Journal of Contemporary Research in Social Sciences
ISSN: 2641-0249
Vol. 7, No. 2, 42-53
2025
Publisher: Learning Gate
DOI: 10.55214/26410249.v7i2.7982

The impact of monetary policy rate on the interbank market rate in Ghana

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Abstract: This study examines the impact of the monetary policy rate (MPR) on the interbank market rate (INTB) in Ghana using monthly data from January 2000 to December 2024. Employing the Johansen cointegration test and Vector Error Correction Model (VECM), the study finds a stable long-run relationship between MPR and INTB, with the interbank rate adjusting to policy changes over time. However, short-run adjustments are sluggish, indicating inefficiencies in the transmission process. Market liquidity constraints, asymmetric information, and structural rigidities contribute to these delays. The findings suggest that while monetary policy remains an effective tool for influencing short-term market rates, enhancing interbank market efficiency is crucial for improving policy transmission. Policy recommendations include strengthening liquidity management, reducing market segmentation, improving policy signaling, and leveraging financial technology to enhance interbank rate responsiveness. These measures can improve the effectiveness of monetary policy in Ghana, ensuring better financial stability and economic growth.

Keywords: *Interbank market rate, Johansen cointegration test, Long run, Monetary policy rate, Short run, Vector error correction model.*

1. Introduction

Monetary policy refers to the actions taken by a central bank to regulate money supply to achieve macroeconomic goals like controlling inflation, managing employment levels, and promoting economic growth. It deals with the regulation and control of financial institutions, active purchases and sales of financial securities to affect changes in money supply and maintenance of interest rate (Jhingan, 2005). Monetary policy can either be contractionary or expansionary. Expansionary Monetary Policy aims to stimulate the economy by lowering interest rates, making borrowing cheaper, and encouraging consumer spending and investment whereas Contractionary Monetary Policy aims to reduce inflation by raising interest rates, making borrowing more expensive, and slowing down spending and investment. Central banks use various instruments, including open market operations, reserve requirements, and interest rate adjustments, to influence liquidity conditions in the financial system. A well-functioning monetary policy framework relies on effective transmission mechanisms to ensure that changes in policy rates influence broader financial and economic variables.

The interbank market plays a pivotal role in this transmission process by facilitating short-term borrowing and lending between banks, thereby regulating liquidity conditions in the financial system. In Ghana, the Bank of Ghana (BoG) utilizes several monetary policy tools—including the policy rate, open market operations, and reserve requirements—to influence interbank market activities and maintain financial stability. Interbank interest rates, which represent the cost of borrowing between banks, serve as a key indicator of liquidity conditions and should ideally respond predictably to changes in the central bank's policy stance. The interbank market thus acts as a crucial link between central bank policies and the broader financial sector, influencing credit availability, interest rates, and ultimately,

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economic activity (Maehle, 2020; Mwenese, Mugenzi, & Hitayezu, 2022). Given that central banks do not directly regulate the supply or pricing of credit extended to the private sector, they instead utilize reserve balances to exert influence over financial conditions. Commercial banks maintain reserves with the central bank, which they use to settle interbank transactions arising from their own operations or on behalf of their clients. When the central bank adjusts the interest rate on its reserves, commercial banks respond by modifying either the pricing or volume of transactions in the interbank market, as central bank money represents an alternative funding source. Consequently, the interbank market plays a pivotal role in the implementation of monetary policy by influencing liquidity management. Empirical studies provide substantial evidence on the significance of the interbank market in monetary policy transmission, including works by Kashyap and Stein (1997); Freixas, Martin, and Skeie (2009); Freixas and Jorge (2008) and Bucher, Hauck, and Neyer (2014).

Despite the theoretical importance of the interbank market in monetary policy transmission, empirical evidence suggests that in Ghana, the relationship between the monetary policy rate (MPR) and the interbank market rate (INTB) is not always predictable or efficient. Persistent deviations between these rates raise concerns about potential inefficiencies in the transmission process. If changes in the policy rate do not effectively translate into corresponding adjustments in interbank rates, it may indicate structural rigidities, liquidity constraints, or market segmentation. These inefficiencies could undermine the effectiveness of monetary policy in achieving its intended objectives, such as inflation control and financial stability.

