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*Original Article*

# Analysis of Transmission Mechanism on Azerbaijan's Banking Sector

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***Abstract:*** *This study investigates the monetary transmission mechanism in Azerbaijan's banking sector, focusing on how changes in monetary policy affect bank funding costs and overall financial intermediation. Using a panel data approach, the analysis examines bank-level responses across different macroeconomic periods, including the crisis and devaluation phase (2014–2017), the recovery and growth period (2018–2022), and the post-recovery phase (2022–2025). The results indicate that the effectiveness of monetary policy transmission is time-varying and strongly influenced by macroeconomic stability and structural features of the banking system. During the crisis period, the traditional interest rate channel is significantly weakened, with banks showing non-standard responses to policy rate changes due to heightened financial stress and currency instability. In contrast, the recovery period demonstrates a restored and statistically significant transmission mechanism, where policy rate increases lead to higher bank funding costs. The findings also highlight the importance of exchange rate dynamics, dollarization, and bank heterogeneity in shaping transmission outcomes. Furthermore, market concentration and the dominance of large banks create asymmetries in the transmission process, limiting uniform policy effects across the sector. Overall, the study concludes that while monetary transmission in Azerbaijan has improved over time, structural constraints within the banking sector continue to affect its efficiency and consistency.*

***Keywords:*** *Monetary Transmission Mechanism, Banking Sector, Monetary Policy, Financial İntermediation, İnterest Rate Channel, Dollarization, Market Concentration, Azerbaijan, Panel Data Analysis, Exchange Rate Dynamics.*

## I. INTRODUCTİON

The effectiveness of monetary policy depends critically on how efficiently policy signals are transmitted through the financial system, with the banking sector serving as the primary transmission channel in bank-dominated economies. With banks taking up most of the financial intermediation in Azerbaijan, knowing how structured and how behaved the bank sector is is very crucial for evaluating the soundness and strength of the monetary policy transmission channel. The impact of policy rates on the real economy can vary considerably due to idiosyncratic differences in how individual institutions react, including differences in bank size, market power and access to liquidity.

This part is devoted to the descriptive analysis of the banking sector in Azerbaijan with the purpose of providing a broader landscape and preparing some preliminary hypotheses about the transmission of monetary policy. The analysis is based on selected structural features, most notably the market concentration and liquidity distribution in the interbank market. It is these factors that will help determine if monetary policy effects are broad-based across the sector or concentrated among a few dominant institutions.

Concentration measures, specifically the Herfindahl–Hirschman Index (HHI), are used to measure the competitive structure of the industry. When concentration is high, large banks are likely to account for a disproportionate share of lending activity, which may limit both the amount and speed of adjustment in the overall system to changes in monetary policy. In such circumstances, the efficacy of monetary policy is likely to be heavily influenced by the actions and strategy of these large banks. In contrast, a more competitive banking landscape would suggest that policy signals are transmitted in a more homogeneous and predictable manner.

In addition to market concentration, this section examines the functioning of interbank markets, including repo, bond, and money markets, where short-term liquidity is exchanged among banks. The structure of these markets reveals which institutions act as major liquidity providers and which rely more heavily on external funding. A deep interbank network, in which a handful of banks are major liquidity centers, could increase the degree of systemic reliance on these firms and affect the speed and breadth of monetary propagation.

This section extracts initial conjectures on the behavior of banks in reaction to monetary policy from concentration analysis and interbank market dynamics. In particular, larger banks with greater capital and broader market access may be less responsive to changes in policy rates; smaller banks, by contrast, may respond more directly to changes in funding conditions.

In summary, this preliminary analysis creates the structural background for identifying the transmission effectiveness in the banking sector of Azerbaijan. Beyond its direct contribution to the empirical work that follows, it helps underpin much of the subsequent empirical analysis by identifying the principal channels and institutional characteristics through which the monetary policy response interacts with banking-sector responses.

## II. METHODOLOGY

This study employs an empirical approach to analyze the monetary transmission mechanism in Azerbaijan's banking sector. The methodology is based on panel data analysis, allowing for the examination of both cross-sectional (bank-level) and time-series dynamics in order to capture heterogeneity across banks and changes over time.

