

Effects of CBRT Policy Rate Decisions on Money Supply Dynamics: Evidence from a VAR Analysis

Özkan İmamoğlu / Asst. Prof. Dr. 

Amasya University, Merzifon Faculty Of Economics And Administrative Sciences, Department Of Economics

ozkan.imamoglu@amasya.edu.tr

Abstract

This study examines the effects of policy rate decisions of the Central Bank of the Republic of Türkiye (CBRT) on money supply dynamics within a VAR framework. Using monthly macro-financial data, the study analyzes the dynamic relationships between money supply and selected variables, including interbank interest rates, deposit interest rates, total deposits, total credit, industrial production, inflation, and securities portfolios. To evaluate these relationships, time series techniques, variance decomposition, and Granger causality analyses are employed. The findings show that money supply is initially explained largely by its own internal dynamics; however, over time, the effects of financial and real variables such as deposit and interbank interest rates, credit volume, industrial production, and inflation become more pronounced. The results indicate that CBRT

policy rate decisions are transmitted to money supply through multiple macro-financial channels. In this respect, the study provides evidence that money supply dynamics in Türkiye are shaped not only by their own structure but also by the gradual influence of policy-related financial and macroeconomic variables. These findings highlight the importance of evaluating monetary policy transmission through a multidimensional framework and contribute to the literature on monetary policy and money supply dynamics in Türkiye.

Keywords: CBRT, Policy Rate, Money Supply, Monetary Transmission, VAR Analysis, Türkiye.

JEL Codes: E51, E52, C32, E44

Citation: İmamoğlu, Ö. (2026). Effects of CBRT policy rate decisions on money supply dynamics: Evidence from a VAR analysis. *Researches on Multidisciplinary Approaches (ROMAYA Journal)*, 2026(2).

1. Introduction

Monetary policy decisions implemented by central banks play a central role in shaping macroeconomic stability, financial market conditions, and liquidity dynamics. Among these policy instruments, policy interest rates are particularly important, as they influence borrowing costs, savings decisions, credit expansion, and overall monetary conditions in the economy. In this context, the policy rate decisions of the Central Bank of the Republic of Türkiye (CBRT) constitute a key mechanism affecting money supply and the broader monetary transmission process.

Changes in policy rates are transmitted to the economy through various macro-financial channels. These channels include interbank market conditions, deposit interest rates, credit volume, inflation dynamics, and real economic activity. The interaction of these variables determines the extent to which monetary policy affects liquidity conditions and money supply over time. Therefore, analyzing the relationship between CBRT policy rate decisions and money supply dynamics is essential for understanding the effectiveness of monetary policy in Türkiye.

Money supply is not shaped solely by its own internal structure; it is also influenced by the responses of financial and real-sector variables to policy changes. Interest rate adjustments may alter banks' funding costs, deposit and lending behavior, portfolio preferences, and the overall availability of liquidity in the financial system. At the same time, inflation and industrial production may reinforce or weaken the transmission of policy signals. For this reason, the analysis of money supply requires a multidimensional framework that considers the dynamic interactions among policy-related macro-financial variables.

The main objective of this study is to examine the effects of CBRT policy rate decisions on money supply dynamics in Türkiye. To this end, the study investigates the dynamic relationships between money supply and selected macro-financial variables, including interbank interest rates, deposit interest rates, total deposits, total credit, industrial production, inflation, and securities portfolios. By employing time-series techniques and a Vector Autoregression (VAR) model, the study aims to reveal how these variables interact over time and how policy-rate-related developments are transmitted to money supply.

This study contributes to the literature in two main respects. First, it provides an empirical evaluation of money supply dynamics in Türkiye within the context of monetary policy transmission. Second, it offers a multidimensional perspective by jointly considering financial and real variables that may influence the response of money supply to policy rate decisions. In this way, the study seeks to provide a clearer understanding of the channels through which CBRT

policy decisions affect monetary conditions and to contribute to policy discussions on the effectiveness of monetary transmission in Türkiye.

2. Literature Review

2.1. Monetary Policy and Policy Rate Transmission

Monetary policy transmission refers to the process through which central bank decisions affect financial conditions, aggregate demand, output, and inflation. In modern monetary frameworks, the policy rate is one of the main instruments used by central banks to influence economic activity. Changes in the policy rate alter short-term market rates first and then spread to other financial variables such as deposit rates, lending rates, credit conditions, and liquidity. Through this process, monetary policy affects spending, saving, borrowing, and ultimately the broader macroeconomic environment (Mishkin, 1995; Choi et al., 2022).

The traditional interest rate channel emphasizes that monetary tightening raises the cost of borrowing, reduces interest-sensitive expenditures, and weakens aggregate demand, while a monetary easing works in the opposite direction. In this framework, policy-induced changes in short-term rates are transmitted to investment, consumption, and production decisions through their effects on financing costs and expected returns. For this reason, the policy rate is not only a monetary policy instrument but also a central signal shaping the overall stance of monetary conditions in the economy (Mishkin, 1995; Choi et al., 2022).

However, the transmission of monetary policy cannot be explained solely by the conventional interest rate channel. The literature has long emphasized that financial frictions, bank balance sheets, and credit market imperfections may amplify or weaken the effects of policy actions. In particular, the credit channel highlights that monetary policy affects the economy not only through market interest rates but also through the availability and terms of external finance. Bernanke and Gertler (1995) argue that tighter monetary policy can increase external finance premia by worsening credit market conditions, thereby magnifying the real effects of policy shocks. Similarly, Kashyap and Stein (1994) show that the lending channel becomes especially relevant when bank loans and market-based finance are not perfect substitutes and when changes in policy affect the supply of bank credit.

Within this broader transmission framework, banks occupy a pivotal role because they intermediate the pass-through from policy decisions to deposits, lo-

ans, and liquidity conditions. Changes in the policy rate may affect banks' funding costs, pricing behavior, maturity structures, and credit supply decisions. Therefore, the transmission mechanism is inherently multidimensional and extends beyond a simple adjustment in market rates. This point is particularly important for emerging economies, where banking sector conditions and institutional features may significantly shape the strength and speed of monetary policy pass-through (Kashyap and Stein, 1994; Baziki and Capacioglu, 2020).

The Turkish case provides especially relevant evidence for this discussion. Empirical findings suggest that under Türkiye's inflation-targeting regime, monetary policy is transmitted through interest rates and related financial variables, with meaningful effects on output and inflation dynamics. Can (2020) shows that interest rates remain a core policy instrument in Türkiye and that monetary transmission operates through multiple channels rather than through a single mechanical path. In addition, bank-level evidence from Türkiye indicates that policy rate changes affect not only loan volumes but also maturities and the intensity of bank responses, pointing to a richer and more layered transmission process within the financial system (Can, 2020; Baziki and Capacioglu, 2020). Considering this literature, policy rate decisions should be understood as central drivers of macro-financial adjustment. Their effects are transmitted through interest rates, banking behavior, credit conditions, and broader monetary aggregates, making the analysis of money supply dynamics particularly important. Accordingly, examining how CBRT policy rate decisions interact with money supply and related macro-financial variables provides a suitable framework for evaluating monetary transmission in Türkiye. This perspective also justifies the focus of the present study on policy-rate-related variables as determinants of money supply dynamics within a VAR setting (Mishkin, 1995; Bernanke and Gertler, 1995; Can, 2020).

2.2. Money Supply and the Banking Channel

The relationship between money supply and the banking system occupies a central place in the monetary transmission mechanism. In bank-based financial systems, monetary policy decisions are transmitted not only through market interest rates but also through the behavior of financial intermediaries that collect deposits, extend credit, and manage liquidity. For this reason, changes in policy rates can influence money supply indirectly by affecting banks' balance sheets, funding structures, and lending decisions. The banking sector therefore acts as a key transmission layer between central bank policy actions and broader monetary conditions in the

economy (Bernanke and Blinder, 1988; Kashyap and Stein, 1994; Mishkin, 1996).

