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Article

Heterogeneous Adjustment in Monetary Transmission: Short-Run Evidence from an Emerging Market on Policy Signals in Bank Equity Valuations, Balance Sheets, and Inflation

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Abstract

This paper examines the short-run dynamics of monetary policy transmission in a bank-dominated emerging economy, with a particular focus on the relative timing of adjustments across bank equity valuations, balance-sheet aggregates, and inflation. Using monthly data over the period 2018–2024, the analysis relies on a reduced-form VAR framework. The results indicate that monetary policy innovations, interpreted as informational signals, are more visibly reflected in bank equity valuations—proxied by the MASI banking index—at short horizons, while balance-sheet aggregates exhibit more limited and less persistent adjustments. Inflation dynamics remain difficult to identify clearly within the short-run horizon, consistent with the slow-moving nature of price adjustments. These findings are consistent with a configuration in which policy-related information is first incorporated into financial valuations before being gradually reflected in credit and macroeconomic variables. This pattern is interpreted as reflecting heterogeneous adjustment speeds rather than a causal transmission sequence. The contribution of the paper is to document these heterogeneous short-run adjustment patterns within a unified empirical framework, highlighting the importance of temporal dynamics in the analysis of monetary transmission.

Keywords: monetary policy transmission; informational signals; bank equity valuations; MASI banking index; credit dynamics; inflation; VAR model; emerging economies

1. Introduction

In bank-dominated financial systems, the transmission of monetary policy is traditionally understood as operating through adjustments in bank credit and, ultimately, inflation. This quantitative perspective implicitly assumes that variations in lending and portfolio allocation constitute the primary observable manifestation of monetary policy effects, while financial market variables are often treated as secondary or merely reflective of underlying balance sheet dynamics.

However, this approach risks overlooking an important dimension of monetary transmission, particularly in the short run. Adjustments in bank balance sheets are subject to contractual rigidities, internal evaluation procedures, and prudential constraints, which may limit their immediate responsiveness. Similarly, inflation dynamics are influenced by nominal rigidities and expectation mechanisms, making short-term effects difficult to identify. By contrast, expectations can adjust rapidly, and monetary-policy-related information may be more quickly incorporated into financial valuations, especially through bank equity prices.

This suggests that short-term monetary transmission may be characterized not only by differences in magnitude but also by differences in the timing of observable responses. In this context, focusing exclusively on bank credit or inflation provides only a partial view of how monetary policy innovations affect the economic system.

From a theoretical perspective, this interpretation is grounded in the interaction between informational efficiency and financial frictions. Signaling theory (Spence, 1973) suggests that monetary policy decisions convey information about future macro-financial conditions, while the semi-strong form of informational efficiency (Fama, 1991) implies that asset prices can rapidly incorporate such information. In contrast, the literature on information asymmetry and credit rationing (Stiglitz and Weiss, 1981) highlights that lending decisions depend on risk assessment processes that may delay balance sheet adjustments.

Empirical evidence partially supports this distinction. A large body of literature documents the rapid response of financial markets to monetary policy announcements, often driven by revisions in expectations (Bernanke and Kuttner, 2005; Gürkaynak et al., 2005; Nakamura and Steinsson, 2018; Jarociński and Karadi, 2020). By contrast, credit aggregates, bank portfolios, and inflation tend to adjust more gradually and heterogeneously, particularly in emerging economies. However, existing studies have generally examined these dimensions separately, with limited attention to their joint dynamics within a unified empirical framework.

This paper contributes to the literature by proposing a unified framework to analyze the relative timing of monetary transmission across financial markets, bank balance sheets, and inflation. Unlike existing studies that focus on individual transmission channels or long-run relationships, this study emphasizes short-run adjustment dynamics using monthly data in a bank-dominated emerging economy. By jointly examining market-based indicators, balance sheet variables, and macroeconomic outcomes, the paper shifts the focus from the intensity of transmission to its temporal structure, highlighting how monetary policy signals may be incorporated at different speeds across the financial system.

In this context, the paper addresses the following research question: *Are short-term monetary policy innovations more visibly reflected in bank equity valuations than in balance sheet variables and inflation?* To answer this question, the study analyzes the joint dynamics of the policy rate, the MASI banking index, banks' holdings of Treasury securities, credit to the non-financial private sector, and inflation in Morocco over the period 2018–2024. Morocco provides a relevant case due to its bank-dominated financial structure, where banks play a central role in financial intermediation and where market indicators offer a meaningful proxy for banking sector valuations.

Methodologically, the analysis relies on a reduced-form VAR model designed to capture short-term interactions without imposing strong structural assumptions. The objective is not to identify a specific transmission channel or establish causal relationships, but rather to document whether monetary policy shocks are associated with heterogeneous response patterns across variables.

Overall, this study contributes to a better understanding of short-term monetary transmission by showing that differences in observed responses across financial, banking, and macroeconomic variables may reflect variations in adjustment timing rather than the absence of transmission.

2. Literature Review

Many economic research studies highlight that financial systems operate under the influence of persistent informational frictions, which fundamentally determine the transmission of monetary policy. In the banking sector, lending decisions are made in a context of incomplete and asymmetric information regarding the quality of borrowers, project risks, and future cash flows. Hodgman (1960) was among the first to assert that banks do not rely exclusively on interest rate adjustments to manage credit risk. When higher interest rates increase the probabilities of default and degrade the composition of borrowers, the restriction of loan volume can constitute a rational equilibrium response rather than a market failure. This intuition was formalized by Akerlof (1970), who demonstrated how adverse selection can harm market efficiency, and by Stiglitz and Weiss (1981),

who showed that credit rationing can appear as a stable equilibrium, induced by information asymmetry and moral hazard.

These theoretical contributions imply that price-based adjustments alone are insufficient to ensure effective financial coordination. As a result, the responsiveness of credit aggregates to monetary policy is intrinsically constrained by informational frictions and risk considerations. In such a context, financial markets play a complementary role by aggregating dispersed information and integrating it into observable prices. Spence's signaling theory (1973) provides an essential conceptual framework, highlighting how observable actions—such as monetary policy decisions—can convey information to agents facing information asymmetries. Similarly, Ross (1977) emphasizes that the financial structure and asset prices reflect expectations regarding future cash flows and risk.

Building on these foundations, Fama (1991) argues that asset prices quickly adjust to publicly available information within the framework of semi-strong informational efficiency. This observation is particularly relevant in the context of monetary policy. If financial markets effectively incorporate information related to monetary policy, asset prices—particularly bank stock prices—can react almost instantaneously to monetary signals, reflecting revisions in expectations regarding profitability, risk, and macroeconomic conditions. From this perspective, the valuation of bank stocks can be interpreted as a forward-looking indicator likely to anticipate adjustments in balance sheet elements with lower variation.

The empirical literature has extensively documented the informational dimension of monetary policy. Bernanke and Kuttner (2005) demonstrate that unanticipated alterations in monetary policy elicit substantial responses in stock markets, chiefly attributable to adjustments in projected cash flows and risk premiums, rather than simultaneous fluctuations in real activity. Nakamura and Steinsson (2018) further argue that monetary policy announcements can reveal private information held by central banks about the economic situation. Jarociński and Karadi (2020) refine this perspective by distinguishing pure monetary policy shocks from informational shocks, demonstrating that monetary announcements often combine these two components and lead to heterogeneous reactions in asset prices. Recent empirical work suggests that financial markets tend to integrate monetary policy signals quickly, particularly through the informational channel (Tanahara et al., 2023). These results support the existence of a sequential transmission process, in which monetary policy first influences expectations and financial prices before acting on credit and real activity. In this context, the apparent weakness of the short-term credit channel does not necessarily indicate a lack of transmission but rather reflects differences in the speed of adjustment between variables in an environment marked by information asymmetries and credit rationing mechanisms that constrain the adjustment of bank supply (Boutfssi et al., 2026; Boutfssi & Quamar, 2026).

The portfolio equilibrium theory provides a useful analytical framework for understanding the integration of monetary signals into financial markets. Tobin (1969) and Friedman (1968) argue that variations in monetary conditions alter the relative returns of assets, leading to a reallocation of portfolios between assets with different risk and liquidity characteristics. In bank-dominated systems, sovereign securities play a central role due to their liquidity, regulatory treatment, and relatively low perceived risk.

