

## CONSEQUENCES OF MONETARY EXPANSION IN AN INFLATIONARY ENVIRONMENT: TURKISH EXPERIMENT BETWEEN 2021 AND 2023

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### Abstract

In September 2021, CBRT started monetary expansion in an inflationary environment which was followed by even higher inflation rates, depreciation of the Turkish Lira, deterioration of current account balance, increase in country risk and dollarization. This paper discusses the consequences of this deviation from the New Keynesian monetary policy framework and undertakes a counterfactual analysis for inflation and property prices using synthetic control method. The counterfactual analysis suggests that the reduction in the policy rate increased average CPI and property price inflation respectively by 50 and 140 percentage points. In the broader context, the counterfactual analysis confirms that absence of credible commitment to a nominal anchor causes high inflation rates and deterioration in the overall macroeconomic performance.

**Keywords:** Monetary Policy, Inflation, Property Prices, Türkiye, Central Banking, Synthetic Control

**JEL Classification:** E2, E31, E52, E5

### Öz

2021 yılının Eylül ayında, enflasyonist bir ortamda TCMB parasal genişlemeye başladı ve bunu daha yüksek enflasyon oranları, Türk Lirası'nın değer kaybı, cari işlemler dengesinin bozulması, ülke riskinin artması ve dolarizasyon izledi. Bu makale, Yeni Keynesyen para politikası çerçevesinden sapmanın sonuçlarını tartışmakta ve sentetik kontrol yöntemi kullanarak enflasyon ve gayrimenkul fiyatları için karşı olgu analizi yapmaktadır. Karşı olgu analizi, politika faizindeki düşüşün ortalama TÜFE ve gayrimenkul fiyatı enflasyonunu sırasıyla 50 ve 140 puan artırdığını öne sürmektedir. Daha geniş bağlamda, karşı olgu analizi, nominal çığpaya yönelik güvenilir bir taahhüdün yokluğunun yüksek enflasyon oranlarına ve genel makroekonomik performansın bozulmasına neden olduğunu doğrulamaktadır.

**Anahtar Kelimeler:** Para Politikası, Enflasyon, Emlak Fiyatları, Türkiye, Merkez Bankacılığı, Sentetik Kontrol

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## **1. Introduction**

Central Bank of the Republic of Türkiye (CBRT) went through several shifts in its monetary policy framework in the last twenty years. CBRT started inflation targeting implicitly in 2002 and explicitly adopted it in 2006. The tight monetary policy until 2009 resulted in a significant decline in inflation. Starting in 2009, CBRT added financial stability to its goals and responded to variations in inflation less strongly, which resulted in a deterioration in the macroeconomic performance of Türkiye relative to similar developing countries.<sup>2</sup> Finally, starting in September 2021, CBRT adopted a policy of low policy rates to stimulate growth in an inflationary environment. Initially, it decreased the policy rate from 19% to 18% when the inflation rate was 19.58% and the inflation target was 5%. By February 2023, the policy rate had gone down to 8.5% while the annual inflation was 55%. This policy experiment continued until June 2023 with drastic consequences for the Turkish economy.

This study investigates the macroeconomic consequences of this monetary policy experiment. For this purpose, I first present macroeconomic indicators for the Turkish economy during the experiment and review the patterns from the perspective of New Keynesian monetary policy framework. Second, I present a counterfactual analysis for the CPI inflation and property prices inflation using Synthetic Control Method to investigate the consequences of the policy shift empirically.

The synthetic control method, introduced by Abadie and Gardeazabal (2003) and extended by Abadie, Diamond, and Hainmueller (2010), is a tool used in causal inference for evaluating the effects of interventions in observational studies. It constructs a weighted combination of control units to create a synthetic counterpart for the treated unit, offering a robust counterfactual for comparison. It has been applied in economics to assess policy impacts and program outcomes.

The counterfactual analysis finds that if there had been no shift in policy, average CPI inflation and property price inflation would both be around %10, while the actual rates were respectively 60% and 150% on average. In other words, the results suggest that CPI and property price inflation would respectively have been 50 percentage points and 140 percentage points lower between 2021 and 2023.

In the monetary policy literature, there is consensus on the importance of commitment to a long-term inflation target to achieve a stable inflation. Kydland and Prescott (1977), Barro and Gordon (1983) suggest that absence of commitment increases the steady state level of inflation. Svensson (1997), Mishkin (1999), Bernanke and Mishkin (1997) and Blinder et. al.

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<sup>2</sup> Gürkaynak et. al. (2015), Karaman and Yıldırım-Karaman (2017)

(2008) argue that if the nominal anchor of the central bank is credible, it helps anchoring inflation expectations and leads to smaller fluctuations in output and inflation. Johnson (2002), Levin, Natalucci and Pieger (2004) and Gurkaynak et. al. (2010) suggest that inflation targeting helps anchoring inflation expectations. Clarida et. al. (1999) show that the economy gains from the commitment if the current price setting depends on the expected inflation.

The Turkish experiment offers a rare instance where the monetary authority adopts policies that are diametrically opposed to the consensus among policy makers and in the academic literature summarized above. The consequences of the experiment are consistent with the consensus and reaffirms that absence of credible commitment to a nominal anchor was associated with higher inflation, depreciation of exchange rate, deterioration of trade balance and current account balance, increase in country risk and dollarization.

The findings of the paper are also consistent with other recent papers that study the Turkish experiment with different methodologies. Gürkaynak et. al. (2022) argues the divergence of Türkiye from the other developing economies from the New Keynesian Perspective and finds that this divergence is caused by the domestic factors and can be fully explained by the standard economic theory. Gencal (2023) and Özatay (2023) argue that the deposit system announced in December 2021<sup>3</sup>, the return of which is indexed to the value of Dollar, led to a deterioration in the overall macroeconomic performance of Türkiye.

The rest of the paper proceeds as follows. Section 2 discusses the monetary policy under New Keynesian Perspective. Section 3 presents data for the period after the new economic policy was introduced. Section 4 presents the methodology and results for the counterfactual analysis and the last section concludes.

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<sup>3</sup> Currency protected deposit (Kur korumalı mevduat)

## 2. Monetary policy under New Keynesian perspective

As reviewed by Gali (2015), the basic New Keynesian equilibrium is characterized by the following three equations:

$$\begin{aligned}\pi_t &= \beta E_t\{\pi_{t+1}\} + \varphi[\hat{y}_t] + u_t \\ \hat{y}_t &= -\frac{1}{\sigma}(i_t - E_t\{\pi_{t+1}\} - r_t^n) + E_t\{\hat{y}_{t+1}\} \\ i_t &= \rho + \theta_\pi\pi_t + \theta_y\hat{y}_t + \vartheta_t\end{aligned}$$

The first equation represents the New Keynesian Philips Curve where  $\pi_t$  is the current inflation rate and  $\hat{y}_t$  is the output gap. This equation implies that an increase in the expected inflation and output gap increases the current inflation.

The second equation represents the aggregate demand where  $r_t^n$  is the long run equilibrium level of real interest rate or the natural rate. The first term in parenthesis is the deviation of real interest rate from its natural level and called interest rate gap. This equation implies that output gap negatively depends on the interest rate gap and positively depends on the expected output gap.

The last equation is a version Taylor Rule that governs how monetary policy is conducted. It states that central bank increases the nominal interest rate when the inflation rate and output increase above their steady state levels.

