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Monetary policy in Turkey after Central Bank independence

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Monetary Policy in Turkey after Central Bank Independence

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Monetary Policy in Turkey after Central Bank Independence*

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Abstract

We present an accessible narrative of the Turkish economy since its great 2001 crisis. We broadly survey economic developments and pay particular attention to monetary policy. The data suggests that the Central Bank of Turkey was a strong inflation targeter early in this period but began to pay less attention to inflation after 2009. Loss of the strong nominal anchor is visible in the break we estimate in Taylor-type rules as well as in asset prices. We also argue that recent discrete jumps in Turkish asset prices, especially the exchange value of the lira, are due more to domestic factors. In the post-2009 period the Central Bank was able to stabilize expectations and asset prices when it chose to do so, but this was the exception rather than the rule.

Keywords: Turkey, CBRT, monetary policy, fiscal policy
JEL Codes: E52, E62, E31, E32, E02

30 August 2015

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1. Introduction

Turkey has had a fascinating 15 years after its 2001 crisis. That crisis proved to be a watershed moment for the country's economy as well as its politics. The disinflation and rapid growth that materialized early in the period marked the country as an economic success story. That story was not revised after growth tapered and disinflation came to a stop with inflation at high single digits.

In this paper we provide a coherent, accessible narrative of the Turkish macroeconomic policy and performance after the 2001 crisis with particular emphasis on monetary policy. To do so, we begin with an overview of Turkish economic history that glosses over all details and many salient points but touches on some vital statistics of the period. Here, we point out that the post-2001 period appears to have two sub-periods that should be studied separately.

We then turn briefly to fiscal policy. The state of Turkish economy cannot be understood without observing that fiscal policy turned aggressively expansionary in 2009 in response to the Global Financial Crisis but never reversed course after the output gap in Turkey closed. The budget deficit does not reveal the increase in government spending because of a concurrent fall in interest rates which created an offsetting decline in interest expenditures.

Monetary policy is our main focus and in that domain the Central Bank has been missing its inflation target for several years now. We first argue that due to political pressures the Central Bank of Turkey (CBRT) began to let the market interest rate diverge from the official policy rate, essentially manipulating the market rate by rationing funds at the policy rate. Hence, the official policy rate is now a poor indicator of policy stance.

Using the one-week TRlibor rate as the policy rate measure, we show that monetary policy in Turkey did not follow a uniform Taylor-type rule in the post-2001 period. We find a structural break in all formulations of the policy rule in 2009. The pre-2009 rules are aggressive in controlling inflation. The post-2010 rules are weak and do not imply real rates rising in response to rising inflation.

Lastly, we present an eventstudy of major jumps in the US dollar-Turkish lira exchange rate in the past couple of years, a period when jumps happened alarmingly often. We argue that while information about global liquidity conditions was certainly pertinent, discrete jumps in the exchange rate are explained better by domestic factors. Among those factors are policy decisions and announcements about the likely future course of policy by the CBRT.

While it is hard to see sizable effects of nonstandard policies of the CBRT on exchange rates (and, in general, on any variables of interest), interest rate decisions certainly had large effects. The overview presented in this paper suggests that as a high inflation country away from the zero lower bound, Turkey still has the interest rate as a proven and powerful policy tool. We argue that using it actively has had desirable effects and failing to utilize it has led to deterioration in inflation and in inflation outlook that was reflected in asset prices.

2. A Brief History

Turkey is a Latin American economy located at the corner of Europe. It has gone through all of the phases of emergingness, from import substitutionism to export-led growth to liberalized capital account and ensuing boom-bust cycles to inflation targeting.[1]

1990s for Turkey were a period of massive budget deficits which drove all other macroeconomic outcomes. The borrowing needs of the government meant banks only lent to the government and did not fund private investment at all, the current account deficit was driven by the budget deficit and periodically these twin deficits blew up (Özatay, 2015, elaborates). Banks took on unreasonable risks such as borrowing in foreign currency and lending in liras and the Central Bank, essentially, was tied to the Treasury and tried to minimize the borrowing costs of the government, sometimes by outright monetization sometimes by changing interest rates to (unsuccessfully) lower the Treasury's funding costs.

The 2001 crisis was a watershed moment. It was the deepest crisis in a series of boom-bust episodes in Turkey in the 1990s and wiped out many of the banks as well as laying bare the structural deficiencies of the Turkish economy. The fixed exchange rate regime was abandoned and the lira was allowed to float after the attack on the currency. It is of great political economy interest how an already unstable three party government undertook a very painful but comprehensive stabilization program and why similar programs were undertaken around the emerging world at about the same time. We do not have insights to offer on this and will only report that a very successful stabilization program was undertaken.

The Turkish stabilization program was three-pronged. The budget was brought under control, the banking system was recapitalized and the central bank gained its independence with the new central bank law. This paper surveys the period after the central bank independence.

[1] This analogy between Turkey and Latin American countries by and large also holds true for politics as well but that is outside the scope of this paper.

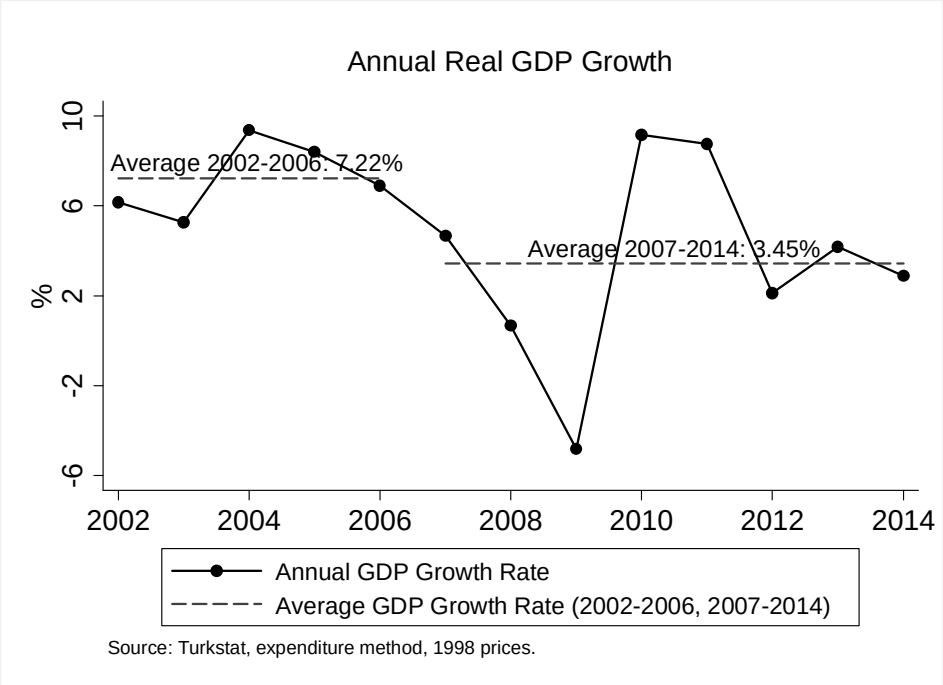

Figure 1. GDP growth rates.

Post-2001 growth in Turkey was impressive but the "new regime" did not last long, as shown in Figure 1. The GDP growth rate in Turkey began to slow in 2006 and was already declining when the Global Financial Crisis led to a severe but short-lived contraction. Indeed, after the crisis slack was taken up in 2010 and 2011, growth settled on levels that were low even by the historical averages, let alone the 2002-2006 period, with the 2012-2014 average falling to 3%.

Figure 2 shows a simple estimate of potential GDP, based on an HP filtered trend, and actual GDP. While this is very rudimentary, it by and large dovetails with more elaborate estimates of potential GDP produced at the CBRT (Coşar et al., 2012). The salient fact is that while in the immediate aftermath of 2001 crisis and the 2008-09 global crisis there were significant output gaps, beginning with 2011 the output gap was essentially closed and therefore demand management would not have, and at this time cannot, lead to lasting output increases. This is an important feature that helps understand the consequences of continued expansionary policies.

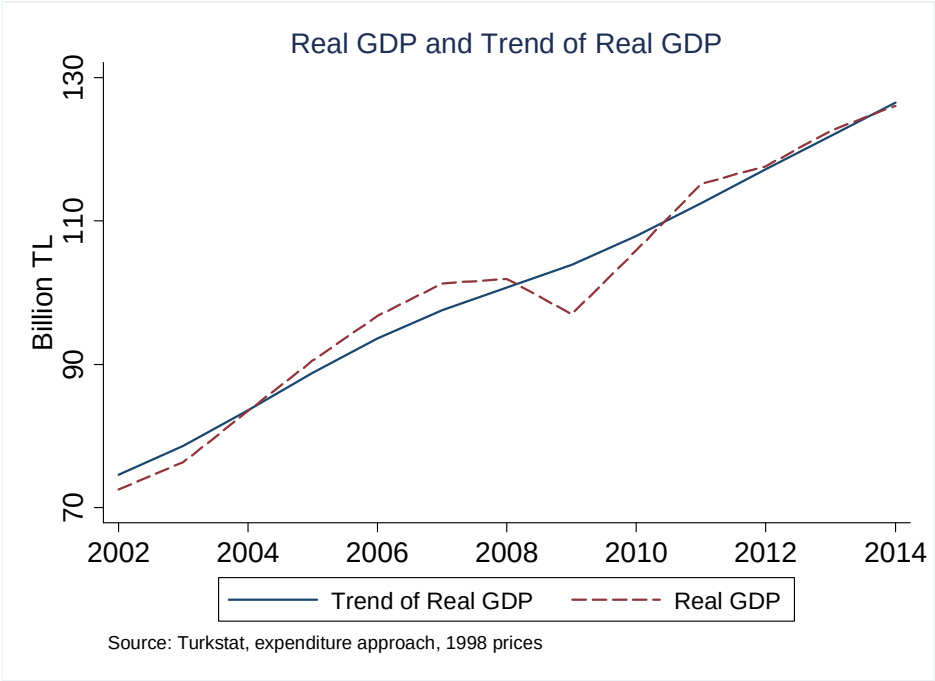

Figure 2. Trend of real GDP is estimated with HP filter.

