

7. Medium-Term Forecasts

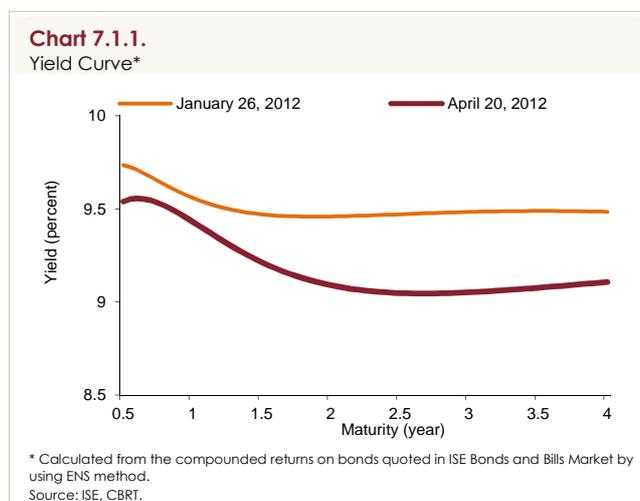
This chapter summarizes the underlying forecast assumptions and presents the medium-term inflation and output gap forecasts as well as the monetary policy outlook over the upcoming three-year horizon.

7.1. Current State, Short-Term Outlook and Assumptions

Monetary Conditions

In the inter-reporting period, the CBRT maintained its cautious stance in tandem with the monetary tightening delivered since October 2011, and continued to effectively utilize the interest rate corridor between O/N lending and borrowing rates. Accordingly, with a view to hinder the possible adverse effects of the recent surge in energy prices and other cost factors on the medium-term inflation outlook, an additional tightening was delivered by March 23 and April 12, 2012. Consequently, the quantity of 1-week repo funding was lowered and the weighted average funding rate was raised (Chart 5.1.7). Furthermore, at its meeting on April 18, the MPC underlined that additional tightening would be implemented more frequently in the upcoming period, in order to prevent deterioration in the inflation outlook.

Amid growing global risk appetite in the first quarter, market rates edged down similar to other emerging economies. Meanwhile, owing to the adopted monetary tightening, short-term rates declined only slightly (Chart 5.1.9). Thus, market rates declined across all maturities, in particularly in the long-term (Chart 7.1.1). On account of the additional tightening delivered in March and April, the interest rate spread turned negative, and the yield curve followed a downward course. Therefore, monetary policy continued to assume a tight stance in the inter-reporting period.



Inflation

In the first quarter of 2012, major factors influencing inflation remained in line with the January Inflation Report forecasts. CPI inflation posted a year-on-year increase by 10.43 percent, close to the previous projections (Chart 1.2.1). Annual inflation in core goods slowed down in the first quarter, while prices of services assumed a mild course. The pass-through from the higher-than-expected increase in energy prices was limited, on the back of the recently favorable course of unprocessed food prices.

Food prices weighed less heavily on the CPI inflation amid the better-than-anticipated course of unprocessed food prices in the first quarter of 2012. However, in view of the high volatility in unprocessed food prices as well as the course of agricultural commodity prices, the year-end forecast for food inflation remained unchanged (Table 7.1.1).

Table 7.1.1.
Revisions to 2012 Assumptions

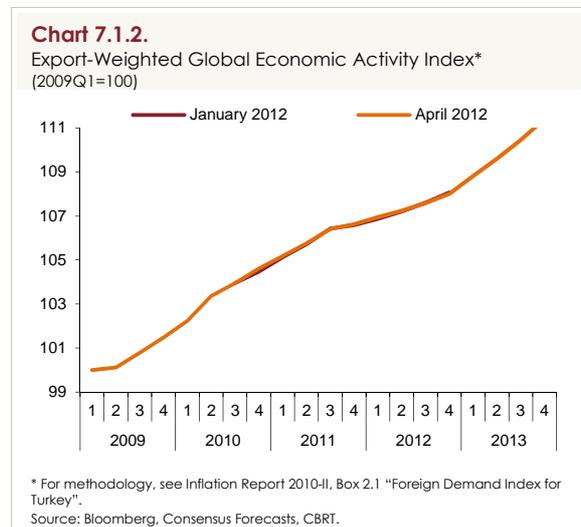
		January 2012	April 2012
Output Gap	2011Q4	-0.25	-0.35
	2012Q1	-0.59	-1.20
	2012-2014	7.5	7.5
Food Price Inflation (Year-end Percent Change)	2012	-0.3	-0.7
Import Prices (Average Annual Percent Change, USD)	2013	-0.7	-0.7
Oil Prices (Average Annual, USD)	2012	110	120
	2013	105	115
Export-Weighted Global Production Index (Average Annual Percent Change)	2012	1.39	1.38
	2013	-	2.44