Existing research on interbank networks has predominantly focused on well-developed financial systems, particularly in Eurozone economies, where monetary policy transmission is more structured. In contrast, studies examining the effectiveness of interbank market mechanisms in developing economies, including Ghana, remain limited (Kireyev, 2015). Some scholars have analyzed interbank market efficiency in Kenya (Murinde et al., 2015; Oduor, Sichei, Tiriongo, & Shimba, 2014) but findings from such contexts may not be directly transferable to Ghana due to differences in financial market structures, regulatory frameworks, and macroeconomic conditions. Therefore, a deeper investigation into Ghana's interbank market dynamics is essential to understanding how monetary policy influences financial markets and economic activity.

This study aims to assess the effectiveness of monetary policy transmission in Ghana by examining the relationship between the monetary policy rate (MPR) and the interbank market rate (INTB). Specifically, the study seeks to determine whether a stable long-run relationship exists between MPR and INTB, and also analyze short-term fluctuations in the transmission process to understand the speed and magnitude of interbank rate adjustments. By addressing these objectives, the study will provide empirical evidence on the effectiveness of monetary policy transmission in Ghana and offer insights into potential reforms to enhance the efficiency of the financial system. Understanding the interaction between the monetary policy rate and the interbank market rate is crucial for enhancing policy effectiveness, maintaining financial stability, supporting economic growth and contribute to the broader discourse on monetary policy effectiveness in Africa.

2. Monetary Policy Operations in Ghana

Monetary policy operations in Ghana are primarily conducted by the Bank of Ghana (BoG) with the aim of maintaining price stability and promoting sustainable economic growth. The BoG operates under an Inflation Targeting (IT) framework, which was officially adopted in 2007. This framework aims to ensure price stability over the medium term by setting a target inflation rate, currently at 8% with a symmetric band of 2%.

The Monetary Policy Committee (MPC) is responsible for formulating and implementing monetary policy. The committee consists of the Governor, the First and Second Deputy Governors, the Head of the Economic Research Department, the Head of the Treasury Department, and two external members with relevant expertise.

DOI: 10.55214/26410249.v7i2.7982

The MPC meets bi-monthly to assess economic conditions and the inflation outlook. Based on these assessments, the committee decides on the monetary policy rate (MPR), which influences other interest rates in the economy, including interbank rates.

The BoG uses various monetary policy instruments to achieve its targets, including open market operations, reserve requirements, overnight placements, term deposits and the discount window. These tools help manage liquidity in the banking system and ensure that the policy rate effectively transmits to other interest rates.

The BoG places a strong emphasis on transparency and communication which are essential for the effectiveness of an IT framework. MPC meeting dates are published at the start of each year, and the outcomes of these meetings, including policy rate decisions and economic assessments, are communicated through press releases and reports.

3. Ghana Interbank Market

In Ghana, the interbank rate is determined by the interactions between banks in the interbank market, where they lend to and borrow from each other to manage their liquidity needs.

The Bank of Ghana sets the monetary policy rate, which serves as a benchmark for other interest rates in the economy, including the interbank rate. Changes in the MPR influence the cost of borrowing for banks.

The overall liquidity in the banking system affects the interbank rate. When there is excess liquidity, the interbank rate tends to be lower, and when there is a liquidity shortage, the rate tends to be higher.

The Bank of Ghana conducts OMOs to manage liquidity in the banking system. These operations include the buying and selling of Bank of Ghana bills as well as government securities, which can influence the interbank rate by affecting money supply.

Banks negotiate rates for short-term loans based on their liquidity needs and the prevailing market conditions influenced by the MPR which is an indication of the cost of borrowing funds from the Bank of Ghana. These transactions help establish the interbank rate, which reflects the cost of short-term borrowing between banks.

Banks' expectations about future monetary policy actions and economic conditions can also influence the interbank rate. If banks expect the policy rate to rise, they may charge higher rates in the interbank market.