A core component of this process is the deposit channel. Policy-rate changes affect the return on savings instruments and the cost of funds in the banking system, which in turn shape deposit accumulation and the composition of bank liabilities. As deposit conditions change, banks adjust their liquidity positions and their ability to support credit creation. Since deposits are a major funding source for commercial banks, movements in deposit volumes and deposit rates are closely linked to the evolution of money supply, especially in systems where bank intermediation remains dominant (Kashyap and Stein, 1994; Disyatat, 2011).

The credit channel reinforces this mechanism by linking monetary policy to loan supply and financing conditions. Bernanke and Gertler (1995) argue that monetary tightening may weaken borrowers' balance sheets and raise external finance premium, thereby amplifying the real effects of policy shocks. In parallel, the bank lending view emphasizes that when policy actions affect the volume or terms of bank lending, the resulting changes in credit supply may influence both aggregate demand and monetary aggregates. In this sense, credit is not merely an outcome of monetary conditions; it is also one of the channels through which policy actions reshape liquidity and money creation over time (Bernanke and Gertler, 1995; Kashyap and Stein, 1994; Gambacorta and Marques-Ibanez, 2011).

Interest rate pass-through plays a critical role in connecting policy decisions to deposit and credit behavior. When policy rates change, the degree and speed with which these changes are transmitted to retail banking rates determine how strongly banks and customers respond. If pass-through is strong, policy actions are more likely to alter deposit incentives, lending costs, and portfolio choices, thereby influencing the pace of money creation. If pass-through is weak or delayed, the effect of monetary policy on money supply may become less direct and more dependent on institutional or structural conditions in the banking sector (Aydın, 2007; Şahin et al., 2018).

These issues are particularly important in Türkiye, where the monetary transmission mechanism has historically operated through multiple interrelated channels. Evidence for Türkiye suggests that interest-rate movements affect banking variables such as deposits, loans, and retail lending conditions, while the overall strength of transmission depends on the institutional structure of the banking system and the prevailing monetary policy framework. Başçı et al. (2007) emphasize that the Turkish transmission mechanism includes not only the interest rate channel but also the credit and expectations channels, while Özşuca and Akbostancı (2012) provide empiri-

cal evidence that the banking sector plays a meaningful role in transmitting policy changes. In addition, studies on Turkish interest rate pass-through show that policy-related rates influence loan and deposit pricing, although the degree of pass-through may vary across instruments and periods (Başçı et al., 2007; Özşuca and Akbostancı, 2012; Yüksel et al., 2013).

Considering this literature, the inclusion of variables such as deposit interest rates, interbank interest rates, total deposits, and total credit is theoretically well grounded in studies of money supply dynamics. These variables represent the main banking-sector channels through which policy-rate decisions can affect liquidity conditions and the expansion or contraction of monetary aggregates. Therefore, examining their dynamic interaction with money supply provides a suitable framework for evaluating how CBRT policy rate decisions are transmitted through the banking system in Türkiye (Bernanke and Blinder, 1988; Bernanke and Gertler, 1995; Başçı et al., 2007).

2.3. Inflation, Industrial Production and Macro-Financial Dynamics

Inflation and industrial production are two fundamental macroeconomic variables in the analysis of money supply dynamics because they reflect both the nominal and real dimensions of monetary transmission. Monetary policy does not operate in isolation; its effects spread through a network of financial and real-sector variables that jointly shape liquidity conditions, aggregate demand, and price developments. For this reason, examining money supply together with inflation and industrial production provides a broader framework for understanding how policy-rate decisions are transmitted throughout the economy (Boivin et al., 2010; Choi et al., 2022).

Inflation is closely linked to money supply through several channels. From a monetary transmission perspective, policy-rate changes influence inflation by affecting borrowing costs, domestic demand, expectations, and broader financial conditions. At the same time, inflation itself may alter money-holding behavior, liquidity preferences, and the real value of financial balances, thereby feeding back into monetary aggregates. This two-way interaction makes inflation an essential variable in empirical studies that seek to understand the transmission of policy decisions to money supply and broader macro-financial conditions (Eickmeier et al., 2022; Miranda-Pinto and Young, 2023).

Industrial production represents the real activity side of this transmission process. Changes in monetary conditions can affect production by altering financing costs, investment incentives, working capital needs, and aggregate demand. Conversely, movements in industrial production may influence money

demand and the use of bank credit by firms, thereby affecting liquidity and monetary expansion. In this sense, industrial production is not merely an output indicator; it is also a variable that helps capture how monetary policy is transmitted to the real economy and how real-sector responses interact with financial variables over time (Boivin et al., 2010; Barth and Ramey, 2002).

The joint consideration of inflation and industrial production is especially important because monetary policy often generates interconnected effects on prices and output rather than isolated movements in a single indicator. Recent evidence shows that the strength and composition of monetary transmission depend on whether financial and policy shocks operate primarily through demand channels, supply channels, or cost channels. This implies that inflation and industrial production should be analyzed together when evaluating the macro-financial consequences of policy-rate changes and their implications for money supply dynamics (Eickmeier et al., 2022; Ha et al., 2024).

This multidimensional perspective is also relevant for Türkiye. Evidence from the CBRT and related studies indicates that inflation dynamics and industrial production are closely monitored in the conduct and evaluation of monetary policy, since both variables reflect the interaction between financial conditions and real economic activity. Studies focusing on Türkiye further show that inflation and industrial production can be forecast and interpreted through a broad information set, which supports their inclusion in empirical models of monetary transmission and money supply behavior (Günay, 2018; Saygılı, 2021).

Accordingly, the inclusion of inflation and industrial production in the present study is theoretically and empirically justified. These variables capture the real and nominal dimensions of monetary transmission and help explain how policy-rate-related developments are reflected in money supply dynamics. Their interaction with interest rates, deposits, and credit also strengthens the macro-financial interpretation of the model and supports a more comprehensive evaluation of monetary policy transmission in Türkiye (Choi et al., 2022; Günay, 2018).

2.4. Empirical Evidence on Monetary Transmission in Türkiye

Empirical studies on Türkiye generally show that monetary policy transmission operates through multiple and interacting channels rather than through a single linear mechanism. In particular, the Turkish literature emphasizes the joint role of policy rates, exchange rates, credit conditions, and banking-sector behavior in shaping macroeconomic outcomes. One of the earlier studies in this area, Us (2004), analyzes the monetary transmission mechanism in Türkiye

using a structural macroeconomic model and shows that policy design matters for how inflation, output, and financial conditions respond to monetary interventions. This line of research established that Turkish monetary transmission should be assessed within a broader macro-financial framework rather than through a narrow one-channel approach (Us, 2004).

Subsequent empirical research has provided stronger evidence on the interest rate channel in Türkiye. Sarac and Ucan (2013) examine the validity of the interest rate channel during the inflation-targeting period and report that the effectiveness of this channel increased after 2002. More recent studies on interest rate pass-through also show that the degree and speed with which policy-rate changes are transmitted to bank lending rates are crucial for the effectiveness of monetary policy. For example, Akşehirli (2024) finds evidence of interest rate pass-through in Türkiye, while also showing that the magnitude and adjustment speed of pass-through may differ across sub-periods. These results suggest that policy rate decisions influence monetary conditions not only directly, but also through their transmission to retail banking rates (Sarac and Ucan, 2013; Akşehirli, 2024).

