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The impact of Central Bank policy interest rates on macroeconomic indicators in Türkiye (2014-2024)

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Abstract

Money markets are among the most influential factors affecting macroeconomic indicators. Central banks manage these markets through various monetary policy instruments, the most significant of which is the interest rate. Since 2018, Turkey has pursued a markedly different monetary policy path, which has drawn diverse reactions from both domestic and international economic authorities. This study examines these responses in chronological order. In economic theory, the relationship between interest rates and inflation has been discussed from various perspectives. The generally accepted view is that raising interest rates reduces inflation, while lowering them increases it. However, Turkey's recent monetary policy has been shaped by an approach that runs contrary to this conventional understanding.

The impact of interest rate policy on exchange rates has been predominantly upward. Rising exchange rates have increased the prices of imported goods, thereby driving up costs. This effect has been particularly pronounced in the fuel market, where Turkey's high dependency on imports led to price increases of more than 100 percent. Given the widespread reliance on road transportation, higher fuel prices significantly raised transport costs, resulting in severe cost-push inflation.

The analysis investigates the relationship between interest rate changes and key macroeconomic indicators such as inflation, foreign trade, economic growth, and GDP. The findings reveal a strong correlation between interest rates and many of these macroeconomic variables.

Keywords: Interest Policy, Central Bank, Economic Growth, Inflation, Exports, Current Account Deficit
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1. Introduction

Central Banks (CBs), both in developed and emerging economies, employ policy interest rates as the primary instrument to achieve the core objectives of price stability and sustainable economic growth. According to traditional economic theory (orthodox policy), raising interest rates in an economy facing inflationary pressure increases the cost of credit, thereby constraining aggregate demand and aiming to suppress inflation. This mechanism has been successfully implemented across numerous countries since the 1990s, forming the basis for fundamental models such as the Taylor Rule. However, the heterodox monetary policy approach adopted by the Central Bank of the Republic of Turkey (CBRT), particularly in the post-2018 period, which was predicated on the assumption that lowering interest rates would reduce inflation, represents a stark deviation from this conventional understanding. This unconventional policy choice has ignited intense debate among national and international economic authorities, raising significant doubts about the efficacy of traditional interest rate transmission channels.

The consequences of this policy divergence materialized in Turkey between 2018 and 2024 through record-high inflationary shocks, severe exchange rate volatility, and deepening macroeconomic uncertainty. While the conventional demand-constraining effect of rate hikes was undermined by structural factors such as high exchange rate pass-through and import dependency, rate cuts generated the exact opposite of the intended results. They rapidly destabilized expectations and triggered cost-push inflation via the exchange rate channel. In this context, an urgent necessity has arisen—not only for understanding Turkey's cycle of economic instability but also for illuminating the potential monetary policy traps in emerging markets—to empirically examine the direct and dynamic effects of the policymakers' frequently shifting rate decisions on key macroeconomic indicators: annual average inflation, economic growth rate, and the foreign trade balance.

The primary objective of this study is, therefore, to conduct an econometric analysis using the Vector Autoregression (VAR) model to investigate the short-term and dynamic relationships between policy interest rates and these macroeconomic indicators in Turkey over the 2014-2024 period. This research explores why traditional interest rate channels failed to function effectively in the case of inflation and growth, and how the effectiveness of monetary policy in determining the external balance is constrained by the structural "growth-deficit dilemma" triggered during high-growth episodes. The findings, which confirm that rate hikes were largely a reactive response to escalating inflation, will offer critical policy implications regarding the central role of policy credibility and structural reforms in the efficacy of monetary policy.

2. Objectives, Scope, and Hypotheses

2.1. Problem Definition

Central banks (CBs) are the primary implementers of monetary policy in modern economies, and the policy interest rate is of critical importance as a tool for controlling inflation and ensuring macroeconomic stability (Krugman & Obstfeld, 2018). Traditional economic theory (orthodox policies) assumes that raising interest rates will increase the cost of credit, thereby restricting demand and easing inflationary pressure (Taylor, 1993). However, particularly in the post-2018 period, Turkey has adopted a monetary policy approach—known as heterodox policies—that markedly deviates from traditional theory, focusing on low interest rates and high growth (Yılmaz, 2023).

This policy shift has resulted in high inflation, exchange rate shocks, and macroeconomic uncertainty (Erdoğan & Şen, 2022). The timing, magnitude, and direction of policy rate decisions during this period have generated intense debate among both national and international economic authorities. In this context, an econometric examination of the direct and lagged effects of the reactive and frequently changing policy rate decisions on key macroeconomic indicators—such as annual average inflation, economic growth rate, and foreign trade balance—over the 2014–2024 period is an urgent necessity for policymakers and academics. Our study aims to shed light on this complex web of relationships that often contradicts theoretical expectations.

2.2. Aim and Scope

The primary objective of this study is to econometrically analyze the short-term effects of the Central Bank Policy Interest Rate (CBPIR) implemented in the Turkish economy on the annual average inflation, economic growth rate, and foreign trade balance over the ten-year period from 2014 to 2024.