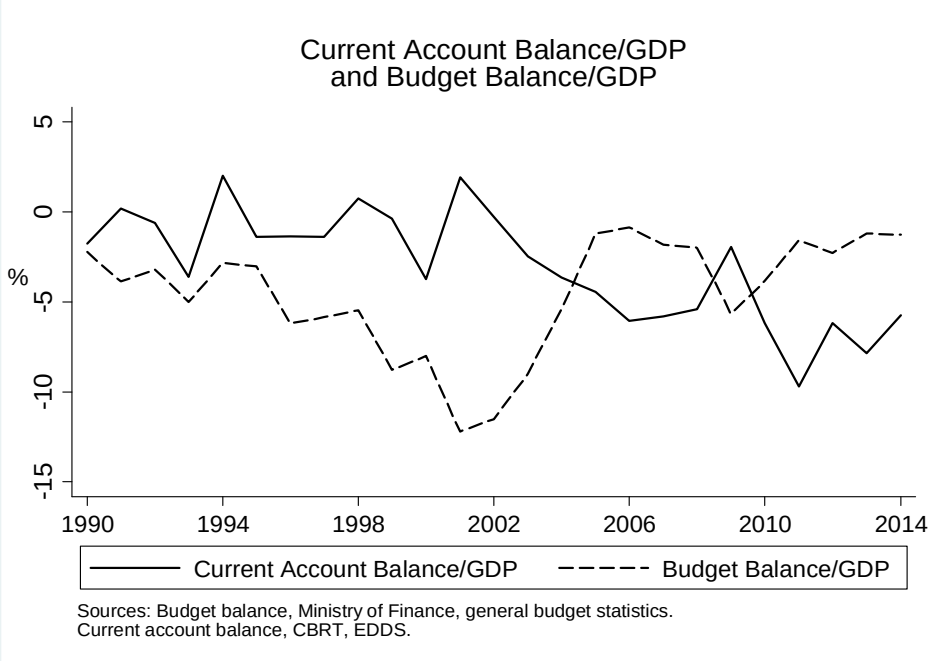

Figure 3. Current account and budget deficits.

Figure 3 shows what is, historically, an anomaly for Turkey but is now a new normal. Up to and including 2001, Turkey was a traditional twin deficits country where the budget deficit drove the current account deficit (CAD), which rarely exceeded three percent of GDP. In the post-2001 period, especially after 2010, the CAD worsened markedly while the budget deficit did not budge. This shift in borrowing to the private sector is new in Turkey and is an artefact of lower borrowing needs of the public sector due to better fiscal discipline, and to improved financial intermediation and access to funds, partially fueled by high global liquidity, as Rodrik (2015) also notes. Köymen-Özer and Sayek-Böke (2015) show that specializing in low value-added and low-tech products also contributed to this increase. High values of CAD became less sustainable after the recent Global Financial Crisis because the share of short term capital inflows for financing the CAD increased significantly from about 25% to 50% (Özmen, 2015). As a result, fragility of the Turkish economy increased in the post-2009 period.

The increase (and, for households even existence) of private borrowing is cause for concern. Due to lack of rigorous flow of funds numbers we do not yet know the exact dynamics of private borrowing and are mostly in the dark about who is borrowing, in which currency and from whom. However, it is clear that private leverage, while still low by international standards, has risen dramatically with household debt to GDP rates increasing to about 22 percent from about 2 percent since 2002.[2] Turkish firms are not used to being highly levered and households are not used to being levered at all. Indeed, and our historical experience only informs us about the consequences of government indebtedness increasing rapidly (not pleasant), making the private indebtedness a cause for concern partly simply due to the reason that these are uncharted waters.

While the political narrative has been one of glory, emphasizing that days of crises are over as government debt to GDP rate is low, it is important to remember that what are hopefully over are the days of twin deficits-driven crises. This tells us nothing about risks stemming from leverage in the private sector that we are now learning to live with.

For completeness of this snapshot of the Turkish economy, we also briefly look at employment and inflation here as well. We will not be covering employment in this paper but will turn to inflation in detail in section 4 below.

[2] CBRT Financial Stability Reports.

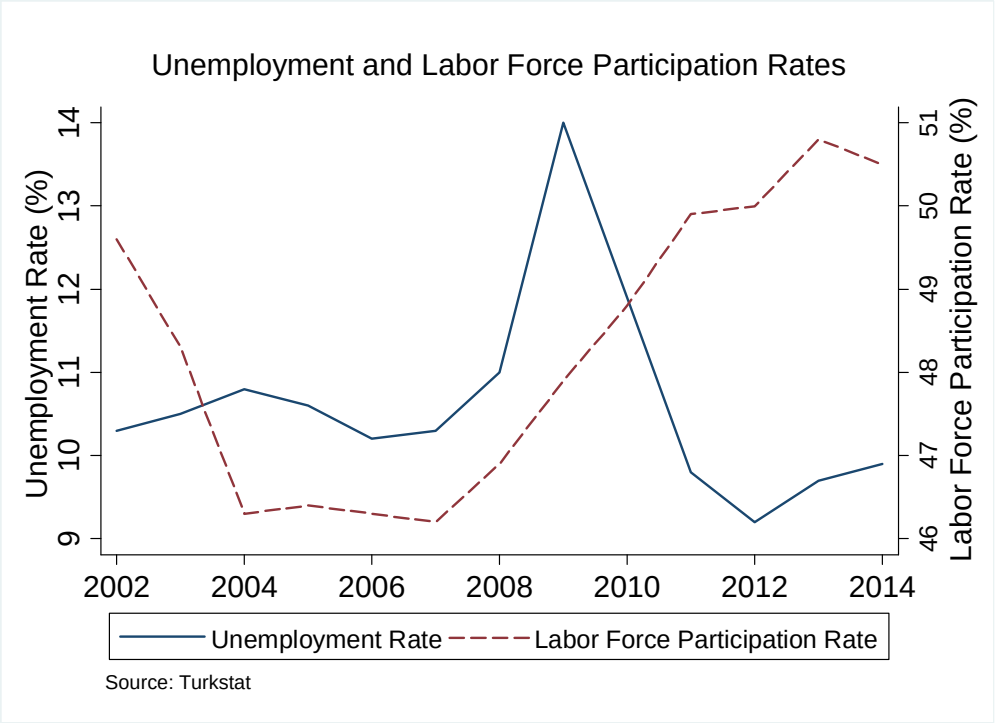

Figure 4. Unemployment and labor force participation.

Figure 4 shows the grave structural unemployment picture of the country. The unemployment rate oscillates around 10 percent and does not go much lower even during periods of high growth and low labor force participation. This is a complex but well understood story involving sectoral transition from agriculture to services and industry, skill mismatch due to weak public education and various institutional factors that make the labor market very rigid (Bakış, 2015).

Notice that the structural aspect of unemployment limits the effectiveness of monetary policy in helping lower it. We will return to this in our discussion of what can reasonably be expected of monetary policy in Turkey.

It is interesting to note that labor force participation has been rising since 2007. This is entirely due to the increased labor force participation of women, which is still a very low 30 percent. The increased female labor force participation was due to the added worker effect (when the working spouse loses or is at risk of losing job the other spouse begins to look for a job) during the global crisis and its continued increase was a pleasant but surprising development.

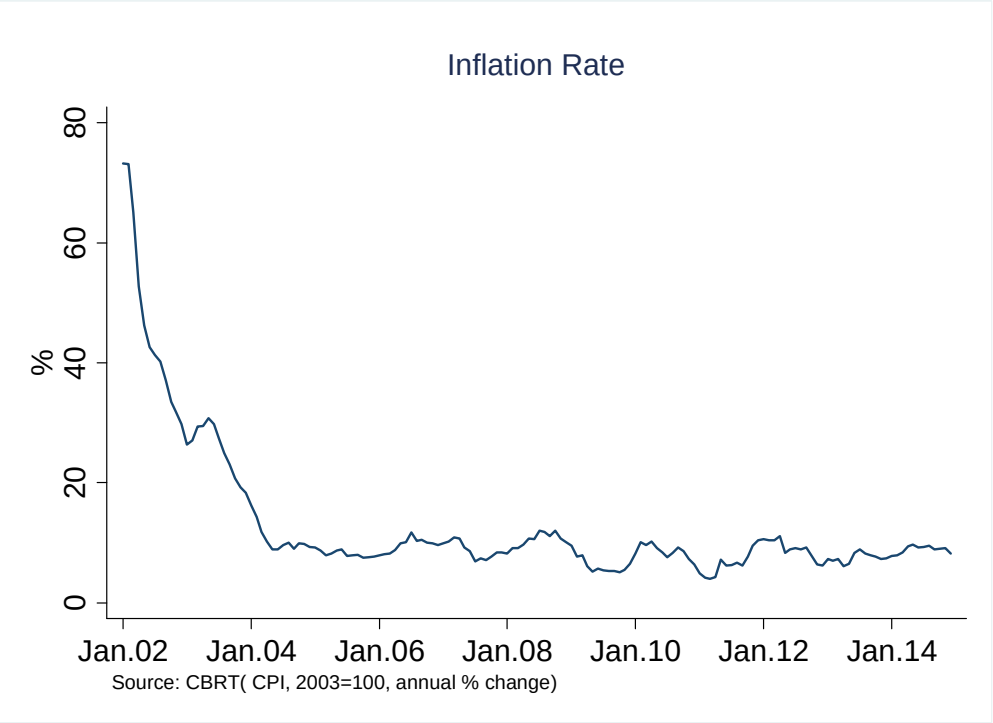

Figure 5. Inflation, 2002-2014.

Briefly turning to inflation, we show a favorite chart of the CBRT (available on the welcome screen of their web page) in Figure 5, showing the rapid disinflation in early 2000s and the period of low and stable inflation since 2005. While the very impressive disinflation and relative stabilization of the inflation rates are both real, the scale of the figure, owing to the very high inflation rate at the beginning of the period, distorts the current picture of inflation.

