

7. Medium-Term Projections

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 next three-year horizon.

7.1 Current State, Short-Term Outlook and Assumptions

Changes in Key Forecast Variables

Consumer inflation recorded a decline in the last quarter of 2018 and remained far below the October Inflation Report forecasts (Table 7.1.1). In this period, the milder-than-projected course of TL-denominated import prices led by the appreciation in the Turkish lira and the decline in the international oil prices as well as the temporary tax cuts led to a deviation from consumer inflation expectations.¹ The decline in inflation spread across subgroups, and even when adjusted for the temporary tax cuts, the underlying trend of inflation registered a slowdown. This is attributed to the favorable repercussions of mitigated financial market volatility in the inter-reporting period on the pricing behavior as well as the weakening in demand conditions.

The up-to-date national income and employment data announced in December point out that economic activity lost pace in the third quarter of 2018 in line with the projections of the October Inflation Report. Accordingly, the output gap forecasts for the fourth quarter were revised downwards, whereas those for the first three quarters were revised upwards to a limited extent (Table 7.1.1). The output gap forecasts for the upcoming period were based on an outlook that net exports will contribute further to growth, the tightness in fiscal conditions will taper off and the fiscal policy will be formulated in line with the rebalancing process in the economy. Against this backdrop, economic activity is estimated to register a gradual improvement. The rise in real wages and the extension of tax cuts in durable goods in the first quarter is believed to support consumer demand to some extent (Chart 7.2.3).

Table 7.1.1: Changes in Key Forecast Variables*

	2018-III	2018-IV
Output Gap	-0.4 (-0.7)	-4.2 (-3.6)
Consumer Inflation (Quarter-end. Annual % Change)	24.5 (24.5)	20.3 (23.5)
B** Index Inflation (Quarter-end. Annual % Change)	23.7 (23.7)	20.2 (22.8)

* Numbers in parentheses denote the values from the October Inflation Report.

** B index is the CPI excluding unprocessed food, alcohol, tobacco, energy and gold.

Despite the global volatilities that persisted in the period following the announcement of the October Inflation Report, financial market indicators for Turkey improved slightly due also to the downtrend in inflation. In this period, portfolio flows towards emerging economies recovered, while portfolio inflows were seen mostly towards stock markets in Turkey as well. Backed also by the CBRT's tight monetary policy stance, the Turkish lira diverged positively from currencies of peer economies in November and December. In the last quarter of 2018, financial conditions grew less tight, while credit growth remained low due to supply and demand-side effects. The loan-deposit spread posted a quarterly decline, yet hovered above historical averages.

¹ Reasons for revisions to year-end inflation forecasts across the year and for the deviation from the year-end forecasts from the October Inflation Report are elaborated on in Box 7.1.

Following the strong tightening in September, the CBRT maintained the tight stance by keeping the policy rate unchanged in the MPC Meetings of October, December and January. Owing also to the tight monetary policy stance, Turkey’s risk premium receded; short-term GDDS rates hovered above long-term yields, while a notable downward shift was seen in the yield curve across all maturities compared to the previous reporting period.

Assumptions for External Variables

Global Growth

Following the announcement of the October Inflation Report, the global growth rate continued to lose momentum due particularly to the more evident deceleration in the euro area growth. Weakened also by the blurred global economic policies, the growth outlook both for advanced and emerging economies for 2019 was revised downwards. Accordingly, medium-term forecasts were based on a slight downward revision in the growth path assumption for the upcoming period implied by the export-weighted global production index, a measure for external demand (Chart 7.1.1). In the external demand outlook for the period ahead, downside risks have become more apparent stemming from the geopolitical developments and recent protectionist discourse.

Chart 7.1.1: Export-Weighted Global Production Index* (Y-o-Y % Change)



Source: Bloomberg, Consensus Forecasts, CBRT.

* Shaded area shows the forecast period.