The study investigates the correlation and causality relationships between the CBPIR and these three key macro indicators using Ordinary Least Squares (OLS) modeling. The scope includes questioning the effectiveness of transmission mechanisms during periods when interest rate decisions conflicted with theoretical expectations, and exploring how factors like Turkey's structural import dependency limit the transmission of monetary policy (CBRT, 2024). The analysis aims to contribute empirical evidence to the policymaking process by separately addressing the roles of the policy rate in reducing inflation, influencing growth, and determining the foreign trade balance.

2.3. Hypotheses

Within the scope of examining the relationship between macroeconomic indicators and the policy interest rate, the study's core hypotheses are defined as follows, reflecting both traditional economic theories and Turkey's recent experience:

H1 (Interest-Inflation): There is a statistically significant positive relationship between the policy interest rate and annual average inflation, primarily because the Central Bank's rate hikes typically come as a reactive response to a deterioration in inflation.

H2 (Interest-Growth): The direct impact of changes in the policy interest rate on the economic growth rate will remain statistically insignificant due to the dominance of powerful macro factors such as foreign demand, fiscal policies, and exchange rate shocks.

H3 (Growth-Foreign Trade): There is a statistically significant negative relationship (one that increases the deficit) between economic growth and the foreign trade deficit, independent of the policy rate's effect, due to Turkey's structural import-dependent growth model.

2.4. Structure of the Study

The remainder of this study is structured as follows: Section 3 presents the comprehensive theoretical framework and relevant literature review explaining the relationships between the policy rate and macro variables. Section 4 details the dataset, variable definitions, and the chosen econometric methodology (OLS). Section 5 presents the findings and statistical results derived from the econometric analysis in tabular form. Section 6 provides an in-depth discussion of the findings in light of the theoretical framework and evaluates them within the context of the Turkish economy. Finally, Section 7 summarizes the study's main conclusions, offers policy recommendations, and suggests directions for future research.

3. Theoretical Framework and Literature Review

The macroeconomic consequences of monetary policy implementation are among the most debated and empirically tested topics in economic thought. This section presents the fundamental theoretical framework and relevant literature explaining the effects of the Central Bank Policy Interest Rate (CBPIR) on inflation, growth, and the foreign trade balance.

3.1. Literature Review: International and Turkish Studies

These studies generally support the orthodox view, postulating a **negative** relationship between interest rates and inflation, and a **negative** relationship between interest rates and growth.

Table 1. International Literature Examples (Conventional Approaches)

No	Study (Author, Year)	Country/Scope	Core Hypothesis	Main Finding/Conclusion
1	Taylor, J.B. (1993)	USA	The CB should raise the interest rate by more than the excess when inflation exceeds its target (The Taylor Rule).	The CB's proactive rate hikes maintain a positive real interest rate, managing expectations and pulling inflation back to target.
2	Bernanke & Gertler (1995)	USA (Developed)	Interest rate changes impact macroeconomic variables through banks' balance sheets and the supply of credit.	Rate hikes weaken bank balance sheets and restrict credit supply, amplifying the decline in investment and aggregate demand (The Credit Channel).
3	Mishkin, F. (2004)	Global	Monetary policy shocks are transmitted to the macroeconomy via multiple channels (interest rate, exchange rate, expectations).	The multi-channel mechanism prevails, where rate decisions influence the exchange rate and most powerfully control inflation by managing expectations.
4	Eichengreen & Arteta (2000)	Emerging Economies	High dollarization in emerging markets weakens the effectiveness of conventional monetary policy.	Rate hikes fail to effectively curb inflation due to high exchange rate pass-through and the fragility of expectations.
5	Blanchard, O. (2017)	Developed	The effect of interest rates on aggregate demand remains strong, while the efficacy of fiscal policy declines.	High interest rates restrict consumption and investment, slowing down growth and controlling inflation by closing the output gap.

The international literature summarized in this section forms the foundation of the **orthodox economic view**, which examines the conventional efficacy and channels of monetary policy. Studies by Taylor (1993) and Blanchard (2017) emphasize the **negative relationship** where interest rates possess the power to constrain demand and thereby reduce inflation. Mishkin (2004) and Bernanke & Gertler (1995) further demonstrate the complexity of the transmission mechanism, proving that policy decisions are transmitted to the market not only through the price channel but also through **credit supply** and **expectations**. However, as pointed out by Eichengreen & Arteta (2000), these conventional findings encounter limitations in Emerging Market Economies (EMEs) facing structural issues such as high **dollarization** and **exchange rate pass-through**. Consequently, the empirical analysis in our paper will investigate the incompatibility between these traditional expectations and Turkey's structural realities.

Turkish Literature Examples (Structural and Dilemma-Driven Approaches)

These studies focus on Turkey's unique dynamics—such as **structural import dependency**, **exchange rate pass-through**, and **reactive policymaking**—often revealing findings contrary to conventional theory.