A better understanding of inflation is provided by Figure 6, which is the same as Figure 5 but omits the initial few years of runaway inflation. Here, it is clear that inflation has settled on an average of about eight percent, low by historical Turkish standards but very high by any definition of price stability, including the CBRT's inflation target. Inflation is also strikingly volatile, regularly breaching double digits but occasionally dipping below five percent, with a standard deviation of 1.7 percentage points. The figure also shows that the core inflation measure, which excludes energy, food, alcohol, tobacco, and gold, remained stubbornly high as well and had a high variance. The disappointing headline numbers were not driven exclusively by volatile non-core components.

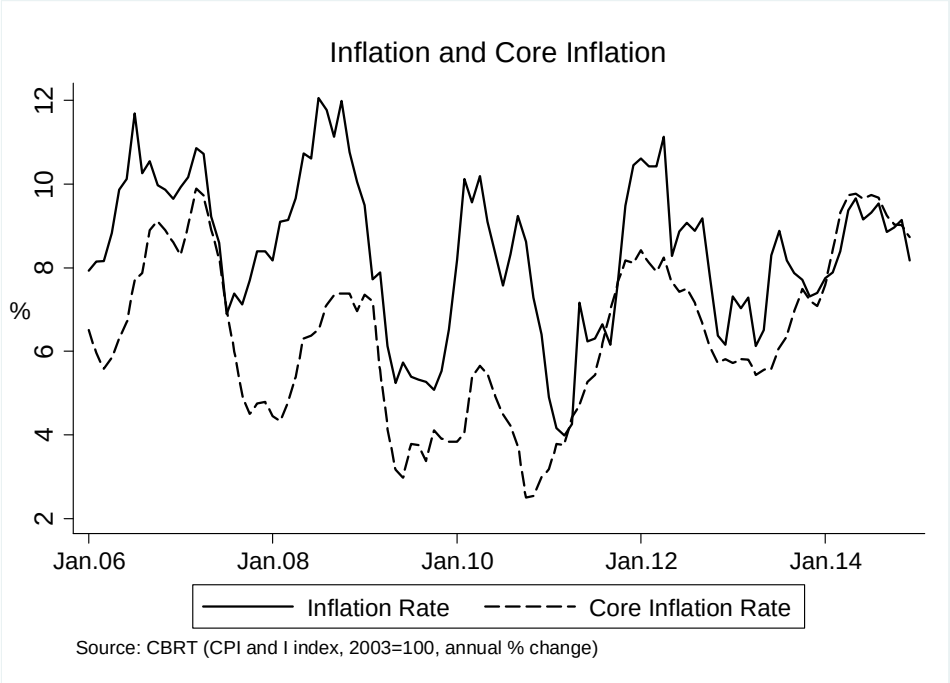

Figure 6. Inflation, 2006-2014.

We will return to the CBRT's loss of control over inflation in section 4 but will first make a necessary detour into fiscal policy.

3. Fiscal Policy

Neither the Turkish macroeconomy nor the behavior of the Central Bank can be understood without at least a basic understanding of fiscal policy in the post-2001 period. Figure 7 shows that budget deficits, which had reached double digits, were rapidly brought under control in the post-crisis period. This was essential for any macroeconomic stabilization and was the backbone of the program that helped Turkey move away from twin deficits-twin crises cycles. We do not elaborate on the (fascinating) mechanics of how this was achieved but note that the strong fiscal situation at the onset of the Global Financial Crisis allowed Turkey to do expansionary fiscal policy and have a short-lived recession despite the depth of the initial contraction.

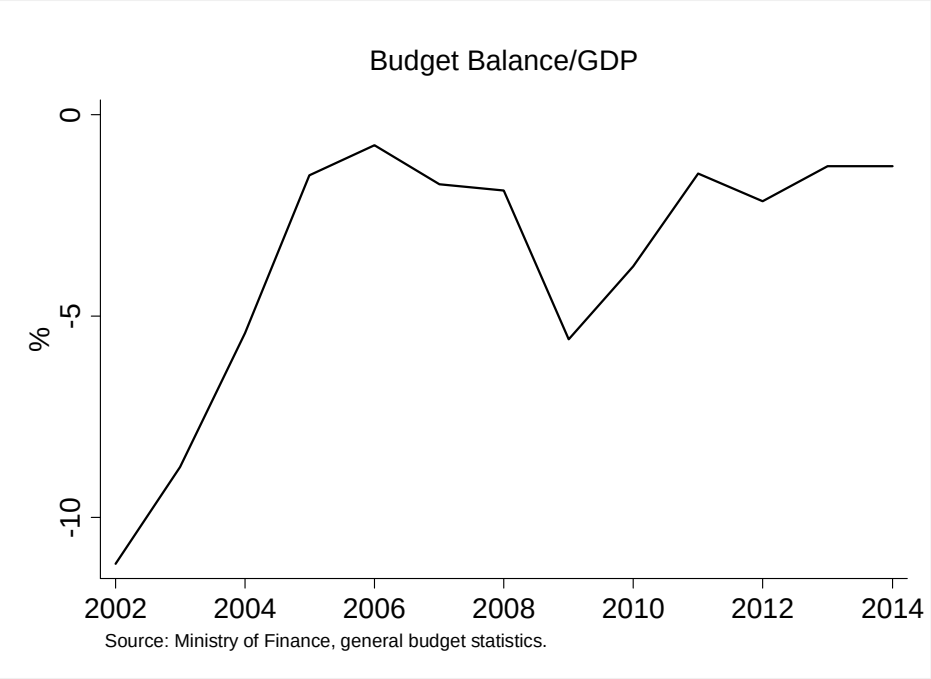

Figure 7. Decreasing budget deficit.

Figure 8 shows that primary spending (government spending excluding interest payments on outstanding debt) as a fraction of GDP increased by almost four percentage points in 2009, as the government undertook fiscal expansion to offset the fall in private demand. This is standard Keynesian response to demand shocks, which affected both external and internal demand at the time, and although the composition of spending was debatable (and debated at the time), the expansionary fiscal policy was not itself subject to debate unlike in the US and euro area.

Importantly, Figure 8 makes another point about the fiscal stance that most commentators of the Turkish economy miss. While Figure 7 showed that the budget deficit increased temporarily in 2009, Figure 8 shows that government spending increased permanently. The increased spending that was to prop up demand and help pick up slack was not undone once the growth rate of GDP increased and the output gap was closed. The government's fiscal stance has been very expansionary since 2009 as tax revenue did not increase at the rate of primary spending increase, as shown in Figure 9.

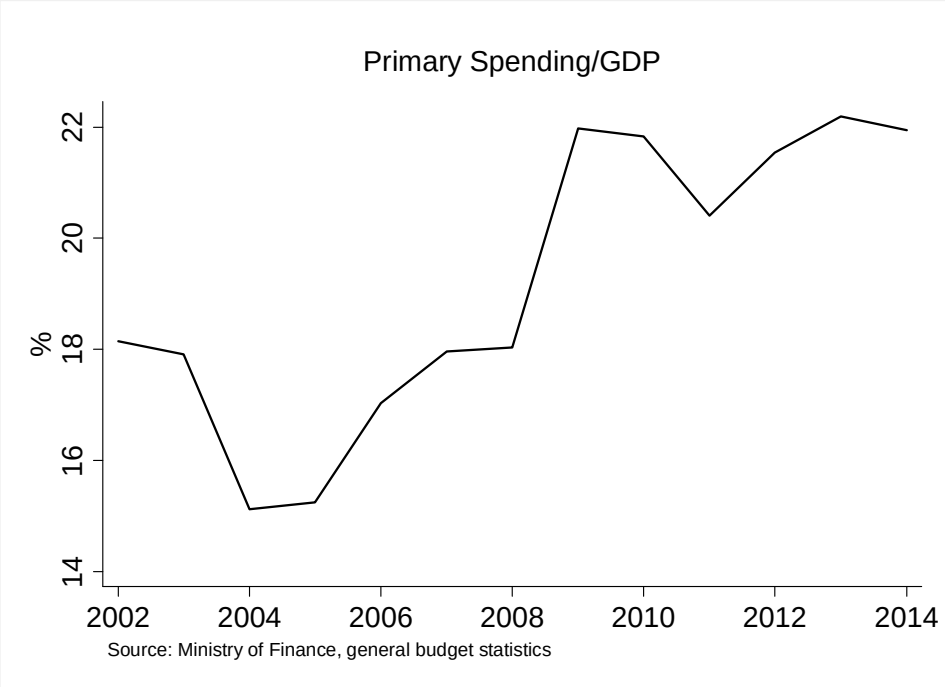

Figure 8. Increasing primary spending.

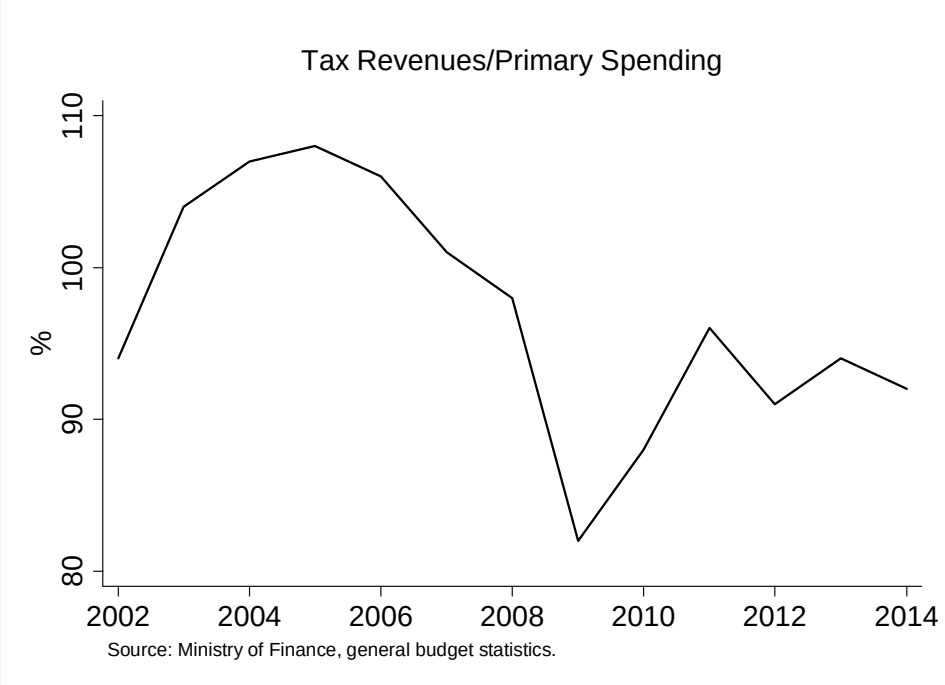

Figure 9. Taxes and spending.