Demand Conditions

National accounts data for the last quarter of 2011 remained broadly in line with the outlook presented in January Inflation Report. The domestic demand followed a flat course, while net external demand was the main driver of growth. Accordingly, domestic and external demand were balanced further (Box 7.1).

First-quarter data as well as indicators on private consumption and investment demand suggest a slowdown in the final domestic demand. Furthermore, data releases on the industrial production for early-2012 indicated a weaker-than-envisioned course for economic activity. Hence, output gap forecasts for the first quarter of 2012 were slightly revised downwards (Table 7.1.1).

First-quarter data on external demand signal further increase in exports, which have started to recover as of the second half of 2011. Export-weighted global production index remained broadly unchanged in the inter-reporting period, while exchange rate continued to give support to exports (Chart 7.1.2).

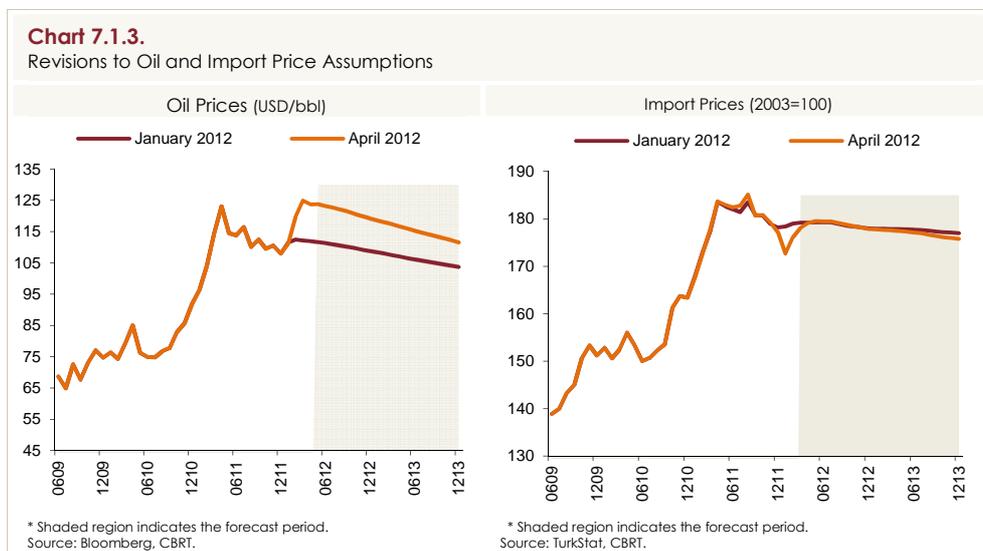


Import Prices

Oil prices soared significantly amid the heightened uncertainty due to growing geopolitical risks in the first quarter of 2012. Accordingly, oil price assumption, which was USD 110 per barrel in the previous Report, was increased

to USD 120 per barrel for 2012, and USD 115 per barrel for 2013 (Table 7.1.1 and Chart 7.1.4).

Meanwhile, the better-than-anticipated course of non-energy import prices in the first quarter partly compensated for the adverse effects of soaring oil prices on inflation (Box 4.3). Current projections based on futures prices assume that import prices in USD will go down by a year-on-year 0.7 percent in 2012. Therefore, the import price assumptions for 2012 remained broadly unchanged in the inter-reporting period (Chart 7.1.3).