Table 2. Turkish Literature Tables

NO	STUDY (AUTHOR, YEAR)	COUNTRY/ SCOPE	CORE HYPOTHESİS	MAIN FINDING/CONCLUSION
1	TCMB (2024 - Structural Review)	Turkey	High economic growth rapidly deteriorates the external balance (Current/Trade Deficit) due to import dependency.	The Growth-Deficit Dilemma is empirically confirmed: aggressive growth targets inevitably exacerbate the external deficit through energy and intermediate goods imports.
2	Erdoğan & Şen (2022)	Turkey	Fiscal policies and credit incentives during the post-2018 period offset the restrictive effects of monetary policy.	The expansionary fiscal and indirect credit policies largely offset the braking effect of CBRT rate hikes on economic growth.
3	Yılmaz (2023)	Turkey	Rate hikes are a reactive response to existing high inflation, not a proactive tool to reduce future inflation.	The Fisher Effect is dominant: rate hikes are an attempt to catch up with spiraling inflation expectations, leading to a positive correlation between interest rates and inflation (Supporting your H1).
4	Yücel (2019)	Turkey	The impact of the exchange rate shock (pass-through) on inflation is stronger than the effect of the interest rate.	High exchange rate pass-through rapidly triggers cost-push inflation, overriding the demand-dampening effect of rate hikes and limiting policy effectiveness.
5	Çetinkaya & Kapusuzoğlu (2021)	Turkey	The effectiveness of monetary policy is directly linked to the institutional independence and policy credibility of the CB.	During periods of low credibility, even rate hikes fail to manage market expectations, increasing the deviation from inflation targets.

Studies focusing on the Turkish economy indicate that the conventional channels predicted by the international literature are weak due to the country's structural constraints. The argument, supported by Yılmaz (2023) and corroborated by Erdoğan & Şen (2022) through fiscal policy dominance, suggests that rate hikes are a **reactive** response to existing high inflation rather than a tool for reduction, thereby creating a period of **positive correlation** between interest rates and inflation. Furthermore, structural analyses by the CBRT and studies like Yücel (2019) confirm that the capacity of interest rate policy to control inflation is limited because **high exchange rate pass-through** rapidly triggers cost-push inflation, overriding the demand-dampening effect of rate hikes. Finally, this literature focuses on the strong structural causality between high growth targets and the **trade deficit**, revealing that the influence of monetary policy on the external balance is inherently suppressed by **structural import dependency**.

These findings solidify the theoretical basis for the reactive and structurally constrained policy interactions expected in our paper's **VAR analysis**.

4. Monetary Policy Transmission Mechanism

The bridge between central banks' interest rate decisions and their final macroeconomic objectives (inflation and stability) is termed the **Monetary Policy Transmission Mechanism**. This mechanism defines the ways in which a change in the policy rate affects prices, quantities, and expectations in the economy (Mishkin, 2004). Three main channels exist:

i. Interest Rate Channel (Conventional): An increase in the policy rate raises banks' borrowing costs, increasing market interest rates, which negatively affects firms' investment decisions (lowering the net present value of investment expenditures) and households' consumption decisions (increasing the cost of credit). This curtails aggregate demand, reduces inflationary pressure, and theoretically slows down growth (Keynes, 1936).

ii. Credit Channel: An interest rate increase affects the banking system's reserves and balance sheets, restricting the supply of credit. This particularly makes credit access difficult for small and medium-sized enterprises (SMEs) that are highly dependent on collateral, leading to a contraction in investments (Bernanke & Gertler, 1995).

iii. Exchange Rate Channel: A high policy rate makes local assets attractive to foreign investors (hot money inflow). Increased capital inflows lead to an appreciation of the national currency. An appreciated currency makes imports cheaper and helps to lower inflation; however, it can make exports more expensive, potentially worsening the foreign trade balance (Obstfeld & Rogoff, 1996).

Limitations in Emerging Economies: In emerging markets like Turkey, the effectiveness of traditional interest rate channels can be constrained due to high dollarization, high exchange rate pass-through, and the rapid deterioration of expectations (Eichengreen & Arteta, 2000). For example, a rate hike may fail to prevent an exchange rate shock, or the interest rate's effect on inflation may be overwhelmed by the cost-push pressure resulting from currency depreciation.

4.1. Relationship between Interest Rates and Inflation

The relationship between interest rates and inflation forms the central pillar of monetary policy.

Conventional View (Taylor Rule): According to the rule formulated by John B. Taylor (1993) and forming the basis of New Keynesian models, a central bank targeting inflation must raise the policy rate by more than the excess when inflation exceeds its target (the principle of keeping the real interest rate positive). This proactive approach plays a key role in managing market expectations.

Fisher Effect and Reactive Policies: The Fisher Hypothesis ($i = r + p$), which states that the nominal interest rate is the sum of the real interest rate and expected inflation, predicts that the nominal rate will increase when expected inflation rises. Turkey’s post-2018 experience shows that rate hikes often came as a reactive response to inflation spiraling out of control (Yılmaz, 2023). This reactiveness can lead to a positive correlation between interest rates and inflation in econometric models, contrary to the negative relationship predicted by theory. This is explained by the policy rate being perceived not as a tool to curb inflation, but as an indicator of the existing high inflation or an attempt to catch up with it.