It is then natural to ask why the budget deficit was not ballooning. The answer is in Figure 10, which shows the decomposition of government revenues and expenditures. Increased government spending was effectively financed by the dramatic fall in interest spending as interest rates fell (led by lower policy rates of the Central Bank and supported by global liquidity) and mildly higher tax revenues also helped the headline budget deficit.

Direct government spending is more expansionary than government interest payments as recipients of these payments save some of the interest income. Also, as about a quarter of government debt is held by non-residents[3] shifting expenditure from interest spending to primary spending has mechanical expansionary effects on top of the balanced budget multiplier.

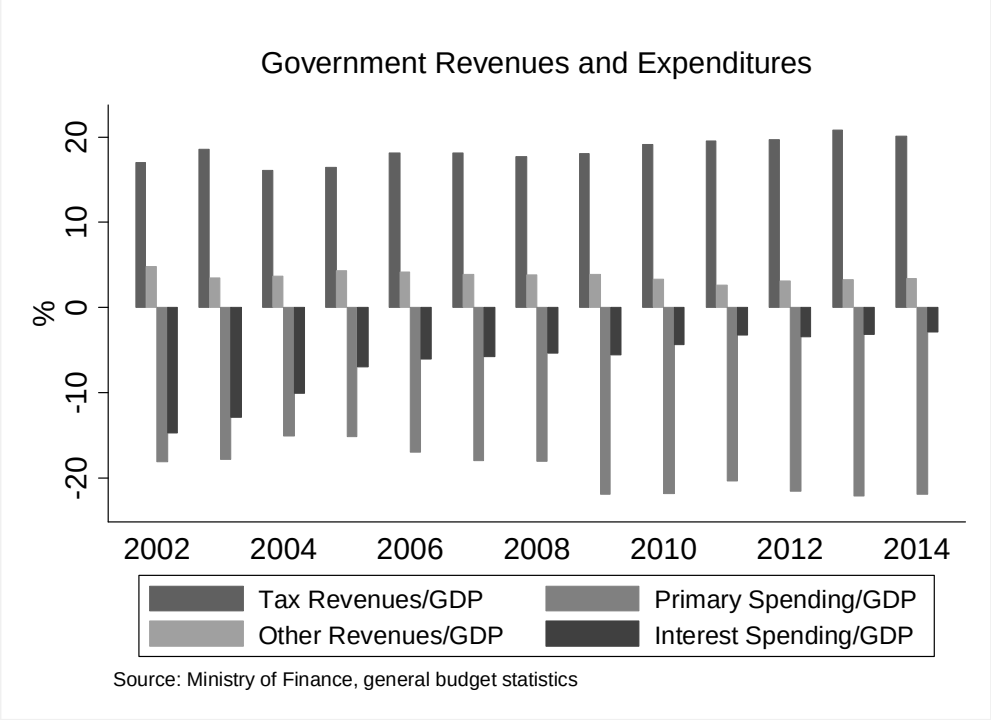

Figure 10. Increasing spending, decreasing interest payments.

Without getting into a debate on the size of the multiplier for this change in the fiscal policy stance, we conclude that fiscal policy became strongly expansionary in 2009 as a response to the Global Financial Crisis but never returned to a neutral stance after the crisis induced output gap was closed. With that in mind, we can now focus on monetary policy.

[3] Ministry of Finance, Annual Report on the Economy 2014.

4. Monetary Policy

Monetary policy in Turkey has been fascinating in the past 15 years. The Central Bank gained its independence in 2001 and began to implement inflation targeting. Due to the IMF-backed stabilization program and its constraints on the central bank balance sheet,[4] early in the period the regime was labeled "implicit inflation targeting," as the inflation target was not the only policy objective. The regime became "inflation targeting" in 2006. In practice, CBRT was doing almost textbook inflation targeting before 2006 as well. The transition to independent central banking and the early periods of implicit and overt inflation targeting are covered in Kara (2008), who also suggests that despite the IMF constraints the CBRT was doing inflation targeting beginning in 2002.

In a broad sense, this early inflation targeting episode was extremely successful, bringing inflation down to single digits from high double (and even triple) digit rates. Figure 5 had shown this strikingly. Monetary policy also contributed to the recovery in 2009 by dramatically easing, but it is hard to quantify the magnitude of the recovery due to CBRT actions.

Before moving to the debate on cyclical stabilization in the post-2001 period it is worth noting that especially after 2010 when the output gap closed, monetary policy was not the proper tool to promote growth. Section 2 showed that growth had slowed *at potential*, hence further growth in Turkey will come from growth of the potential. That requires structural reforms to increase female labor force participation, improve education to increase human capital, and foster investment by making the country less legally and politically risky. These are not central banking issues.

Especially since 2010 the Central Bank lost track of its inflation objective, while focusing on many other issues, including bank loan growth, capital flows, current account deficit, etc. Davig and Gürkaynak (2015) show that a central bank may lower welfare by trying to address too many inefficiencies if this causes other policymakers to care less about problems for which they have the appropriate tools. Turkey seems to fit the description.

Having noted the problems associated with delegating all economic policy to the CBRT and expecting it to somehow engineer permanently above potential growth rates, we turn to inflation stabilization, the core mandate of CBRT for which it possesses the right policy tool.

[4] Some balance sheet items of the CBRT were limited by the performance criteria of the stand-by program.

4.1 Monetary Policy and Inflation

The policy framework in Turkey became a monetary economist's dream beginning in 2010, with the CBRT first actively using reserve requirements to (unsuccessfully) control bank loan growth, then using the volatility of the overnight rate to increase the risk/return ratio and deter overnight currency flows (slightly extending currency flow duration), then allowing the interbank rate to systematically be above the policy rate to do back-door policy tightening. During this period CBRT also allowed banks to hold reserves in foreign currency at what amounted to a secondary exchange rate controlled by the CBRT for the purpose of calculating the reserve amounts, with the (unrealized) hope that this would have an effect on the market exchange rate. The papers by Akkaya and Gürkaynak (2012), Kara (2012), Özatay (2012), Üçer (2011) delve into various aspects of these policies, and most of these papers are critical of the design and/or effectiveness of this long list of non-standard policies. Here, with the benefit of several more years of data, we take a broader perspective.

We begin by making the obvious point that inflation has been above the target and above the target band (called the uncertainty band by the CBRT) almost continuously since 2011. Figure 11 succinctly shows this. Not coincidentally, this is when the output gap closed (Figure 2) and fiscal policy continued to be expansionary (Figures 8-9).

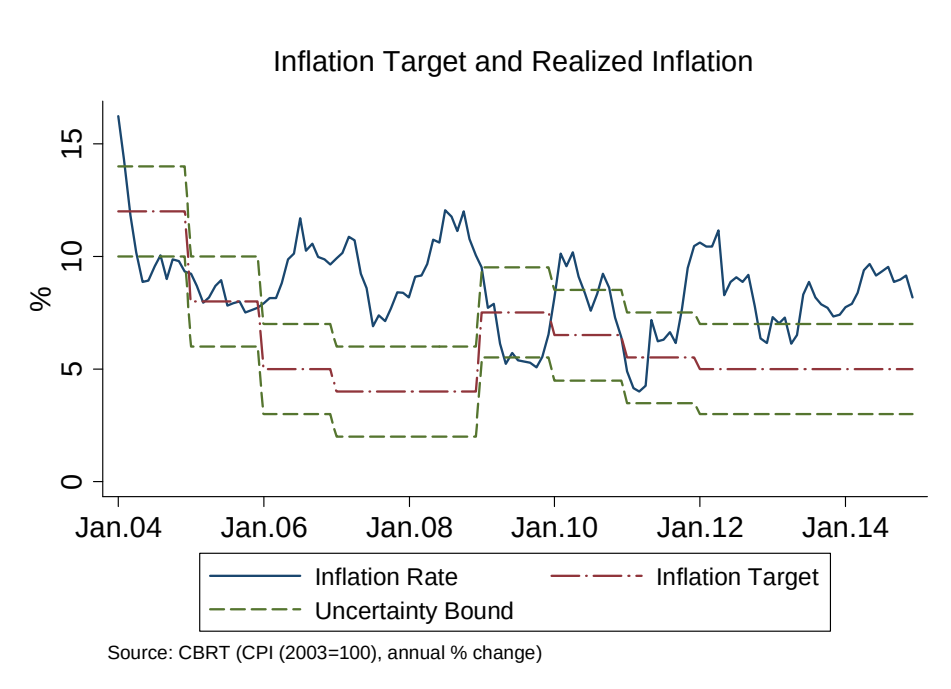

Figure 11. Inflation and the target.

This then begs the question what monetary policy was doing at this time. Figure 12, which plots inflation, primary spending and CBRT's policy rate together, suggests that the answer is "not much." The policy rate was constant as inflation was rising in 2011-2012 and was lowered as inflation came down afterwards even though it remained above the target. The notable increase in the policy rate came in early 2014, when a political corruption crisis led to a jump in the exchange rate and unhinged expectations. Figure 12, however, hides more than it reveals.