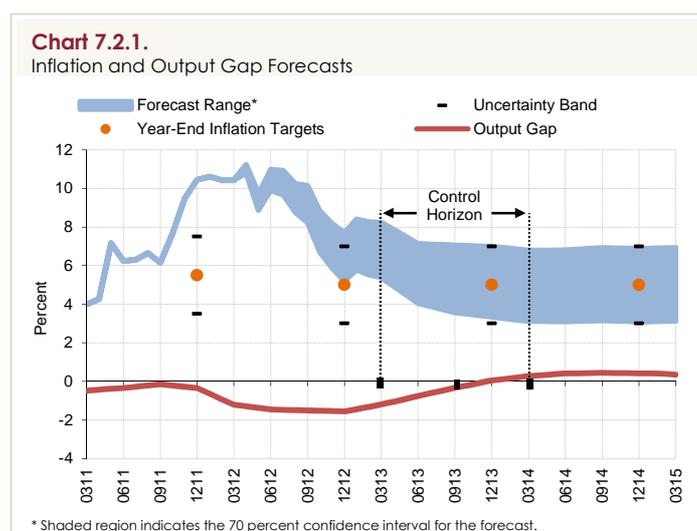
Fiscal Policy and Tax Adjustments

Regarding the fiscal outlook, the medium-term inflation forecasts take the revised projections of the MTP as given. The stipulated tax cuts and government incentives within the new incentive system, which was publicly announced on April 5, are considered to have no adverse effects on the fiscal balance. Tobacco prices are assumed to remain constant throughout 2012 amid tax adjustments to tobacco products in October 2011, while increasing in January 2013 as implied by the tax adjustments in October 2011. Furthermore, other tax adjustments and administered prices are assumed to be consistent with the inflation targets and automatic pricing mechanisms.

7.2. Medium-Term Outlook

Forecasts are based on the assumption that additional tightening will be delivered more frequently in the upcoming period, and consequently,

annualized loan growth rate will hover around 14 percent. Accordingly, inflation is expected to be, with 70 percent probability, between 5.3 and 7.7 percent with a mid-point of 6.5 percent at the end of 2012, and between 3.4 and 7.0 percent with a mid-point of 5.2 percent at the end of 2013. Inflation is expected to stabilize around 5 percent in the medium term (Chart 7.2.1).

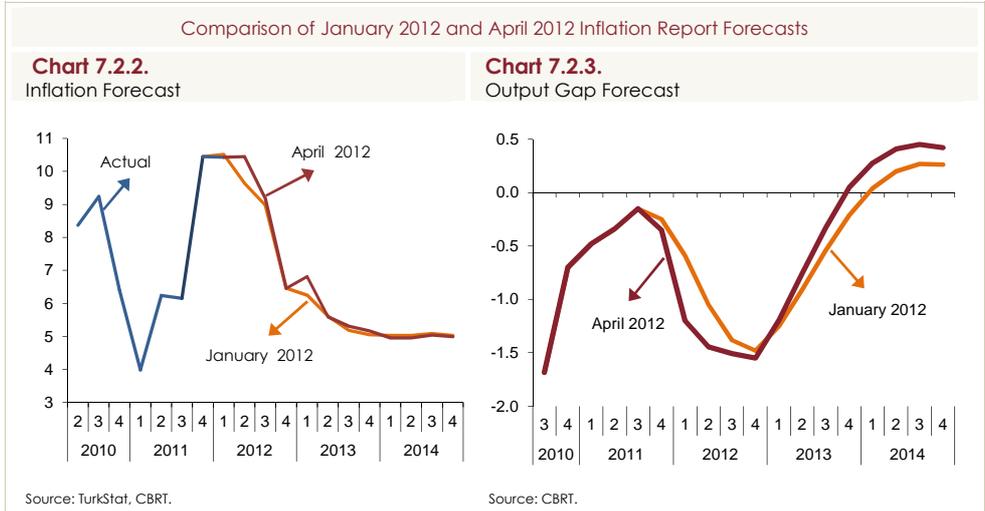


Revised projections signal a notable fall in inflation in the last quarter. Amid soaring energy prices, inflation is envisioned to remain high in the short term with secondary effects remaining limited on the back of mild demand conditions. In the last quarter of 2012, inflation is expected to fall sharply to 6.5 percent by year-end, as the base effects owing to tax adjustments in administered prices fade away in the last quarter.