## III. LITERATURE REVIEW

In turn, the literature on monetary transmission mechanisms provides a wide range of theoretical and empirical background for economic agents on how changes in monetary policy impact the financial system as well as real activity. The early contributions emphasize the important role of interest rates in transmitting monetary policy decisions to the general economy, via bank lending and borrowing behaviour. As explained, for instance, in Frederic S. Mishkin (2019), the impact and transmission of changes in monetary policy depend on many factors, including especially the financial system's structural form, the degree of bank intermediation and macroeconomic environment stability. And in bank-dominated systems, such as those found in many developing economies, the mechanism is the bank lending channel.

A most important innovation was the work of Ben S. Bernanke and Alan S. Blinder (1988), who formalized, for example, the credit channel of monetary transmission. They estimate that monetary policy impacts aggregate demand not only through its effect on interest rates, but also because when banks are balance sheet constrained (spread = 0), their provision of credit is reduced. This framework is especially important in underdeveloped capital market economies (Djankov, McLiesh & Shleifer, 2007), as firms are contingent on bank financing.

Additional development of the theory of the bank lending channel is given by Anil K. Kashyap and Jeremy C. Stein (2000), who show that banks are key transmitters of monetary shocks to the real economy. Their empirical analysis indicates that banks with weaker balance sheets engage in a more aggressive cutback in lending in the period of monetary tightening emphasizing the important role played by bank heterogeneity both in transmission and dynamics.

Nicolas Cetorelli and Linda S. Goldberg (2012) apply empirical studies to the notion of financial globalization. Their point is that cross-border activities by banks can change the nature of domestic monetary policy, since such international activities represent challenges to traditional modes of domestic money transmission. This is especially so in new and emerging economies where dollarization loops back to high foreign capital flows.

Marcel Ehrmann et al. delve further into examining how bank-specific characteristics determine monetary transmission. (2003), which illustrates that the relative importance of transmission through the banking sector is closely related to both financial structure and bank capitalization. They suggest that, in comparison to less concentrated banking systems, more concentrated banking systems display higher transmission but lower uniformity effects.

Leonardo Gambacorta (2005). Owing to data availability until October 2023, the following are some of the evidence: In bank lending behaviour, output loan growth is determined by how strong the bank lending channel is, based on liquidity positions and capital adequacy. Weaker liquidity constraints at banks are associated with faster lending adjustment to monetary tightening, further reinforcing asymmetries in transmission across institutions.

As noted by international financial institutions such as the International Monetary Fund (2023) and the World Bank (2022), structural factors, including financial dollarization, shallow capital markets, or banking sector concentration, can undermine monetary policy in transition and developing economies. It underscores the fact that transmission through the monetary channel is rarely complete, but typical of such economies are typically very shock-prone.

Risks of Democracy: Towards the case for Azerbaijan, the existing literature is still low but increasing. Mammadov (2016) investigates the impacts of monetary policy and exchange rate variability, suggesting that adjustment in the exchange rate is a key factor that determines macroeconomic stability and the effectiveness of policies. More recent empirical studies offer further insights into sectoral dynamics. Using econometric modeling, Huseynova and Hajizada (2024) investigate the stability of the banking sector in economic stress time periods and find that macroeconomic shocks generally have consequences on the financial stability criteria.

Further contributions by Huseynova and Balajayeva (2025) focus on digital banking and regulatory frameworks, highlighting how technological development improves efficiency and risk management in the banking sector. Other studies by Huseynova and co-authors (2023–2026) extend the analysis to financial markets, investment dynamics, and trade relationships, reinforcing the importance of econometric approaches in understanding economic interactions in Azerbaijan.

Overall, the literature suggests that monetary transmission is a multi-channel process influenced by interest rates, credit supply conditions, bank balance sheets, and structural characteristics of the financial system. However, there is still a research gap regarding the dynamic and bank-level transmission mechanism in Azerbaijan, particularly in relation to sector concentration, dollarization, and post-crisis structural changes. This study addresses this gap by providing an empirical investigation of how monetary policy is transmitted through the banking sector under varying macroeconomic conditions.

## IV. ANALYSES AND DISCUSSION

The focus of the analysis will be on descriptive analysis of Azerbaijan's banks to have an understanding and a bird's-eye view of the sector and make initial assumptions about the possible effect of monetary transmission. Descriptive analysis and forming initial assumptions will help understand the structure of the banking sector in Azerbaijan and the economic relationship between monetary policy and the banking sector's response.