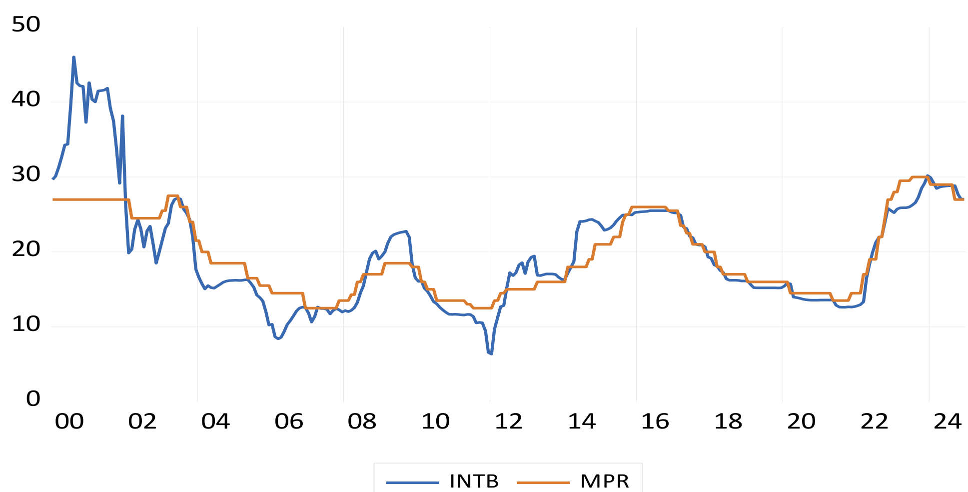

Figure 1.
Trend of Monetary Policy Rate and Interbank Market rate from January 2000 to December 2024.

The monetary policy corridor is ±100 basis points of the Monetary Policy Rate (MPR) representing the depo (-100bps) and reverse repo (+100bps) rates. Monetary Policy objective is to maintain interbank interest rates within the target corridor. Inefficiencies or delayed transmission is observed when the interbank rates fall outside the policy corridor. Alignment of interbank rate with the MPR signals market equilibrium with optimal liquidity. MPR less than Interbank Rate but within corridor signals degree of liquidity tightness but enough for the market to settle. MPR more than Interbank Rate but within corridor signals degree of excess liquidity but within acceptable levels.

4. Review of Some Empirical Studies

The interbank market plays a crucial role in the monetary policy transmission mechanism, serving as a conduit for central bank interventions to influence broader financial conditions. However, the effectiveness of this transmission varies due to factors such as liquidity constraints, information asymmetry, and regulatory structures. This section synthesizes key studies on the interaction between monetary policy and the interbank market in Ghana and comparative economies, identifying common themes, methodological approaches, and gaps in the literature.

4.1. Monetary Policy Transmission and Interest Rate Pass-Through

The extent to which changes in the monetary policy rate (MPR) affect market rates is a key area of focus. Kovanen (2011) provides an in-depth analysis of the interest rate pass-through in Ghana. The study finds that responses to changes in the policy interest rate are gradual in the wholesale market, including the interbank market. This indicates that it takes time for changes in the policy rate to fully impact the interbank rates. Also, The Bank of Ghana faces challenges in targeting a short-term money market interest rate. Prolonged deviations in the interbank interest rate from the prime rate illustrate these difficulties, which may be due to factors such as monetary policy signaling, weak policy credibility, and liquidity management. In the retail market, the pass-through to deposit and lending interest rates is protracted and incomplete. This means that changes in the policy rate do not fully translate to changes in the rates offered to consumers and businesses.

Kottoh (2019) presents an in-depth analysis of how changes in the monetary policy rate affect interest rates set by commercial banks in Ghana. The study uses the Autoregressive Distributed Lagged Model (ARDL) to analyze data from 2003 to 2018. This model helps in understanding the dynamics of interest rate adjustments over time. The study finds a significant long-run cointegrating relationship between the monetary policy rate (MPR) and wholesale market rates (WMR), as well as deposit rates. This indicates that changes in the MPR have a lasting impact on these rates.

The pass-through of the MPR to both wholesale market rates and deposit rates is found to be incomplete. However, lending rates and interbank rates respond relatively strongly to changes in the MPR in the short run. The study suggests that the government should free the credit and deposit markets to incentivize borrowers and private investors.

Studies have shown that the MPR has a significant impact on the interbank market rate in Nigeria. Research by Nwude and Archibong (2022) highlights that changes in the MPR lead to corresponding changes in the interbank rate, affecting overall market liquidity and lending behavior.

4.2. Global Perspective

Empirical study by Cosam and Gabriel (2024) focused on the relationship between the policy rate and key market rates, including commercial bank retail rates and government securities yield rates. Utilizing the Johansen cointegration approach, their study findings indicated that, in the long run, the interbank rate fully adjusts to changes in the policy rate, reflecting strong monetary policy transmission within the interbank market, whiles in the short run, the policy rate exerts a significant and immediate effect on the interbank rate, reinforcing the widely accepted notion that central bank interventions predominantly influence short-term interest rates.