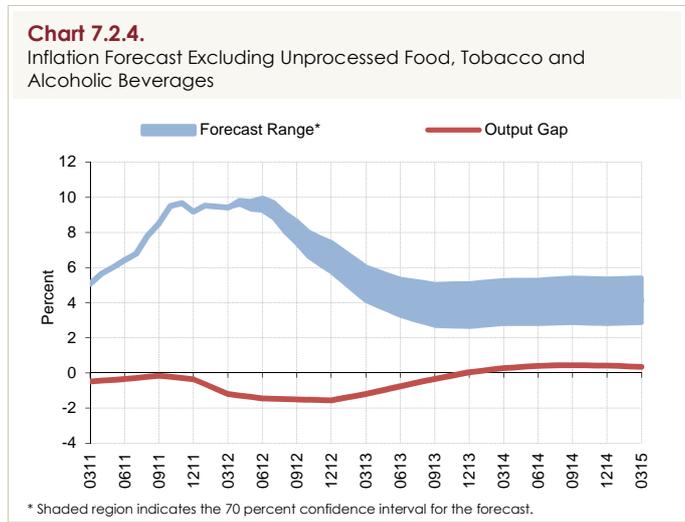
Major factors affecting inflation moved largely in tandem with the January Inflation Report projections. However, the short-term inflation is envisioned to surpass the previous projections amid soaring energy prices in April (Chart 7.2.2). At its meeting on April 18, the MPC underlined that temporarily rising inflation would not be allowed to deteriorate inflation outlook and additional tightening would be delivered more frequently in the upcoming period. In view of the CBRT's aggressive policy reaction, inflation assumption for end-2012 is kept unchanged in the inter-reporting period.

Output gap forecasts based on the above assumptions are given in Chart 7.2.1. Given the latest data releases, output gap forecasts for the first quarter of 2012 have been slightly revised downwards. Also considering the tighter monetary policy stance, forecasts are based on the outlook assuming

that aggregate demand conditions will provide higher support to disinflation throughout 2012 (Chart 7.2.3).



Unpredictable fluctuations in the prices of items that are beyond the control of the monetary policy, such as unprocessed food, tobacco and alcoholic beverages, are among major factors causing deviations in inflation forecasts. Hence, inflation forecasts excluding unprocessed food, tobacco and alcoholic beverages are publicly announced. Forecasts are based on the assumption that year-end unprocessed food inflation will be 8.5 percent and the prices of tobacco and alcoholic beverages will remain constant throughout the year. Hence, inflation forecasts excluding unprocessed food, tobacco and alcoholic beverages are presented in Chart 7.2.4. The inflation indicator, as measured above, is expected to fall gradually by the third quarter of 2012, and stabilize around 5 percent in the medium term.



It should be emphasized that any new data or information regarding the inflation outlook may lead to a change in the monetary policy stance. Therefore, assumptions regarding the monetary policy outlook underlying the inflation forecast should not be perceived as a commitment on behalf of the CBRT.

Comparison of the CBRT's Forecasts with Inflation Expectations

It is critical that economic agents, being aware of the temporary factors, should focus on the underlying medium-term inflation, and therefore, take the inflation target as a benchmark in their pricing plans and contracts. In this respect, to serve as a reference guide, CBRT's current inflation forecasts should be compared to inflation expectations of other economic agents. Accordingly, year-end inflation expectations as well as 12-month and 24-month ahead inflation expectations of the Survey of Expectations' respondents are slightly above our baseline scenario forecasts (Table 7.2.1).

Table 7.2.1.
CBRT Inflation Forecasts and Expectations

	CBRT Forecast	CBRT Survey of Expectations*	Inflation Target**
2012 Year-end	6.46	7.61	5.0
12-Month Ahead	6.14	6.96	5.0
24-Month Ahead	4.95	6.40	5.0

* April 2012, second survey period results.

** Calculated by linear interpolation of year-end inflation targets for 2012- 2014.

Source: CBRT.

7.3. Risks and Monetary Policy

The high course of inflation and the recent deterioration in the short-term inflation expectations pose risk on the pricing behavior. Due to sharp price increases in the third quarter of 2011, inflation is envisioned to remain remarkably above the target until the last quarter of 2012, requiring a close monitoring of the pricing behavior. Although the delivered monetary tightening of the CBRT since October, besides mild domestic demand conditions have alleviated upside risks on inflation by containing secondary effects, inflation expectations will be cautiously and carefully monitored in the upcoming period, and necessary measures will be taken to keep medium-term inflation outlook consistent with the target.