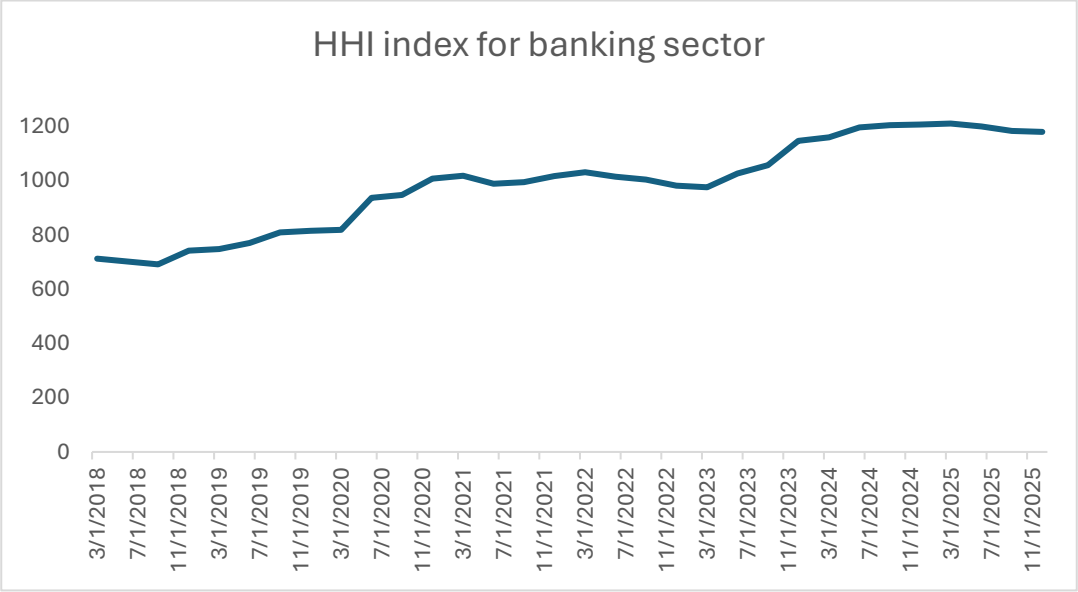


**Figure 1. HHI Index of Banks**

To establish a bird's-eye view, we first need to construct a concentration index for Azerbaijan's banking sector. After setting up the concentration index, this will give us the picture to understand if the sector is dominated by a few big banks or if it is functioning in a competitive environment. This analysis will give some leads to understand the behavior of monetary policy. Besides the concentration index, it is important to analyze how liquidity is interchanged between banks in repo, bond, and money markets. The information from this analysis will help to understand which banks are more concentrated in financial markets. This will help us formulate our assumption for the result of the methodology. Higher concentration on financial markets increases the reliance of the system on liquidity provided by a few banks; highly concentrated banks seek more liquidity from the market and provide liquidity for the market, acting as a "central liquidity station".

Figure 3 above shows the HHI index for the banking sector in terms of the total loan portfolio. An upward trend is observed in the graph for the whole period described. HHI index increases for the banking sector continuously, which demonstrates that a few banks hold the majority of the loan portfolio concentration, and this makes the real economy liable to big banks. This finding can reveal the initial assumptions about the way monetary policy is operated in Azerbaijan. A high degree of loan portfolio concentration raises questions about the efficiency of the monetary policy. Most of the banks hold a small amount of loan portfolio, and even if such banks decide on changing interest rates, it is highly likely that the effect of such changes will be minimal in the lending market, which leaves the functioning of policy rate decisions to big banks. If these big banks' interest rate decisions align with those of the central bank or exhibit rigidity, it is another uncertainty that alarms the effectiveness of monetary policy.