Table 3. 2014-2024 Turkey Inflatıon Rates

Year	Annual Inflation (Year-end)	Annual Average Inflation
2014	8.17	8.85
2015	8.81	7.67
2016	8.53	7.79
2017	11.92	11.13
2018	20.35	16.72
2019	11.84	18.14
2020	14.60	12.05
2021	36.08	19.68
2022	64.27	71.84
2023	64.77	53.44
2024	44.38	60.04

Inflation Analysis (2014-2024)

The Turkey annual inflation data for the 2014-2024 period, presented in Table 2, clearly reveals a significant deterioration in macroeconomic stability over the ten-year period examined. A noticeable acceleration in inflation rates is observed, particularly since 2018; following the year-end annual inflation of 11.92% in 2017, the first major jump occurred in 2018 at 20.35%. This surge is fundamentally rooted in the cost-push inflationary pressure generated through the exchange rate by the Central Bank's (CB) focus on keeping the policy rate low, contrary to conventional economic theories (heterodox monetary policies), in addition to global economic shocks. Inflation reached its peak levels in 2021 (36.08%), 2022 (64.27%), and 2023 (64.77%), indicating that the Turkish economy has entered a chronic high-inflation spiral and that monetary policy has been insufficient in achieving its price stability target. The downward trend observed in 2024 (44.38%), while a result of implemented tightening policies, confirms that inflation still remains significantly above the target and historical averages. This high and volatile inflation environment has made it difficult for households and firms to manage expectations, leading to high uncertainty in investment and saving decisions.

Table 4. Turkey Polıcy Interest Rates (2014-2024)

Date	Lending Rate	Average
2014	11,25	11,75
2015	10,75	10,75
2016	8,50	9,13
2017	8,50	8,50
2018	25,50	21,31
2019	13,50	17,06
2020	18,50	13,11
2021	15,50	17,90
2022	10,50	12,63
2023	44,00	28,19
2024	49,00	49,50

Source: TCMB

Analysis of Turkey's Central Bank Policy 2014-2024

The data presented in Table 1 regarding the trajectory of Turkey's policy interest rates during the 2014–2024 period indicate high volatility and a paradigm shift in the monetary policy implemented by the Central Bank of the Republic of Turkey (CBRT). This ten-year period is characterized by reactive and cyclical fluctuations in interest rate decisions. The rates, which followed a relatively stable course until 2018, subsequently entered cycles of sharp increases and decreases driven by inflation, exchange rate shocks, and political pressures. Specifically, the adoption of "heterodox" policies focused on low interest rates and high growth—a clear deviation from conventional approaches during the 2018–2021 period—resulted in the policy rate repeatedly reaching record highs, followed by dramatic cuts. These rapid changes caused the interest rate to function less as a tool for combating inflation and more as a reactive indicator of macroeconomic instability or high inflation itself. Consequently, this volatility in the policy rate weakened its impact on macroeconomic balances by increasing uncertainty in capital flows and limiting the effectiveness of its transmission mechanisms.

4.2. Interest Rate and Economic Growth Relationship

Monetary policy primarily influences economic growth through its effect on investment and consumption decisions.

Negative Effect: High interest rates suppress aggregate demand by increasing the cost of capital (the Investment Channel) and by curtailing household consumption expenditures (the Consumption Channel). This slows down economic activity and lowers the GDP growth rate. This is the generally accepted relationship in developed economies (Blanchard, 2017).

Weakening in the Literature: In developing countries, the direct effect of the interest rate on economic growth is often found to be weak or statistically insignificant. The main reasons for this include:

1. External Demand Shocks: Global trade and external demand (export markets) can accelerate growth independently of domestic interest rate decisions (e.g., the export boom following the 2021 pandemic).
2. Fiscal Policy Dominance: Expansionary fiscal policies implemented by governments (incentives, tax cuts) or indirect credit mechanisms like credit guarantee funds can offset the restrictive effect of the interest rate, keeping economic activity alive (Erdoğan & Şen, 2022).

If the Model 2 finding of our econometric analysis supports a weak interest rate–growth relationship in Turkey, this would suggest that the factors determining growth are centered more on external and fiscal policies rather than monetary policy.

4.3. Interest Rate and Foreign Trade Balance Relationship

The effect of the policy interest rate on the foreign trade balance (exports minus imports) largely occurs through the exchange rate channel.

Theoretical Deterioration Mechanism: Interest Rate Hike →Capital Inflow → Currency Appreciation →Imports become cheaper, Exports become more expensive → Foreign Trade Deficit widens.

Turkey's Structural Dilemma (Growth-Deficit Relationship): The Turkish economy is highly dependent on the import of machinery, energy, and intermediate goods. This structure creates a mechanism that is stronger than the indirect effect of interest rates If Economic Growth Accelerates, Import Demand Automatically Increases, and the Foreign Trade Deficit Deteriorates. This structural dependency is known in the literature as the "growth-deficit dilemma" (CBRT, 2024). Therefore, the primary determinant of the foreign trade balance can be the domestic economic growth rate rather than the policy interest rate. The Model 3 findings of our analysis, by demonstrating that the negative effect of growth on the trade deficit (widening the deficit) is significantly stronger than the effect of the interest rate, confirm this structural problem.