According to Gali (2008) the basic New Keynesian framework implies that high inflation causes inefficient allocation of resources due to nominal rigidities. It also implies that the current values of both output and inflation depend on their expected future values and hence expected stance of monetary policy has an impact on the current values of these variables. In this respect, the model suggests that long-term commitment to a credible nominal anchor plays a very important role in stabilizing the economy.

In this basic set up, a stable and unique equilibrium exists if only  $\theta_\pi > 1$  which implies that central bank increases the nominal interest rate more than the increase in the inflation rate and therefore leads to an increase in the real interest rate. If  $\theta_\pi$  is smaller than one, inflationary shocks lead to indeterminacy and unique equilibrium does not exist.

The intuition behind the framework is that if the central bank does not react to an increase in the inflation rate by increasing the nominal interest rate more than the increase in inflation, any inflationary shock results in a decline in the real interest rate and hence an increase in the aggregate demand which, in turn, leads to a positive output gap and pushes inflation up. An increase in inflation will lead to a further decline in the real interest rate, further increasing the output gap and inflation. In other words, the economy enters an inflationary spiral in which inflation and output gap trigger each other. Consequently, aggregate demand curve

becomes upward sloping which might lead to a permanent divergence from the steady state and self-adjustment mechanism does not work unless the expectations are restored.

The evidence on the evolution of Turkish monetary policy is broadly consistent with this basic framework. Between 2002 and 2009 CBRT increased the policy rate more than the increase in the inflation rate, had effective communication and was successful in decreasing the inflation rate to single digits. After the onset of the Great Recession, however, it adopted a less strict monetary policy. CBRT added financial stability to its goals, gave weaker responses to the variations in inflation. Empirically, Gürkaynak et. al. (2015) finds that CBRT responded to the variations in inflation aggressively before 2009 and weakly after 2009. Karaman and Karaman (2017) shows that this policy shift resulted in a poor macroeconomic performance for Türkiye compared to similar developing countries.

In September 2021 CBRT switched its policy rule again and started monetary expansion to stimulate growth in an inflationary environment. This new policy continued until June 2023. From the lens of the New Keynesian Perspective, the monetary expansion in an inflationary environment is expected to lead to a decline in the real interest rate and an increase in the gap between the actual and natural level of real interest rate in absolute value. As the second equation implies, an increase in the interest rate gap boosts aggregate demand and causes a positive output gap and an upward sloping aggregate demand curve. As the first equation implies, the positive output gap increases in the inflation rate. The Increase in inflation leads to a further decline in the real interest rate and increase in the aggregate demand which results in a permanent divergence from the long-run equilibrium of the economy. Moreover, this permanent divergence and absence of long-term commitment to the inflation target deteriorate the inflation expectations.

In broad terms, the consequences of this policy shift are consistent with the predictions of the New Keynesian Approach. Standard deviation of the one year ahead inflation expectations in Türkiye increased from 0.92 in January 2020 to 11.29 in June 2022. As the current values of both output and inflation depend on their expected future values, self-fulfilling of expectations resulted in a further increase in inflation and output gap. Consequently, this policy resulted in a deterioration in the overall macroeconomic performance of Türkiye. The next section provides a more detailed account of the economic consequences.

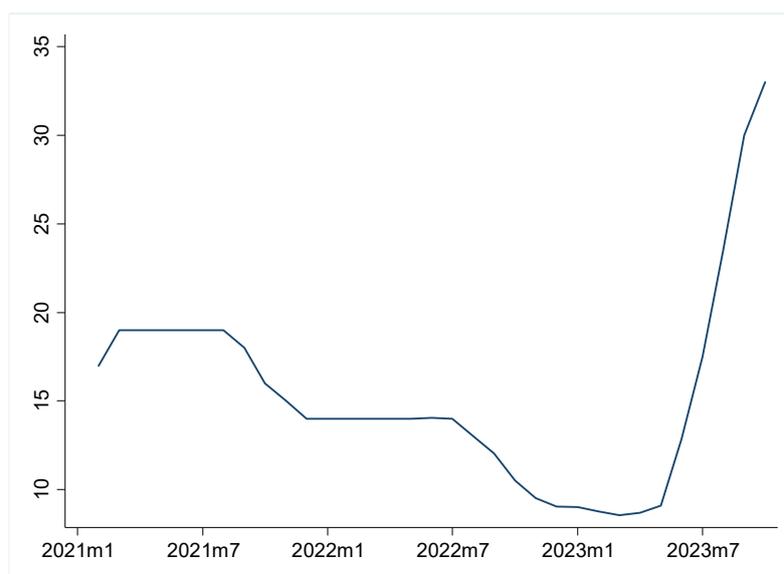
### **3. Descriptive analysis of the macroeconomic data**

In this section, I present data to discuss the macroeconomic consequences of switching to the expansionary monetary policy between September 2021 and June 2023.

Figure 1 plots the weighted average funding cost of the CBRT. The figure makes clear that CBRT started monetary expansion in September 2021 and gradually decreased the policy

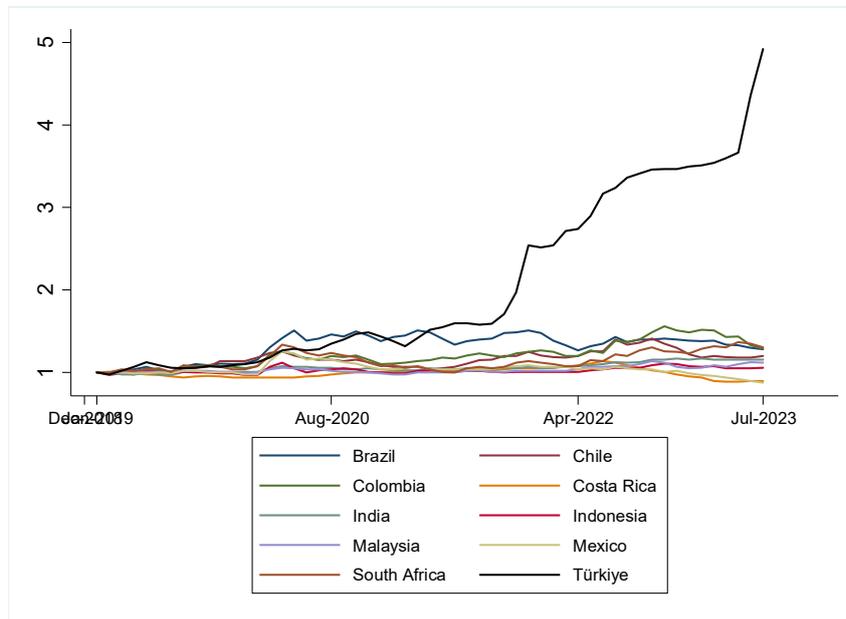
rate from 19% to 14% by December 2021. It then kept interest rates constant for eight months but restarted monetary expansion in August 2022 and decreased the benchmark policy rate gradually to 8.5% by February 2023. In June 2023, the policy experiment ended and the CBRT started monetary contraction with the aim of normalization and stabilization of the inflation rate.

**Figure 1:** Weighted average funding cost of the CBRT



**Source:** Central Bank of the Republic of Türkiye

Figure 2 shows the index values of monthly average exchange rates for Türkiye and other developing countries. The values of the exchange rate indices are normalized to one for January 2019 for all countries. After the monetary expansion started in September 2021, TL started to depreciate as expected. A decline in the interest rate pushed aggregate demand and inflation up and led to capital outflows. Consequently, the exchange rate increased more than 2.5-fold in two months and deviated from the other developing economies with similar characteristics.

