirements, stricter lending standards, and limits on exposure to certain risk factors.

(iii) Develop and maintain sophisticated monitoring systems that can detect early signs of distress in banks. This can involve real-time data analysis and stress testing to identify vulnerabilities.

(iv) Foster close communication between the central bank, regulatory authorities, and financial institutions. This collaboration can help align monetary policy decisions with the goal of maintaining financial stability.

(v) Encourage banks to maintain higher capital buffers to absorb shocks resulting from changes in monetary policy. This can improve their resilience to economic fluctuations.

(vi) Banks should implement rigorous risk management practices, diversify their portfolios, and accurately assess the potential impact of changes in monetary policy on their balance sheets.

(vii) The central bank should communicate its monetary policy intentions clearly and provide guidance on potential actions to ensure banks can better prepare for policy shifts.

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