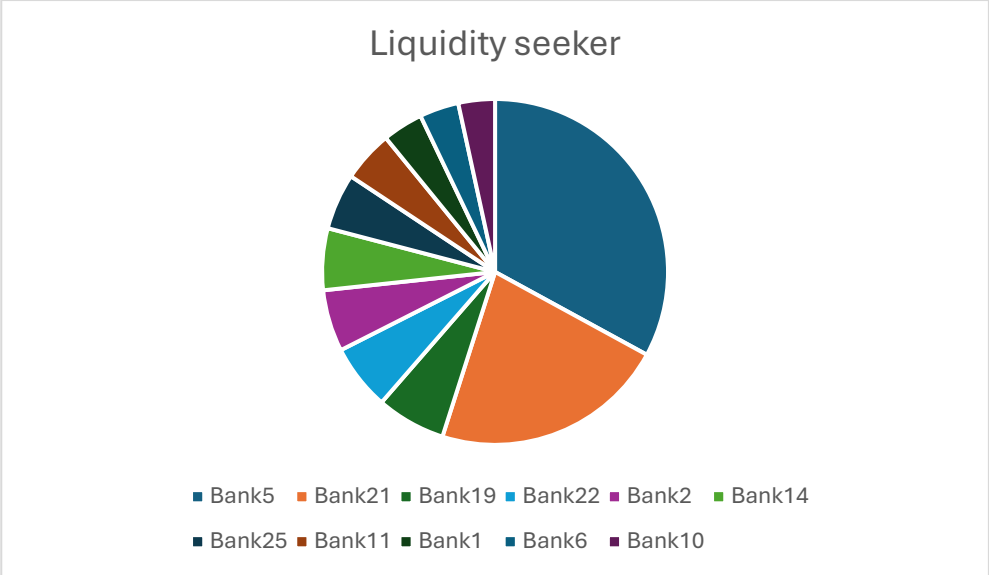


**Figure 2. Concentration of Liquidity Seeking Banks in Interbank Market**

Figure 4 above illustrates the distribution of banks engaging in trade in the interbank market to satisfy their liquidity needs. It is shown that Bank5 and Bank21 together represent at least one counterparty in the trade in more than 50% of all trades. Bank5 and Bank21 are the main movers of the interbank market, which is a similar view to the HHI index. The reason behind the concentration of the interbank market by a few banks in the liquidity-seeking category may be due to operational scale. Bigger banks have easier access to international markets, have a larger portfolio to manage and trade in bigger volumes in repo and money, which makes the concentration to be formed around them in the interbank market.

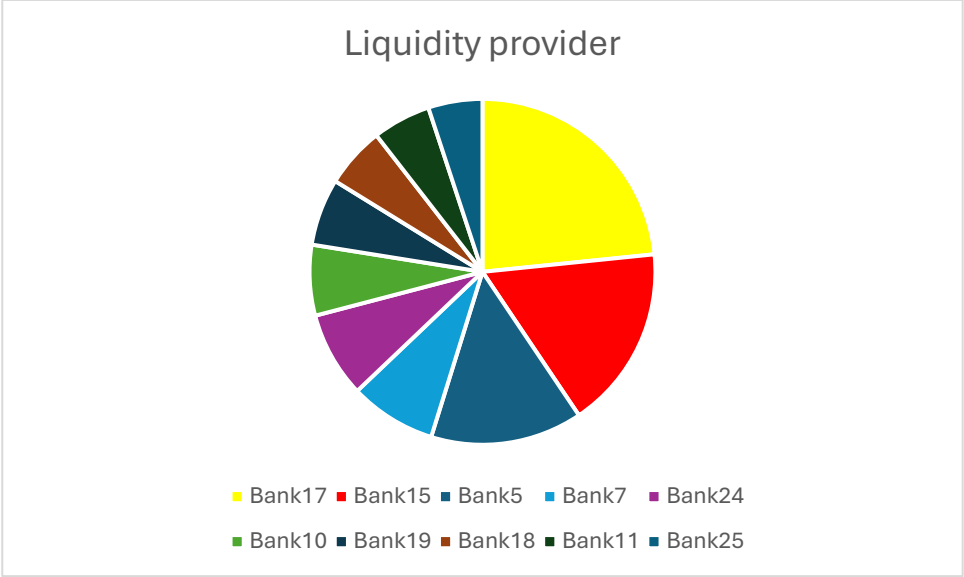


**Figure 3. Concentration of Liquidity Provider Banks in Interbank Market**

Figure 5 demonstrates the main liquidity providers in the interbank market of Azerbaijan. This is also similar to the situation described in Figure 4; both liquidity seekers and liquidity providers in the interbank market are dominated by a few banks. It can be due either to the fact that most of the liquidity in the market is provided by a few banks or that liquidity is provided at a reasonable rate by a few banks. Under both scenarios, this is an indication of a few banks' concentration in the banking sector.