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Mwenese et al. (2022) provides several key findings on the influence of the interbank market on monetary policy transmission in Rwanda. The study explores how the characteristics of banks' networks affect the spread between the interbank market rate and the central bank rate. It finds that banks with high centrality in the network tend to support monetary policy transmission by narrowing this spread. The findings also indicate that relationship borrowing, and diversification of lenders can push up the spread, which does not support the transmission of monetary policy. This suggests that while some network characteristics aid in policy transmission, others may hinder it.

Blattner and Swarbrick (2021) developed a two-country model incorporating risky lending and cross-border interbank market frictions. Their findings indicate that such frictions can impair monetary policy transmission, leading to suboptimal economic outcomes

Cetorelli and Goldberg (2019) examined how global banks transmit monetary policy across borders. Their study reveals that changes in major economies' monetary policies significantly influence lending patterns of global banks, affecting credit availability in other countries.

Brandao-Marques, Gelos, and Harjes (2020) explored monetary policy transmission in emerging markets and developing economies. They highlighted that factors like interbank market liquidity and financial development levels significantly influence the effectiveness of policy transmission.

4.3. Regional Perspectives: Sub-Saharan Africa

A synthesis report by Raga and Tyson (2021) examined interbank markets in Sub-Saharan Africa. The report emphasizes that efficient interbank markets are vital for effective monetary policy transmission, impacting lending rates and economic growth.

Kanyumbu (2021) examined the role of the interbank market in the transmission of monetary policy in Malawi by investigating the relationship between excess reserves and interbank market rates, while also considering additional factors influencing these rates. Employing the Ordinary Least Squares estimation technique within an Error Correction Model framework, the study provided empirical evidence on the responsiveness of interbank market rates to fluctuations in banking system liquidity. The study found that a well-functioning interbank market enhances the transmission mechanism, leading to more effective policy outcomes.

A recent study by Bwire (2023) assessed the role of interbank markets in inflation-targeting regimes within the Common Market for Eastern and Southern Africa (COMESA). The findings suggest that efficient interbank markets facilitate better monetary policy implementation, aiding in achieving price stability. The International Monetary Fund (2023) examined the monetary policy transmission mechanism in Tanzania, finding active money, interest rate, and credit channels.

Freixas and Jorge (2008) provides several important findings on the impact of interbank market imperfections on monetary policy. The paper highlights that asymmetric information in the interbank market can lead to credit rationing. This means that not all banks can access the funds they need, which can create an equilibrium where some banks are unable to lend as much as they would like. The study shows that banks' liquidity positions significantly influence their reaction to monetary policy changes. This is known as the "Kashyap and Stein liquidity effect," where banks with more liquidity are better able to respond to monetary policy adjustments. The findings suggest that monetary policy is more effective when interbank market imperfections are stronger. This is because the imperfections amplify the impact of policy changes on the availability of credit. The paper establishes the crucial role of the interbank market in the micro-foundations of the monetary policy transmission mechanism. It shows how interbank market imperfections can affect the broader credit market and, consequently, the overall economy.

5. Materials and Methods

The study employs the linear Granger (1969) causality test in the VECM theme, to examine the short-run and long-run linearity relationship among the variables in bivariate and multivariate mode. To provide accuracy in the estimate of the relationship, it is thus necessary to prior determine the

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presence of unit root and cointegration between the time series. This helps in implementing VECM scheme which presumes that all variables are endogenous.

5.1. Augmented Dickey and Fuller (1981) Stationary Test

Study applies Augmented Dickey-Fuller (henceforth ADF) test developed by Dickey and Fuller (1981) to examine the unit root in each series with the following hypothesis:

H_0: θ=0 i.e., the time series is non-stationary and need to be differenced (has a unit root)

H_a: θ<0 i.e., the time series is stationary (has no unit root)

The ADF test is expressed by the following ordinary least square (OLS) relationship:

$$\Delta y_t = \alpha_0 + \beta t + \theta y_{t-1} + \sum_{i=1}^{p} \delta_i \Delta y_{t-i} + \varepsilon_t \qquad (1)$$

where, t is a deterministic trend, α and β are the constants, p is the lag order selected based on Schwarz Bayesian Criterion (SBC). If the calculated value, in absolute term, is more than the t-statistic value (or the p-value less than 5%), this rejects the null hypothesis (θ=0) and conclude that the time series is stationary.