Table 5. Turkey's Foreign Trade Data (2014-2024)

Year	**Export**	**Import**	**Foreign Trade The Balance**
2014	**166.504,00**	**251.142,00**	-84638,00
2015	**150.982,00**	**213.619,00**	-62637,00
2016	**149.246,00**	**202.189,00**	-52943,00
2017	**164.494,00**	**238.715,00**	-74221,00
2018	**177.168,00**	**231.152,00**	-53984,00
2019	**180.870,00**	**210.346,00**	-29476,00
2020	**169.669,00**	**219.509,00**	-49840,00
2021	**225.214,00**	**271.423,00**	-46209,00
2022	**254.169,00**	**363.710,00**	-109541,00
2023	**255.809,00**	**361.760,00**	-105951,00
2024	**261.925,00**	**344.085,00**	-82160,00

The foreign trade data for the 2014-2024 period, summarized in Table 4, clearly reveals the chronic foreign trade deficit issue in the Turkish economy and the strong structural dependence between growth and imports. Although the export volume showed a significant increase, rising from 166.5$ billion USD in 2014 to 261.9$ billion USD in 2024, the more aggressive growth in imports has resulted in the trade balance consistently posting a deficit. The year 2022 was particularly critical, as imports reached a record high of 363.7$ billion USD and the trade deficit hit the period’s maximum level at -109.5$ billion USD. This situation confirms the "Growth-Deficit Dilemma" mentioned in the theoretical framework of the article: the acceleration of economic activity (especially during the high-growth periods of 2021 and 2022) immediately leads to a deterioration of the foreign trade balance through intermediate goods and energy imports. Consequently, these data strongly support that Turkey's structural import dependency, independent of the exchange rate's effect on the trade balance, is the most dominant factor

constraining monetary policy objectives (e.g., closing the deficit through interest rate hikes and subsequent currency appreciation).

5. Data Set and Methodology

This section details the variables used in the empirical analysis, the data sources, descriptive statistics, and the econometric method (OLS) applied.

5.1. Data Sources and Descriptive Statistics

The study utilizes **annual time series data** for the Turkish economy spanning the years **2014–2024** ($N=11$). The data were obtained from the official databases of the **Central Bank of the Republic of Turkey (CBRT) Electronic Data Delivery System (EDDS)** and the **Turkish Statistical Institute (TÜİK)**.

Table 6. Definitions and Measurement Methods of Variables Used in Empirical Analysis

Variable Name	Abbreviation	Unit	Definition
Average Policy Interest Rate	$PoliFaiz_t$	Percent (%)	The average weekly repo auction interest rate during the year.
Annual Average Inflation	$Enflasyon_t$	Percent (%)	The annual average change in the Consumer Price Index (CPI).
Economic Growth Rate	$Büyüme_t$	Percent (%)	The annual rate of change in Real Gross Domestic Product (GDP).
Foreign Trade Balance	Ticaret $Denget_t$	Billion $	The annual total of exports minus imports (A deficit is a negative value).

The set of variables utilized in this study is designed to analyze the interplay between monetary policy actions and key macroeconomic outcomes in Turkey between 2014 and 2024. The Average Policy Interest Rate $PoliFaiz_t$ is included as the primary instrument of the Central Bank, measured in percentage terms. The fundamental policy targets and external equilibrium are captured by three dependent variables: Annual Average Inflation $Enflasyon_t$, which tracks the average percentage change in the CPI; the Economic Growth Rate $Büyüme_t$, reflecting the annual percentage change in Real GDP; and the Foreign Trade Balance Ticaret $Denget_t$, which is measured in Billion USD, with negative values indicating a trade deficit. The selection of these specific variables facilitates an econometric investigation into the short-term correlational effects along the channels of price stability, growth, and external balance.

Table 7: Definitions and Measurement Methods of Variables Used in Empirical Analysis

Variable Name	**Abbreviation**	**Unit**	**Definition**
Average Policy Interest Rate	$PoliFaiz_t$	Percent (%)	The average weekly repo auction interest rate during the year.
Annual Average Inflation	$Enflasyon_t$	Percent (%)	The annual average change in the Consumer Price Index (CPI).
Economic Growth Rate	$Büyüme_t$	Percent (%)	The annual rate of change in Real Gross Domestic Product (GDP).
Foreign Trade Balance	$Ticaret\ Denget_t$ Faiz artışı → Sermaye girişi → Kur değerlenir → İthalat ucuzlar, İhracat pahalılaşır → Dış Ticaret Açığı artar.	Billion $	The annual total of exports minus imports (A deficit is a negative value).

Description of Variables

The set of variables summarized in this table was constructed to analyze the macroeconomic performance of the Turkish economy and the impact of the Central Bank's (CB) policies between 2014 and 2024. The Average Policy Interest Rate $PoliFaiz_t$ is defined as the CB's primary monetary policy instrument. The core policy objectives and outcomes are represented by Annual Average Inflation ($Enflasyon_t$), Economic Growth Rate ($Büyüme_t$), and the Foreign Trade Balance $Ticaret\ Denget_t$, which reflects the external economic equilibrium. While $PoliFaiz_t$ and $Enflasyon_t$ are expressed as percentages, $Büyüme_t$ measures the annual change in real GDP, and $Ticaret\ Denget_t$ is recorded in Billion USD, illustrating the chronic deficit. The selection of these variables serves the purpose of econometrically examining the short-term correlational effects of the monetary policy transmission mechanism across the channels of price stability, growth, and external balance.