Import Prices

The average annual increase in international oil prices and USD-denominated import prices remained below the October Inflation Report assumptions. Due to the recent fall in crude oil prices on spot and futures markets and the views about the course of factors setting the crude oil prices, the assumption for crude oil prices in the October Inflation Report was reduced to USD 63 from USD 80 for 2019 (Table 7.1.2, Chart 7.1.2). However, variation in the commitment to the OPEC’s decision to cut down on production among countries, the ongoing foreign trade negotiations between China and the US, and the slowdown in the Fed’s policy normalization weigh on the uncertainties over oil prices. Assumptions for the annual rate of increase in USD-denominated import prices were also revised downwards for 2019, albeit to a more limited extent than the assumption for oil prices (Table 7.1.2, Chart 7.1.3).

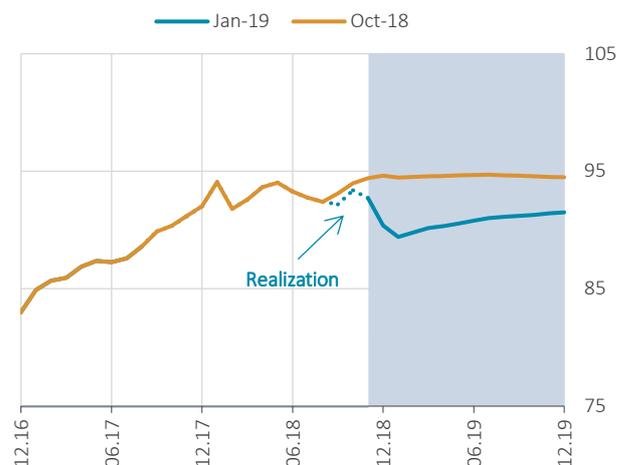
Chart 7.1.2: Revisions in Oil Price Assumptions*
(USD/Barrel)



Source: Bloomberg, CBRT.

* Shaded area shows the forecast period.

Chart 7.1.3: Revisions in Import Price Assumptions*
(Index, 2010=100)



Source: Bloomberg, CBRT.

* Shaded area shows the forecast period.

Monetary Policies of Advanced Economies

Normalization in monetary policies of advanced economies has continued since the publication of the October Inflation Report. In line with expectations, the Fed completed 2018 with four rate hikes. Meanwhile, the ECB terminated asset purchases. Expectations grew stronger that the normalization processes of advanced economies would lose pace in the period ahead. Policy rates implied by options were revised downwards for the Fed, the ECB, the UK and Japan (Table 2.3.1). Moreover, the number of median rate hikes for 2019, which was raised to three in the Fed's meeting in March 2018, was reduced to two in December again. Accordingly, the exogenous assumption for the foreign interest-rate path in the making of medium-term forecasts was revised slightly downwards as of 2019 compared to the October Inflation Report. Our forecasts are based on the assumption that the global risk sentiment will not worsen further over the upcoming period.

Unprocessed Food Prices

Another external variable underlying the medium-term forecasts is the path of unprocessed food prices. Inflation in unprocessed food prices was high at 27.1%. Year-end inflation forecasts for 2019 and 2020 remained intact at 13% and 10%, respectively (Table 7.1.2).

Fiscal Policy, Administered Prices and Tax Adjustments

The fiscal policy contributed to the balancing process in economic activity in the last quarter of the year in line with the projections of the October Inflation Report. The reduction in electricity and natural gas prices in the start of the year as well as the stable course of the exchange rate coupled with the fall in oil prices reduced the need for an upside adjustment in energy prices, which resulted in a downward revision in energy inflation assumptions for 2019 in the inter-reporting period. Medium-term projections are based on an outlook where macroeconomic policies are determined with a medium-term perspective and in a coordinated manner with a focus on bringing inflation down. Thus, it is assumed that the fiscal policy will continue to be formulated in a way to contribute to the economic rebalancing in 2019 and prices under public administration will be largely determined to support the disinflation process.² The robust policy coordination to lower inflation and ensure macroeconomic stabilization is envisaged to improve the risk premium and perceptions of uncertainty gradually.