Another important strand of the Turkish literature focuses on the banking and credit channels. Can (2020) shows, using VAR models for the post-2006 inflation-targeting period, that interest rates remain a central policy tool in Türkiye and that monetary transmission works through more than one macroeconomic pathway. At the micro level, Baziki and Çapacıoğlu (2020) provide bank-firm-loan level evidence showing that policy-rate increases reduce both commercial loan volumes and maturities, with stronger effects for smaller or more fragile banks. Similarly, Binici et al. (2013) show that the CBRT's interest rate corridor and liquidity management framework affect credit and deposit rates through different channels, indicating that monetary policy transmission in Türkiye is closely linked to banking-sector pricing and risk appetite. Together, these studies support the view that credit supply, deposit conditions, and bank behavior are central to the Turkish transmission mechanism (Can, 2020; Baziki and Çapacıoğlu, 2020; Binici et al., 2013).

The Turkish evidence also indicates that financial markets respond meaningfully to policy actions. Duran et al. (2012) show that the transmission of monetary policy to asset prices constitutes an important stage of the monetary transmission mechanism in Türkiye. This finding is important because it reinforces the idea that policy-rate decisions affect broader monetary conditions through a web of financial variables rather than through a single observable market price. Taken together, the empirical literature on Türkiye suggests that policy-rate changes are

transmitted through interest rates, credit conditions, deposit behavior, asset prices, and banking-sector responses. This multidimensional structure provides a strong empirical basis for examining money supply dynamics together with policy-related macro-financial variables in the Turkish case (Duran et al., 2012; Can, 2020).

2.5. Research Gap and Hypotheses Development

Although the literature on Türkiye provides important evidence on monetary transmission, several limitations remain. First, many studies focus on a specific transmission channel, such as the interest rate channel, the exchange rate channel, or the credit channel, rather than examining the joint dynamics of money supply with multiple policy-related macro-financial variables. Second, a considerable part of the Turkish literature concentrates on inflation, output, lending behavior, or asset-price responses, while the direct dynamic relationship between policy-rate-related variables and money supply has received comparatively less attention. Third, the coexistence of banking variables, real-sector indicators, and monetary aggregates in a unified time-series framework remains relatively underexplored in the Türkiye context (Us, 2004; Sarac and Ucan, 2013; Can, 2020; Akşehirli, 2024).

The present study addresses this gap by focusing directly on money supply dynamics and by examining how they are affected by policy-related financial and macroeconomic variables within a VAR framework. Unlike studies that isolate one transmission channel, this study jointly evaluates interbank interest rates, deposit interest rates, total deposits, total credit, industrial production, inflation, and securities portfolios. In doing so, it offers a more integrated perspective on how CBRT policy rate decisions are transmitted through financial intermediation, macroeconomic activity, and liquidity conditions. This integrated design is the main contribution of the study to the literature on monetary transmission in Türkiye (Baziki and Çapacıoğlu, 2020; Binici et al., 2013; Duran et al., 2012).

Based on the theoretical and empirical literature reviewed above, the following hypotheses are developed:

H1: Policy-rate-related financial variables have a statistically significant effect on money supply dynamics in Türkiye.

H2: Deposit and credit variables provide significant explanatory power for changes in money supply.

H3: Inflation and industrial production contribute significantly to the dynamic behavior of money supply.

H4: There are Granger-causal relationships between money supply and selected macro-financial variables associated with monetary policy transmission.

These hypotheses are consistent with the literature showing that monetary policy in Türkiye operates through interconnected financial and real-sector channels. They also provide a clear analytical bridge between the theoretical framework and the econometric model employed in this study (Can, 2020; Baziki and Çapacıoğlu, 2020; Akşehirli, 2024).

3. Methodology / Data and Model

3.1. Data

This study examines the effects of CBRT policy rate decisions on money supply dynamics in Türkiye by using monthly time-series data. The empirical analysis is based on macro-financial variables that represent the main channels of monetary transmission, including interest rates, deposits, credit volume,

inflation, industrial production, and securities portfolios.

The dataset covers the 2020–2025 period and is constructed from official statistical sources. Monetary and banking variables such as M2 money supply, total deposits, total credit, and total securities portfolios are obtained from the Central Bank of the Republic of Türkiye (CBRT) through the Monthly Money and Banking Statistics and the Electronic Data Delivery System (EVDS). The deposit interest rate series is obtained from the CBRT’s official interest rate statistics for Turkish lira deposits. The Consumer Price Index (CPI) and the Industrial Production Index (IPI) are officially produced by the Turkish Statistical Institute (TURKSTAT) and accessed through official releases and the EVDS platform (Central Bank of the Republic of Türkiye [CBRT], n.d.-a, n.d.-b; Turkish Statistical Institute [TURKSTAT], 2025).

The variables included in the study are presented in Table 1.

Table 1. Description of Variables

Variable	Definition	Source Institution	Access Platform
M2	M2 Money Supply	CBRT	EVDS / Monthly Money and Banking Statistics
INT	Interbank Overnight Weighted Average Interest Rate	CBRT	EVDS
DEPINT	Deposit Interest Rate (TRY deposits)	CBRT	EVDS / Interest Rate Statistics
DEP	Total Deposits	CBRT	EVDS / Monthly Money and Banking Statistics
CREDIT	Total Credit	CBRT	EVDS / Monthly Money and Banking Statistics
IPI	Industrial Production Index	TURKSTAT	EVDS / Official Releases
CPI	Consumer Price Index	TURKSTAT	EVDS / Official Releases
SEC	Total Securities Portfolio	CBRT	EVDS / Banking Statistics

Source: Compiled by the author from official statistical sources.

The inclusion of these variables is consistent with the monetary transmission literature. While M2 is the focal monetary aggregate of the study, the remaining variables capture the main financial and macroeconomic channels through which policy rate decisions may affect liquidity conditions and money supply over time.

3.2. Model

Unlike a single-equation regression framework, the present study adopts a Vector Autoregression (VAR) model in order to analyze the dynamic interrelationships among money supply and the selected macro-financial variables. This choice is appropriate because the variables considered in the study influence each other simultaneously over time, and im-

posing a strict exogenous-endogenous distinction would be overly restrictive.

Accordingly, the baseline empirical system can be expressed as follows:

$$= c + A_1 Y_t Y_{t-1} + A_2 Y_t Y_{t-2} + \dots + A_p Y_t Y_{t-p} + u_t$$

where

$$Y_t = \begin{bmatrix} M2_t \\ INT_t \\ DEPINT_t \\ DEP_t \\ CREDIT_t \\ IPI_t \\ CPI_t \\ SEC_t \end{bmatrix}$$

In this system, c denotes the vector of constant terms, A_i represents the coefficient matrices for lagged values, p is the lag length, and u_t is the vector of innovations. This framework allows each variable to be explained by its own lagged values as well as by the lagged values of all other variables in the system. In this way, the model captures the dynamic structure of monetary transmission more effectively than a conventional static regression model.

The model is designed to evaluate how policy-rate-related variables are transmitted to money supply through interest rate, deposit, credit, and macro-economic channels. Therefore, money supply is not treated merely as the dependent variable in a simple regression equation; rather, it is analyzed as the central variable within a system of jointly determined macro-financial variables.

3.3. Econometric Procedure

The econometric procedure of the study follows the standard stages of multivariate time-series analysis.

First, the stationarity properties of all variables are examined by using the Augmented Dickey–Fuller (ADF) and Phillips–Perron (PP) unit root tests. These tests are used to determine whether the series contain a unit root and whether they are stationary in levels or in first differences. The test equations used in the study are given below.

Constant Model

$$\Delta Y_t = \alpha_0 + \gamma Y_{t-1} + u_t$$

Constant and Trend Model

$$\Delta Y_t = \alpha_0 + \alpha_1 t + \gamma Y_{t-1} + u_t$$

If the variables are found to be stationary at first difference, this indicates that they are integrated of order one, $I(1)$. In standard time-series analysis, the next step after identifying $I(1)$ variables is to test for the existence of a long-run equilibrium relationship among them by using a Johansen cointegration test. If cointegration is detected, a Vector Error Correction Model (VECM) becomes more appropriate; if no cointegration exists, the analysis can proceed with a VAR model estimated in first differences. However, the current study does not report Johansen cointegration test results. Therefore, the empirical findings are interpreted within the limits of the estimated VAR framework, and the absence of an explicit cointegration analysis should be considered a methodological limitation. Future research may strengthen the empirical design by incorporating Johansen cointegration results and, where appropriate, comparing the findings with a VECM specification.