If the null hypothesis rejected at level (without differencing), then the order of the stationary series is designated as I(0) whereas if the null hypothesis rejected at first difference then the order of the stationary series is designated as I(1). Similarly, for second difference the order of the stationary series is designated as I(2).

5.2. Johansen and Juselius (1990) Cointegration Test

If the time series are non-stationary at level and when the variables are integrated of same order, the Johansen test of cointegration developed by Johansen and Juselius (1990) can be applied to obtain the number of cointegrating vector(s). Johansen and Juselius (1990) multivariate cointegration model can be expressed as:

$$\Delta y_t = \alpha_0 + \pi y_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \Delta y_{t-i} + \varepsilon_t \qquad (2)$$

where, π and Γ_i are the coefficient matrices, Δ is the symbol of difference operator and p is the lag order selected based on Schwarz Bayesian Criterion (SBC). Johansen and Juselius (1990) techniques use two likelihood ratio test statistics to obtain the number of cointegrating vector(s) namely, the Trace test and the Maximum Eigenvalue test which can be computed respectively as:

$$T(r) = -T \sum_{i=r+1}^{n} \ln{(1 - \hat{\lambda}_i)} \qquad (3)$$

$$\lambda_{max}(r, r+1) = -T \ln{(1 - \hat{\lambda}_{r+1})} \qquad (4)$$

where, $\hat{\lambda}_i$ is the expected eigenvalue of the characteristic roots and T is the sample size. The null hypothesis of the Trace test (equation 3) investigates the number of r cointegrating vectors against the alternative of n cointegrating vectors. The null hypothesis of the Maximum Eigenvalue test (equation 4) investigates the number of r cointegrating vectors against the alternative of r+1 cointegrating vectors. So, if the variables are found to be cointegrated after applying Johansen and Juselius (1990) test then it can be concluded that their exists long-run equilibrium relationship between the variables. Further, that long-run equilibrium relationship can be examined by applying VECM scheme.

5.3. Vector Error Correction Model (VECM)

It can be understood that cointegration indicates the presence of causality among two time series but it does not detect the direction of the causal relationship. According to Engle and Granger (1987) the presence of cointegration among the variables shows unidirectional or bi-directional Granger causality among those variables. Further, they demonstrate that the cointegration variables can be specified by an Error Correction Mechanism (henceforth ECM) that can be estimated by applying standard methods and diagnostic tests. The VECM regression equation can be expressed as follows:

$$\Delta y_t = \alpha_1 + p_1 ECM1_{t-1} + \sum_{i=1}^{n} \beta_i \Delta y_{t-i} + \sum_{i=0}^{n} \zeta_i \Delta x_{t-i} + \varepsilon_{1t} \quad (5)$$

$$\Delta x_t = \alpha_2 + p_2 ECM2_{t-1} + \sum_{i=0}^{n} \beta_i \Delta y_{t-i} + \sum_{i=1}^{n} \zeta_i \Delta x_{t-i} + \varepsilon_{2t} \quad (6)$$

where, βi and ζ_i are the short-run coefficients, Δ is the symbol of difference operator, p is the lag order, $ECM1_{t-1}$ and $ECM2_{t-1}$ are the Error Correction Term (henceforth ECT) and ε_{1t}, and ε_{2t} are the residuals. Further, the $ECM1_{t-1}$ is the lagged value of the residuals derived from the cointegrating regression of y and x (equation 5) whereas the $ECM2_{t-1}$ is the lagged value of the residuals derived from the cointegrating regression of x and y (equation 6).

Now, unidirectional causality between y to x (i.e., y Granger cause x) will happen in the equation 5 if, the estimated coefficients (ζ_i) on the lagged values of 'y' is jointly significant (short-run causality) and the ECT coefficient $p1$ is negative and statistically significant (long-run causality). Similarly, unidirectional causality between x to y (i.e., x Granger cause y) will happen in the equation 6 if, the estimated coefficients ( ) on the lagged values of 'x' is jointly significant (short-run causality) and the ECT coefficient $p2$ is negative and statistically significant (long-run causality). Hence, if both the variables Granger cause one other, then it can be concluded that there is a two-way feedback relationship between y and x. Thus, the VECM representation allows us to discriminate amongst the long-run and short-run dynamic relationships.