## V. RESULT AND DISCUSSION

The empirical findings of this study reveal that the effectiveness of the monetary transmission mechanism in Azerbaijan's banking sector varies significantly across different economic periods and is strongly influenced by structural characteristics of

the sector. Our analysis using a panel data estimation approach and additional descriptive evidence finds some evidence for time-varying dynamics as well as bank heterogeneity with regard to their response to monetary policy.

The results show an opposite effect between policy rate and banks' funding costs during the period of crisis and devaluation (2014–2017), which goes against conventional economic theory. Banks seem to have lowered their funding costs rather than raising them in response to a higher policy rate. This apparently contradictory result can be explained by a rather adverse macroeconomic environment, with high currency depreciation, increasing NPLs and higher financial uncertainty. Under these conditions, banks placed extended importance on profitability and liquidity control to minimize their interest expenses by lowering deposit rates and attempting to broaden interest margins. Thus, the monetary transmission through the conventional interest rate channel was badly affected. The dummy for the devaluation is statistically significant, confirming that shocks in the exchange rate dominated banks' behavior in this period. Moreover, the findings show considerable cross-bank heterogeneity and suggest that larger banks may be less sensitive to changes in policy rates than smaller banks as a result of stronger capital ratios and access to alternative sources of funding.

In that respect, the recovery and growth period 2018–2022 retains a normal transmission mechanism. The institutional relationship between the policy rate and funding costs turns positive and meaningful, suggesting that banks are progressively adopting their pricing behavior to central bank decisions. This shift echoes better macroeconomic stability, lower dollarization and stronger regulatory oversight. Adding macroeconomic control variables gives more information on what drives funding costs. Indeed, we find that the real effective exchange rate has a negative relationship with funding rates, suggesting that currency strength lowers inflation pressures and thus lowers risk premiums in the economy. In a similar fashion, negative effects are reflected in the dollarization ratio as banks avoid attracting more foreign currency deposits as they seek to escape exchange rate risks. These relationships hold up robustly with the use of instrumental variables, addressing endogeneity issues. In addition, bank-level responses also become less dispersed in this wave for overall borrowing more uniform transmission of monetary policy shocks, but large or small banks keep taking apart.

In the post-recovery period from 2022 to 2025, the banking sector continues to benefit due to digital transformation and financial innovation. The detailed econometric estimates of this period are not plentiful, but the trends seem clearly pointing up the days. Banks became more efficient and responsive to monetary policy signals. Better liquidity management and customer engagement enabled by technology are creating a more stable financial environment. But our data still reflect some structural asymmetries, as larger banks can be a little more independent from interest rate policies than smaller institutions due to healthier capital levels and less concentrated business lines.

The results of the dynamical analysis are broadly consistent with descriptive evidence regarding market concentration and interbank dynamics. The increase in the Herfindahl–Hirschman Index suggests that the banking sector is becoming more concentrated, as a few banks now command a relatively large share of its loan portfolio. Likewise, the interbank market for any currency is controlled by a few big institutions that alike provide liquidity to the market and borrow those currencies. This double role allows these banks to play the role of a central liquidity hub in the financial system. Consequently, the monetary policy transmission relies on only a few big banks, and smaller banks that tend to react more quickly have relatively small effects on macroeconomic aggregates.

Overall, the results demonstrate that monetary policy transmission in Azerbaijan is neither uniform nor constant over time. It is influenced by bank-level behavior, structural characteristics of the banking system and macroeconomic environment. The transmission mechanism weakens or diverges from theory during periods of financial stress, but is more effective and aligned with policies during boom times. However, the continued aggregate market and liquidity power of a few large banks ensures persistent asymmetries in the transmission process.

Such findings have meaningful implications for policymakers. Strengthening competition in the banking sector and reducing dependence on a few large institutions may enhance the transmission of monetary policy more effectively and uniformly. In addition, more regular monitoring of interbank market structures and the use of other macroprudential tools could reduce systemic risks from concentration. To sum it all up, although Azerbaijan has shown a significant improvement in terms of developing its monetary transmission, structural problems with the banking sector are still among the main issues affecting its effectiveness.

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