Empirical literature shows that banks can substitute private loans with sovereign bonds during periods of uncertainty or regulatory pressure. Acharya and Steffen (2015) show that during periods of financial stress, European banks increased their exposure to sovereign bonds, while Ongena et al. (2019) highlight how institutional and fiscal factors reinforce this behavior. More recent studies emphasize the structural balance sheet considerations, particularly capital adequacy constraints, liquidity requirements, and the optimization of risk-weighted assets (Bottero et al., 2019; Odendahl et al., 2024). Prudential regulation can amplify these dynamics, as capital and liquidity rules can encourage banks to favor low-risk assets (Altavilla et al., 2018; Gambacorta and Shin, 2018). Furthermore, Fraise and Mésonnier (2023) show that environments of persistently low interest rates,

combined with regulatory constraints, can mitigate the expansionary effects of monetary policy on credit supply.

These mechanisms are particularly pronounced in emerging economies, where financial systems are often less developed and more bank-centered. Mishra and Montiel (2013) assert that informational frictions contribute to incomplete and unstable monetary transmission in these contexts. More recent studies suggest that monetary policy in emerging markets primarily operates through financial conditions and short-term asset prices, while credit responses remain delayed and heterogeneous (Pirozhkova et al., 2024). Empirical data further indicate that credit dynamics are shaped by structural factors such as fiscal interactions, banking sector characteristics, and risk perceptions (Tenreyro and Thwaites, 2016; Brandão-Marques et al., 2021; Najab et al., 2022).

The relationship between monetary policy and inflation introduces an additional level of complexity. In the neo-Keynesian framework, monetary policy affects inflation through interest rates, aggregate demand, and expectations (Clarida et al., 1999; Galí, 2008). A central element of this framework is the role of the expectations channel through which monetary policy indirectly influences inflation (Woodford, 2003). The literature suggests that monetary policy innovations can quickly affect expectations and asset prices, particularly through the informational channel (Nakamura & Steinsson, 2018), while their transmission to real variables and inflation generally appears more gradual and delayed (Romer & Romer, 2004). Moreover, the coexistence of informational components and monetary policy can contribute to complicating the short-term response of inflation (Jarociński & Karadi, 2020), as these factors may lead to varying inflationary pressures that are not immediately reflected in price levels.

In emerging economies, the transmission to inflation appears more complex due to the role of external shocks, exchange rate dynamics, and imperfect anchoring of expectations (Mishra & Montiel, 2013). Although credible monetary frameworks, such as inflation-targeting regimes, can improve inflation control (Svensson, 2010), their short-term effects remain difficult to empirically identify. This reinforces the idea that inflation should be considered the result of a multi-stage and context-dependent transmission process, rather than an immediate response to changes in monetary policy. The entire literature suggests that monetary transmission operates through multiple interconnected levels. Monetary policy signals are first integrated into financial markets through adjustments in expectations and variations in asset prices, in accordance with the principle of informational efficiency. These signals are then gradually transmitted to bank balance sheets, where lending and portfolio decisions are influenced by regulatory constraints, risk management, and institutional factors. Finally, the effects propagate to inflation with a certain lag, reflecting nominal rigidities and the role of expectations.

However, existing studies have generally examined these mechanisms in isolation. Little attention has been paid to the joint analysis of financial market reactions, balance sheet dynamics, and inflation within a unified empirical framework, particularly in bank-dominated emerging economies and on a monthly frequency.

This gap motivates the present study, which aims to examine the timing and relative intensity of monetary transmission across these different levels of the financial system, with particular attention to the interaction between market indicators, banking variables, and the dynamics of inflation.

3. Conceptual Framework and Research Hypotheses

The conceptual framework of this study is grounded in signaling theory and the literature on monetary transmission in bank-based financial systems, with the objective of analyzing differences in the timing of short-term adjustments across key components of the banking system.

In conventional interpretations of the credit channel, variations in the policy rate affect financing conditions, which then translate into adjustments in bank lending and portfolio allocation. Within this framework, stock market valuations are generally interpreted as reflecting realized changes in

banking performance. Implicitly, the transmission mechanism is assumed to operate first through quantities, and only subsequently through prices.

This study adopts an alternative perspective in which monetary transmission is viewed as a process characterized by heterogeneous adjustment speeds across variables. Monetary policy actions can be interpreted as public signals regarding future macro-financial conditions (Spence, 1973). Under the semi-strong form of informational efficiency (Fama, 1991), these signals may be rapidly incorporated into asset prices through expectation adjustments, even when balance sheet quantities remain temporarily inert.

From this perspective, the banking system can be conceptualized as consisting of two interrelated layers. The first corresponds to an informational layer, captured by bank equity valuations, which reflects the rapid assimilation of monetary-policy-related information. The second corresponds to an allocation layer, represented by balance sheet variables—particularly sovereign bond holdings and credit to the private sector—which are shaped by contractual rigidities, internal risk assessment processes, and regulatory constraints (Adrian & Shin, 2010; Gambacorta & Shin, 2018). These frictions may delay quantitative adjustments relative to price-based responses.

Credit to the non-financial private sector is especially sensitive to information asymmetries and risk evaluation mechanisms (Stiglitz & Weiss, 1981; Jiménez et al., 2012), which may generate gradual and non-synchronous adjustments. In this context, differences in observed dynamics are interpreted as differences in adjustment timing rather than as evidence of incomplete transmission.

Extending this reasoning, inflation can be viewed as a subsequent stage of the transmission process, reflecting the cumulative effects of expectations, financial conditions, and credit dynamics. As a result, its response to monetary policy innovations may appear delayed and less clearly identifiable in the short run.

Consistent with this perspective, the empirical strategy relies on a reduced-form VAR framework, which is well suited to capturing short-run dynamic interactions across variables without imposing a priori structural restrictions. This approach allows the analysis to focus on the relative timing of responses rather than on the identification of specific causal transmission channels.

Within this framework, the analysis deliberately focuses on bank credit to the non-financial private sector rather than to the financial sector. This choice reflects the fact that monetary policy transmission to real economic activity primarily operates through firms' investment, production, and employment decisions, which are directly linked to financing conditions in the non-financial sector. By contrast, credit to financial institutions largely reflects intra-financial transactions, liquidity management, and regulatory adjustments, which may respond rapidly to monetary policy but do not directly translate into real economic outcomes. Focusing on non-financial private-sector credit therefore allows the framework to isolate transmission mechanisms relevant to the real economy and avoids conflating real-sector responses with internal financial system dynamics.

This conceptual framework leads to the following testable implications. If monetary policy primarily operates as an informational signal in the short run, financial market variables should react more rapidly than balance sheet aggregates, while inflation should display weaker and less stable short-term responses. These mechanisms directly motivate the formulation of the research hypotheses (H1–H3), which focus on differences in the timing and visibility of responses across variables.

H1. *At short horizons, monetary policy shocks are associated with statistically significant responses in bank equity valuations.*

H2. *At short horizons, balance-sheet variables exhibit weaker and non-contemporaneous responses compared to bank equity valuations.*

H3. *At short horizons, inflation responses are less stable and less clearly identifiable than those observed in financial and balance-sheet variables.*

4. Methodology and Econometric Strategy

4.1. General Methodological Framework

The objective of this study is to analyze the propagation of monetary policy shocks in a banking-dominant emerging economy, with a focus on the timing of adjustments between financial valuations, balance sheet variables, and inflation. The analysis does not aim to identify a specific structural channel but to characterize the relative dynamics between these different dimensions of the financial system.

Macro-financial interactions being intrinsically dynamic and interdependent, a single-equation approach appears insufficient to capture the simultaneous effects between expectations, asset prices, credit decisions, and macroeconomic variables. In this context, the use of a reduced-form vector autoregressive (VAR) model (Sims, 1980; Lütkepohl, 2005) allows for the modeling of these interdependencies without imposing a priori causal structure, while capturing the short-term dynamics at the heart of this study.

The identification of monetary shocks relies on a recursive Cholesky decomposition, interpreted as an intra-period sequencing hypothesis, in which some variables can react more quickly than others within the same period. This approach allows for the introduction of a temporal structure consistent with the analysis, without attributing a strict causal interpretation to the estimated relationships.

However, this identification strategy relies on a strong hypothesis of variable hierarchy, which may influence the empirical results. In particular, the chosen order can condition the interpretation of impulse response functions, which limits the robustness of the conclusions when the actual temporal structure between variables remains uncertain. This limitation is particularly important in the context of this study, where the temporal hierarchy between variables is precisely the subject of the analysis.

In this context, generalized impulse response functions (GIRFs) are also utilized. Unlike the recursive approach, these functions are invariant to the order of ranking of the variables and thus allow for verifying the robustness of the observed dynamics. The joint use of Cholesky-type IRFs and GIRFs thus allows distinguishing results dependent on a specific identification structure from those that reflect more robust empirical regularities.