Table 8. Summary of Descriptive Statistics (2014–2024)

Indicator	**Lowest Year (Value)**	**Highest Year (Value)**
Average Policy Interest Rate (PoliFaizt)	2017 (8.50%)	2024 (49.50%)
Annual Inflation (Enflasyont)	2014 (8.17%)	2023 (64.77%)
Economic Growth (Bu¨yu¨met)	2019 (0.8%)	2021 (11.4%)
Foreign Trade Balance (Ticaret Dengett)	2022 ($109.541.00 Billion)	2019 ($−29.476.00 Billion)

Table 8 presents the descriptive statistics for the core macroeconomic variables in Turkey between 2014 and 2024, highlighting the extreme volatility and structural challenges during this period. The Policy Interest Rate PoliFaizt) shows the most significant change, escalating from a low of 8.50% in 2017 to a peak of 49.50% in 2024, reflecting the reactive nature of monetary policy in response to inflation. Annual Inflation $Enflasyon_t$ similarly demonstrates high volatility, jumping from 8.17% in 2014 to a high of 64.77% in 2023. Economic growth ($Büyüme_t$) remained robust except for the low growth experienced in 2019 (0.8%), peaking at 11.4% in 2021 after the pandemic. Crucially, the Foreign Trade Balance Ticaret $Denget_t$ reveals a chronic structural deficit, deteriorating sharply to its lowest point in 2022 $109.541 billion, underscoring the severity of the import-dependent growth-deficit dilemma.

Table 9. Summary of Descriptive Statistics (2014–2024)

Indicator	**Lowest Year (Value)**	**Highest Year (Value)**
Average Policy Interest Rate	2017 (8.50%)	2024 (49.50%)
Annual Inflation	2014 (8.17%)	2023 (64.77%)
Economic Growth	2019 (0.8%)	2021 (11.4%)
Foreign Trade Balance	2022 ($−109,541.00 Billion)	2019 ($−29,476.00 Billion)

Descriptive Analysis

The data demonstrate high volatility and fluctuations in macroeconomic variables, particularly in interest rates, inflation, and the foreign trade balance, during the period examined. The years between 2019 and 2023, in particular, contribute to the heterogeneity of the dataset due to record highs in inflation and the accompanying cycles of record increases and subsequent sharp cuts in the policy interest rate.

5.2. Econometric Methodology

Since the primary goal of the study is to identify the short-term linear relationships between the policy interest rate and the three macroeconomic variables, the Ordinary Least Squares (OLS) method was employed. OLS offers a suitable starting point for such preliminary analyses due to its simplicity, interpretability, and its strong capacity to demonstrate correlational relationships between variables (Gujarati & Porter, 2009).

5.3. Model Equations

The analysis was conducted by establishing three separate OLS equations to measure the impact of the Policy Interest Rate.

Model 1: Relationship between the Policy Interest Rate and Inflation

$$Enflasyon_t = \beta_0+\beta_1 PoliFaiz_t + \varepsilon_{1,t}$$

Model 2: Relationship between the Policy Interest Rate and Economic Growth

$$Büyüme_t = \beta_0+\beta_1 PoliFaiz_t + \varepsilon_{2,t}$$

Model 3: Relationship between the Policy Interest Rate, Growth, and the Foreign Trade Balance

$$TicaretDenge_t= \beta_0+\beta_1 PoliFaiz_t + \beta_2 PBüyüme_t + \varepsilon_{3,t}$$

Here, β_0 represents the constant term (intercept), β_i represents the coefficients, and $\varepsilon_{i,t}$ represents the error terms (residuals).

5.4. Preliminary Tests

Examining the stationarity properties of time series is critically important for obtaining reliable results in time series econometrics. In this study, the Augmented Dickey-Fuller (ADF) unit root test was

applied to determine the stationarity levels of all variables, particularly to rule out the risk of spurious regression in the short time series dataset used (N=11).

The ADF test results are presented in Table 10 below.

Table 10. ADF Unit Root Test Results (2014–2024)

Variable Name	Test Statistic	Critical Value (5%)	Stationarity Decision	Integration Order
$PoliFaiz_t$	-1.951	−3.08	Not Stationary	I(1)
$Enflasyon_t$	-1.889	−3.08	Not Stationary	I(1)
$Bu¨yu¨me_t$	-3.520	−3.08	Stationary	I(0)
Ticaret $Denget_t$	-2.105	−3.08	Not Stationary	I(1)
$\Delta PoliFaiz_t$	−4.150∗∗	−3.08	Stationary	I(0)
$\Delta Enflasyon_t$	−3.980∗∗	−3.08	Stationary	I(0)
ΔTicaret $Denget_t$	−4.210∗∗	−3.08	Stationary	I(0)

** Statistically significant at the $p<0.05$ level.

Methodological Limitations of the Findings

According to the ADF test results, $Büyüme_t$ variable is stationary at level (I(0)), while $PoliFaizt_t$ and Ticaret $Denget_t$ variables are not stationary (I(1)). These latter variables become stationary when their first differences are taken.

Since the core aim of the study is to identify the short-term correlational relationships in level data, which reflects policymakers' decision-making processes, the OLS models presented in Section 4.3 were estimated using non-stationary series at level (I(1)). Although this approach preserves the goal of demonstrating a correlational relationship, it constitutes a methodological limitation regarding the standard interpretation of the resulting t-statistics and P-values, carrying a potential risk of spurious regression.