Second, the appropriate lag length is determined by using standard information criteria such as the Akaike Information Criterion (AIC), Schwarz Information

Criterion (SC), Hannan–Quinn Criterion (HQ), and Final Prediction Error (FPE). Since the study includes multiple variables and a relatively limited sample period, lag selection should be handled carefully in order to avoid overparameterization.

Third, after estimating the VAR model, several diagnostic tests are applied to evaluate the adequacy of the specification. These include serial correlation tests, heteroskedasticity tests, and stability tests. These diagnostic procedures are necessary to determine whether the estimated model is statistically reliable and dynamically stable.

Fourth, the dynamic relationships among the variables are examined through Granger causality tests, impulse response functions, and forecast error variance decomposition. The Granger causality test is used to determine whether the past values of one variable help predict another variable. The impulse response functions show how a shock to one variable affects the others over time. The variance decomposition analysis quantifies the proportion of the forecast error variance of money supply that is explained by shocks to the other variables in the system.

Taken together, this methodological framework allows the study to examine not only whether policy-related macro-financial variables are associated with money supply, but also how these relationships evolve dynamically over time.

4. Findings

Before presenting the empirical results, it should be noted that although the variables were found to be predominantly integrated of order one, $I(1)$, the current study does not report Johansen cointegration test results. For this reason, the findings presented below are evaluated within the estimated VAR framework and should be interpreted as evidence of dynamic short- to medium-run relationships rather than as confirmation of a long-run equilibrium structure.

This section presents the empirical findings of the study on the effects of CBRT policy-rate-related macro-financial variables on money supply dynamics in Türkiye. In line with the econometric framework of the study, the analysis begins with descriptive statistics for all variables included in the VAR system. These statistics provide an initial overview of the central tendency, dispersion, and range of the series used in the empirical model.

4.1. Descriptive Statistics

Table 2 reports the descriptive statistics of the variables included in the analysis, namely money supply, interbank overnight weighted average interest rate, deposit interest rate, total deposits, total credit, industrial production index, consumer price index, and total securities portfolio.

Table 2. Descriptive Statistics of the Variables

Variable	Mean	Standard Deviation	Minimum	Maximum
Money Supply	22.703	0.641	21.709	23.714
BAFO	25.907	16.140	7.760	56.920
MFO	25.724	16.817	7.344	59.543
Deposit	22.687	0.658	21.684	23.696
Credit	20.513	0.615	19.681	21.672
SÜE	4.611	0.097	4.241	4.697
CPI	6.898	0.622	6.101	7.944
MKP	21.295	0.621	20.258	22.264

The descriptive statistics presented in Table 2 provide useful preliminary information about the overall structure of the variables. In particular, the mean, standard deviation, minimum, and maximum values help assess the scale and variability of each series over the sample period. The results indicate that the interest-rate variables, namely BAFO and MFO, exhibit relatively higher volatility compared to the other variables, while monetary and balance-sheet variables such as money supply, deposits, credit, and securities portfolio display comparatively smoother variation over time. The industrial production index also appears more stable in relative terms, whereas

CPI reflects an upward price-level structure consistent with the inflation dynamics observed during the sample period.

Before estimating the VAR model, it is necessary to determine whether the variables satisfy the stationarity condition required in time-series analysis. For this purpose, the behavior of the series is first examined graphically in their level form, and then their stationarity properties are tested statistically by using the Augmented Dickey–Fuller (ADF) and Phillips–Perron (PP) unit root tests. The graphical representations of the level values of the variables are presented below



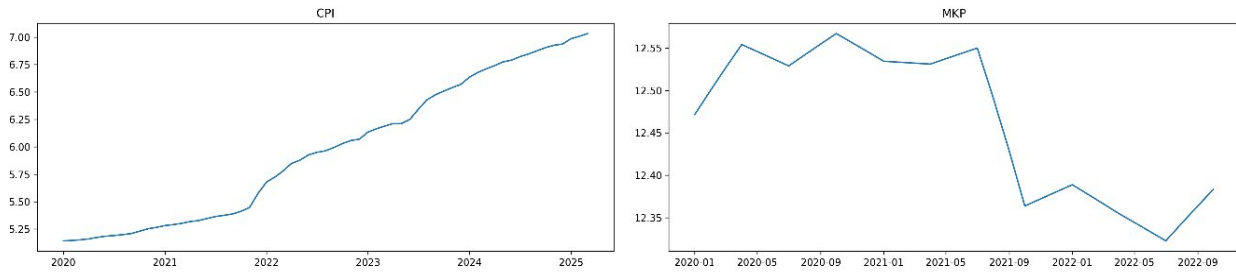


Figure 1. Level-Form Graphical Representations of the Variables Used in the VAR Model

Note: The figure presents the level values of money supply, interbank overnight weighted average interest rate, deposit interest rate, total deposits, total credit, industrial production, consumer prices, and securities portfolio over the sample period.

Before proceeding to the formal unit root tests, the variables were also examined graphically in their level form in order to observe their general trend, volatility, and possible non-stationary behavior over the sample period. This visual inspection provides a preliminary indication of whether the series exhibit persistent trends or structural fluctuations that may affect the reliability of VAR estimation in levels.

As shown in Figure 1, several variables display clear trending behavior over time, particularly money supply, deposits, credit, CPI, and the securities portfolio. By contrast, the interest-rate variables exhibit sharper fluctuations and more pronounced short-term movements. These graphical patterns provide

de preliminary visual support for the possibility that most variables may not satisfy the stationarity condition in levels, which justifies the subsequent application of ADF and PP unit root tests.

4.2. Unit Root Test Results

In order to determine the stationarity properties of the variables included in the model, Augmented Dickey–Fuller (ADF) and Phillips–Perron (PP) unit root tests were applied to both the level values and the first differences of the series. The results for the level values are reported in Table 3.

Table 3. ADF and PP Unit Root Test Results for Level Values

Variables	ADF (constant)	ADF (constant and trend)	PP (constant)	PP (constant and trend)	Maximum
Money Supply	0.0049 [0.9550]	-2.5638 [0.2979]	-0.0522 [0.9494]	-1.6522 [0.7599]	23.714
BAFO	-1.3797 [0.5860]	-2.9930 [0.1435]	0.0678 [0.9606]	-1.5193 [0.8120]	56.920
MFO	-0.6498 [0.8506]	-3.5609** [0.0431]	0.1139 [0.9643]	-1.5036 [0.8176]	59.543
Deposit	-0.2744 [0.9219]	-2.2392 [0.4596]	-0.1551 [0.9379]	-1.5844 [0.7876]	23.696
Credit	1.4985 [0.9991]	-2.7646 [0.2159]	1.4759 [0.9991]	-2.0049 [0.5867]	21.672
SÜE	-2.4149 [0.1423]	-2.9872 [0.1449]	-1.5174 [0.5181]	-1.7843 [0.7001]	4.697
CPI	0.6604 [0.9902]	-2.7285 [0.2295]	1.1179 [0.9973]	-2.6765 [0.2498]	7.944
MKP	-0.1875 [0.9338]	-2.6865 [0.2459]	-0.6711 [0.8458]	-1.6311 [0.7688]	22.264

Critical Values

Significance Level	ADF (constant)	ADF (constant and trend)	PP (constant)	PP (constant and trend)
1%	-3.550396	-4.140858	-3.544063	-4.118444
5%	-2.913549	-3.496960	-2.910860	-3.486509
10%	-2.594521	-3.177579	-2.593090	-3.171541

Note: Critical values for the ADF and PP tests are based on MacKinnon (1996). Values in square brackets indicate p-values. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

The results reported in Table 3 indicate that most variables are non-stationary in levels according to both ADF and PP tests under the constant and constant-and-trend specifications. Although the MFO variable appears significant in the ADF test under the constant-and-trend specification, the overall evidence from the unit root tests suggests that the level

values of the variables do not consistently satisfy the stationarity condition required for reliable VAR estimation. Therefore, the stationarity of the first differences of the series was further examined.