Ongoing uncertainties regarding global economy require further flexibility in monetary policy against volatility in capital flows. Notwithstanding the

alleviating concerns regarding the Euro Area sovereign debt problem in the first quarter of 2011, the unfavorable course of growth as well as the currently elevated borrowing costs across the region keep debt sustainability debates alive. Moreover, ongoing deleveraging in the Euro Area banking system feeds into financial fragilities, increasing the probability of a renewed deterioration in the risk appetite. On the other hand, the risk appetite may recover faster than expected, should problems regarding the global economy are solved sooner and more decisively than envisaged. Overall, the possibility that global capital flows will continue to be volatile in the forthcoming period confirms the appropriateness of the existing flexibility in the monetary policy framework. Hence, the CBRT will continue to monitor global developments closely, and take the required measures promptly.

Another risk factor in the forthcoming period is the uncertainty regarding oil prices. Although the weak course of the global economy largely contains the upside risks to commodity prices, ongoing supply-side problems pose upside risk to energy prices in the short term. Should such a risk materialize, the CBRT will not react to temporary price movements, yet will not tolerate any deterioration in expectations.

Unprocessed food prices pose downside risk to inflation outlook over 2012. The probability for a downward correction in unprocessed food prices after hitting the recent-high in end-2011, besides the favorable precipitation during the recent months, increase the likelihood of a better-than-envisioned course for unprocessed food prices throughout the year. Inflation may reach the target faster than projected in the baseline scenario, should the food prices follow a more favorable course than expected.

The CBRT monitors fiscal policy developments closely while formulating its monetary policy. The baseline scenario forecasts of the Report are based on the MTP framework, therefore assuming that fiscal discipline will be maintained. A revision in the monetary policy stance may be considered, should the fiscal stance deviate significantly from this framework, and consequently have an adverse effect on the medium-term inflation outlook.

Strengthening the structural reform agenda that would ensure the sustainability of the fiscal discipline and reduce the saving deficit will contribute to the relative improvement of Turkey's sovereign risk, thereby supporting price stability and the financial stability. Making progress in this direction will also

provide room for monetary policy maneuver and support social welfare by keeping interest rates of long-term government securities permanently at low levels. In this respect, taking necessary steps towards implementation of the structural reforms envisaged by the MTP is of utmost importance.

Box
7.1

Differentiating the Domestic and External Demand in Estimating the Output Gap

Output gap, the difference between current output and the non-inflationary potential output, is one of the frequently used indicators by central banks, also including the CBRT, to assess demand-side pressures on inflation. Designing monetary policy in the post-crisis period to include financial stability besides price stability created the need for alternative views and methods in implementing policy and performing the background analyses. In particular, domestic-demand-driven strong recovery in the Turkish economy caused mounting concerns over sustainability of the current account deficit, which is considered to jeopardize macroeconomic and financial stability in the medium term, thus requiring a special emphasis on demand components for designing the monetary policy. Accordingly, an extensive analysis focusing not only on output gap, but also on its main components is crucial for assessing the overheating of the economy in consideration of the inflation outlook. This Box, by utilizing a Bayesian methodology within a semi-structural model, provides a framework for estimating output gap as well as its main components for the Turkish economy.

Model and the Methodology

The analysis is built on a New-Keynesian small open economy model, which closely resembles Öğünç and Sarkaya (2011) in specification and estimation, but differs from the above study by explicitly including behavioral equations for the domestic and the external demand. The equations of the model can be expressed as follows:

$$\tilde{d}_t = \alpha \tilde{d}_{t-1} + (1 - \alpha) \tilde{d}_{t+1} - \beta \tilde{r}_t + \varepsilon_t^d \quad (1)$$

$$\tilde{x}_t = \rho \tilde{x}_{t-1} + \gamma \tilde{y}_t^* - \delta \tilde{q}_{t-2} + \varepsilon_t^x \quad (2)$$

$$\tilde{m}_t = \theta (\tau \tilde{d}_t + (1 - \tau) \tilde{x}_t) + \vartheta \tilde{q}_t + \varepsilon_t^m \quad (3)$$

$$\tilde{y}_t = \omega_1 \tilde{d}_t + \omega_2 \tilde{x}_t - \omega_3 \tilde{m}_t \quad (4)$$