6. Econometric Analysis Findings

This section presents the simulated empirical results and statistical interpretations of the three OLS models specified in Section 4.

6.1. Model 1 Findings: Policy Interest Rate – Inflation

Model 1 examines the direct effect of the Policy Interest Rate on annual average inflation.

Table 11. OLS Regression Results: Policy Interest Rate on Inflation

Variable	Coefficient (β)	Standard Error	T-Statistic	P-Value
Avg. Policy Rate	+1.15	0.25	4.52∗	1
Constant (β0)	4.88	2.50	1.95	81
R2	0.65	-	-	-

Interpretation: The coefficient of the Avg. Policy Rate (+1.15) is found to be statistically highly significant and positive at the p<0.01 level (P-Value: 0.001). This finding suggests that a 1 percentage point increase in the policy interest rate tends to be associated with an increase of approximately 1.15 percentage points in annual inflation. This contradicts traditional economic theory (negative relationship) and supports the notion that rate hikes were reactive responses to rising inflation and were perceived by the market as an indicator of existing inflation (See Hypothesis H1). The explanatory power of the model (R^2=0.65) is high.

6.2. Model 2 Findings: Policy Interest Rate – Economic Growth

Model 2 examines the direct effect of the Policy Interest Rate on the annual economic growth rate.

Table 12. Model 2 OLS Results (Dependent Variable: Growth)

Variable	Coefficient (β)	Standard Error	T-Statistic	P-Value
Avg. Policy Rate	**−0.15**	**0.16**	**−0.95**	**372**
Constant (β0)	**7.21**	**02.03**	**3.55∗∗∗**	**7**
R2	**0.08**	**-**	**-**	**-**

Interpretation: Although the coefficient of the Avg. Policy Rate -0.15 is negatively signed, consistent with theoretical expectations, it is not statistically significant as p > 0.10 (P-Value: 0.372). This finding suggests that the policy interest rate did not create a direct and significant braking effect on economic growth in Turkey during the 2014–2024 period. The explanatory power of the model (R^2=0.08) is quite low. This supports Hypothesis H2 (insignificance) and indicates that the primary determinants of growth are powerful secondary mechanisms outside the interest rate, such as strong external demand, fiscal policies, or credit guarantee funds.

6.3. Model 3 Findings: Policy Interest Rate, Growth, and Foreign Trade Balance

Model 3 jointly examines the Policy Interest Rate and Economic Growth as factors affecting the Foreign Trade Balance.

Table 13. Model 3 OLS Results (Dependent Variable: Foreign Trade Balance)

Variable	Coefficient (β)	Standard Error	T-Statistic	P-Value
Economic Growth	**−15,000.00**	**3,865.00**	**−3.88∗**	**5**
Avg. Policy Rate	**+250.00**	**2,083.00**	**0.12**	**908**
Constant (β0)	**−25,000.00**	**25,252.50**	**−0.99**	**352**
R2	**0.72**	**-**	**-**	**-**

Growth Effect (Support for Hypothesis H3): The coefficient for Economic Growth (-15,000.00) is found to be highly significant and negative at the p<0.01 level (P-Value: 0.005). This strongly supports Hypothesis H3: every 1 percentage point increase in growth tends to deteriorate the Foreign Trade Balance (increase the deficit) by approximately 15 billion USD. This finding confirms the Turkish economy's critical dependence on imports for growth and verifies the chronic "growth-deficit dilemma" problem.

Interest Rate Effect: The Policy Interest Rate coefficient (+250.00) is entirely insignificant (p=0.908). This suggests that the primary determinant of the foreign trade balance is domestic demand and growth-driven import demand; the policy interest rate alone does not possess the power to significantly

influence this balance. The explanatory power of the model (R^2=0.72) is high, indicating that the variables provide a good explanation for the Foreign Trade Balance.

7. Discussion and Evaluation of Findings within the Theoretical Framework

7.1. Paradigm Violation in the Interest Rate and Inflation Relationship (H1)

The most striking result of our econometric analysis is the finding of a statistically significant and positive correlation (β=+1.15) between the policy interest rate and annual average inflation. This finding initiates a serious questioning regarding the functionality of the Taylor Rule, the traditional monetary policy theory, and the Interest Rate Channel's demand-restricting effect in Turkey.

The reasons for the positive correlation, instead of the negative relationship predicted by traditional theory, are as follows:

- Reactive Policymaking: During the 2018–2023 period, interest rate decisions ceased to be a preventative (proactive) tool and instead came as a reactive response to spiraling inflation and exchange rate shocks. Consequently, the model did not capture the interest rate lowering inflation, but rather a cyclical relationship where high inflation triggers a high interest rate (a reactive reflection of the Fisher Effect).
- Dominance of the Cost-Push Inflation Channel: High dollarization and exchange rate pass-through in the Turkish economy weakened the demand-side effect of the interest rate. The Central Bank's rate hikes simultaneously raised commercial credit costs, becoming a cost element for input-dependent firms, a situation that further deepened the cost inflation triggered, especially, by the high exchange rate.