The analysis is complemented by the Forecast Error Variance Decomposition (FEVD), which allows for the evaluation of the relative contribution of different shocks to the dynamics of each variable. This approach offers a complementary reading of the transmission mechanisms by highlighting the relative importance of the sources of fluctuations.

Finally, the stability of the model is examined using Chow-type structural break tests. The eventual identification of breaks allows for the verification of the robustness of the estimated relationships and, if necessary, the integration of indicator variables to account for regime changes.

This methodological framework seeks to examine the dynamic interactions among financial, banking, and macroeconomic variables from a short-term viewpoint, highlighting the variations in timing of the observed adjustments.

4.2. Data

The empirical analysis is based on monthly macro-financial data covering the period from January 2018 to December 2024, totaling 83 observations. This period corresponds to the longest interval for which a coherent and continuous set of data could be established for all variables, based on official institutional sources, notably Bank Al-Maghrib and the Casablanca Stock Exchange.

The use of a monthly frequency is central to this study, as the objective is to examine the timing of short-term adjustments between the variables. This frequency allows capturing the sequence of reactions between financial valuations, balance sheet variables, and inflation, providing sufficient temporal resolution to observe differentiated adjustments without introducing excessive complexity associated with a higher frequency.

The study period includes the years 2020 and 2021, marked by macro-financial disruptions related to the COVID-19 crisis. Rather than segmenting the sample into sub-periods, the analysis relies on a unified framework to preserve the coherence of the VAR model and maintain a sufficient number of observations for estimation. Segmentation would have reduced the sample size and compromised the robustness of dynamic analyses, particularly impulse response functions and variance decompositions.

In this perspective, the COVID-19 episode is treated as part of the macrofinancial environment in which the interactions between variables take place, rather than as a distinct regime. This approach allows for the analysis of monetary transmission within a context that integrates heterogeneous economic conditions, without imposing a structural break a priori.

In general, this choice of data and frequency is meant to make sure that the analysis is empirically consistent while also letting us look at the short-term dynamics that are at the heart of this study's problem.

4.3. Variable Selection

The VAR model is based on a set of selected endogenous variables in order to capture the main dimensions of short-term monetary transmission in a bank-dominated financial system. The specification aims to articulate, within a unified framework, the interactions between financial valuations, balance sheet variables, and inflation in line with the study's objective focused on the timing of adjustments.

Bank credit to the non-financial sector is retained as an indicator of real economy financing. By focusing on non-financial borrowers, this variable allows for the isolation of credit flows directly related to productive activity, excluding interbank operations. It constitutes a standard measure of the credit channel, widely used in the literature (Bernanke & Gertler, 1995; Stiglitz & Weiss, 1981).

The holdings in Treasury bonds are introduced to capture the portfolio reallocations made within the bank's balance sheet. In banking-dominant systems, sovereign securities represent an allocation characterized by high liquidity, favorable prudential treatment, and low capital intensity. Their inclusion allows for understanding the substitutions between risky assets and safe assets in response to monetary conditions (Tobin, 1969; Acharya & Steffen, 2015; Ongena et al., 2019).

The joint introduction of credit and Treasury bonds thus allows for the characterization of the allocative dimension of the bank balance sheet. While credit involves an informational assessment and risk-bearing, sovereign debt constitutes a more liquid and less regulatory-constrained alternative.

The policy rate is introduced as a monetary policy instrument, allowing for the capture of policy innovations without imposing an explicit structural hypothesis on the central bank's reaction function, in accordance with the standard VAR approach (Sims, 1980; Christiano et al., 2005).

The MASI banking index is integrated as a market indicator, allowing for the capture of the informational dimension of transmission. Stock valuations aggregate expectations related to profitability, financing conditions, and balance sheet risks. In the context of informational efficiency (Fama, 1991), they can quickly reflect monetary policy signals through adjustments in expectations (Bernanke & Kuttner, 2005; Nakamura & Steinsson, 2018).

Finally, inflation is introduced to incorporate the macroeconomic dimension of transmission. It reflects the diffusion of monetary effects through aggregate demand, financial conditions, and expectations (Clarida et al., 1999; Galí, 2008; Woodford, 2003). Given nominal rigidities, its dynamics are generally more gradual, making it a relevant indicator of the final stage of transmission.

Overall, this choice of variables allows for structuring the analysis around three complementary levels: (i) an informational dimension captured by stock market valuations, (ii) an allocative dimension reflected in balance sheet variables, and (iii) a macroeconomic dimension represented by inflation.

This structuring constitutes the central analytical framework of the study and allows for examining the differences in timing in responses to monetary policy shocks.

4.4. Time-Series Properties

The time series employed in this study exhibit heterogeneous statistical properties and are transformed to ensure stationarity, following standard econometric practice in VAR modeling (Granger & Newbold, 1974; Sims, 1980; Hamilton, 1994; Lütkepohl, 2005).

Macroeconomic balance-sheet aggregates observed at monthly frequency typically display strong persistence and stochastic trends. This is the case for bank credit to the non-financial sector (CREDIT-NFS) and banks' holdings of Treasury securities (TBILLS), which are measured in levels and represent cumulative stock positions. Both variables are therefore expressed in first logarithmic differences:

$$\begin{aligned}\Delta \log (CREDIT-NFS_t) &= \log (CREDIT-NFS_t) - \log (CREDIT-NFS_{t-1}) \\ \Delta \log (TBILLS_t) &= \log (TBILLS_t) - \log (TBILLS_{t-1})\end{aligned}$$

The central bank policy rate (PR_t), although bounded, also exhibits persistence at the monthly frequency and is transformed in first differences:

$$\Delta PR_t = PR_t - PR_{t-1}$$

The MASI Banking Index (MASI-B) is expressed in first logarithmic differences:

$$\Delta \log (MASI-B_t) = \log (MASI-B_t) - \log (MASI-B_{t-1})$$

Inflation (INF_t) is introduced as a macroeconomic variable reflecting price dynamics. Consistent with standard practice in macro-financial VAR models, inflation is expressed in logarithmic differences, allowing for a stationary representation of its dynamics:

$$\Delta \log (INF_t) = \log (INF_t) - \log (INF_{t-1})$$

Unit root tests confirm that all transformed variables are stationary at conventional significance levels. The VAR model is therefore estimated using stationary first-difference representations of the variables.

4.5. VAR Model Specification

Given the stationarity of the transformed variables, the empirical analysis relies on a Vector Autoregressive (VAR) framework specified in stationary form. The VAR approach provides a flexible representation of the joint dynamics among macro-financial variables, allowing for feedback effects and endogenous interactions without imposing a priori structural restrictions on causal relationships.

The vector of endogenous variables is defined as:

$$Y_t = \begin{bmatrix} \Delta PR_t \\ \Delta \log (TBILLS_t) \\ \Delta \log (CREDIT-NFS_t) \\ \Delta \log (MASI-B_t) \\ \Delta \log INF_t \end{bmatrix} \quad (5)$$

where:

- ΔPR_t measures changes in the monetary policy stance of Bank Al-Maghrib;
- $\Delta \log (TBILLS_t)$ reflects short-term adjustments in banks' holdings of sovereign Treasury securities;
- $\Delta \log (CREDIT-NFS_t)$ captures short-term changes in bank credit to the non-financial private sector;
- $\Delta \log (MASI-B_t)$ represents monthly returns of banking sector equities;
- $\Delta \log INF_t$ denotes changes in inflation dynamics.

The general VAR model of order p is given by:

$$Y_t = c + \sum_{i=1}^p A_i Y_{t-i} + \varepsilon_t \quad (6)$$

where c is a vector of intercepts, A_i are coefficient matrices to be estimated, and ε_t is a vector of reduced-form innovations assumed to be serially uncorrelated with constant variance.

All variables are treated as endogenous, reflecting the joint determination of monetary policy, financial market valuations, portfolio allocation, credit supply, and inflation within a system characterized by short-run feedback mechanisms.

The ordering of variables in the VAR is consistent with the timing assumptions underlying the identification strategy discussed in the subsequent section.

4.6. Pre-Estimation Diagnostics and Model Adequacy

4.6.1. Unit Root Tests

Prior to estimating the VAR model, the time-series properties of all variables are examined using Augmented Dickey–Fuller (ADF) and Phillips–Perron (PP) unit root tests in order to determine their order of integration.

Ensuring stationarity is a standard requirement in VAR analysis, as non-stationary series may generate spurious results and invalidate inference (Lütkepohl, 2005). The tests are conducted under specifications including intercept terms, consistent with the statistical characteristics of the data.

4.6.2. Structural Stability: Chow Breakpoint Test

The stability of the relationships among variables over the sample period is examined using the Chow breakpoint test. This test allows for the detection of structural changes at specified breakpoints by comparing the fit of the model across sub-periods.