**Figure 2:** Exchange rates (Domestic currency per Dollar, January 2019=1)

**Source:** Bank for International Settlements

In December 2021, in order to stop the rapid collapse of the value of TL, the government announced a new financial instrument. Kur Korumalı Mevduat (KKM) which translates as exchange rate-protected deposit. The instrument was a TL savings account that at the end of its term paid the maximum of a fixed deposit interest rate and the rate of depreciation of TL against Dollar or Euro. Table 1 summarizes the two potential outcomes and respective returns:

**Table 1:** Potential outcomes of KKM

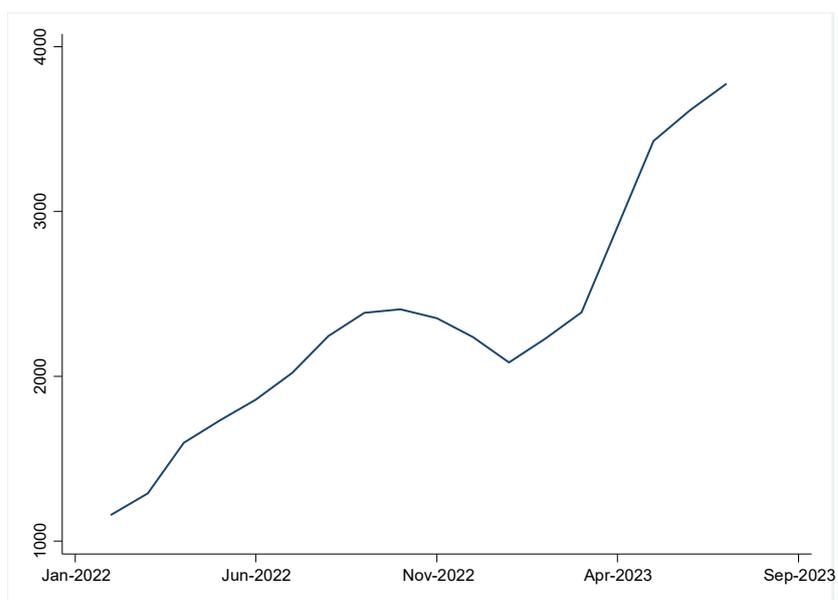
Scenarios	Returns
if TL depreciates more than the deposit interest rate	$(E_{t+1}/E_t)-1$
if TL depreciates less than the deposit interest rate	Deposit interest rate

This new instrument was intended to prop up the demand for TL. If an investor kept his or her funds in dollars, the return of investment in terms of Turkish Lira was equal to the depreciation rate of TL. If the investor opts for KKM, then the return on investment is at least equal to the deposit interest rate and possibly higher if TL depreciates more than the deposit rate. Obviously, the expected payoff of KKM is higher than that of keeping Dollar because

it offers a free option and therefore KKM is the dominant strategy for a depositor. As a result, the real value of KKM grew significantly in two years as Figure 3 shows.

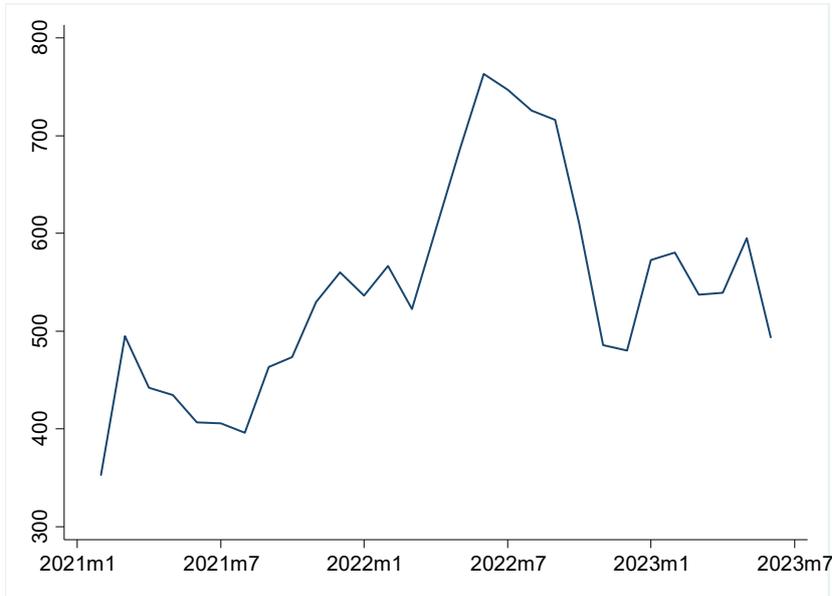
The flipside of the KKM is the risk that the government assumes. The amount that the government is under obligation to pay increases with depreciation of TL beyond the deposit rate. Hence, as the expected depreciation of the TL increased, the risk of the government also increased and as a result, credit default swap rates in Türkiye increased significantly in the same period as Figure 4 shows.

**Figure 3:** KKM/CPI



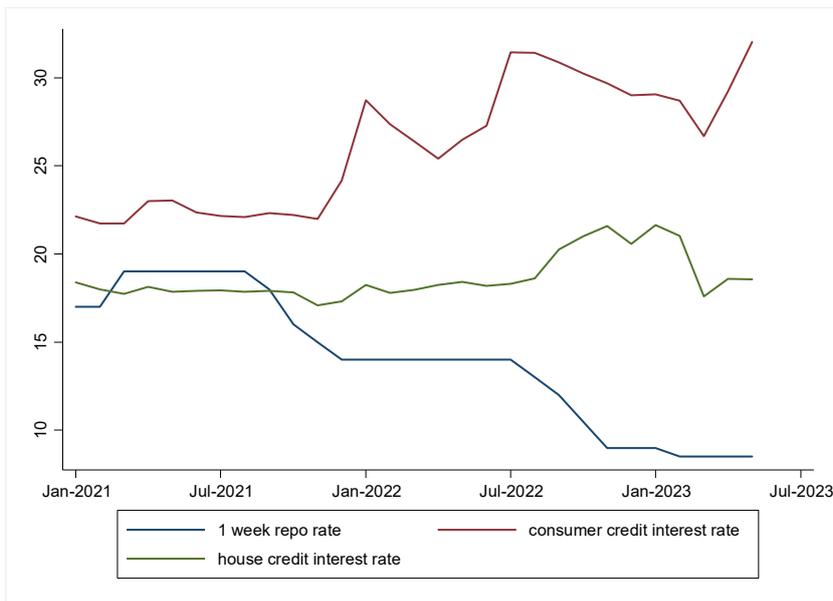
**Source:** Banking Supervision and Regulation Agency