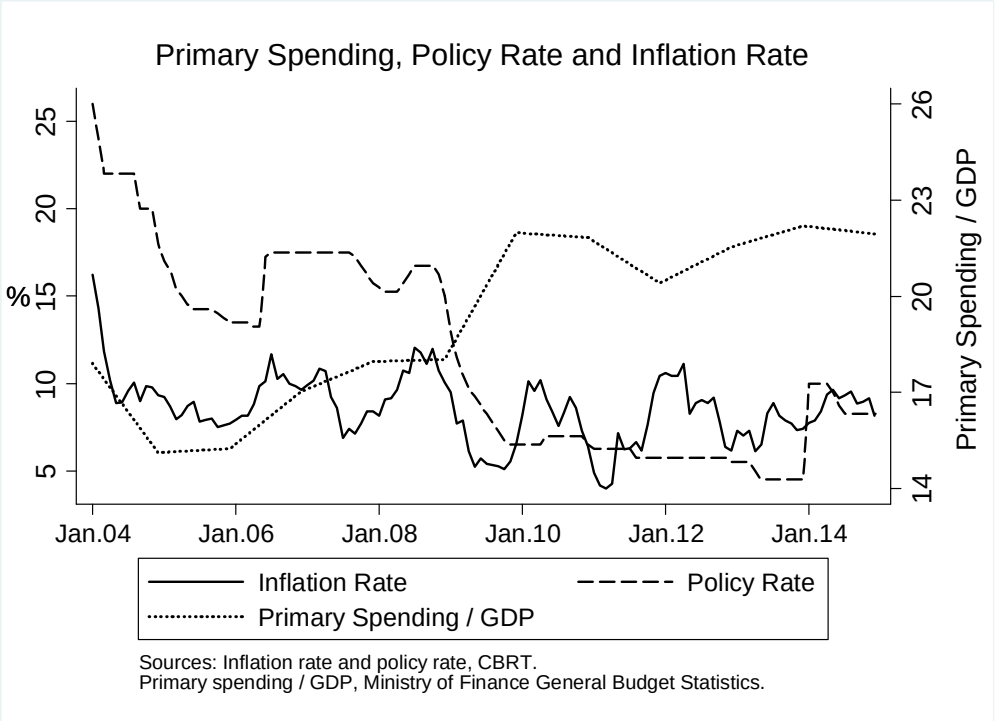

Figure 12. Fiscal and monetary policies, and inflation.

4.2 Policy Rate and Policy Stance

The "policy rate" has the connotation of a target rate of a central bank that is a point of attraction in the interbank market. This was indeed the case in Turkey up to 2010. But afterwards the policy rate and the market rate diverged (Figure 13). In essence, the policy rate became an empty signifier, uninformative about the stance of monetary policy. We think this was done by the CBRT at least in part to take advantage of the limited economic understanding of the politicians who were pressuring the institution for lower interest rates. Keeping the policy rate low

and allowing the interbank rate to be much higher allowed a veiled policy tightening at the expense of policy transparency.[5]

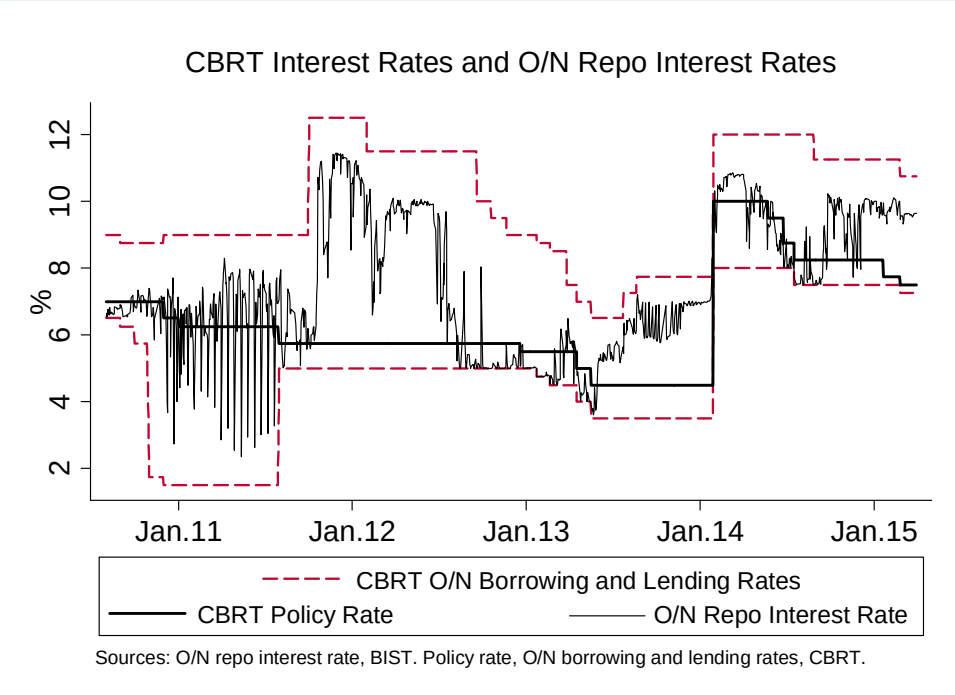

Figure 13. Plethora of policy rates.

The "policy rate" had switched from the overnight rate to a one week repo rate in 2010 and, as shown in Figure 13, that repo rate was not used to keep market rates close to the announced policy target rate. Indeed, the central bank often explicitly noted in its formal policy announcements that "interbank money market rates will materialize around [level much higher than policy rate]."[6] (CBRT 2013, inter alia). Thus, to assess the policy stance, estimate the reaction function, and to quantify Turkish monetary policy in any way, we need a policy measure distinct from the official policy rate. Alp et al. (2010) had shown that the interest rate in the one week Turkish Lira Libor (TRlibor) market is the best predictor of policy stance in Turkey. That argument continues to hold, so we use the TRlibor rate as our measure of effective policy rate.

Figure 14 shows that this measure of the policy rate was much more responsive to inflation than the official policy rate. Now, using the TRlibor rate as a realistic measure of the policy stance, and employing this measure for the whole period (before 2010 as well to keep sub-periods comparable) we can study the reaction function of the Central Bank of Turkey.

[5] It was also the case that a wide corridor gave the CBRT the flexibility to almost continuously adjust the interbank rate, which the policymakers genuinely seemed to like.

[6] The statement read "…interbank money market rates will materialize around 7.75 percent" whereas the same statement had announced the policy rate (one week repo rate) to be 4.5 percent.

Before we turn to econometric analysis, notice that in Figure 14 the inflation line is above the policy rate line for long stretches of time, regardless of how the policy rate is measured. Turkey had negative real policy rates in 2012 and 2013 even when the policy rate is measured with TRlibor. Recall from Figure 2 that this period had no economic slack. It appears that the Central Bank was stimulating demand with negative real interest rates at a time when the output gap had closed, and that combined with the continued fiscal stimulus led to overheating. That overheating manifested itself in inflation much higher than the target and also in historically unprecedented levels of current account deficits.

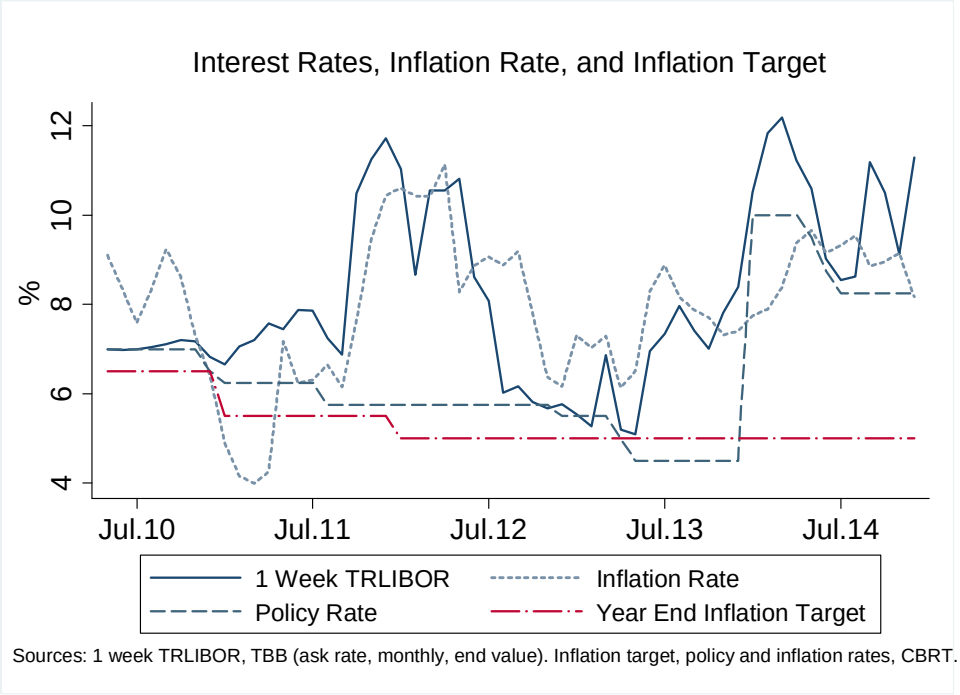

Figure 14. Inflation, target, and interest rates.

4.3 The Regime Switch in Monetary Policy

The discussion above suggests that monetary policy in Turkey was different, likely weaker, towards the end of the period of our study compared to the immediate aftermath of Central Bank independence, during the great stabilization of Turkish economy. Sayek-Böke and Gürkaynak (2013) and Acemoğlu and Üçer (2015) also argue that there was a break in Turkish economic performance (as well as political and democratic performance) sometime after 2006. To study whether monetary policy was indeed different during part of the post-2001 crisis period we looked for a structural break in estimated Turkish monetary policy reaction functions.

The policy rules we estimated and checked for structural breaks were of the Taylor-type rules which allow the central bank to react to inflation as well as a measure of output, and perhaps to other variables. Starting from 2003 to avoid the large, discrete drop in inflation and interest rates in 2002, and using monthly data, we estimate three monetary policy rules. All policy rules we consider include the annual inflation in the previous year. One rule has the deviation of industrial production[7] (IP) from its trend, the second one has the growth rate of IP and the third one adds the depreciation of the lira to the second formulation.