In the present study, particular attention is given to the COVID-19 period and its aftermath, which constitute major macro-financial disruptions likely to affect monetary transmission dynamics. Breakpoints are therefore selected around key dates associated with the onset of the pandemic and the subsequent post-COVID adjustment phase.

This approach provides a useful framework for assessing whether the relationships between variables remain stable or exhibit structural shifts in response to these events. When structural breaks are identified, they can be accounted for through the inclusion of appropriate dummy variables in the VAR specification.

4.6.3. Multicollinearity Test

Potential multicollinearity among the explanatory variables is assessed prior to estimation. High multicollinearity may affect the precision and stability of coefficient estimates and complicate the interpretation of dynamic interactions.

The analysis relies on standard diagnostic measures, including correlation matrices and variance inflation factors (VIF), to evaluate the degree of linear dependence among variables. This step ensures that the variables included in the VAR system do not exhibit excessive collinearity that could undermine the reliability of the estimated relationships.

4.7. VAR Specification and Lag Order Selection

In order to determine the appropriate number of lags, several information criteria are used, notably the Akaike Information Criterion (AIC), the Schwarz Criterion (BIC), and the Hannan-Quinn Criterion (HQ). These criteria allow for a trade-off between the quality of fit and the parsimony of the model by penalizing the introduction of additional parameters.

The final choice of the number of lags is based on a combination of these criteria while taking into account the economic coherence of the model and the stability of the estimates. This approach ensures a balanced specification, suitable for the analysis of short-term dynamics.

4.8. Post-Estimation Diagnostic Tests

After estimating the VAR model, a series of diagnostic tests are conducted to verify the statistical validity of the model and the robustness of the results.

First, the absence of autocorrelation of the residuals is examined using the Lagrange multiplier (LM) test. This test allows us to verify if the model's innovations are independent over time, a necessary condition to ensure the validity of the inferences.

Next, the normality of the residuals is assessed using the Jarque-Bera test. Although normality is not a strict condition for VAR estimation, it is a useful element for interpreting impulse response functions and variance decompositions.

The homoscedasticity of the residuals is also tested to verify the constancy of the error variance. The presence of heteroscedasticity could affect the accuracy of the estimates and the reliability of the confidence intervals.

Furthermore, the stability of the model is examined through the roots of the characteristic polynomial. A VAR is considered stable when all the roots are located inside the unit circle. This condition guarantees the validity of impulse response functions and variance decompositions.

Overall, these tests ensure that the estimated model meets the necessary conditions for a reliable interpretation of the observed dynamics.

4.9. Dynamic Analysis: IRFs and FEVDs

The dynamic behavior of the VAR system is analyzed using impulse response functions (IRFs) and forecast error variance decompositions (FEVDs). IRFs trace the temporal response of each endogenous variable to a one-standard-deviation innovation, while FEVDs quantify the relative contribution of each shock to forecast error variance at different horizons (Sims, 1980; Lütkepohl, 2005).

Identification of innovations relies on a Cholesky decomposition of the variance-covariance matrix of reduced-form residuals. This approach imposes a recursive contemporaneous ordering of variables and yields orthogonal shocks, facilitating interpretation. The resulting IRFs and FEVDs are therefore interpreted as conditional dynamic responses, rather than as structural causal effects.

Statistical inference is conducted using bootstrap confidence intervals, which are well suited to finite samples and macro-financial environments characterized by potentially non-Gaussian innovations (Kilian, 1998).

4.10. Robustness to Identification: Generalized Impulse Response Functions

To assess the sensitivity of the results to the recursive identification implied by the Cholesky decomposition, generalized impulse response functions (GIRFs) are computed following Pesaran and Shin (1998). Unlike orthogonalized IRFs, GIRFs do not require orthogonality of shocks and are invariant to the ordering of variables in the VAR system.

Confidence intervals for the GIRFs are obtained using Monte Carlo simulations. This robustness exercise allows verification that the qualitative dynamic patterns identified in the baseline analysis are not driven by the specific identifying assumptions and remain stable when these constraints are relaxed.

5. Results

5.1. Preliminary Diagnostic Tests

5.1.1. Multicollinearity Diagnostics

Although multicollinearity is generally less critical in a VAR framework where all variables are treated as endogenous, it may still affect the precision of estimated coefficients and the stability of the system. As a robustness check, pairwise correlations and Variance Inflation Factors (VIFs) are examined.

As reported in Table 1, the correlation matrix indicates relatively low linear associations across variables, with the highest coefficient equal to 0.219 between inflation and Treasury bill holdings.

These values suggest that the variables capture distinct dimensions of the macrofinancial system, without exhibiting strong linear dependence.

This assessment is confirmed by the variance inflation factor (VIF) in Table 2. The centered VIF values range between 1.02 and 1.06, remaining close to unity and well below conventional thresholds associated with multicollinearity concerns.

Taken together, these results do not provide evidence of severe multicollinearity in the system. The specification therefore appears suitable for VAR estimation, with limited risk of coefficient instability due to linear dependence among variables.

Table 1. Correlation matrix between the explanatory variables.

<i>Variables</i>	$\Delta \log$, (<i>MASI-B_t</i>)	$\Delta \log$ <i>INF_t</i>	$\Delta \log$ (<i>CREDIT-NFS_t</i>)	$\Delta \log$, (<i>TBILLS_t</i>)	ΔPR_t
$\Delta \log$ (<i>MASI-B_t</i>)	1	0.0308	-0.2577	0.0272	-0.1412
$\Delta \log INF_t$	0.0308	1	0.0910	0.2192	0.0748
$\Delta \log$ (<i>CREDIT-NFS_t</i>)	-0.2577	0.0910	1	0.0285	-0.0002
$\Delta \log$ (<i>TBILLS_t</i>)	0.0272	0.2192	0.0285	1	0.0162
ΔPR_t	-0.1412	0.0748	-0.0002	0.0162	1

Source: Authors’ calculations based on econometric estimations.

Table 2. Test Variance Inflation Factor (VIF).

<i>Variable</i>	<i>Centered VIF</i>
$\Delta \log$ (<i>MASI-B_t</i>)	1.0226
$\Delta \log INF_t$	1.0575
$\Delta \log$ (<i>TBILLS_t</i>)	1.0510
ΔPR_t	1.0269

Source: Authors’ calculations based on econometric estimations.

5.1.2. Structural Stability and Chow Breakpoint Test

The stability of the estimated VAR system is assessed using Chow breakpoint tests at selected dates corresponding to major macro-financial disruptions, with particular attention to the COVID-19 period.

The breakpoint dates are not chosen from the entire sample; instead, they are chosen to show economically significant events that are likely to change **the stability of the estimated relationships**. March 2020 captures the onset of the COVID-19 shock, while December 2021 and June 2022 correspond to post-crisis phases characterized by macro-financial adjustment and evolving monetary conditions. The objective is not to test all possible breakpoints, which could lead to data-driven inference, but to assess the robustness of the model around clearly identifiable episodes of potential structural stress.

As reported in Table 3 the breakpoint test for March 2020 yields a p-value of 0.0979. While this value remains above the conventional 5% threshold, it is close to the 10% level, suggesting **weak and non-conclusive evidence of parameter instability**, without allowing a formal rejection of the null hypothesis of stability.

For the post-COVID period, including December 2021 and June 2022, the reported p-values are well above standard significance levels, indicating no evidence of structural breaks. Overall, the results do not provide strong statistical support for the presence of structural instability in the VAR system over the sample period.

From a methodological perspective, these findings support the use of a unified VAR specification rather than a segmented sample. Splitting the sample would significantly reduce the number of observations and undermine the reliability of impulse response functions and forecast error variance decomposition.

It is important to note that the Chow test evaluates the stability of estimated coefficients rather than changes in the underlying variables. As such, the absence of statistically significant breakpoints should be interpreted as evidence of relatively stable relationships within the system, rather than the absence of macroeconomic shocks.

At the same time, the borderline result observed for March 2020 suggests that the interpretation of short-run dynamics around the COVID shock should be approached with caution.

Table 3. Multiple Structural Failure Tests.

rupture date	F-stat	p-value (F)	p-value (LR)	p-value (Wald)
2020M03	1.9408	0.0979	0.0657	0.0841
2021M12	1.0362	0.4030	0.3375	0.3942
2022M06	1.3283	0.2618	0.2043	0.2487

Source: Authors’ calculations based on econometric estimations.

5.1.3. Stationarity Tests (ADF and Phillips-Perron)

The stationarity of the series is assessed using the Augmented Dickey–Fuller (ADF) and Phillips–Perron (PP) tests, in order to ensure the validity of the VAR estimation and to avoid spurious regression issues.