The data used in this paper are monthly data on Monetary Policy rate and Interbank Market rate for the period January 2000 to December 2024. Secondary data were obtained from the Bank of Ghana. The work was analyzed with EViews 11.

6. Results and Discussion

Table 1.
Descriptive Statistics.

	INTB	MPR
Mean	19.84441	19.58367
Median	17.44500	18.00000
Maximum	26.04250	30.00000
Minimum	6.350000	12.50000
Std. Dev.	7.680728	5.422217
Skewness	1.038709	0.449153
Kurtosis	3.966290	1.754133
Jarque-Bera	65.61730	29.48923
Probability	0.000000	0.00000
Sum	5953.323	5875.100
Sum Sq. Dev.	17639.08	8790.730
Observations	300	300

The descriptive statistics presented in Table 1 shows that INTB has mean value of 19.844, followed by MPR with 19.5837. From the analysis, INTB has the highest Standard Deviation as it recorded 7.680728, implying that INTB is more volatile than MPR, with a wider range and greater standard deviation. MPR is relatively stable, with less variation in values. Both variables are non-normally distributed, indicating potential irregularities or economic shocks affecting them. This analysis helps policymakers understand the behavior of these financial indicators, allowing for better economic decision-making.

Table 2.
Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) Unit Root Tests.

Variable	ADF		PP		Order
	Levels	First Difference	Levels	First Difference	
D(INTB)	-1.841	-16.212	-2.209	-16.459	I(1)
D(MPR)	-1.946	-6.178	-1.819	-18.509	I(1)

Table 3.
Test of cointegration.

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.042068	17.61459	15.49471	0.0236	12.67878	14.26460	0.0877
At most 1 *	0.016592	4.935814	3.841465	0.0263	4.953814	3.841465	0.0263

The trace test suggests two cointegrating equations. The max-eigenvalue test suggests one cointegrating equation. Given that the trace test is considered more robust in small samples, we conclude that INTB and MPR are cointegrated, indicating a long-run equilibrium relationship. Since INTB and MPR are cointegrated, policy changes in MPR (e.g., by the central bank) will have long-term effects on Treasury bill rates. INTB adjusts to correct deviations from equilibrium, whereas MPR remains relatively exogenous. The negative cointegrating coefficient suggests an inverse relationship between MPR and INTB. This information is crucial for policymakers aiming to stabilize financial markets and manage interest rates effectively.

Table 4.
Normalized Cointegrating Vector and Imposed Restrictions.

INTB	MPR	C
1.000	-1.062418 (-0.19793)	1.002726
Error Correction	Coefficient	t-statistic
ECM(-1)	-0.07800	-3.368391

The cointegration equation shows the long-run relationship between INTB and MPR:

$$INTB_{t-1} = 1.002726 - 1.062418 \times MPR_{t-1}$$

The coefficient of MPR(-1) is -1.062418, suggesting that a 1 percentage point increase in MPR leads to a 1.06 percentage point decrease in INTB in the long run. The negative relationship implies that as the central bank raises the Monetary Policy Rate (MPR), the interbank Interest Rate (INTB) tends to decline. This could be due to policy interventions that influence short-term money market conditions differently than expected.

The error correction term (ECM (-1)) represents how quickly deviations from the long-run equilibrium are corrected. The coefficient of -0.078031 indicates that INTB adjusts to deviations from long-run equilibrium at a rate of 7.8% per period. The negative and significant coefficient confirms that INTB moves towards restoring equilibrium when there is a disequilibrium, however, that MPR does not adjust significantly to correct disequilibrium. INTB is the adjusting variable, while MPR remains weakly exogenous (policy-driven rather than responding to short-term deviations). Past changes in INTB and MPR influence their current values, particularly past MPR changes affecting current INTB. Since INTB adjusts significantly while MPR does not, policymakers focusing on monetary policy (MPR) should recognize that interbank rates (INTB) respond more actively to restore equilibrium. Changes in MPR take time to influence INTB, so monetary policy should be designed with long-term effects in mind. MPR influences INTB both in the long run and short run, but INTB does not significantly influence MPR.