² In Box 7.2, a theoretical evaluation is presented regarding the role of the fiscal policy in reducing the output gap and volatility in inflation.

Table 7.1.2: Revisions in Assumptions*

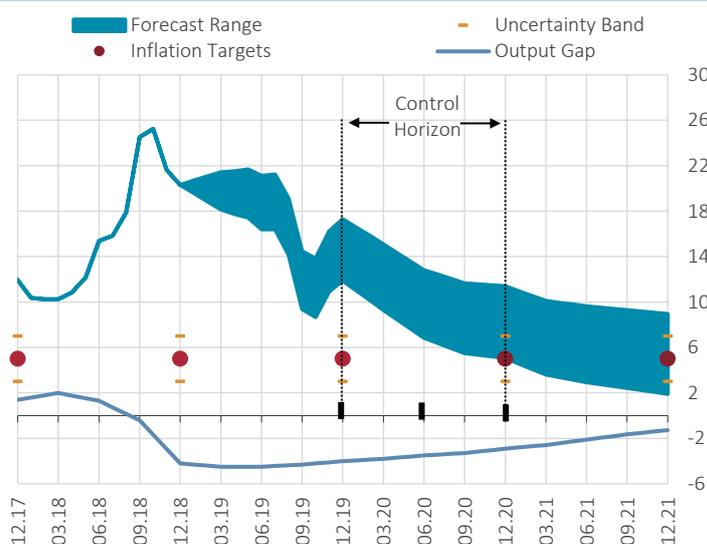
	2018	2019	2020
Export-Weighted Global Production Index* (Annual Average % Change)	2.52 (2.55)	2.57 (2.64)	-
Oil Prices (Average, USD)	71.1 (74.6)	63.1 (80.0)	63.8 (76.2)
Import Prices (USD, Annual Average % Change)	5.3 (6.0)	-2.2 (1.3)	1.5 (-)
Food Price Inflation (Year-end % change)	25.1 (29.5)	13.0 (13.0)	10.0 (10.0)

* Numbers in parentheses denote the values from the October Inflation Report.

7.2 Medium-Term Projections

With a tight policy stance that focuses on bringing inflation down through enhanced policy coordination, inflation is projected to converge gradually to the target. Accordingly, inflation is projected to be 14.6% at the end of 2019, 8.2% at the end of 2020 and 5.4% at the end of 2021 and to stabilize around 5% over the medium term. With a 70% probability, inflation is expected to be between 11.9% and 17.3% (with a mid-point of 14.6%) at end-2019 and between 5.1% and 11.3% (with a mid-point of 8.2%) at end-2020 (Chart 7.2.1).

Chart 7.2.1: Inflation and Output Gap Forecasts*



Source: CBRT, TURKSTAT.

* 70% confidence interval.

Following the October Inflation Report, appreciation in the Turkish lira coupled with the fall in crude oil prices pulled TL-denominated import prices down, while tax cuts in certain products accompanied by the weak domestic demand made the underlying trend of inflation lose pace. With increased support from demand conditions to the disinflation process coupled with the decelerated underlying trend of inflation, assumptions for oil and import prices were pulled considerably downwards particularly for 2019 and were influential in the downward revision in inflation forecasts (Charts 7.2.2 and 7.2.3). Reasons for the downward revision in inflation forecasts for 2019 and 2020 are indicated in Table 7.2.1.