The test results for the first-difference values are presented in Table 4.

Table 4. ADF and PP Unit Root Test Results for First Differences

Variables	ADF (constant)	ADF (constant and trend)	PP (constant)	PP (constant and trend)	Maximum
D(Money Supply)	-3.0898** [0.0328]	-4.0695** [0.0146]	-3.0713** [0.0343]	-4.0494** [0.0257]	23.714
D(BAFO)	-3.6307*** [0.0079]	-3.5045** [0.0481]	-3.5014** [0.0113]	-3.3655* [0.0660]	56.920
D(MFO)	-2.9072* [0.0507]	-3.7962** [0.0136]	-5.6311*** [0.0000]	-5.6168*** [0.0001]	59.543
D(Deposit)	-2.9715** [0.0435]	-3.9452** [0.0252]	-2.8987* [0.0515]	-3.8713** [0.0105]	23.696
D(Credit)	-5.2303*** [0.0001]	-5.6373*** [0.0001]	-3.3614** [0.0164]	-3.3484* [0.0686]	21.672
D(SÜE)	-4.0834*** [0.0022]	-3.3819* [0.0642]	-4.5806*** [0.0004]	-6.3424*** [0.0000]	4.697
D(CPI)	-4.0065*** [0.0026]	-4.1523*** [0.0092]	-4.0656*** [0.0022]	-4.2328*** [0.0073]	7.944
D(MKP)	-3.1353** [0.0293]	-4.0767** [0.0146]	-3.1138** [0.0309]	-4.0494** [0.0105]	22.264

Critical Values

Significance Level	ADF (constant)	ADF (constant and trend)	PP (constant)	PP (constant and trend)
1%	-3.546099	-4.121303	-3.546099	-4.121303
5%	-2.911730	-3.487845	-2.911730	-3.487845
10%	-2.593551	-3.172314	-2.593551	-3.172314

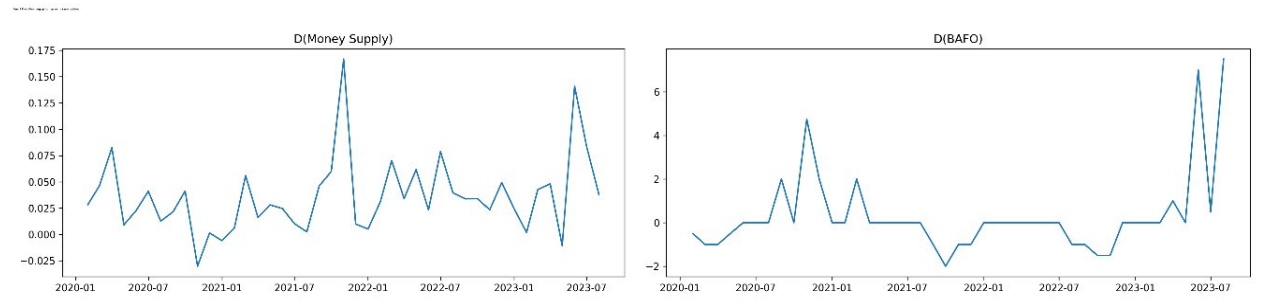
Note: Critical values for the ADF and PP tests are based on MacKinnon (1996). Values in square brackets indicate p-values. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

According to the findings in Table 4., all variables become stationary after first differencing under the relevant test specifications. In other words, the first differences do not exhibit a unit root problem. These results indicate that the variables can be treated as integrated of order one, I(1).

Since the variables are predominantly I(1), the next step in the empirical analysis is to examine whether a long-run equilibrium relationship exists among them. For this reason, following the unit root analysis, the appropriate lag length and the cointegration

structure of the system should be evaluated before proceeding with the estimation of the VAR or VECM framework.

To complement the statistical evidence obtained from the ADF and PP tests, the first-differenced forms of the variables are also presented graphically below. Examining the transformed series visually helps assess whether differencing reduces trend behavior and produces more stable fluctuations around a constant mean.



Effects of CBRT Policy Rate Decisions on Money Supply Dynamics: Evidence from a VAR Analysis

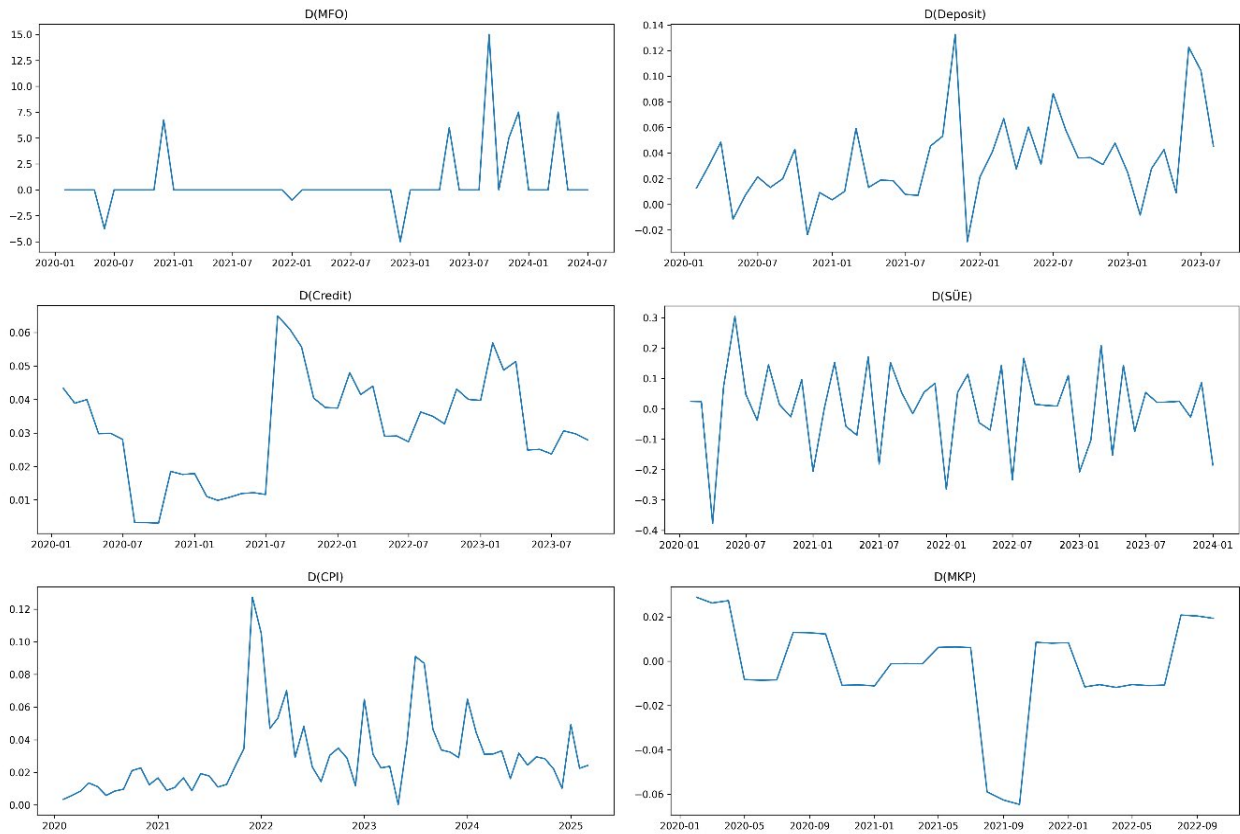


Figure 2. First-Difference Graphical Representations of the Variables Used in the VAR Model

Note: The figure presents the first-differenced forms of money supply, interbank overnight weighted average interest rate, deposit interest rate, total deposits, total credit, industrial production, consumer prices, and securities portfolio.