The variables included in the model are expressed as transformations capturing short-term dynamics, mainly through logarithmic differences. As reported in Table 4, the unit root test results indicate that all transformed variables are stationary at level. Both ADF and PP statistics are significant at the 1% level for most variables, allowing rejection of the null hypothesis of a unit root. These variables can therefore be considered integrated of order zero, $I(0)$, in their specified form.

An exception arises for the monetary policy variable (ΔPR_t). As shown in Table 4, the ADF test does not reject the null hypothesis of a unit root (p-value = 0.1018), whereas the PP test indicates stationarity at the 1% level (p-value = 0.0000). This divergence can be explained by the higher sensitivity of the ADF test to model specification and potential heteroskedasticity, while the PP test is generally more robust in such contexts.

Given the robustness properties of the PP test, the variable ΔPR_t is retained in its specified form. However, this discrepancy calls for cautious interpretation and may justify additional robustness checks.

Overall, the results confirm that the variables used in the model satisfy the stationarity conditions in their chosen form. The VAR model is therefore estimated on stationary series, ensuring the validity of the short-term dynamics analyzed

Table 4. Tests de stationnarité (ADF et Phillips-Perron).

Variable	ADF t-stat	ADF p-value	PP t-stat	PP p-value
ΔPR_t	-2.5777	0.1018	-9.2821	0.0000
$\Delta \log(TBILLS_t)$	-11.5756	0.0001	-11.3813	0.0000
$\Delta \log(CREDIT-NFS_t)$	-8.7856	0.0000	-8.7881	0.0000
$\Delta \log INF_t$	-9.6291	0.0000	-15.2441	0.0000
$\Delta \log(MASI-B_t)$	-8.0845	0.0000	-8.0845	0.0000

Source: Authors’ calculations based on econometric estimations.

5.2. VAR Model Specification

5.2.1. Lag Length Selection and Model Estimation

The selection of the optimal lag length is based on standard information criteria (AIC, SC, HQ, and FPE) as well as the likelihood ratio (LR) test. As reported in Table 5 the results indicate a divergence across criteria. Information criteria consistently favor a highly parsimonious specification with zero lags (AIC = -22.4433; SC = -22.2901), while the LR test identifies a VAR(3) specification as optimal (LR = 48.5360).

This divergence reflects the classical trade-off between parsimony and dynamic specification. However, a zero-lag model is not consistent with the VAR framework, as it fails to capture intertemporal relationships. A dynamic specification is therefore required.

Table 5. VAR Lag Order Selection Criteria.

Lag	LogL	LR	FPE	AIC	SC	HQ
0	857.8487	–	1.23e-16*	-22.4433*	-22.2901*	-22.3821*
1	879.5404	39.9583	1.35e-16	-22.3563	-21.4363	-21.9886
2	898.7474	32.8541	1.58e-16	-22.2039	-20.5172	-21.5298
3	929.4868	48.5360*	1.39e-16	-22.3549	-19.9015	-21.3744

Source: Authors’ calculations based on econometric estimations.

As reported in Table 5, the VAR(1) model exhibits the best overall performance according to both AIC (-22.6466) and SC (-21.7661), outperforming VAR(2) and VAR(3). In contrast, higher-order specifications substantially increase model complexity, with the number of estimated parameters rising from 30 in VAR(1) to 55 in VAR(2) and 80 in VAR(3), without a commensurate improvement in fit.

Given the relatively limited sample size (83 observations), such an increase in dimensionality raises concerns regarding overparameterization and potential instability of the estimated system. In this context, the LR test result favoring VAR(3) must be interpreted with caution, as this criterion does not sufficiently penalize model complexity and may lead to overfitting.

Importantly, the objective of this study is to analyze short-run dynamics and the relative timing of responses across variables. From this perspective, a VAR(1) specification provides a sufficient dynamic structure to capture immediate interactions while preserving estimation reliability.

Accordingly, the VAR(1) model is retained, as it ensures a parsimonious, stable, and empirically well-performing specification, consistent with both the sample size and the analytical focus of the study.

Table 5. Lag Length Selection Criteria and Model Comparison.

Model	global AIC	global SC	Number of coefficients
VAR(1)	-22.6466	-21.7661	30
VAR(2)	-22.4441	-20.8183	55
VAR(3)	-22.5414	-20.1594	80

Source: Authors’ calculations based on econometric estimations.

5.2.2. Residual Diagnostics and Robustness of Statistical Inference

The results indicate that the joint statistics are significant at the 1% level, leading to a rejection of the null hypothesis of multivariate normality. As reported in Table 6 this deviation from normality appears to be driven by skewness and excess kurtosis in several equations of the system.

However, this result should be interpreted with caution. In VAR models applied to macrofinancial data, the normality of residuals is not a necessary condition for consistent estimation. Instead, non-normality mainly affects the validity of standard asymptotic inference.

To address this issue, statistical inference particularly for impulse response functions and variance decomposition is based on bootstrap procedures, which do not rely on normality assumptions. This approach ensures robust inference despite the presence of non-normal residuals.

Table 6. Multivariate Normality Tests of VAR(1) Residuals.

Component	Skewness	χ^2 (Skew)	p-value	Kurtosis	χ^2 (Kurt)	p-value	JB Statistic	df	p-value
1	-2.9290	117.2505	0.0000	19.4774	927.6401	0.0000	1044.891	2	0.0000
2	0.9168	11.4878	0.0007	12.4434	304.6886	0.0000	316.1764	2	0.0000
3	0.5525	4.1711	0.0411	4.4081	6.7745	0.0092	10.9456	2	0.0042
4	-0.3791	1.9641	0.1611	4.4381	7.0657	0.0079	9.0298	2	0.0109
5	-0.2466	0.8314	0.3619	3.5588	1.0669	0.3016	1.8983	2	0.3871

Source: Authors’ calculations based on econometric estimations.

5.2.3. Residual Heteroskedasticity Test

The homoskedasticity of the VAR(1) residuals is assessed using a multivariate heteroskedasticity test. As reported in Table 7 the joint test yields a p-value of 0.0393, leading to a rejection of the null hypothesis of homoskedasticity at the 5% significance level.

However, this result should be interpreted with caution. A closer examination of individual components indicates that heteroskedasticity is not uniformly distributed across the system. Most variance terms are not statistically significant, and only a limited number of cross-residual interactions exhibit significance.

These findings suggest that the detected heteroskedasticity is not pervasive, but rather limited to specific elements of the system. In the context of VAR models, such deviations from homoskedasticity do not affect the consistency of parameter estimates but may impact the reliability of standard inference based on asymptotic assumptions.

To address this issue, statistical inference in the analysis particularly for impulse response functions and variance decomposition is based on bootstrap procedures, which are robust to heteroskedasticity. This approach ensures that confidence intervals and significance assessments remain valid despite the presence of residual heteroskedasticity.

Overall, while the null hypothesis of homoskedasticity is formally rejected, the evidence does not suggest severe or systematic instability in the residual structure, and the VAR specification remains suitable for dynamic analysis under robust inference.

Table 7. VAR Residual Heteroskedasticity Test (VAR(1)).

Chi-square Statistic	df	p-value
181.8107	150	0.0393

Source: Authors’ calculations based on econometric estimations.

5.2.4. Stability Test of the VAR(1) Model

The stability of the VAR(1) model is assessed by examining the roots of the characteristic polynomial.

As illustrated in Figure 1 the results indicate that all characteristic roots have a modulus strictly less than one, meaning that they lie inside the unit circle. This condition ensures that the VAR system is dynamically stable and covariance-stationary.

As a result, shocks affecting the system are transitory and gradually dissipate over time. This property is essential for the validity of dynamic analyses, including impulse response functions and forecast error variance decomposition.

From a methodological perspective, the stability condition supports the use of the estimated VAR(1) specification for analyzing short-run interactions between variables.

Overall, the diagnostic tests suggest that the model satisfies the main requirements for VAR estimation. While some deviations from normality and homoskedasticity are observed, these do not affect the consistency of the estimates, and robust inference procedures are employed to ensure the reliability of the results.

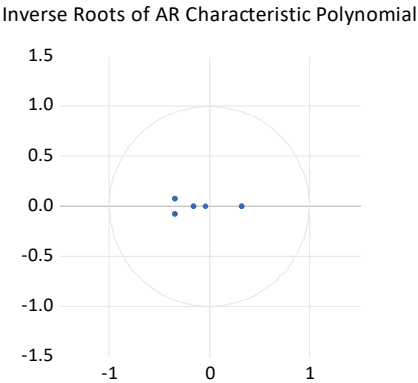


Figure 1. Inverse Roots of the AR Characteristic Polynomial (VAR(1)).
Source: Authors’ calculations based on econometric estimations.