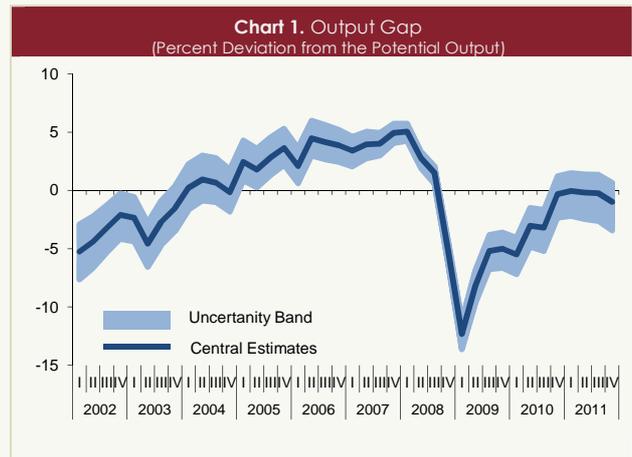
$$\pi_t = \varphi \pi_{t-1} + (1 - \varphi) \pi_{t+1} + \zeta \tilde{y}_{t-2} + \mu \tilde{s}_t + \varepsilon_t^\pi \quad (5)$$

Equation (1) expresses domestic demand gap, \tilde{a}_t , as a function of its lagged value, its expected value for one-period ahead and the real interest rate, \tilde{r}_t . Equation (2) summarizes the behavior of the export demand gap, \tilde{x}_t , as a function of foreign output gap, \tilde{y}_t^* , and real exchange rate, \tilde{a}_{t-2} . Equation (3) shows that import demand gap, \tilde{m}_t , depends on the domestic demand gap and the export demand gap besides the real exchange rate. Equation (4) is the identity expressing output gap in terms of its main components, which are domestic demand gap, export demand gap and the import demand gap. Finally, equation (5) summarizes the behavior of inflation using a New-Keynesian Phillips curve, by also including real import prices, $\tilde{\zeta}_t$, in addition to output gap as the main marginal cost item.

Model parameters for 2002Q1-2011Q4 are estimated using Bayesian techniques, and by including GDP, imports, exports, inflation rate, interest rates, foreign output gap, real effective exchange rate and real import prices in the estimation.¹

Results

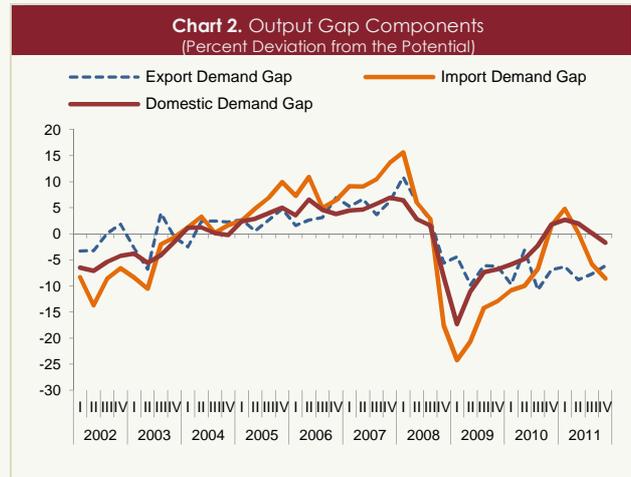
The central estimate for the output gap and the uncertainty band computed by the distribution of the parameter estimates are presented in Chart 1.² The estimation results display that output was well below its potential in the beginning of 2009, while output headed towards a strong recovery in the subsequent post-crisis period. The central estimates imply that output gap was non-inflationary in the aftermath of the crisis, thus indicating the absence of an overheating in the economy.



¹ All series, except real interest rates, real exchange rates and real import prices, are seasonally adjusted. For a detailed discussion about the model, data set and the estimation results, see Alp, Ögünç and Sankaya (2012).

² The central estimate for the output gap is computed by using average values obtained from the estimated posterior distribution of the parameters.

Estimates of the output gap components are shown in Chart 2. The results imply that the post-crisis recovery is mainly driven by domestic demand, while exports hovered below its potential for a prolonged period. Meanwhile, real appreciation of the Turkish lira amid strong recovery of the domestic demand explains lingering of imports above its potential. However, even the upper bound of the output gap estimates do not point to an overheating as of the third quarter of 2010, with no significant divergence between domestic demand and exports, and each individual component hovering below their potential.