Figure 2 shows that the first-differenced series fluctuate around a relatively more stable mean and no longer exhibit the pronounced trend patterns observed in the level series. In general, the transformed variables appear more suitable for time-series modeling, which is consistent with the ADF and PP findings reported in Table 4. Therefore, the graphical evidence supports the conclusion that the variables can be treated predominantly as integrated of order one, $I(1)$.

4.3. Lag Length Selection and Diagnostic Tests

Following the unit root analysis, the next step is to determine the appropriate lag length for the VAR model. In multivariate time-series analysis, lag selection is critical because an insufficient lag structure may omit important dynamic relationships, while an excessive lag order may lead to overparameterization. Therefore, the optimal lag length was evaluated by using standard information criteria, namely the Likelihood Ratio (LR), Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Criterion (SC), and Hannan–Quinn Criterion (HQ).

Table 5. VAR Lag Length Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	813.5089	NA	2.63e-23	-29.29123	-28.99926	-29.17833
1	973.3925	267.4416	8.23e-25	-32.77791	-30.15013*	-31.76173
2	1021.9590	67.10997	1.66e-24	-32.21669	-27.25310	-30.29723
3	1112.1620	98.40344	9.64e-25	-33.16953	-25.87014	-30.34680
4	1225.2290	90.45371*	4.05e-25	-34.95379	-25.31859	-31.22778
5	1365.2710	71.29408	1.85e-25*	-37.71895*	-25.74795	-33.08967*

Table 5 reports the lag length selection criteria for the VAR model. The asterisks indicate the preferred lag order under each criterion. The results show that the AIC, FPE, and HQ criteria select lag 5, while the SC criterion suggests a more parsimonious lag order of 1. In addition, the LR statistic favors lag 4. Considering that several criteria support lag 5, the VAR(5) specification was selected for the baseline analysis.

However, given the relatively limited sample size and the number of variables included in the system, this choice should be interpreted with caution in terms of model parsimony.

After determining the lag structure, the adequacy of the estimated VAR(5) model was evaluated through diagnostic tests for serial correlation, heteroskedasticity, and stability.

Table 6. LM Autocorrelation Test Results

Lag	LRE* Stat	df	Probability	Rao F-stat	df	Probability
1	74.05981	64	0.1828	1.171313	(64, 52.6)	0.2783
2	96.03939*	64	0.0059	1.770576**	(64, 52.6)	0.0170
3	65.79812	64	0.4144	0.983781	(64, 52.6)	0.5281
4	61.19264	64	0.5764	0.887009	(64, 52.6)	0.6783
5	51.74967	64	0.8645	0.704499	(64, 52.6)	0.9096
5	1365.2710	71.29408	1.85e-25*	-37.71895*	-25.74795	-33.08967*

Note: *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table 6 presents the LM serial correlation test results for the VAR(5) model. The null hypothesis of the test states that there is no serial correlation in the residuals. The results indicate that the null hypothesis cannot be rejected for lags 1, 3, 4, and 5. However, at lag 2, the null hypothesis is rejected, suggesting the presence of residual autocorrelation at that lag level. Accordingly, the diagnostic evidence does not sup-

port the conclusion that the model is entirely free from autocorrelation. Rather, the findings indicate that the VAR(5) specification performs reasonably well at most lag levels, but there is a serial correlation issue specifically at the second lag. This result should be taken into account when interpreting the dynamic structure of the model and may be discussed as a limitation of the specification.

Table 7. White Heteroskedasticity Test Results

Chi-Square	df	Probability
1730.172	1728	0.4807

Note: *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table 7 reports the White heteroskedasticity test results for the VAR(5) model. The null hypothesis of the test states that the residuals have constant variance, while the alternative hypothesis indicates the presence of heteroskedasticity. Since the probability value of the chi-square statistic is 0.4807, the null hypothesis cannot be rejected at conventional significance levels. Therefore, the results suggest that the estimated VAR(5) model does not suffer from a heteroskedasticity problem.

mated model is stable and does not exhibit heteroskedasticity; however, the serial correlation detected at the second lag should be acknowledged in the interpretation of the findings.

Finally, the stability of the VAR(5) model was evaluated by examining the inverse roots of the characteristic polynomial. The results indicate that all characteristic roots lie inside the unit circle, which implies that the model satisfies the stability condition. Taken together, the diagnostic tests suggest that the esti-

4.4. Variance Decomposition Results

The hypotheses developed in the study are evaluated not only through the overall VAR framework but also through the forecast error variance decomposition results. In particular, H1, H2, and H3 are directly related to the extent to which policy-rate-related financial variables, banking variables, and macroeconomic indicators explain fluctuations in money supply over time.

Table 8. Forecast Error Variance Decomposition Results for Money Supply

Pe- riod	S.E.	Money Supply	BAFO	MFO	DEPOSIT	CREDIT	SÜE	CPI	MKP
1	0.013645	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.017931	92.47744	0.039984	1.086368	0.000401	0.352694	0.512694	5.310605	0.219811
3	0.020163	89.52711	0.387095	1.783973	0.001025	0.768211	0.663015	6.485455	0.384117
4	0.021073	82.71934	2.081521	3.838919	0.209636	2.440566	0.982308	7.174146	0.553559
5	0.021570	79.13877	3.595603	5.119024	0.319491	3.217335	0.937651	7.030113	0.642014
6	0.021835	77.23985	4.591911	5.459644	0.389248	3.799928	0.924466	6.954138	0.640816
7	0.022129	75.56372	6.142264	5.690640	0.389254	3.700152	0.906019	6.941018	0.666931
8	0.022453	74.02694	7.444192	5.859718	0.460619	3.606234	0.905145	7.046256	0.650897
9	0.022714	73.28503	8.057762	5.896022	0.615236	3.526163	0.891477	7.087531	0.640775
10	0.022888	72.52317	8.499255	5.986781	0.773984	3.473100	0.928242	7.103661	0.711802

Table 8 reports the forecast error variance decomposition of money supply over a ten-period horizon. The results show that, in the first period, the forecast error variance of money supply is explained entirely by its own shocks. This is an expected finding in VAR-based variance decomposition and indicates that money supply initially reflects its own short-run internal dynamics.

However, as the time horizon expands, the explanatory power of money supply's own shocks gradually declines. By the tenth period, the proportion explained by its own innovations falls to 72.52%, implying that the contribution of other macro-financial variables becomes increasingly important over time. This pattern suggests that money supply dynamics in Türkiye are not purely self-determined in the medium term; rather, they are progressively shaped by policy-related financial variables and broader macroeconomic conditions.

Among the policy-rate-related financial variables, BAFO and MFO display a rising contribution throughout the forecast horizon. The explanatory share of BAFO increases from virtually zero in the first periods to 8.50% in the tenth period, while the contribution of MFO reaches 5.99%. These findings provide support for H1, indicating that policy-rate-related financial variables have a statistically meaningful role in explaining money supply dynamics. More specifically, the results suggest that interbank and deposit rate conditions become increasingly relevant in the transmission of monetary policy to monetary aggregates.

The contribution of banking variables also becomes more visible over time. Although the effect of DEPOSIT remains relatively limited, increasing to 0.77% in the tenth period, the contribution of CREDIT rises more clearly and reaches 3.47% by the end of the forecast horizon. This pattern supports H2, which states that deposit and credit variables provide explanatory

power for changes in money supply. In particular, the stronger medium-term role of credit suggests that bank lending dynamics form an important part of the transmission from financial conditions to money supply.