5.3. Impulse Response Functions

Following a monetary policy innovation, the impulse response functions reveal heterogeneous adjustment patterns across variables, particularly at short horizons.

As illustrated in Figure 2, bank equity valuations, proxied by $\Delta \log (MASI-B_t)$, display the most pronounced short-run response. The effect increases from 0.001293 in period 1 to a peak of 0.008281 in period 2, before declining rapidly and becoming negligible after period 3. This pattern suggests a relatively fast adjustment concentrated in the immediate periods following the innovation. However, the magnitude remains limited and should be interpreted cautiously given statistical uncertainty.

In contrast, balance-sheet variables exhibit weaker and less structured responses. The reaction of Treasury securities $\Delta \log (TBILLS_t)$ is small and unstable, alternating in sign and fluctuating around zero, which does not point to a persistent adjustment pattern. Similarly, credit to the private sector $\Delta \log (CREDIT-NFS_t)$ shows a negative response at short horizons, reaching -0.001138 in period 2 before converging toward zero. While this may be indicative of a temporary tightening effect, the magnitude is modest and dissipates quickly.

Inflation $\Delta \log INF_t$ displays the most volatile dynamics, with alternating signs and no clear directional pattern. The initial increase (0.075833) is followed by a sharp decline (-0.100585) and subsequent fluctuations, making it difficult to identify a stable short-run response to monetary policy innovations.

Taken together, these results suggest that the short-run dynamics of the system are characterized by differences in response timing and visibility across variables. Financial valuations appear to react more rapidly within the estimated system, while balance-sheet variables and inflation display more muted and less stable adjustments.

From a comparative perspective, the peak response of bank equity valuations (0.008281) exceeds those observed for credit and Treasury securities in absolute terms. However, this difference should not be interpreted as evidence of stronger transmission through financial markets. Rather, it is consistent with the interpretation that monetary policy innovations, viewed as informational signals,

may be reflected more rapidly in asset prices, while balance-sheet variables adjust more gradually under institutional and informational constraints.

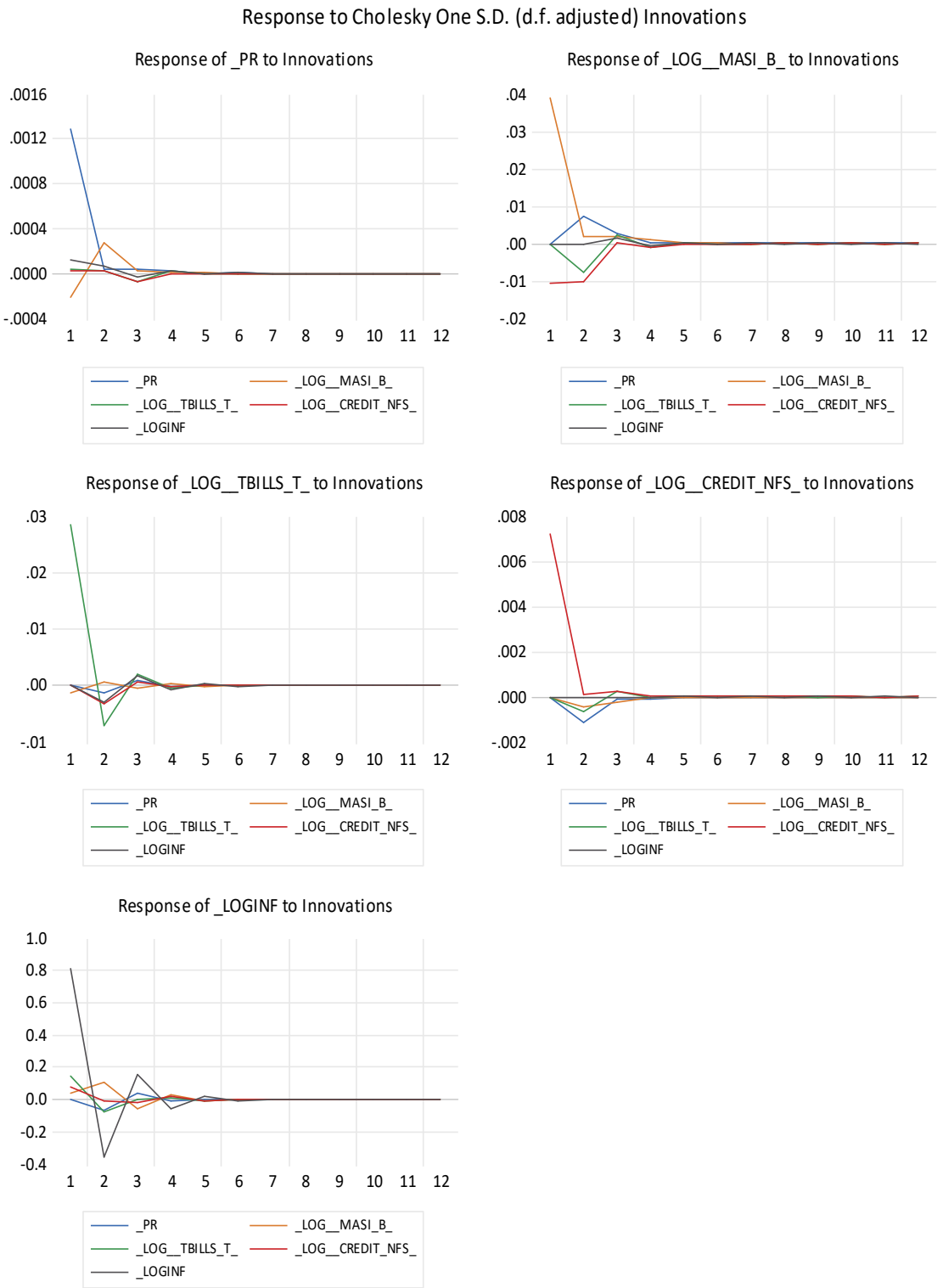


Figure 2. Impulse Response Functions to Monetary Policy and Portfolio Shocks Tests. **Note.** Impulse response functions are derived from a reduced-form VAR model using Cholesky orthogonalization. The ordering of variables is as follows: ΔPR_t , $\Delta \log (MASI-B_t)$, $\Delta \log (TBILLS_t)$, $\Delta \log (CREDIT-NFS_t)$, and $\Delta \log INF_t$. Responses are reported over a

12-period horizon. Confidence intervals are obtained via bootstrap with 1,000 replications. Source: Authors' calculations based on econometric estimations.

5.4. Forecast Error Variance Decomposition Results

The forecast error variance decomposition reveals a marked heterogeneity in the sources of fluctuations across variables. Overall, the results indicate that system dynamics are largely dominated by their own innovations, suggesting a high degree of persistence, particularly for credit and inflation.

For credit to the private sector, own shocks account for approximately 93% of its variance at short horizons and remain above 89% at longer horizons. The contribution of monetary policy innovations remains limited, at around 2%, while bank equity valuations account for a relatively larger share, reaching about 7–8% at medium horizons. This pattern indicates that internal factors primarily drive short-run credit dynamics, with only modest associations with monetary policy innovations.

By contrast, bank equity valuations display a relatively higher sensitivity to monetary policy innovations. While their variance is still largely explained by their shocks (declining from about 97% at short horizons to around 86% at longer horizons), the contribution of monetary policy innovations increases from approximately 2.6% to nearly 5%. This finding is consistent with the interpretation that financial markets may act as an early absorber of policy-related information.

Treasury securities exhibit highly self-driven dynamics, with their own shocks explaining more than 99% of their variance at short horizons and still around 96% at longer horizons. The contribution of monetary policy innovations remains limited, at approximately 0.7%, indicating minimal short-run adjustment within this segment.

Similarly, inflation is largely dominated by its innovations, accounting for around 95% of its variance at short horizons and approximately 92% at longer horizons. The contribution of monetary policy innovations remains modest, increasing slightly from about 0.7% to around 2.6%. This result is consistent with the absence of a clearly identifiable short-run response to inflation and supports the interpretation of a gradual and context-dependent transmission process.

Taken together, these results suggest that monetary policy innovations are associated with heterogeneous short-run adjustment patterns across variables. In particular, financial market variables appear to reflect policy-related signals more visibly at short horizons, while credit and inflation exhibit more limited and gradual adjustments. Importantly, these results should be interpreted with caution, as variance decomposition outcomes are conditional on the identification scheme and the ordering of variables within the Cholesky framework.