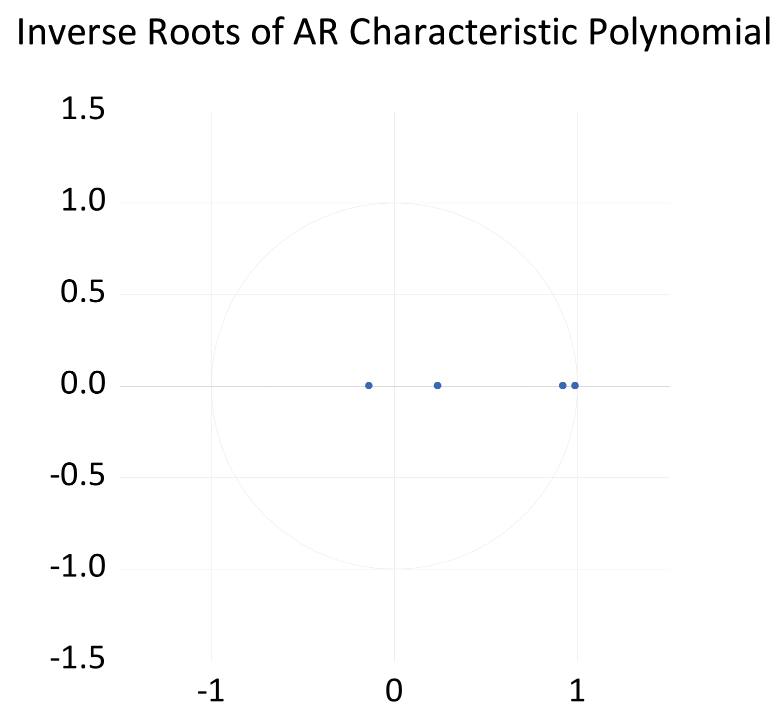

Figure 2.
The inverse roots of the autoregressive (AR) characteristic polynomial.

Figure 2 serves as a diagnostic tool for assessing the stability of the estimated Vector Error Correction Model (VECM). All the roots are located within the unit circle, confirming that the estimated model satisfies the stability condition. This implies that the system's dynamic adjustments to shocks are mean-reverting, ensuring that deviations from equilibrium do not lead to explosive behavior. This stability is crucial for reliable policy simulations and forecasting, as it ensures that the estimated relationships between monetary policy rates (MPR) and interbank interest rates (INTB) remain consistent over time. In terms of policy, policymakers can confidently implement gradual adjustments in interest rates, knowing that the effects will be predictable and will not destabilize financial markets. Similarly, interventions in monetary policy (such as changing the policy rate) will not lead to unexpected shocks in inflation or currency depreciation, making it easier to maintain macroeconomic stability. Again, long-term strategies for financial regulation, credit expansion, and exchange rate policies can be formulated with lower risks of unintended market disruptions.

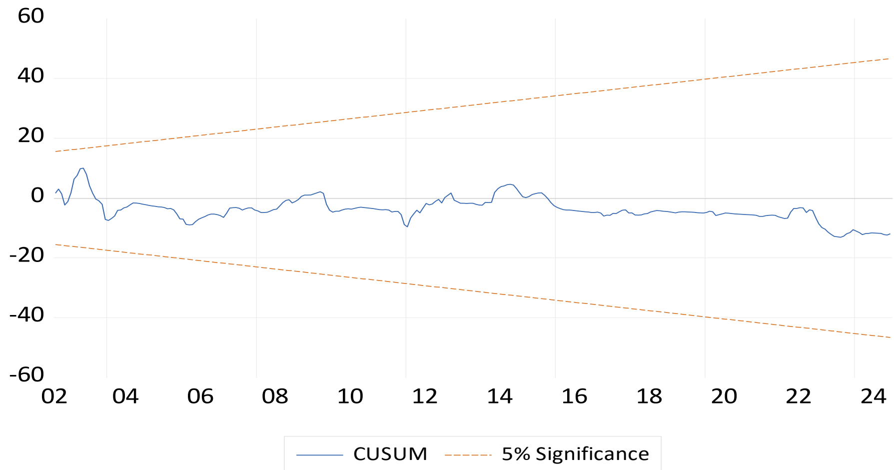

Figure 3.
CUSUM Test.