**Figure 4:** 10-Year CDS Rates



Source: Thomson Reuters Eikon

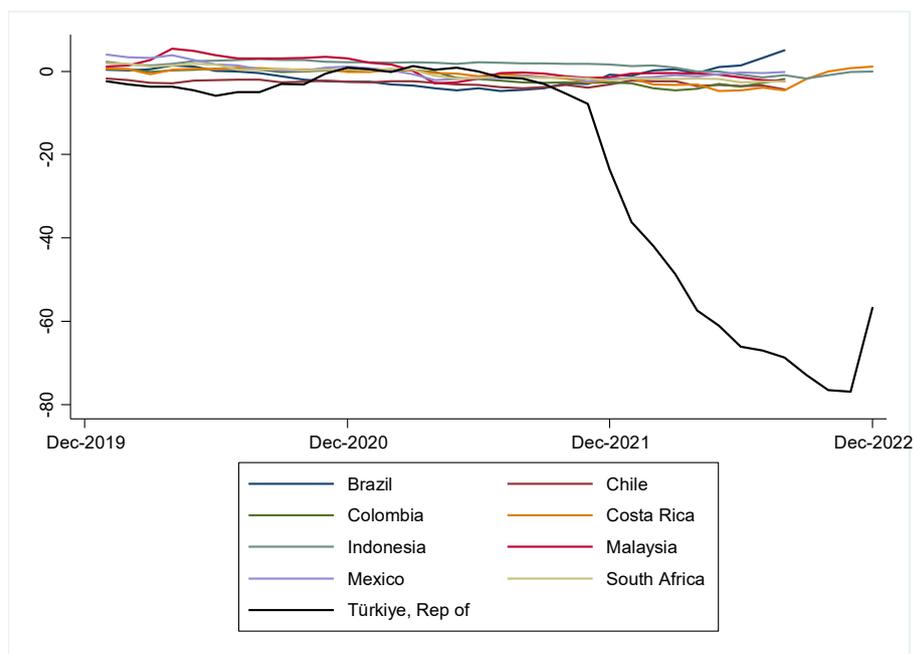
**Figure 5:** Interest rates



Source: Central Bank of the Republic of Türkiye

One consequence of KKM was effectively increasing nominal TL interest rate. After KKM was introduced, the nominal market interest rate deviated significantly from the central bank policy rate as Figure 5 shows. Consequently, the central bank policy rate was no longer an indicator of the market conditions.

**Figure 6:** Policy rate minus inflation rate



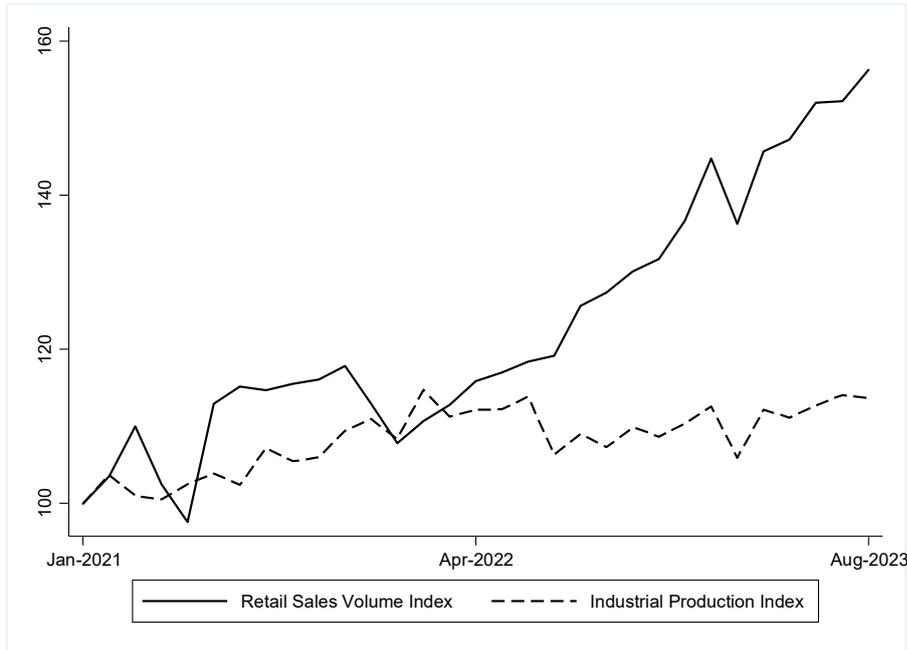
**Source:** Bank for International Settlements

As discussed in the previous section, after CBRT switched to the new economic policy in September 2021, real interest rate started to decrease. Figure 6 compares the difference between the policy rate and inflation rate in Türkiye with those in the other developing economies. Türkiye started to deviate from other developing economies after the announcement of the new economic policy and the difference between the policy rate and inflation rate decreased to -70% by September 2022.

Consistent with the New Keynesian framework, the decline in the real interest rate facilitated borrowing which in turn resulted in an increase in the aggregate demand. Figure 7 shows the retail sales volume and industrial production indices for Türkiye, normalized to 100 in January 2021. The increase in the retail sales volume index outpaces industrial production, which is a sign of the positive output gap which triggers an increase in both inflation expectations and inflation.

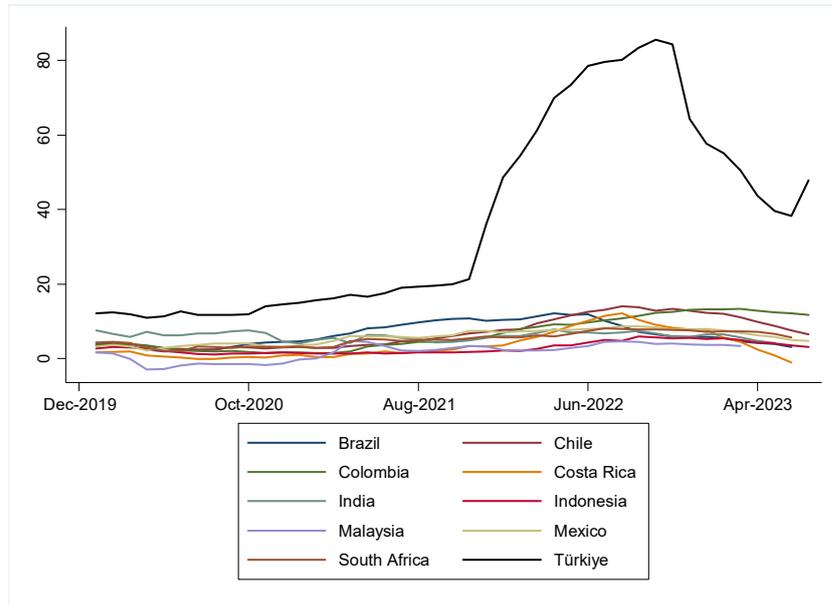
As a result of an increase in the positive output gap and depreciation of the Turkish Lira, inflation rate peaked at 85,5% in October 2022. This pattern in inflation is consistent with Kara and Sarıkaya (2021) which suggests that exchange rate pass through to the inflation got stronger in Türkiye in the recent years because the inflation expectations are not well anchored. In Figure 8, we observe that the inflation rate in Türkiye deviated from the other developing economies after September 2021. An increase in inflation caused a further decline in the real interest rate and further increase in the output gap. This in turn caused a further increase in inflation expectations and inflation.