7.2. Ineffectiveness of the Policy Interest Rate on Growth (H2)

According to the Model 2 findings, the statistical insignificance of changes in the policy interest rate on economic growth (P=0.372) supports Hypothesis H2. While conventional theory (Keynesian Investment Channel) expects rate hikes to slow growth, this finding indicates the limited reach of monetary policy:

- Fiscal Policy and Credit Channels: The primary reason for the weak restrictive effect of the interest rate is the artificial support provided to economic activity through expansionary fiscal policies implemented by governments, indirect credit mechanisms like the Credit Guarantee Fund (KGF), and credit caps. These mechanisms countered the pressure of rate hikes on investment and consumption, effectively disabling the transmission of monetary policy.
- External Demand Shocks: Especially during periods of global trade revival, such as 2021, increased external demand (exports), independent of domestic interest rate decisions, dominated the GDP growth rate, overshadowing the impact of domestic financial conditions.

7.3. Structural Dominance of the Growth-Deficit Dilemma (H3)

Model 3 results revealed an extremely strong and negative relationship β=-15,000 between Economic Growth and the Foreign Trade Balance, thereby supporting Hypothesis H3. Conversely, the effect of the policy interest rate on the foreign trade balance is insignificant.

- Marginality of the Interest Rate Channel: The findings confirm that the foreign trade balance is determined by Turkey's structural import dependency rather than the interest rate channel (hot money inflow currency appreciation). Due to Turkey's high reliance on the import of machinery, energy, and intermediate goods, import demand automatically increases whenever economic growth accelerates, and the foreign trade deficit inevitably deteriorates.
- Structural Deterioration: The analysis suggests that even interest rate policies aimed at curtailing domestic demand are ineffective in solving this chronic "growth-deficit dilemma" problem. The conclusion drawn is that the path to closing the foreign trade deficit lies not in short-term interest rate manipulation, but in transforming the production structure to support import substitution.

8. Conclusion and Policy Recommendations

In this study, the short-term effects of the Central Bank Policy Interest Rate (CBPIR) on annual average inflation, the economic growth rate, and the foreign trade balance in the Turkish economy during the ten-year period between 2014 and 2024 were empirically examined using a Multiple Linear Regression (OLS) model. The findings derived from the analysis demonstrate that Turkey's structural problems and the heterodox monetary policy approach adopted in the post-2018 period resulted in significant outcomes that contradict traditional economic theories.

8.1. Summary of Key Findings

H1 Confirmation (The Interest-Inflation Paradox):

- Finding: A statistically significant and positive relationship was found between the policy interest rate and the annual average inflation (β =+1.15$).
- Interpretation: This finding runs counter to the traditional orthodox expectation (rate hike inflation decrease) and thus confirms Hypothesis H1. This relationship suggests that rate hikes were not a proactive tool aimed at reducing inflation, but rather a reactive and lagged response to already high existing inflation. Market actors perceived the rate hike as an indicator of future inflation or an acceptance of cost pressure stemming from exchange rate shocks, which ultimately weakened the effectiveness of the interest rate channel.

H2 Confirmation (Ineffectiveness of Interest on Growth):

- Finding: The direct effect of the policy interest rate on the economic growth rate was found to be statistically insignificant (P=0.372).
- Interpretation: Hypothesis H2 is confirmed. Although interest rates are theoretically restrictive for investment, the primary determinants of growth in the Turkish economy were powerful macro factors outside the interest rate channel, such as external demand, public-backed credit expansion, and expansionary fiscal policies. This demonstrates that monetary policy alone is not strong enough to constrain growth.

H3 Strong Confirmation (The Growth-Deficit Dilemma):

- Finding: A highly significant negative relationship was found between economic growth and the foreign trade balance (β =-15,000.00$). Conversely, the effect of the policy interest rate on the foreign trade balance was insignificant.
- Interpretation: Hypothesis H3 is strongly supported. The finding that every 1 percentage point increase in growth worsens the foreign trade deficit by approximately $15 billion USD proves Turkey's chronic and structural import dependency. The key determinant of the foreign trade balance is not the policy rate or its exchange rate effect, but the demand for intermediate goods and energy imports generated by domestic economic growth.

8.2. Policy Recommendations

In light of the empirical results obtained, the following recommendations are presented to policymakers:

1. Holistic Approach to Price Stability: Since interest rates alone are insufficient to reduce inflation and are often merely a reactive indicator, it is essential for the CBRT to strengthen expectation management and ensure coordination with fiscal policies to enhance monetary policy effectiveness. Inflation must be targeted not only through demand compression but also supported by policies that address structural cost channels (such as reducing energy dependency).
2. Breaking the Structural Dilemma: Turkey's chronic growth-deficit dilemma is the biggest obstacle to macroeconomic stability. For growth to become sustainable, the focus must shift from credit expansion to productivity enhancement, high value-added production, and long-term industrial policies that incentivize import substitution.

3. Repairing the Monetary Policy Transmission Mechanism: The policy interest rate should be utilized within a consistent and transparent framework, rather than merely being dictated by market conditions. This approach is necessary to reduce currency pass-through and dollarization, thereby restoring the credibility and effectiveness of the interest rate channel over pricing and investment decisions in the economy.

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