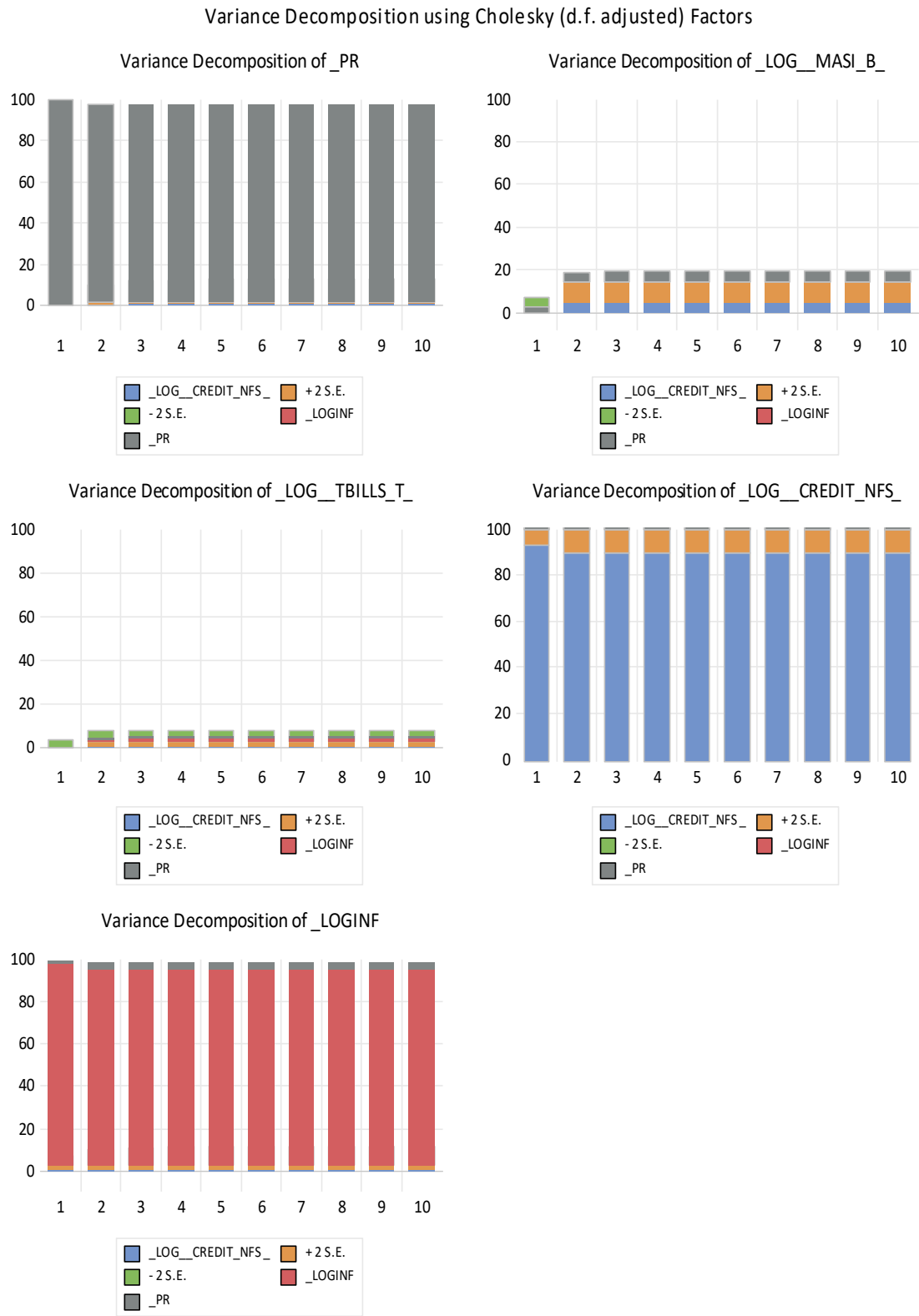


Figure 3. Decomposition of the variance of the bank credit forecast error. **Note:** The figure reports the forecast error variance decomposition derived from a reduced-form VAR model estimated in stationary form. The decomposition is based on Cholesky orthogonalization, with the following ordering: ΔPR_t , $\Delta \log(MASI-B_t)$, $\Delta \log(TBILLS_t)$, $\Delta \log(CREDIT-NFS_t)$, and $\Delta \log(INF_t)$. Results are presented over a 12-period horizon. Confidence intervals are obtained using Monte Carlo simulations with 1,000 replications. Source: Authors' calculations based on econometric estimations.

5.5. Generalized Impulse Response Functions

Generalized impulse response functions (GIRFs) are used to examine the dynamic responses of the variables to a monetary policy innovation without relying on a specific variable ordering. The interpretation focuses on the magnitude, persistence, and short-run patterns of adjustment.

As illustrated in Figure 4, Following an innovation in ΔPR_t , the response of bank equity valuations ($\Delta \log(MASI-B_t)$) appears more visible at very short horizons relative to the other variables. The response is initially negative (-0.000655 in period 1), before turning positive in period 2 (+0.000659) and period 3 (+0.000255). This pattern is consistent with a rapid adjustment followed by quick stabilization. However, the magnitude remains limited (on the order of 10^{-3} to 10^{-4}), and the response converges toward zero from around period 5, indicating a short-lived effect.

By comparison, the response of credit to the private sector ($\Delta \log(CREDIT-NFS_t)$) is weaker and more diffuse. The initial effect is very small (+0.000017 in period 1, +0.000218 in period 2), followed by rapid attenuation and fluctuations around zero. The overall response remains confined within a narrow range (below ± 0.0002), suggesting limited short-run sensitivity within the estimated framework.

Treasury securities ($\Delta \log(TBILLS_t)$) also display low-amplitude responses. The initial effect is positive but marginal (+0.0000285 in period 1), followed by fluctuations close to zero without clear persistence. This pattern indicates that adjustments in this segment remain modest at short horizons.

Inflation ($\Delta \log INF_t$) exhibits a larger initial response (+0.0725 in period 1), which should be interpreted with caution given the different scale of the variable. Subsequent responses are unstable, alternating in sign and remaining limited in relative terms, with no clear short-run trajectory.

Taken together, the GIRFs highlight heterogeneous short-run response patterns across variables. Bank equity valuations appear to display relatively more visible immediate responses, whereas balance-sheet variables and inflation exhibit more limited and less stable adjustments.

Consistent with the variance decomposition results, these findings suggest that monetary policy innovations are associated with relatively modest short-run adjustments across the system. In particular, the response of credit remains limited in magnitude and short-lived within the considered horizon.

Importantly, given the use of generalized impulse responses and the reduced-form VAR framework, these results should be interpreted as empirical dynamic associations rather than as evidence of structural or causal relationships between variables.