**Figure 7:** Retail sales volume and industrial production (January 2021=100)



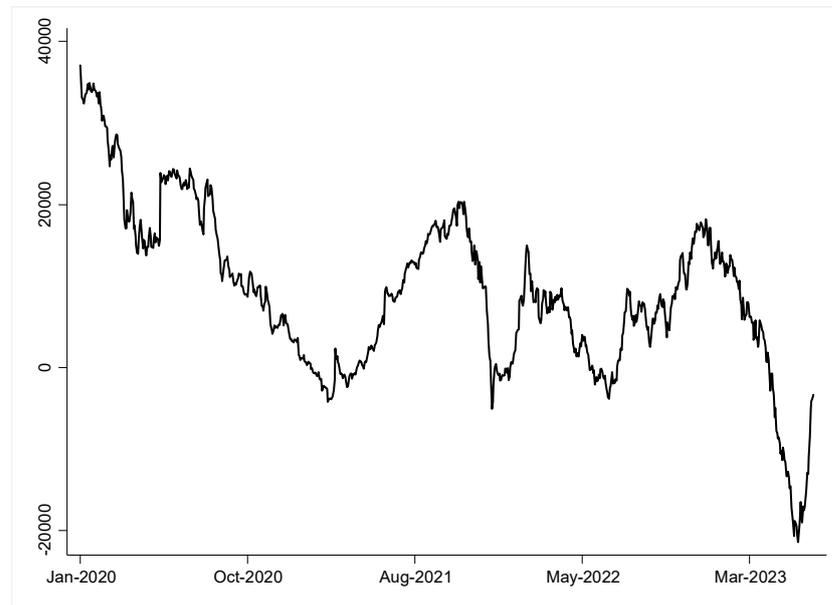
**Source:** Central Bank of the Republic of Türkiye

**Figure 8:** Annual CPI inflation rates

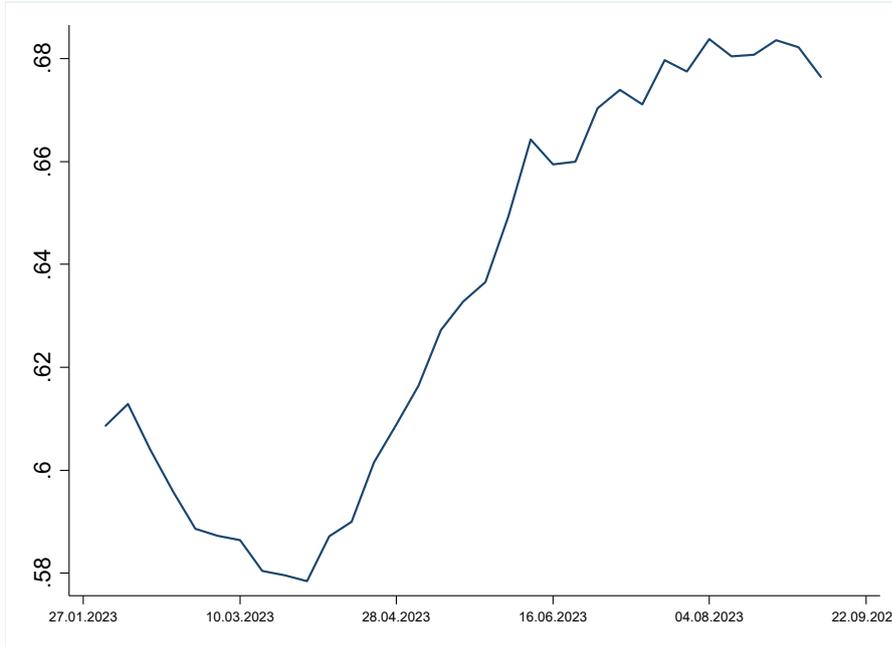


Source: Bank for International Settlements

**Figure 9:** Net FX reserves of the CBRT (millions USD)



Source: Central Bank of the Republic of Türkiye

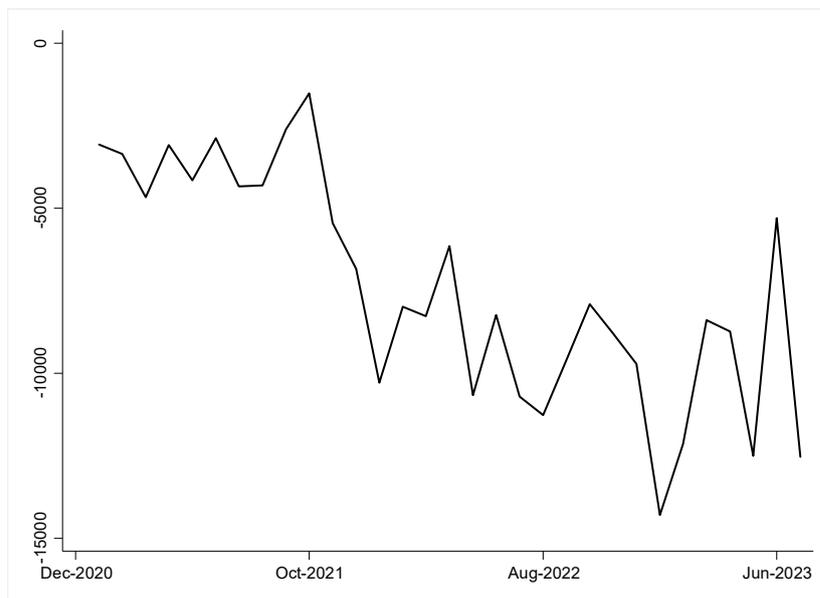
**Figure 10:** (KKM+ Foreign Currency Deposit)/Total Deposit

**Source:** Banking Supervision and Regulation Agency

According to PPP theory, if a currency loses its value against the goods, it is also expected to lose its value against the other currencies by a similar rate. Hence, due to the increase in the upward pressure on the exchange rate, as the magnitude of KKM grew, it became a threat to the whole economy. CBRT attempted to prevent the depreciation of Turkish Lira by selling reserves. However, with open capital markets, the central banks cannot simultaneously control the interest rate and exchange rate at the same time. Trying to prevent the depreciation of the domestic currency resulted in the loss of reserves and was not sustainable. As we see in Figure 9, net reserves of the CBRT decreased significantly in two years. As the net reserves of the CBRT decreased, expected depreciation of Turkish Lira increased which in turn increased dollarization as shown in Figure 10.

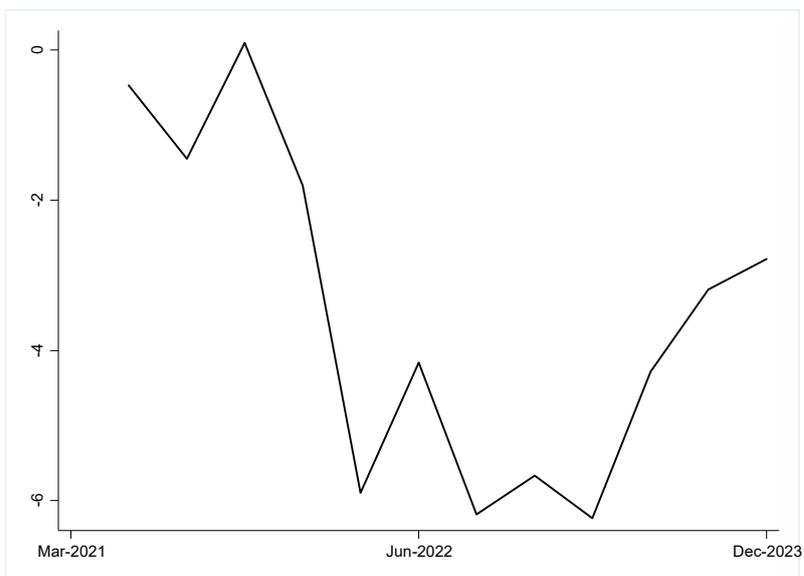
Efforts to stabilize the value of Turkish Lira in 2022 and in the first half of 2023 resulted in real appreciation of Turkish Lira. In other words, stabilizing exchange rate in a high inflation environment resulted in an increase in the relative prices of the goods produced in Türkiye. This, in turn, resulted in a loss of trade advantage and caused a deterioration in both the trade balance and current account balance as seen in Figures 11 and 12. This result stood in contrast to the new policy's stated goal of decreasing current account deficit.