Using a battery of structural break tests, not reported for brevity, we find a structural break in all policy rules somewhere in 2009. Where exactly the break is located depends on the particular test and rule but all combinations of tests and policy rules point to a break in 2009.[8] We therefore split the sample into two, with the first sub-period running from 2003M1 to 2009M12 and the second one from 2010M1 to 2014M12, but note that out qualitative results and argument do not depend on when in 2009 we locate the sample break.

Table 1 shows the estimated Taylor-type rules for the two sub-periods and the p-value of the Chow test for the structural break in 2009M12 for that specification of the rule. All three rules clearly show that the CBRT was targeting inflation strongly in the earlier period, with a reaction function that satisfied the Taylor principle and moved the nominal interest rate more than one-for-one in response to inflation. All three rules also show that in the latter period the CBRT's response to inflation was severely muted, with the inflation response coefficient only half as large and much below unity in this period.

This is statistical validation for the common observation that lately CBRT has not been the inflation targeter it used to be. This finding is also consistent with the immense and public pressure the Central Bank faced from the government to lower interest rates.[9] Although it was not easy to clearly see in an environment of very complicated monetary policy actions and communication, the policy stance was too easy given the inflation rate in the 2010-2014 period. The strong policy rule in the first period helped inflation to fall to 6.5% at the end of 2009, from above 25% at the beginning of 2003. The weak reaction function that followed allowed inflation to average about 8% in 2010-2014.

[7] We use industrial production rather than GDP because IP is available at a monthly frequency but GDP is only available quarterly.

[8] Some multiple break tests also suggest other breaks as well, such as in 2005, but 2009 shows up often as the sole break and always as the most likely break point even in multiple break tests.

[9] The Turkish press is full of examples of the prime minister and various cabinet members arguing that the CBRT has to cut interest rates, that high interest rates cause high inflation, that the CBRT is a traitor for not vastly lowering the policy rates, etc. "Erdoğan:…" (2011, 2014) are two examples among many.

Notice that the depreciation of the lira does not enter the Taylor rule with any statistical significance. CBRT was not targeting inflation in the recent period and it is not clear to us which variable it was targeting, if any.

Taylor Rule Estimations for the Periods before and after the Break

	Period 1 (2003/01-2009/12)	**Period 2 (2010/01-2014/12)**	**Chow Test for Break F-statistic**
	Interest Rate	Interest Rate	
1st Taylor Rule			
Constant	5.24***	2.88***	
	(0.70)	(1.16)	
Inflation rate	1.29***	0.64***	299.99***
	(0.05)	(0.14)	
% deviation of IP from its trend	0.12**	0.12**	
	(0.05)	(0.05)	
R^2	0.88	0.28	
2nd Taylor Rule			
Constant	5.71***	4.46***	
	(0.66)	(1.22)	
Inflation rate	1.24***	0.50***	342.48***
	(0.05)	(0.14)	
Annual growth of IP	0.10***	-0.07*	
	(0.02)	(0.04)	
R^2	0.89	0.25	
3rd Taylor Rule			
Constant	5.72***	4.16***	
	(0.67)	(1.23)	
Inflation rate	1.24***	0.52***	339.48***
	(0.05)	(0.14)	
Annual growth of IP	0.10***	-0.07*	
	(0.02)	(0.04)	
Change in USD/TRY rate	0.14	6.68	
	(5.62)	(5.09)	
R^2	0.89	0.27	

Table 1: This table shows the Taylor Rule estimation results. First column shows the estimation results for the first sub-period. Second column shows the estimation results for the second sub-period. Third column shows the F-statistic of the Chow test for break. In conducting the Chow test, inflation rate is used as a time varying regressor. Critical F-value is 11.38 for p-value=0.001.

A striking visual counterpart to Table 1 is Figure 15, which shows the relationship between the monetary policy stance and inflation rate in the two sub-periods. The scatterplots and the slopes of the OLS regression lines (bivariate regression between interest rate and inflation) shown in the top panel for the early and in the bottom panel for the later periods depict a remarkable change in the relationship, as was suggested by Table 1.

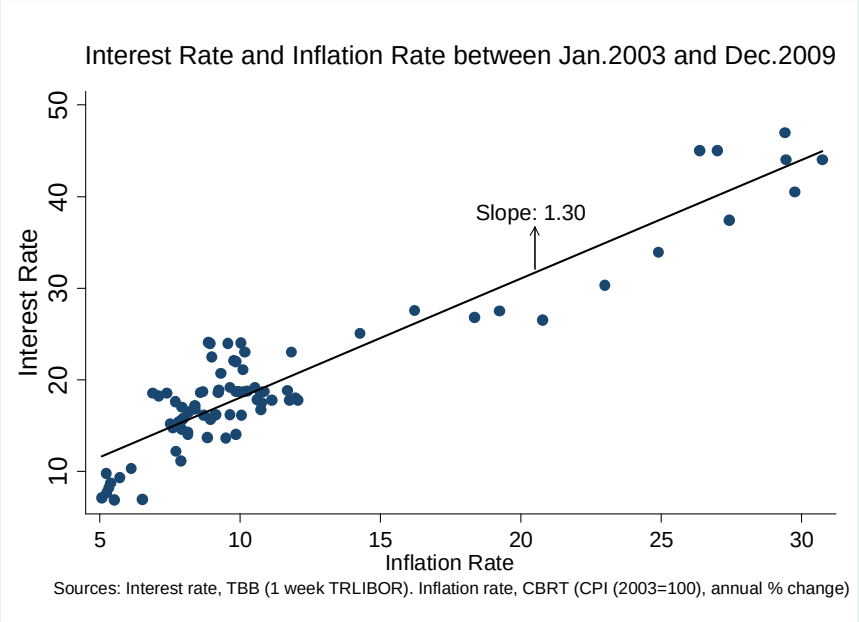

Figure 15.A. Relationship between the interest rate and inflation rate, 2003-2009.

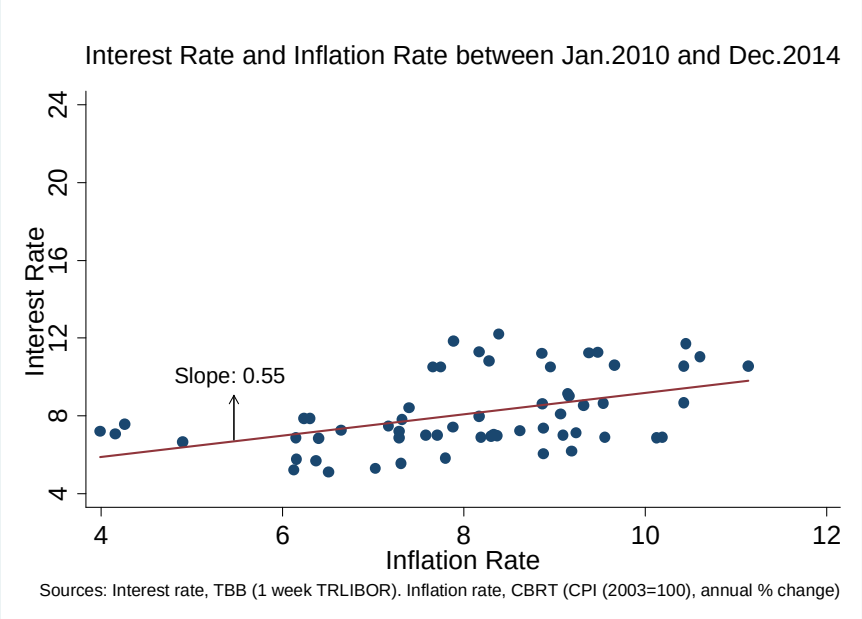

Figure 15.B. Relationship between the interest rate and inflation rate, 2010-2014.

The break in the reaction function we determine allows us to ask what monetary policy would have looked like in the recent period had the strong anti-inflation stance of the central bank continued. To find out we present a counterfactual exercise where we estimate the interest rate implied by the 2003-2009 reaction function using the post-2010 data. Figure 16 shows the result.

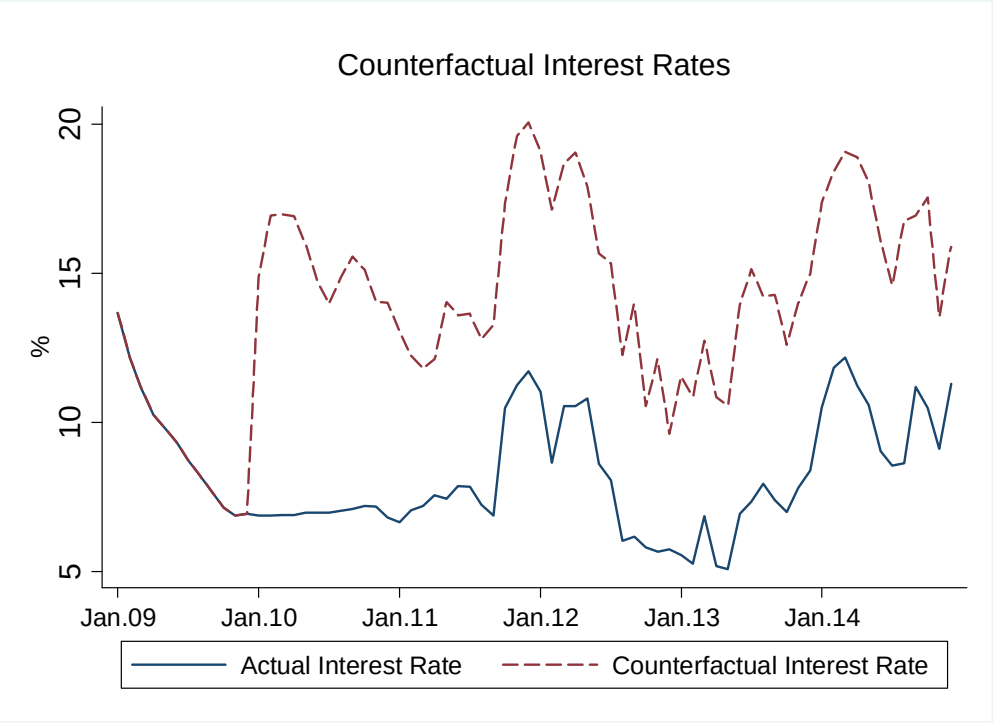

Figure 16. Counterfactual interest rate is the rate we would have had if first period's Taylor rule had been implemented in the second period. Estimation is done using the second specification of Taylor rule presented in Table 1.