With respect to macroeconomic indicators, the explanatory share of CPI increases substantially after the first period and reaches 7.10% in the tenth period. This is one of the largest contributions among the non-monetary variables and supports H3, indicating that inflation contributes significantly to the dynamic behavior of money supply. In contrast, the contribution of SÜE remains more modest, fluctuating around 1% throughout the forecast horizon. This suggests that industrial production has a more limited but still non-negligible role in the system. Taken together, these findings indicate that price dynamics are more influential than real activity in explaining variations in money supply within the period examined.

The contribution of MKP remains comparatively low, reaching 0.71% in the tenth period. Although this indicates that the securities portfolio variable has a limited direct contribution to the forecast error variance of money supply, its presence in the system is still relevant for capturing the broader financial environment surrounding monetary transmission.

Overall, the variance decomposition results indicate that money supply is initially driven by its own shocks, but the explanatory role of other macro-financial variables increases over time. In particular, interbank interest rates, deposit interest rates, credit, and inflation emerge as the most important external contributors to money supply dynamics. These findings are consistent with the multidimensional structure of the monetary transmission mechanism and suggest that the management of money supply in Türkiye is closely associated with both financial and macroeconomic developments.

4.5. Granger Causality Results

Finally, the causal relationships among the variables were examined by means of the Granger causality test, and the results are reported in Table 9. In this context, H4 proposes that there are Granger-causal

relationships between money supply and selected macro-financial variables associated with monetary policy transmission. It should be noted that Granger causality refers to predictive causality based on lagged values and should not be interpreted as structural causality in the strict sense.

Table 9. Granger Causality Test Results

Null Hypothesis	Test Statistic	Probability	Decision
DBAFO does not Granger-cause Money Supply	6.860	0.3340	Not rejected
DMFO does not Granger-cause Money Supply	26.636	0.0074	Rejected
DLMDEPOSITS does not Granger-cause Money Supply	21.613	0.0014	Rejected
DLKREDI does not Granger-cause Money Supply	20.935	0.0019	Rejected
DLSUE does not Granger-cause Money Supply	22.540	0.0010	Rejected
DLTUFE does not Granger-cause Money Supply	10.603	0.1014	Not rejected
DLMKP does not Granger-cause Money Supply	25.521	0.0003	Rejected
Money Supply does not Granger-cause DMFO	26.482	0.0036	Rejected
Money Supply does not Granger-cause DBAFO	9.392	0.1046	Not rejected
Money Supply does not Granger-cause DLMDEPOSITS	25.327	0.0184	Rejected
Money Supply does not Granger-cause DLKREDI	27.430	0.0082	Rejected
Money Supply does not Granger-cause DLSUE	8.520	0.1385	Not rejected
Money Supply does not Granger-cause DLTUFE	22.395	0.0167	Rejected
Money Supply does not Granger-cause DLMKP	10.330	0.1081	Not rejected

The results in Table 9 indicate that several macro-financial variables possess statistically significant predictive power for money supply dynamics. In particular, the null hypothesis is rejected for DMFO, DLMDEPOSITS, DLKREDI, DLSUE, and DLMKP, indicating that these variables Granger-cause money supply over the sample period. By contrast, the null hypothesis cannot be rejected for DBAFO and DLTUFE, suggesting that these variables do not exhibit statistically significant predictive causality toward money supply within the estimated framework.

The findings for DMFO provide support for H1, which states that policy-rate-related financial variables have a statistically significant effect on money supply dynamics in Türkiye. More specifically, changes in deposit interest rates appear to contain useful predictive information for subsequent changes in money supply. However, the same result is not observed for DBAFO, since the interbank overnight weighted average interest rate does not Granger-cause money supply at conventional significance levels. Therefore, the evidence for H1 should be interpreted as partial, rather than applying uniformly to all interest-rate-related variables.

The results for DLMDEPOSITS and DLKREDI provide clear support for H2. Both deposit and credit variables are found to Granger-cause money supply,

suggesting that banking-sector balance sheet dynamics have an important explanatory role in the behavior of monetary aggregates. The significance of the credit variable is particularly noteworthy, as it is consistent with the view that lending activity forms an important channel in the expansion of broad money. Similarly, the result for deposits indicates that funding conditions within the banking system are closely connected to money supply movements.

With respect to H3, the evidence is mixed. DLSUE is found to Granger-cause money supply, implying that industrial production contributes significantly to the dynamic behavior of money supply. This result supports the role of real economic activity in the monetary transmission process. In contrast, DLTUFE does not Granger-cause money supply, although money supply is found to Granger-cause DLTUFE in the reverse direction. This finding suggests that inflation appears to respond to changes in money supply rather than acting as a statistically significant predictor of it within the estimated model. Accordingly, H3 is supported more clearly for industrial production than for inflation.

The bidirectional results are also important. Money supply Granger-causes DMFO, DLMDEPOSITS, DLKREDI, and DLTUFE, while DMFO, DLMDEPOSITS, and DLKREDI also Granger-cause money

supply. This pattern indicates that the interaction between money supply and selected banking variables is not one-directional. Instead, it reflects a dynamic feedback structure within the monetary transmission mechanism. In particular, the bidirectional relationships between money supply and deposit interest rates, deposits, and credit point to a close interdependence between monetary aggregates and banking-sector conditions.

Another noteworthy finding concerns DLMKP. Although the contribution of this variable in the variance decomposition analysis remains relatively limited, the Granger causality results show that changes in securities portfolios have predictive power for money supply. This suggests that portfolio-related financial adjustments may still play a role in shaping the broader macro-financial environment associated with monetary developments.

Overall, the Granger causality results provide clear support for H4, indicating that statistically significant predictive relationships exist between money supply and several macro-financial variables associated with monetary policy transmission. More specifically, deposit interest rates, deposits, credit, industrial production, and securities portfolios emerge as relevant predictors of money supply over the period analyzed. These results suggest that money supply dynamics in Türkiye are shaped not only by narrow monetary conditions but also by broader banking, production, and portfolio-related developments.

These results should also be interpreted in light of the absence of a reported cointegration analysis. Accordingly, the Granger causality findings are evaluated as predictive relationships within the VAR framework rather than as evidence of long-run structural causality.

5. Conclusion

This study examined the effects of CBRT policy rate decisions on money supply dynamics in Türkiye within a VAR framework. In line with this objective, the analysis focused on the dynamic relationships between money supply and selected macro-financial variables, namely interbank overnight weighted average interest rates, deposit interest rates, total deposits, total credit, industrial production, inflation, and securities portfolios. The empirical framework was supported by unit root tests, lag length selection criteria, and diagnostic tests for serial correlation, heteroskedasticity, and model stability.

The findings indicate that money supply is initially explained largely by its own internal dynamics. However, as the forecast horizon expands, the explanatory role of other macro-financial variables becomes more visible. In particular, variance decomposition results show that deposit interest rates, interbank interest rates, credit volume, inflation, and,

to a lesser extent, industrial production and securities portfolios contribute to the dynamic behavior of money supply over time. These results suggest that money supply in Türkiye is not shaped solely by its own internal structure, but also by the gradual influence of policy-related financial and macroeconomic variables.

The Granger causality results further strengthen this conclusion. Deposit interest rates, deposits, credit, industrial production, and securities portfolios were found to have predictive power for money supply, while money supply was also found to Granger-cause some of these variables in return. These findings point to the existence of a dynamic feedback structure between money supply and selected banking and macroeconomic variables. In particular, the bidirectional relationships involving deposits, credit, and deposit interest rates indicate that money supply and banking-sector conditions are closely interconnected within the monetary transmission mechanism.

Taken together, the empirical findings support the view that the transmission of CBRT policy decisions operates through multiple channels rather than through a single mechanism. Interest-rate-related variables, banking-sector balance sheet variables, and selected macroeconomic indicators jointly contribute to the behavior of money supply. In this respect, the results underline the importance of evaluating monetary transmission in a multidimensional framework that incorporates both financial and real-side variables. Overall, the empirical findings provide clear support for H2 and H4, while H1 and H3 are supported only partially.