**Figure 11:** Trade balance (millions USD)



Source: Thomson Reuters Eikon

**Figure 12:** Current Account balance to GDP



Source: Thomson Reuters Eikon

All in all, macroeconomic data presented above is consistent with the predictions of the New Keynesian Model and shows that the new monetary policy resulted in a deterioration of the overall macroeconomic performance of Türkiye. In the next section, I adopt a more formal approach and rely on Synthetic Control Method to estimate the consequences of the experiment.

#### 4. Synthetic control analysis

This section conducts Synthetic Control analysis for the CPI and property price inflation in Türkiye in order to assess the impact of the monetary policy experiment using other developing countries as control units. Synthetic control analysis makes a counterfactual estimation for the variables of interest using a weighted average of the control units with endogenously chosen weights. The methodology discussed below closely follows Abadie et. al. (2010) and Karaman and Yıldırım-Karaman (2017).

The sample the study is based on covers 22 developing countries with economies similar to that of Türkiye. Without loss of generality, we can suppose that the first country is Türkiye and exposed to the policy shift. Hence, the remaining 21 countries can be considered as potential control units. Suppose that  $Y_{1t}^N$  denotes the outcome that would be in Türkiye at time  $t$  if there were no policy intervention.  $Y_{1t}^I$  denotes the outcome for Türkiye when it is exposed to intervention. Hence, the effect of the intervention for Türkiye that we want to estimate is:

$$\alpha_{1t} = Y_{1t}^I - Y_{1t}^N$$

Following Abadie et. al. (2010), we define the following factor model for each country in the sample:

$$Y_{it}^N = \delta_i + \theta_i Z_i + \lambda_i \mu_i + \varepsilon_{it}$$

Where  $\delta_i$  is the unknown common factor,  $Z_i$  represents observed variables,  $\theta_i$  represents unknown parameters,  $\lambda_i$  represents unobserved common factors,  $\mu_i$  is the vector of factor loadings, and  $\varepsilon_{it}$  is the error term.

Suppose that  $W = (w_1, \dots, w_{22})$  represents a vector of weights where  $w_1 + \dots + w_{22} = 1$ . In the model, a particular  $W^* = (w_1^*, \dots, w_{22}^*)$  is chosen such that the difference between characteristics of Türkiye before the intervention and weighted average of the control units is minimized. More specifically, if  $X_1$  is  $k \times 1$  vector of the characteristics of Türkiye before the policy shift and  $X_0$  is  $k \times j$  matrix of the same characteristics of the control units, weight vector can be estimated through minimizing the following magnitude:

$$\sum_{m=1}^k v_m (X_{1m} - WX_{0m})^2$$

After the weight vector is estimated synthetic values for Türkiye can be estimated as follows

$$\sum_{j=2}^{22} w_j Y_{jt} = \delta_t + \theta_t \sum_{j=2}^{22} w_j Z_{jt} + \lambda_t \sum_{j=2}^{22} w_j \mu_{jt} + \sum_{j=2}^{22} w_j \varepsilon_{jt}$$

Synthetic control analysis is made using quarterly data and covers the period between 2011 and 2023. The years before 2011 were excluded because they were years of recovery from the 2009 Global Financial Crisis. CPI inflation rate, nominal and real percentage change in the property prices, policy rate, credit to GDP gap, exchange rate data for 22 countries<sup>4</sup> are taken from the Bank for International Settlements.

Synthetic CPI inflation rate for Türkiye is calculated using past values of inflation rate, exchange rate and credit to GDP gap as predictors. Synthetic inflation rate is estimated as the weighted average of Brazil, Mexico, Indonesia, South Africa, and Russia. Table 2 compares the predictors for Türkiye with the predictors of the synthetic control units. We observe that the average values of predictors for different time periods in the synthetic control units are close to those in Türkiye and hence we conclude that synthetic units match Türkiye well.

Figure 12 shows the actual and synthetic inflation rates for Türkiye. The actual and synthetic inflation rates began to diverge in 2017, when the CBRT did not react to the spike in inflation and the real interest rate (policy rate – inflation rate) fell to -4%. In the second half of 2018, the CBRT started monetary contraction, and in 2019, actual and synthetic inflation rates get closer.

After the introduction of the lax monetary policy in 2021, the actual and synthetic inflation diverge again. Between 2021 and 2023, the difference between the actual and synthetic inflation rate was on average 50 percentage points. In other words, this finding suggests that had the new monetary policy not been introduced, on average inflation rate would have been 50 percentage points lower.

<sup>4</sup> Türkiye, Brazil, Chile, China, Indonesia, Israel, India, Korea, Mexico, Malaysia, Thailand, South Africa, New Zealand, Russia, Poland, Colombia, Czechia, Denmark, Hong Kong, Canada, Switzerland, Sweden

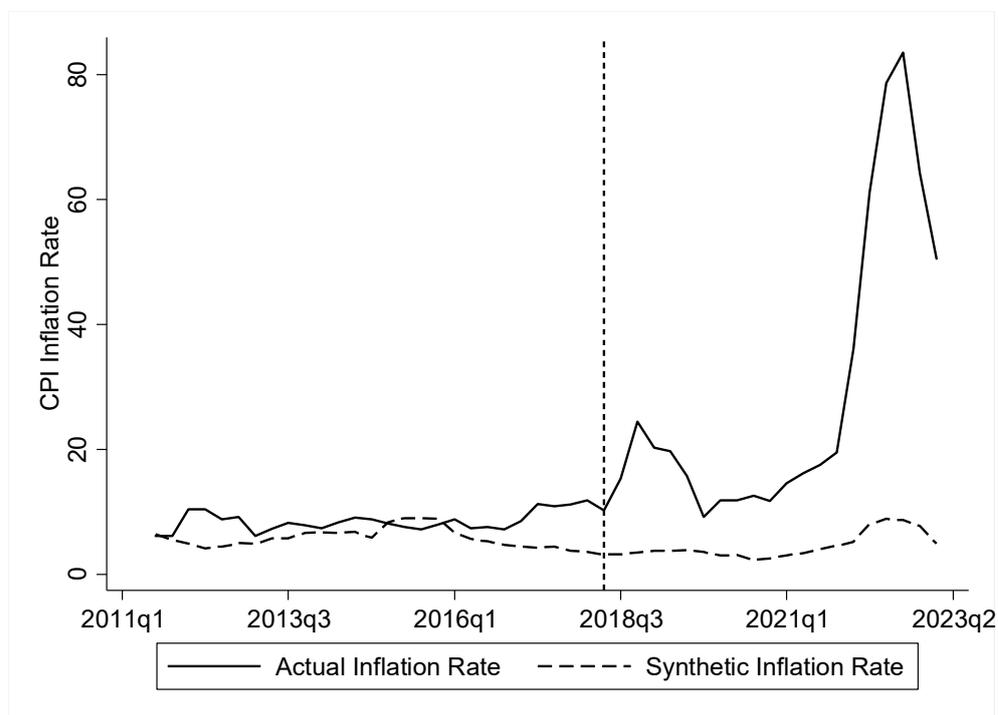
**Table 2:** Predictors for the estimation of synthetic inflation rate