That the counterfactual interest rate path is above the realized path is not surprising. It is, however, striking how much higher the interest rate would have been had the CBRT continued to follow its earlier, strongly stabilizing policy rule. The average distance between the actual and counterfactual policy paths is about 7 percentage points. That is, the interest rate set by the CBRT was about 7 percentage points too low in 2010-2014 by its own earlier standards. Once again, it is no wonder that inflation was above the target band for long stretches during this period.

A natural follow up question is what would have happened to inflation had the CBRT continued to follow the strongly stabilizing rule. We had built a DSGE model anticipating this

question but as these models produce indeterminacy under weak Taylor-type policy rule parameters[10] it was not possible to estimate the structural parameters in the latter period.[11]

4.4 A Narrative Eventstudy of Recent Past

Turkey did experience an episode in this period that makes us think indeterminacy may be more than an esoteric DSGE model feature. Figure 17 below shows the exchange value of the dollar against the lira between the beginning of 2013 and March 2015, when this paper was written.[12] Some key events that caused (and relieved) financial market distress are marked in the figure.

The so-called taper tantrum affected the lira along with other emerging market currencies. As shown in the figure, this marks the beginning of the secular depreciation of the lira. The figure also suggests that domestic political and economic policy developments were associated with the largest swings in the exchange rate. The Gezi Park protests,[13] in retrospect, did not lead to notable changes in the exchange rate compared to the events that were to follow.[14]

The period we will especially focus on is between the last month of 2013 and the first month of 2014. Before delving deeper into an event study of this period, it is worth noting that the exchange rate movements were reflecting the value of the lira against other currencies, rather than changes in the value of the dollar against all currencies. The lower panel of the figure shows the value of the lira against an equally weighted currency basket of other emerging market currencies. Jumps in the two figures are essentially identical. Looking at a trade weighted currency basket and looking at the value of different currencies individually against the lira would have yielded the same result. Major jumps in the value of the lira were due to domestic factors although the initial

[10] The intuitive reason of the indeterminacy is that if the central bank is not raising the real interest rate in response to higher inflation then aggregate demand is not reigned in. In this case there is no reason why the private sector should not expect arbitrary inflation rates, which will turn into self-fulfilling prophecies as expected inflation feeds into actual price setting. Raising the real interest rate requires raising the nominal rate more than one for one with respect to inflation.

[11] Inoue and Rossi (2011) caution against assuming that transmission parameters will remain the same in studies of structural breaks.

[12] The data are end of day exchange rate quotes. The vertical lines are drawn so that events affecting exchange rates on that day come before the data point is plotted. In most cases this means the vertical lines are placed one day before the actual day of the event. This properly deals with the discrete nature of the data shown.

[13] Gezi Park protests were popular demonstrations that began as a response to planned demolition of a park in İstanbul and became country-wide demonstrations against the government which were met with very heavy-handed police responses.

[14] Also, Atalar (2014) shows using intraday data from this period, that a sizable part of the depreciation of the lira during the Gezi park events are in response to the prime minister's speeches rather than to the protests.

trend of depreciation began with the taper tantrum. It is also noteworthy that Turkey was affected more by the prospect of tighter global liquidity than other emerging market economies, with the lira depreciating noticeably over this period against these currencies as well.

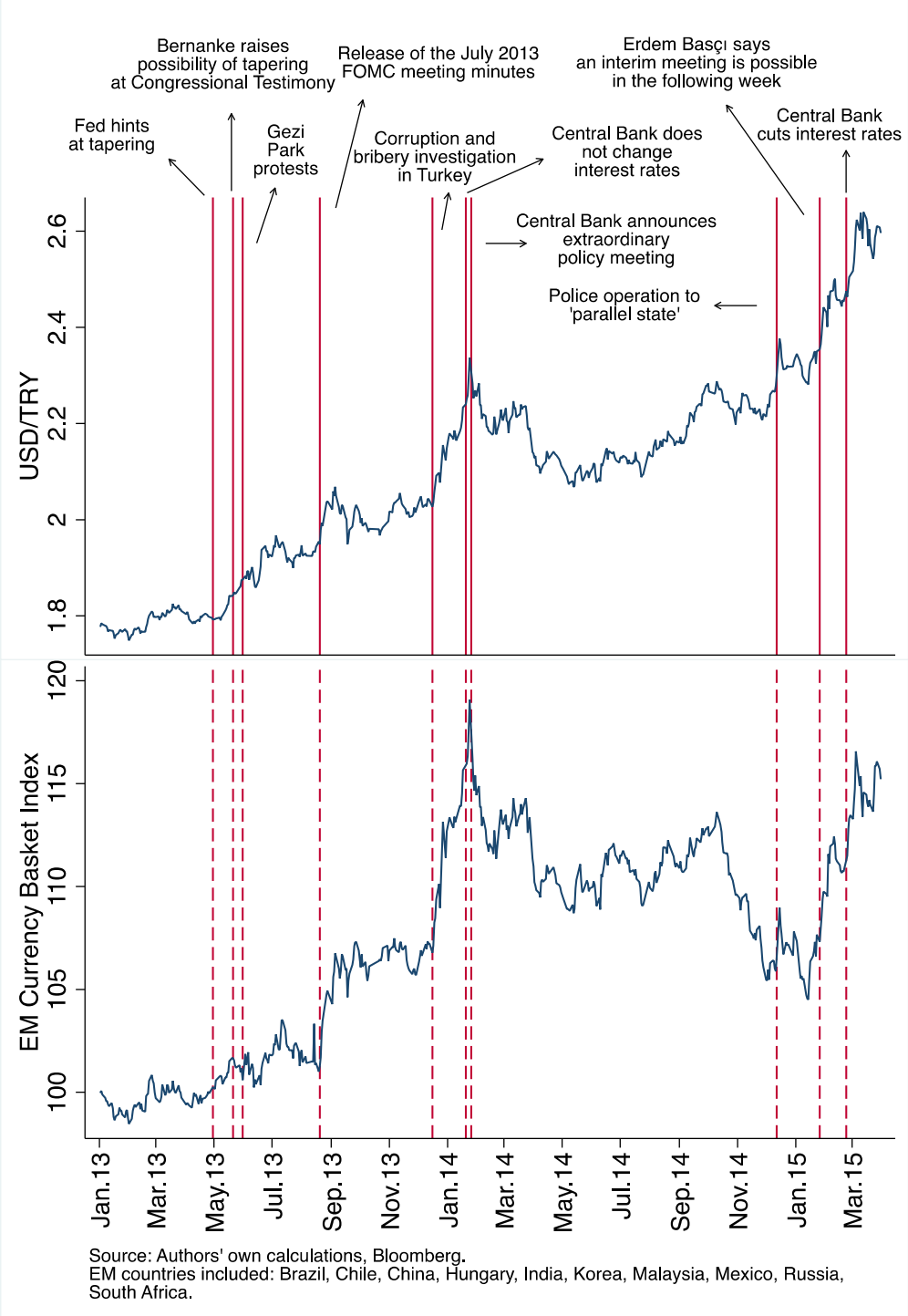

Figure 17. Events and exchange rate responses.

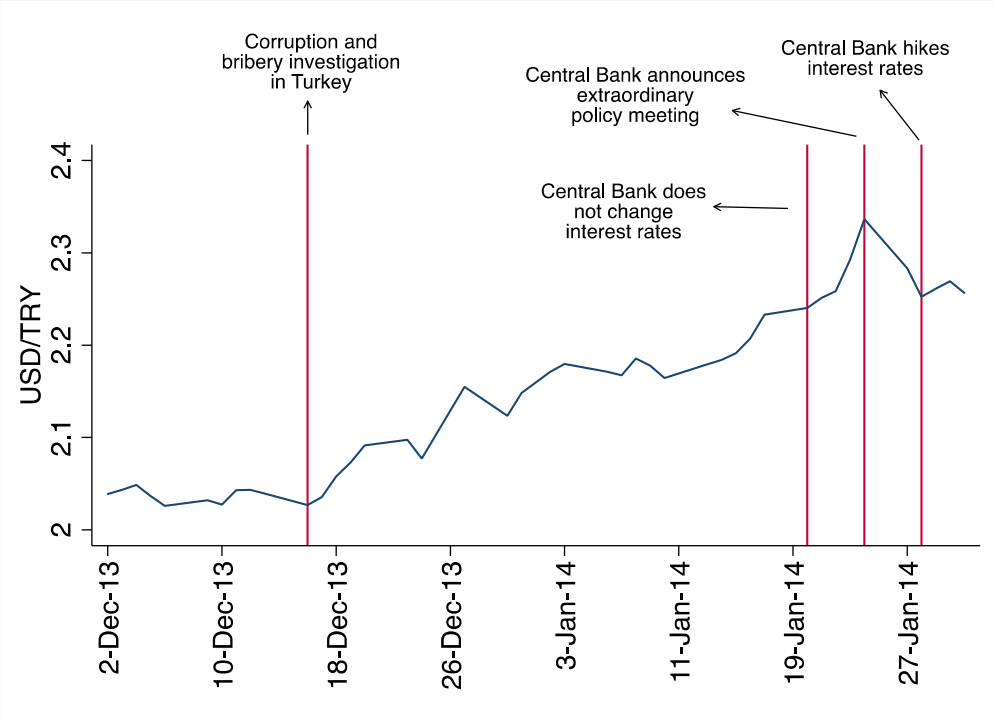

Figure 18. A closer look at Dec. 2013-Jan. 2014.