On the other hand, this observation has changed significantly by the fourth quarter of 2010. Accordingly, estimation results indicate that output was close to its potential, domestic demand surpassed its potential in tandem with its ongoing strong course, while exports remained below their potential owing to global uncertainties and the weak external demand. In other words, the Turkish economy showed no signs of overheating in this period and registered growth despite the serious divergence between domestic and external demand. The finding on the divergence of the demand components as well as the estimation results indicate that high current account deficits, which were accompanied by high growth rates in the past, may not necessarily signal overheating at other times.

In sum, the estimation results are consistent with the economic outlook underlying the monetary policy implementations as of the last quarter of 2010. Taking into account of the fact that the deterioration of the growth composition may jeopardize financial stability, the monetary policy aimed to drive the economy to a stable growth path by effectively utilizing multiple tools. In fact, the adopted policy measures lessened the divergence between domestic and external demand, and the economy has settled into a relatively stable growth path as of the second quarter of 2011.

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Box
7.2

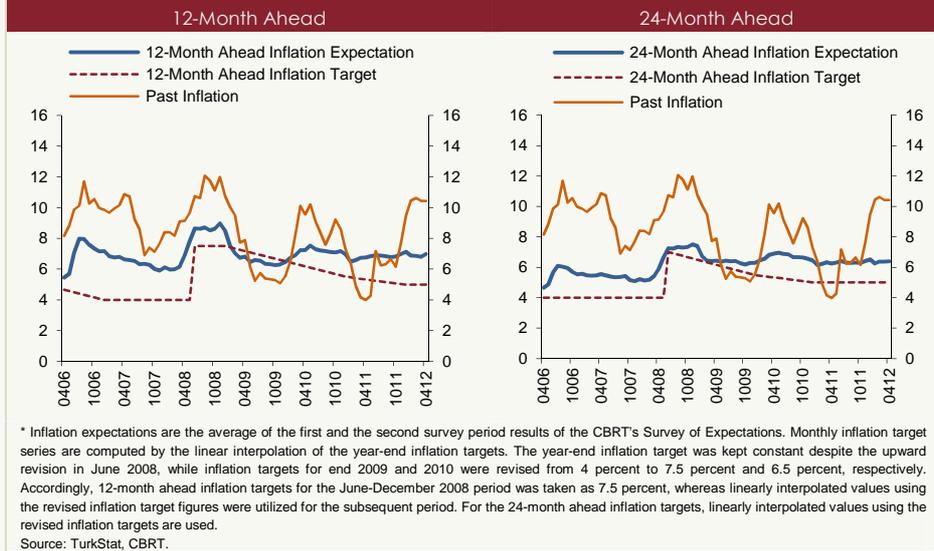
Inflation Expectations and the Communication

In the last quarter of 2011, inflation soared rapidly amid the cumulative effects of the import prices and the exchange rate, in addition to tax adjustments to tobacco products and elevated increases to unprocessed food prices. Even though these developments were largely temporary, the CBRT has adopted a cautious stance in order to prevent medium-term expectations to be adversely affected from past inflation, and to worsen inflation outlook. Accordingly, by following an active communication policy, the CBRT has announced in detail the underlying reasons for the surge in inflation through presentations, reports and papers. Furthermore, closely monitoring the course of short-term inflation, the CBRT has informed the public against sharp moves. More importantly, a strong monetary tightening has been delivered as of October 2011, placing a special emphasis on price stability in this period. This Box questions the effectiveness of the CBRT's strategy in controlling inflation expectations.

The Role of Past Inflation in Expectations Formation

Controlling expectations is critical for preventing deterioration of the pricing behavior amid the temporarily rising inflation. The significant and time-varying weight given to past inflation in forming expectations is documented by Başkaya, Kara and Mutluer (2008) for the Turkish economy. Analyzing the sensitivity of inflation expectations to inflation realizations during the rapidly soaring inflation period of the last quarter of 2011 will provide significant information about the effectiveness of the communication policy, as well as the possible changes in the pricing behavior.