	<b>Türkiye</b>	<b>Synthetic Türkiye</b>
Inflation rate (2013 average)	7.72	6.26
Inflation rate (2014 average)	8.64	6.95
Inflation rate (2015 average)	7.89	8.46
Inflation rate (2016 average)	7.73	5.06
Credit to GDP Gap (2013 average)	12.15	7.15
Credit to GDP Gap (2014 average)	11.03	8.99
Credit to GDP Gap (2015 average)	12.05	10.39
Credit to GDP Gap (2016 average)	7.83	7.24
Domestic currency depreciation rate (2013 average)	0.030	0.030
Domestic currency depreciation rate (2014 average)	0.028	0.041
Domestic currency depreciation rate (2015 average)	0.063	0.055
Domestic currency depreciation rate (2016 average)	0.031	-0.008

**Table 3:** Predictors for the estimation of synthetic property price inflation rate

	<b>Türkiye</b>	<b>Synthetic Türkiye</b>
Property price inflation rate (2013 average)	11.36	8.86
Property price inflation rate (2014 average)	13.58	10.71
Property price inflation rate (2015 average)	16.14	12.58
Property price inflation rate (2016 average)	13.32	7.61
Credit to GDP Gap (2013 average)	12.15	7.88
Credit to GDP Gap (2014 average)	11.03	10.98
Credit to GDP Gap (2015 average)	12.05	12.14
Credit to GDP Gap (2016 average)	7.83	8.07
Domestic currency depreciation rate (2013 average)	0.030	0.013
Domestic currency depreciation rate (2014 average)	0.028	0.029
Domestic currency depreciation rate (2015 average)	0.063	0.034
Domestic currency depreciation rate (2016 average)	0.031	-0.002

**Figure 12:** Actual and synthetic inflation rates for Türkiye



Another distortion the lax monetary policy created was in property prices. An increase in inflation expectations coupled with negative real interest rates encourages borrowing at cheap cost and investing in real assets including real estate.

I conduct Synthetic Control analysis both for nominal and real property prices. For nominal property prices, the predictors are past values of property price inflation, exchange rate and credit to GDP gap. The control units are Canada, Chile, Hong Kong, India and Sweden. Table 3 compares the predictors for Türkiye with and synthetic Türkiye and shows that they are close. Figure 13 plots the actual and synthetic nominal property price inflation rates. The actual and synthetic property price inflation rates started to diverge at the beginning of 2020 and the wedge opens up after the adoption of the lax monetary policy in 2021. Between 2021 and 2023, the difference between the actual and synthetic nominal property inflation rates was 140 percentage points on average. In other words, had the lax monetary policy not been introduced, property price inflation rate would have been 140 percentage points lower on average.

**Figure 13:** Actual and synthetic property price inflation rates

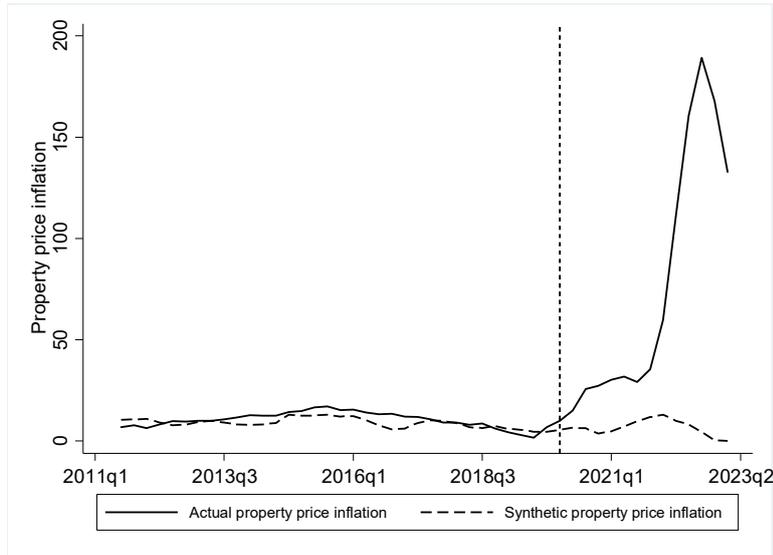
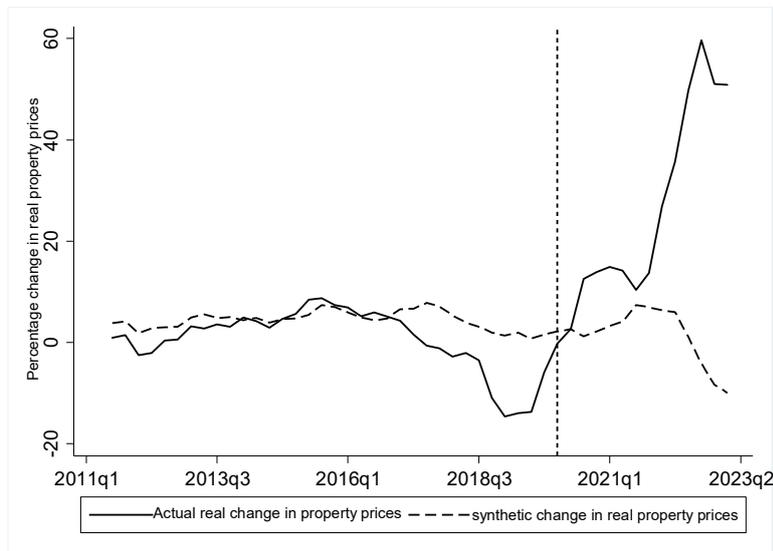


Figure 14 repeats the counterfactual analysis for the actual and synthetic real property prices. Synthetic percentage change in real property price for Türkiye is calculated using past values of change in real property prices, exchange rate and credit to GDP gap as predictors and is a weighted average of the values for Canada, Colombia, Czechia, Mexico, Sweden and Hong Kong. Table 3 compares the predictors for Türkiye with those for synthetic Türkiye and shows that they are similar. The figure once again shows a dramatic significant divergence between the actual and synthetic real property inflation rates after the monetary policy switch.