We now turn to the December 2013-January 2014 period as an eventstudy. We will use this period to highlight the potency of CBRT in controlling expectations and expectation-driven asset prices. Econometric evidence suggests that while financial markets react to CBRT's monetary policy, especially in the case of the exchange rate, the effect is small (Aktaş et al., 2009). We verified (but do not report) this once again for the more recent sample. The events of this period suggest that the effect is nonlinear. While small changes in the policy stance have almost negligible effects on the exchange rate, large changes have substantial effects.

Figure 18 shows that the lira began to depreciate rapidly following the corruption charges against members of the government and their families. At the time, the expectation was that the CBRT would not tolerate such rapid depreciation of the currency, both because of financial stability reasons and, more importantly, due to the depreciation's effects on elevating inflation by mechanical pass-through and by shifting up expectations. In the event, CBRT did not increase interest rates to defend the lira at its planned meeting.

The lira began to depreciate much faster after the CBRT kept policy rates intact, at negative real rate levels. One interpretation of this is that market participants lost their nominal anchor in lira when the CBRT did not raise interest rates, learning what Table 1 shows: monetary policy does not react strongly to inflation. Then, expectations of future price level and associated asset prices became unhinged. This was visible in the exchange value of the lira. While the data we show is consistent with this interpretation, it clearly does not rule out alternatives. Then again, it was clear that market participants' belief that there were some outcomes in inflation (preceded by some outcomes in exchange rates) that the CBRT would not tolerate was shaken.

A few days after its scheduled policy meeting, following the deep depreciation of the lira, CBRT announced that it was going to hold a new policy meeting. It is notable that the announcement that a meeting was to take place was sufficient to undo the jump in the exchange rate, before the meeting actually took place. The financial market response was large and showed that CBRT has the ability to strongly affect expectations and associated asset prices—the exchange rate in this case. Of course, this was also shown in the other direction a few days ago when the anticipated interest rate increase did not materialize at the scheduled meeting.

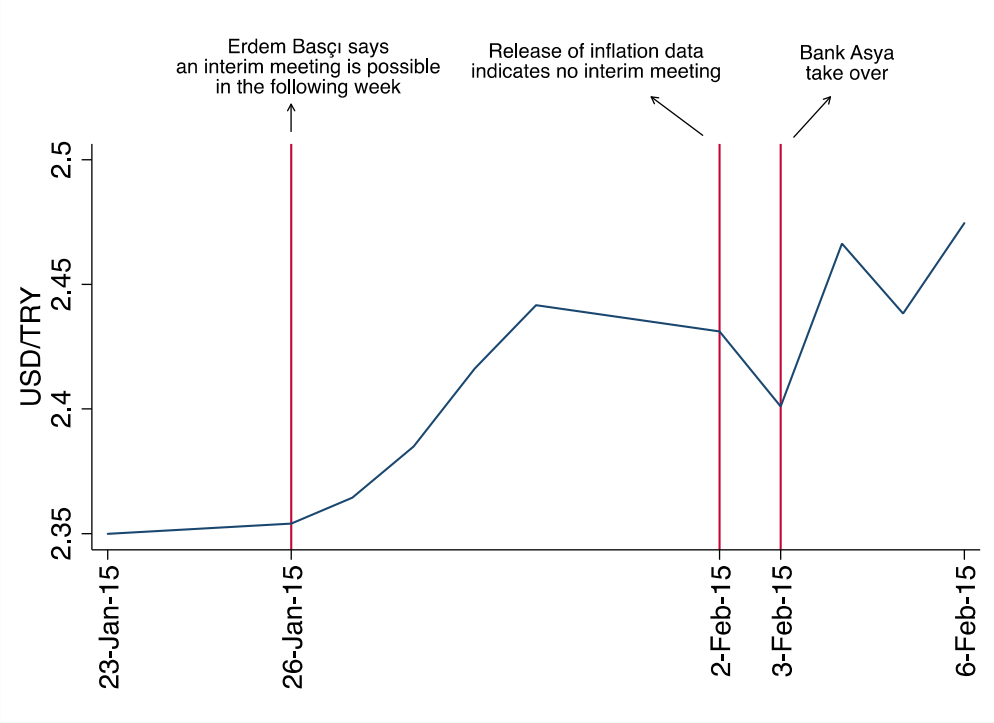

Figure 19. A closer look at Jan.-Feb. 2015.

A similar episode took place about a year later (Figure 19), verifying our argument that the CBRT does have the ability to impose discipline on expectations but that it does not do so.[15] Once again at a time of great political pressure on the institution, Governor Başçı commented in a speech that interest rates may be cut in an intermeeting move if inflation, which was to be released in a few days' time, comes in below a threshold (which would have still remained much higher than the inflation target—see Figure 14). Inflation coming down as much was at the time seen as an almost sure bet and the belief that CBRT was to cut interest rates despite elevated inflation once again led to the anti-inflation commitment of the institution to be questioned, expectations to deteriorate and the lira to very rapidly lose value.

Given the expectations for the release surprisingly, inflation did not fall as much and the CBRT was saved from cutting interest rates. The fact that what would have been a policy mistake was averted led to an appreciation of the lira but because this happened due to a reason external to the CBRT (inflation falling a notch less than what was needed to fulfill the communicated condition for a rate cut) limited the extent of the gain.

Studies of these episodes help us make a number of observations. First, Turkey has had an inordinate number of large "events" in the recent past. This is a high political and policy volatility country. Second, all eyes were on the Central Bank during that period. This is bad in the sense that, as we also argued at the beginning of this section, the CBRT looked like the only economic policymaker in the country. On the other hand, it is reassuring that markets still attribute sufficient credibility to the institution and perceive it to be potent enough to pin down expectations and asset prices, should it choose to do so.

The third observation we make is that CBRT's weak reaction function was evident in these large events as well as in run-of-the-mill policy responses to oscillating inflation. The Central Bank, more often than not, showed that it was very hesitant to raise interest rates and quick to lower them, regardless of the inflation outlook.

The last observation we make is on the potency of monetary policy. In the rare instance when the CBRT moved aggressively to control expectations of inflation and depreciation, and to stabilize financial markets, its policy actions produced the desired result. Similarly, when it signaled a lack of concern for inflation and (perceived) deference to political pressure, financial

[15] Aktaş et al. (2009) shows the financial market impact of CBRT policies during the early period of our study and also argue that the Central Bank did have a strong effect on longer-term interest rates.

markets moved to signal that CBRT's strong presence is needed to have a nominal anchor. That is, CBRT's policy rates help anchor or unanchor expectations and affect financial markets in ways its myriad nonstandard policies do not. Interest rates remain the fundamental and effective tool of monetary policy.

5. Conclusion

Turkey has had two distinct periods of economic policy and activity after its post-2001 crisis. The first one, which ends sometime in 2006 to 2009 and we econometrically date to 2009 for the break in monetary policy, is a relatively successful period. We observe rapid disinflation and high growth rates in this period. This episode is well understood and is also well advertised by the government and policymakers. We argue that there is a second, low growth period that is characterized by expansionary fiscal policy and weak monetary policy that allowed inflation to rise and remain elevated, current account deficit to increase and financial markets to suffer high volatility. Our key finding, therefore, is of a structural break in monetary policy around 2009. Monetary policy after that time was characterized by weak responses to inflation, which not only allowed inflation to be above target for most of the recent period, it also added to volatility in expectations and financial markets by weakening the nominal anchor.

Using a succession of political and policymaking events and exchange rate responses to these, we argue that domestic factors played a large role in the recent depreciation of the lira. Importantly, we also observe that when the Central Bank used interest rates to offset inflationary pressures and stabilize financial markets it was successful in doing so. In the instances when the expected policy tightening did not come, or when the Central Bank signaled looser policy at times of political pressure for lower interest rates, we observe unhinged expectations that manifest themselves in exchange rates immediately.

While deflationary pressures made many central banks lower policy rates to zero and then try innovative monetary policy actions to further stimulate demand, Turkey never left the well understood world of inflation above target. The recent experience suggests that inflation and asset prices have responded in the textbook manner to monetary policy in Turkey. The behavior of inflation before and after the structural break in monetary policy shows using interest rates to control inflation had been successful and not doing so led to inflation persistently above target.

In Turkey old fashioned monetary policy works, when used.

Data Sources

Budget Balance: T.R. Ministry of Finance, General Directorate of Public Accounts, General Budget Statistics.

CBRT O/N Borrowing and Lending Rates: CBRT.

CBRT Policy Rate: CBRT (before 20.05.2010 O/N borrowing rate is used, after 20.05.2010 1 week repo rate is used).

Current Account Balance: CBRT, Electronic Data Delivery System.

Emerging Market Country Spot Rates: Bloomberg (Tickers: BRLTRY, INRTRY, ZARTRY, RUBTRY, CNYTRY, MXNTRY, KRWTRY, HUFTRY, MYRTRY, TRYCLP).

Industrial Production Index: Turkish Statistical Institute (1997=100).

Inflation Rate: CBRT (CPI, 2003=100, annual % change).

Inflation Target: CBRT.

Inflation and USD/TRY Expectations: CBRT.

Interest Spending of the Government: T.R. Ministry of Finance, General Directorate of Public Accounts, General Budget Statistics.

Labor Force Participation Rate: Turkish Statistical Institute, Labor Force Statistics.

O/N Repo Interest Rate: Borsa Istanbul.

Other Revenues of the Government: T.R. Ministry of Finance, General Directorate of Public Accounts, General Budget Statistics.

Primary Spending: T.R. Ministry of Finance, General Directorate of Public Accounts, General Budget Statistics.

Real GDP: Turkish Statistical Institute, Expenditure Approach, 1998 prices.

Tax Revenues: T.R. Ministry of Finance, General Directorate of Public Accounts, General Budget Statistics.

TRLIBOR (1 Week): The Banks Association of Turkey, Turkish Lira Reference Interest Rate.

Unemployment Rate: Turkish Statistical Institute, Labor Force Statistics.

USD/TRY Spot Rate: Bloomberg (Ticker: USDTRY).

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