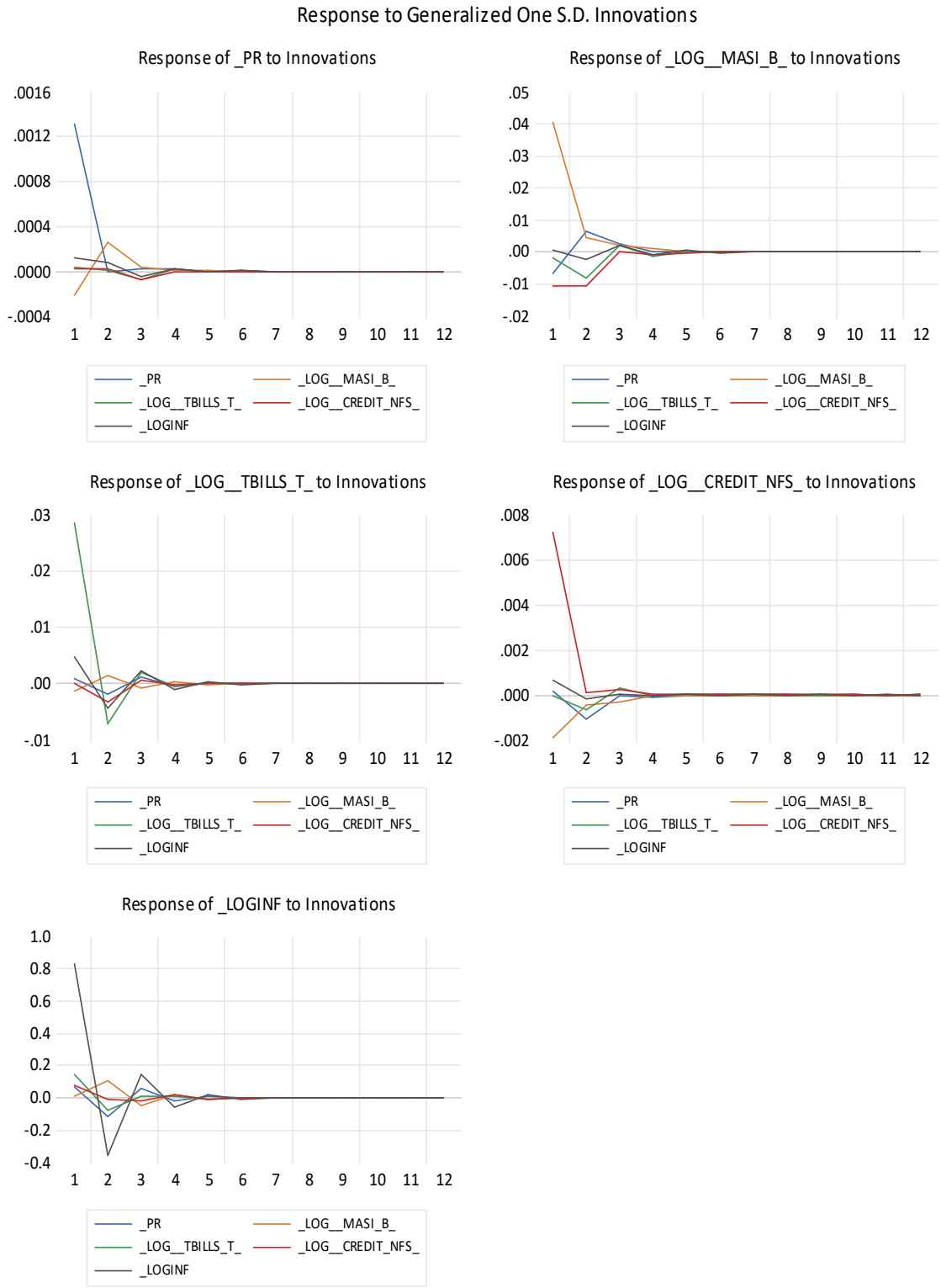


Figure 4. Generalized Impulse Response Functions (GIRFs). **Note:** The figure reports generalized impulse response functions (GIRFs) to a one-standard-deviation innovation in the policy rate (ΔPR_t) derived from a reduced-form VAR model. The solid line represents the point estimate of the response, while the dashed lines correspond to Monte Carlo confidence intervals based on 1,000 replications. Responses are reported over a 12-period horizon.

6. Discussion

Empirical results suggest that, in the short term, monetary policy innovations are more visibly reflected in bank stock valuations—approximated by the MASI banking index—than in balance sheet aggregates or inflation. This phenomenon is explained by research on informational frictions and the role of financial markets in information consolidation.

In a context of information asymmetry, lending decisions are not based solely on price adjustments, but also involve risk selection and assessment mechanisms (Stiglitz and Weiss, 1981). Consequently, private sector credit aggregates may exhibit a low short-term responsiveness to monetary policy innovations. Conversely, bank stock valuations, proxied by the MASI banking index, are more likely to incorporate new information quickly, which is consistent with the semi-strong form of informational efficiency (Fama, 1991).

From this perspective, monetary policy decisions can be interpreted as public signals regarding future macro-financial conditions (Spence, 1973). The reaction of the banking index is part of an information absorption mechanism, meaning that expectations change even before any changes in balance sheet variables become observable. It is important to note that this phenomenon should not be interpreted as evidence of direct transmission through financial markets, but rather as an early reflection of monetary policy information in asset prices.

The gap between the rapid change in financial valuations and the slowness of changes in balance sheet variables is consistent with the structural limitations of the bank credit transmission channel. In the presence of prudential regulations and informational frictions, banks adjust their behavior gradually, which can delay observable changes in the supply of credit. The limited contribution of monetary policy innovations to credit variance supports this interpretation and suggests that balance sheet adjustments are not concurrent with changes in financial valuations.

This interpretation is consistent with recent data from emerging economies, where short-term monetary transmission tends to be reflected first in financial conditions, while credit adjustments remain more gradual and heterogeneous (Mishra & Montiel, 2013; Pirozhkova et al., 2024; Boutfssi et al., 2026).

Regarding inflation, the results do not reveal a stable or directional short-term response. Impulse reactions appear volatile, and the variance decomposition indicates a limited contribution from monetary policy innovations. These observations are consistent with studies highlighting the delayed transmission of prices due to nominal rigidities and the role of expectations (Clarida et al., 1999; Woodford, 2003; Romer & Romer, 2004).

Overall, the results support a sequential interpretation—understood here as an analytical framework rather than a causal order—of monetary transmission. Monetary policy innovations appear to be reflected first in financial valuations, then progressively in bank balance sheets, and finally, later, in macroeconomic variables. This interpretation, however, should be treated with caution and does not constitute proof of structural causality.

In this context, the weak short-term response of credit and inflation should not be interpreted as evidence of monetary policy ineffectiveness, but rather as a reflection of differences in the speed of adjustment between variables.

The main contribution of this study lies in its joint analysis of financial valuations, balance sheet aggregates, and inflation within a unified empirical framework. It suggests that observed differences in monetary transmission may reflect temporal heterogeneity rather than inconsistencies between theoretical channels.

Overall, the empirical data confirm the proposed hypotheses. Monetary policy innovations are associated with stronger responses in bank equity valuations (H1), while balance sheet variables exhibit weaker and non-contemporary adjustments (H2). Finally, inflation does not display a clear short-term response pattern (H3).

Policy Implications

From a macro-financial perspective, these results suggest that assessing monetary transmission at short horizons solely through credit aggregates or inflation may provide an incomplete picture. The absence of immediate responses in these variables does not necessarily imply weak transmission, but may instead reflect a sequencing process in which policy-related information is first incorporated into financial valuations.

In this context, market-based variables should be interpreted as indicators of expectation adjustments rather than as direct transmission channels.

More broadly, the findings highlight the role of structural features of the banking system in shaping transmission dynamics. Informational asymmetries, prudential constraints, and internal risk management practices may contribute to delaying adjustments in credit supply, even when financial variables appear to react.

Importantly, these results also suggest that short-run monetary transmission may be more difficult to detect using standard quantity-based indicators. This has implications for policy assessment, particularly in bank-dominated systems where balance-sheet adjustments are inherently gradual.

Given the reduced-form nature of the VAR framework, these implications remain indicative and should be interpreted with caution. Further research using structural approaches or micro-level data would be necessary to more precisely identify the underlying transmission mechanisms.

7. Conclusions

This study examines the short-run dynamics of monetary policy transmission in a bank-dominated emerging economy, with a particular focus on the relative timing of adjustments across bank equity valuations, balance-sheet aggregates, and inflation.

The empirical results suggest that monetary policy innovations are more visibly reflected in bank equity valuations proxied by the MASI banking index at short horizons, while balance-sheet variables and inflation exhibit more limited and less stable responses. This pattern is consistent with a configuration in which policy-related information appears to be incorporated into financial valuations before becoming observable in slower-moving variables.

Importantly, this interpretation does not imply the existence of a direct transmission channel through financial markets. Rather, it suggests that asset prices may reflect the early incorporation of monetary policy signals through expectation adjustments, while the diffusion toward credit and inflation remains more gradual and constrained.

The contribution of this paper lies in documenting heterogeneous short-run adjustment patterns across variables within a unified empirical framework. In this perspective, differences in observed responses may reflect variations in adjustment timing rather than the absence of transmission.

7.1. Limitations

Several limitations should be acknowledged. First, the analysis relies on a reduced-form VAR framework, which captures dynamic interactions but does not identify structural causal mechanisms. The results should therefore be interpreted as conditional associations rather than causal effects.

Second, the relatively limited sample size may constrain the precision of the estimates, particularly at longer horizons.

Third, while monthly data are appropriate for capturing short-run dynamics, they may not fully capture very high-frequency adjustments in financial variables or longer-term transmission mechanisms affecting credit and inflation.

Finally, the identification strategy relies on recursive assumptions, which may influence the interpretation of impulse responses, despite the use of complementary generalized approaches.

7.2. Future Research

These limitations open several avenues for future research. First, structural approaches such as SVAR or DSGE models could help disentangle policy innovations from informational components and provide a clearer identification of transmission mechanisms.

Second, the use of micro-level data, particularly at the bank or firm level, could offer deeper insights into credit allocation, risk assessment, and heterogeneity across borrowers.

Third, extending the analysis to alternative frequencies or employing high-frequency identification strategies could improve the understanding of short-term market reactions and the informational content of policy announcements.

Finally, further research could explore the interaction between monetary policy, financial variables, and macroeconomic outcomes across different institutional contexts, particularly in emerging economies.

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