The Cumulative Sum (CUSUM) test is a recursive residual-based stability test used to examine whether the parameters of an estimated econometric model remain stable over time. In figure 3, the solid blue line represents the cumulative sum of recursive residuals, while the two dashed orange lines denote the 5% significance level boundaries. Since the CUSUM statistic remains within the 5% critical bounds, we conclude that the estimated model exhibits parameter stability. This confirms that the relationships between INTB and MPR are consistent over time, reinforcing the validity of policy inferences drawn from the model. This test reassures policymakers that the economic models remain valid and can be used to guide decision-making with minimal risk of sudden structural shifts.

The findings of this study confirm that the interbank market rate (INTB) in Ghana is significantly influenced by the monetary policy rate (MPR), albeit with some inefficiencies in the transmission process. The cointegration results indicate a stable long-run relationship between the two variables, suggesting that monetary policy changes do have lasting effects on interbank rates. However, the short-run dynamics reveal that adjustments in INTB occur gradually, pointing to delays in policy transmission. The results align with previous studies, such as Kovanen (2011) and Kottoh (2019) which found that the pass-through from MPR to INTB is incomplete and subject to lags. Similar to the findings of Mwenese et al. (2022) in Rwanda, the Ghanaian interbank market does not always adjust instantaneously to policy rate changes, likely due to liquidity constraints and asymmetric information among banks. The estimated error correction term (-0.078) confirms that deviations from the long-run equilibrium are corrected at a relatively slow pace, which implies that market frictions or institutional inefficiencies may be hindering full and immediate adjustment. These inefficiencies are further reflected in the observed deviations of INTB from the MPR within the monetary policy corridor. As suggested by Freixas and Jorge (2008) the existence of structural rigidities, such as limited market competition and the role of large banks in liquidity distribution, could contribute to these deviations. Similar observations were made by Oduor et al. (2014) in Kenya, where market segmentation impacted interbank rate adjustments.

The study finds that INTB is more volatile than MPR, as evidenced by its higher standard deviation. This aligns with findings from Nwude and Archibong (2022) in Nigeria, where fluctuations in interbank rates were attributed to liquidity shortages and varying risk perceptions among banks. The fact that the Bank of Ghana (BoG) does not always directly control liquidity distribution in the interbank market further explains why MPR changes do not translate into immediate interbank rate adjustments.

Moreover, the significant negative coefficient (-1.062) in the cointegration equation suggests that increases in MPR result in proportionate decline in INTB in the long run. This contrasts with conventional expectations that raising the policy rate should tighten liquidity and push interbank rates higher. A possible explanation is that banks respond to tighter monetary conditions by improving liquidity management strategies, thereby stabilizing borrowing costs in the interbank market. This phenomenon has also been observed in other African economies (Bwire, 2023; Kanyumbu, 2021).

The presence of cointegration suggests that monetary policy remains a viable tool for influencing short-term market rates. However, the slow adjustment process calls for additional measures to enhance policy effectiveness. As Brandao-Marques et al. (2020) argue, improving interbank market liquidity and transparency can significantly strengthen policy transmission in developing economies.

6.1. Policy Implications

There are four important policy implications for this study. The Bank of Ghana should strengthen liquidity forecasting and interbank market monitoring to minimize volatility in interbank rates and enhance the predictability of policy transmission, thus, enhancing Liquidity Management. Secondly, policies should be introduced to promote competition and reduce market dominance by a few large banks. Also, clear communication from the central bank regarding policy intentions can help align market expectations with monetary policy objectives and finally, strengthening financial infrastructure by enhancing digital banking and financial technology integration in liquidity management, as seen in emerging markets which could improve interbank rate responsiveness to monetary policy adjustments.

6.2. Conclusion and Limitations

This study provides empirical evidence that the monetary policy rate (MPR) and the interbank market rate (INTB) in Ghana exhibit a long-run relationship, with INTB adjusting to changes in MPR over time. However, the short-run transmission process is characterized by delays, market inefficiencies, and liquidity constraints that prevent immediate and full pass-through of policy rate changes. The findings highlight the need for structural improvements in the interbank market to enhance monetary policy effectiveness.

One of the limitations of the study is the focus on the relationship between MPR and INTB, without incorporating other macroeconomic variables such as inflation, GDP growth, exchange rates, or fiscal policies, which could also influence interbank market dynamics. Excluding these factors may limit the study's ability to capture the broader economic context affecting monetary policy transmission.

Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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Journal of Contemporary Research in Social Sciences
ISSN: 2641-0249
Vol. 7, No. 2: 42-53, 2025
DOI: 10.55214/26410249.v7i2.7982