**Figure 14:** Actual and synthetic changes in real property prices



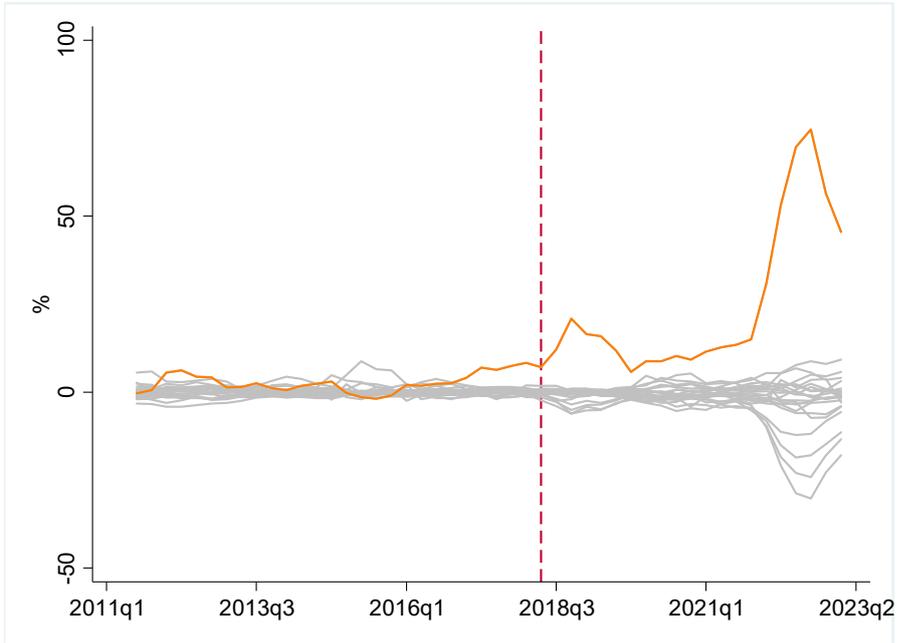
**Table 4:** Predictors for the estimation of synthetic change in real property prices

	<b>Türkiye</b>	<b>Synthetic Türkiye</b>
Percentage change in real property prices (2013 average)	3.60	4.95
Percentage change in real property prices (2014 average)	4.35	4.53
Percentage change in real property prices (2015 average)	7.87	6.42
Percentage change in real property prices (2016 average)	5.14	5.15
Credit to GDP Gap (2013 average)	12.15	10.96
Credit to GDP Gap (2014 average)	11.03	11.22
Credit to GDP Gap (2015 average)	12.05	12.42
Credit to GDP Gap (2016 average)	7.83	8.56
Domestic currency depreciation rate (2013 average)	0.030	0.008
Domestic currency depreciation rate (2014 average)	0.028	0.027
Domestic currency depreciation rate (2015 average)	0.063	0.053
Domestic currency depreciation rate (2016 average)	0.031	0.003

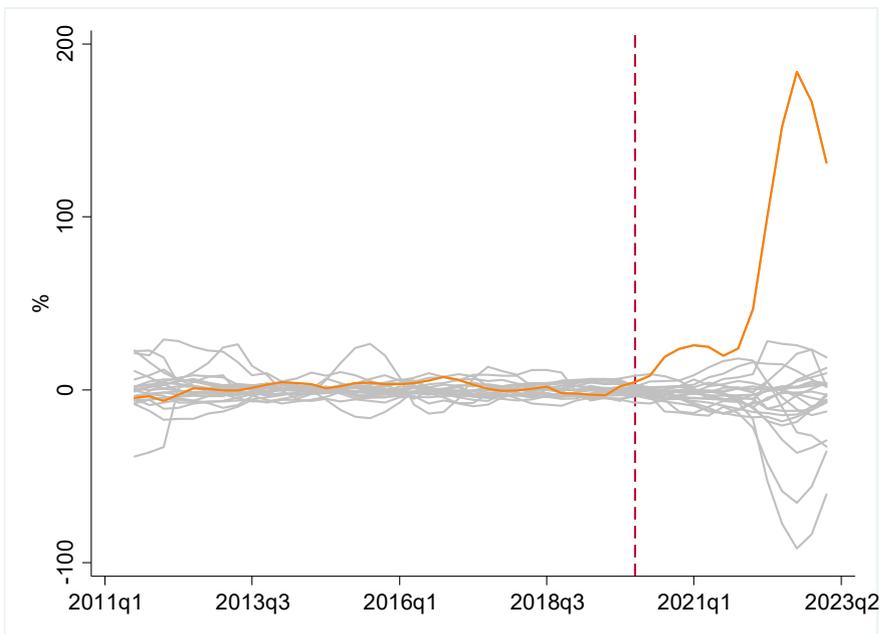
For robustness checks, placebo tests are conducted for CPI inflation rate and percentage change in nominal and real property prices. In placebo tests, Synthetic Control analysis is conducted for each control unit as if the country had experienced the policy shift. If the synthetic control estimation for Türkiye is larger than the distribution of the placebo effects, it suggests that the effect is not observed by chance, and the policy shift in Türkiye drove the observed effects.

Figures 15, 16 and 17 display the placebo test results. For each of the CPI inflation and nominal and real property inflation, gray lines show the difference between the actual and synthetic values for the control countries. Orange line shows the same difference estimated for Türkiye. The figures show that for each the three variables the estimated gap is larger for Türkiye than it is for control countries, lending credence to the counterfactual analysis.

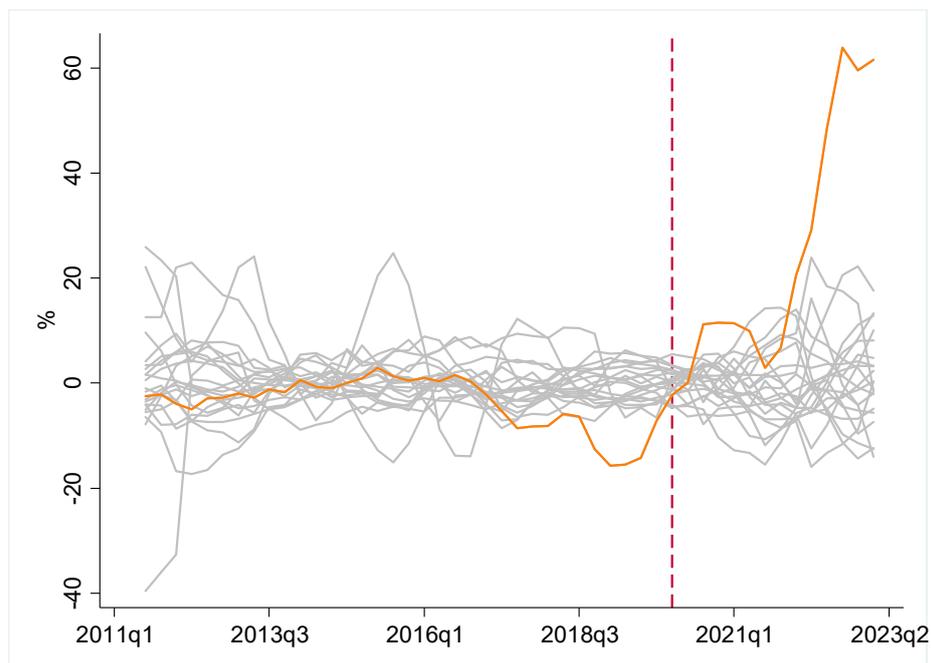
**Figure 15:** Placebo test result for CPI inflation rate



**Figure 16:** Placebo test result for property price inflation rate



**Figure 17:** Placebo test result for the percentage change in real house prices



## 5. Conclusion

It is rare that a country adopts economic policies that are diametrically opposed to what academic literature and decades of policy experience on the subject advises, Türkiye did so between 2021 and 2023, when CBRT tried a policy of fighting high inflation with expansionary monetary policy. In this study, I document that this experiment failed as expected. A review of the trajectories of macroeconomic indicators during the experiment show that they were distorted in ways that are consistent with the predictions of the New Keynesian framework. Counterfactual analysis of CPI and nominal and real property price inflation show that that the policy experiment had the opposite of the intended effect and increased inflation rates. All in all, while the prevailing academic and policy consensus on monetary policy has its limitations, the evidence suggests that doing the exact opposite of its prescriptions does much worse.

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