12 and 24-month ahead inflation expectations remained stable, notwithstanding the surge in inflation as of the last quarter of 2011 (Chart 1). The course of expectations in this period when compared to previous periods of high inflation rates indicates significant difference with respect to the formation of expectations. In other words, inflation expectations deteriorated notably following the rapid surge in inflation during 2006 and 2008, while medium-term expectations remained quite stable subsequent to soaring of inflation by end-2011. The absence of deterioration in expectations given the 4.3 percentage point increase in inflation within 3 months brings about the question of whether the sensitivity of expectations to inflation realizations has lessened. A finding on the lower sensitivity will support the assertion that the CBRT's communication policy as well as the monetary policy are effective.

Chart 1. Inflation Realizations, Expectations, Targets and Forecasts*

Empirical Findings

This section is based on findings by Başkaya, Gülşen and Kara (2012), which replicates Başkaya, Kara and Mutluer (2008) by using revised data, and analyzes the effects of the recent inflation realizations on expectations formation. The model seeks to assess the dependence of inflation expectations on inflation targets and other control variables, such as the change in exchange rates, risk premium, industrial production index and the changes in oil prices

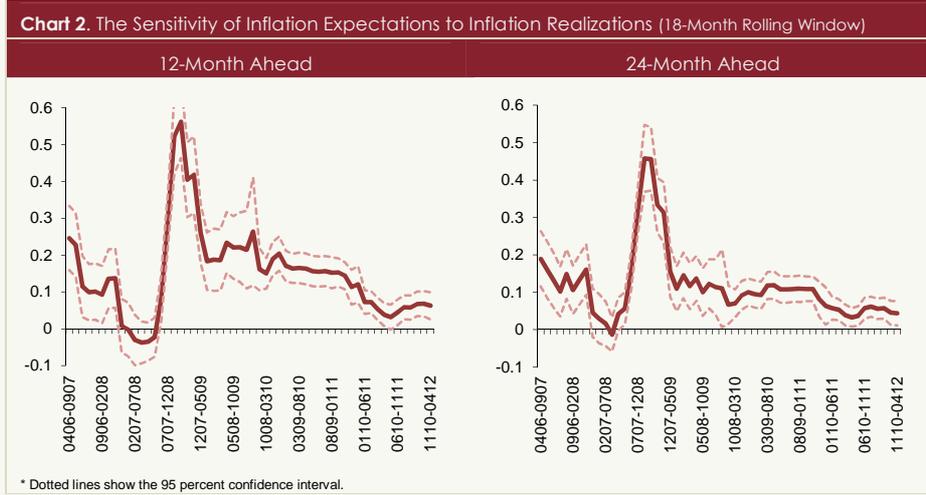
$$\pi_{it,t+k}^b = \beta_0 + \mu_i + \beta_1 \pi_{t-1} + \beta_2 \pi_{t,t+k}^h + \gamma X_t + \varepsilon_{it} \quad k = 12, 24.$$

The dependent variable $\pi_{it,t+k}^b$ is the k-month ahead inflation expectation of the CBRT's Survey of Expectations respondent i at time t, π_{t-1} is the annual inflation rate of the previous month, $\pi_{t,t+k}^h$ is the k-month ahead inflation target.³

β_1 represents the weight assigned to past inflation in expectations formation. Monitoring the course of this parameter over time may reveal significant information regarding how the dependence of expectations on inflation realizations changes over time. Accordingly, the above model is computed over a rolling window of 18 months (Chart 2).

³ Monthly inflation targets are linearly interpolated by using year-end inflation targets.

The results indicate a notable decline in the sensitivity of both 12-month and 24-month ahead inflation expectations to inflation realizations during 2011 (Chart 2). Despite an edging up in the last quarter of 2011, the sensitivity is still low compared to previous periods.



Conclusion

In sum, the conducted analyses demonstrate that inflation expectations are relatively less sensitive to inflation realizations, notwithstanding the sharp increase in inflation during 2011. This finding reveals that the CBRT was able to convince the public about the temporary nature of the surge in inflation, and proves the effectiveness of the CBRT's communication policy with a focus on medium-term inflation outlook. However, both the 12-month as well as the 24-month ahead inflation expectations hovering above inflation target points to the need to make significant progress towards achieving price stability.

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