From a policy perspective, the findings imply that the effectiveness of monetary policy cannot be assessed only through short-term policy rate adjustments. The response of deposits, credit conditions, inflation dynamics, and real economic activity should also be taken into account when evaluating the broader effects of policy decisions on monetary conditions. Therefore, the management of money supply in Türkiye requires a coordinated understanding of interest rate transmission, banking-sector behavior, and macroeconomic developments.

Despite these contributions, the study has certain limitations. First, the sample period is relatively limited and includes extraordinary episodes such as the pandemic period and changes in the monetary policy environment. Second, the results are derived from a reduced-form VAR framework, which is useful for identifying dynamic interactions but does not establish structural causality. In addition, although the variables were found to be predominantly $I(1)$, the study does not report Johansen cointegration results; therefore, the findings should be interpreted within the limits of the VAR specification rather than as evidence of a confirmed long-run equilibrium.

um relationship. Third, the findings may be sensitive to lag structure, variable definitions, and possible structural breaks within the sample period. Future studies may extend the sample period, incorporate structural break tests, and compare the findings with alternative specifications such as VECM or structural VAR models.

In conclusion, the study shows that money supply dynamics in Türkiye are influenced not only by their own past values but also by the evolving effects of interest rates, credit conditions, deposits, inflation, and production-related variables. Accordingly, the results contribute to the literature by providing evidence that the monetary transmission mechanism in Türkiye operates through interrelated macro-financial channels and that money supply should be analyzed within a broader systemic framework.

References

- Akşehirli, N. (2024). Interest rate pass-through in Türkiye: Evidence of the monetary policy approach. *Journal of Research in Economics, Politics & Finance*, 9(2), 287–305. <https://doi.org/10.30784/epfad.1407576>
- Aydın, H. İ. (2007). Interest rate pass-through in Turkey (CBRT Working Paper No. 07/05). Central Bank of the Republic of Turkey.
- Barth, M. J., III, & Ramey, V. A. (2002). The cost channel of monetary transmission. In B. S. Bernanke & K. Rogoff (Eds.), *NBER macroeconomics annual 2001* (Vol. 16, pp. 199–256). MIT Press.
- Başçı, E., Özel, Ö., & Sarıkaya, Ç. (2007). The monetary transmission mechanism in Turkey: New developments (CBRT Working Paper No. 07/04). Central Bank of the Republic of Turkey.
- Baziki, S. B., & Çapacıoğlu, T. (2020). Bank lending and maturity: The anatomy of the transmission of monetary policy (Working Paper No. 20/05). Central Bank of the Republic of Turkey.
- Bernanke, B. S., & Blinder, A. S. (1988). Credit, money, and aggregate demand. *American Economic Review*, 78(2), 435–439.
- Bernanke, B. S., & Gertler, M. (1995). Inside the black box: The credit channel of monetary policy transmission. *Journal of Economic Perspectives*, 9(4), 27–48.
- Binici, M., Erol, H., Kara, H., Özlü, P., & Ünalı, D. (2013). Interest rate corridor: A new macroprudential tool? (CBT Research Notes in Economics No. 2013-20). Central Bank of the Republic of Turkey.
- Boivin, J., Kiley, M. T., & Mishkin, F. S. (2010). How has the monetary transmission mechanism evolved over time? In B. M. Friedman & M. Woodford (Eds.), *Handbook of monetary economics* (Vol. 3A, pp. 369–422). Elsevier.
- Can, U. (2020). How does the monetary transmission mechanism work? Evidence from Turkey. *Journal of Behavioral and Experimental Finance*, 26, 100308.
- Central Bank of the Republic of Türkiye. (n.d.-a). Monthly money and banking statistics. TCMB Statistics website. Retrieved March 16, 2026
- Central Bank of the Republic of Türkiye. (n.d.-b). Interest rates on deposits (monthly stock data, weighted average). TCMB Statistics website. Retrieved March 16, 2026
- Central Bank of the Republic of Türkiye. (n.d.-c). Consumer prices. TCMB Statistics website. Retrieved March 16, 2026
- Choi, S., Furceri, D., Loungani, P., Mishra, S., & Poplawski-Ribeiro, M. (2022). Revisiting the monetary transmission mechanism through an industry-level differential approach (IMF Working Paper No. 22/17). International Monetary Fund.
- Choi, S., Willems, T., & Yoo, S. Y. (2022). Revisiting the monetary transmission mechanism through an industry-level differential approach (IMF Working Paper No. 22/17). International Monetary Fund.
- Disyat, P. (2011). The bank lending channel revisited. *Journal of Money, Credit and Banking*, 43(4), 711–734.
- Duran, M., Özcan, G., Özlü, P., & Ünalı, D. (2012). Measuring the impact of monetary policy on asset prices in Turkey. *Economics Letters*, 114, 29–31.
- Eickmeier, S., Gong, C., & Ortega, E. (2022). What drives inflation? Disentangling demand and supply factors (BIS Working Paper No. 1047). Bank for International Settlements.
- Gambacorta, L., & Marques-Ibanez, D. (2011). The bank lending channel: Lessons from the crisis (BIS Working Paper No. 345). Bank for International Settlements.
- Günay, M. (2018). Forecasting industrial production and inflation in Turkey with factor models (CBRT Working Paper No. 18/05). Central Bank of the Republic of Türkiye.
- Ha, J., Kose, M. A., Ohnsorge, F., & Yilmazkuday, H. (2024). Resolving puzzles of monetary policy transmission in emerging market and developing economies (NBER Working Paper No. 33133). National Bureau of Economic Research.
- Kashyap, A. K., & Stein, J. C. (1994). Monetary policy and bank lending. In N. G. Mankiw (Ed.), *Monetary policy* (pp. 221–261). University of Chicago Press.
- Miranda-Pinto, J., & Young, E. R. (2023). Monetary policy transmission through commodity prices (IMF Working Paper No. 23/215). International Monetary Fund.
- Mishkin, F. S. (1995). Symposium on the monetary transmission mechanism. *Journal of Economic Perspectives*, 9(4), 3–10.
- Mishkin, F. S. (1996). The channels of monetary transmission: Lessons for monetary policy (NBER Working Paper No. 5464). National Bureau of Economic Research.
- Özsuca, E. A., & Akbostancı, E. (2012). An empirical analysis of the bank lending channel in Turkey (ERC Working Paper No. 12/05). Economic Research Center, Middle East Technical University.
- Sarac, T. B., & Ucan, O. (2013). The interest rate channel in Turkey: An investigation with Kalman filter approach. *International Journal of Economics and Financial Issues*, 3(4), 874–884.
- Saygılı, H. (2021). How do real and monetary integrations affect inflation dynamics in Turkey? (CBRT Working Paper No. 21/21). Central Bank of the Republic of Türkiye.
- Şahin, S., Çiçek, S., & Yıldırım, D. (2018). Interest rate pass-through in Turkey during the period of unconventional interest rate corridor. *Quantitative Finance and Economics*, 2(4), 837–859.
- Sims, C. A. (1980). Macroeconomics and reality. *Econometrica*, 48(1), 1–48.
- Turkish Statistical Institute. (2025). Industrial production index, December 2025. TURKSTAT Data Portal. Retrieved March 16, 2026
- Us, V. (2004). Monetary transmission mechanism in Turkey under the monetary conditions index: An alternative policy rule. *Applied Economics*, 36(9), 967–976. <https://doi.org/10.1080/0003684042000233195>
- Yüksel, E., Metin-Özcan, K., & Hatipoğlu, O. (2013). Interest rate pass-through in Turkey and the impact of global financial crisis: Asymmetric threshold cointegration analysis. *Journal of Policy Modeling*, 35(4), 603–622.