Table 7.2.1: Revisions in and Reasons for Year-end Inflation Forecasts for 2019 and 2020

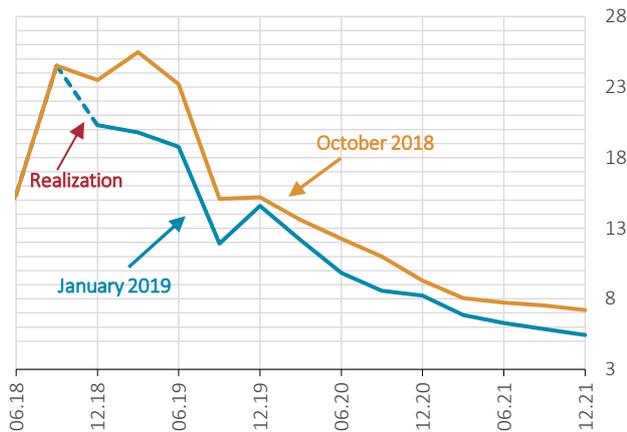
	2019	2020
2018-IV (October 2018) Forecast	15.2	9.3
2019-I (January 2019) Forecast	14.6	8.2
Revisions in Forecasts Compared to 2018-IV	-0.6	-1.1
Reasons for Forecast Revisions		
TL-denominated Import Prices (Exchange rate, Oil and Import Prices)	-0.5	-0.3
Deviation from Inflation Forecast/Underlying Trend of Inflation	-0.4	-0.4
Output Gap	-0.3	-0.4
Taxes and Administered Prices	0.2	-
Wage Adjustments	0.4	-

Source: CBRT.

The inflation forecast for end-2019 was revised downwards to 14.6% from 15.2%. The decline in the assumption for TL-denominated import prices drove the year-end inflation forecast down by 0.5 points. Meanwhile, consumer inflation in the last quarter of the year proved 3.2 points less than the October Inflation Report forecasts and the fall in the underlying trend of inflation excluding the tax cut effect is believed to reduce the year-end inflation forecast by 0.4 points. Moreover, despite the downside effects stemming from the cuts in electricity and natural gas, tax adjustments coupled with the revision in assumptions for administered prices is projected to add to the inflation forecast by 0.2 points. In addition, the output gap, which is expected to contribute more to disinflation in the period ahead, is likely to limit the 2019 inflation forecast by 0.3 points. Nevertheless, the unit labor cost is projected to add 0.4 points to the year-end inflation forecast. Thus, the year-end inflation forecast for 2019 was revised downwards by 0.6 points compared to the October Inflation Report.

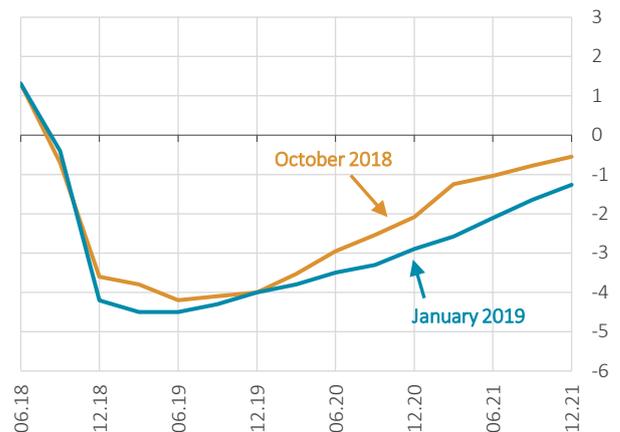
The inflation forecast for 2020 was pulled down to 8.2% from 9.3%. Of the 1.1-point downward revision, in the inter-reporting period, 0.4 points stem from the downward revision of the inflation forecast for end-2019 and the expected recovery in the underlying trend of inflation. Moreover, demand conditions, which are expected to prove weaker as of the second quarter of 2019 compared to the previous Report, are expected to have further curbing effects on inflation in 2020. This follows that the revision in output gap forecasts has pulled the inflation forecast for end-2020 down by 0.4 points since the previous reporting period. Given the assumptions of a decline in oil prices and mild appreciation in the real exchange rate, TL-denominated import prices are projected to pull inflation in 2020 down by 0.3 points.

Chart 7.2.2: Inflation Forecast



Source: CBRT, TURKSTAT.

Chart 7.2.3: Output Gap Forecast



Source: CBRT.

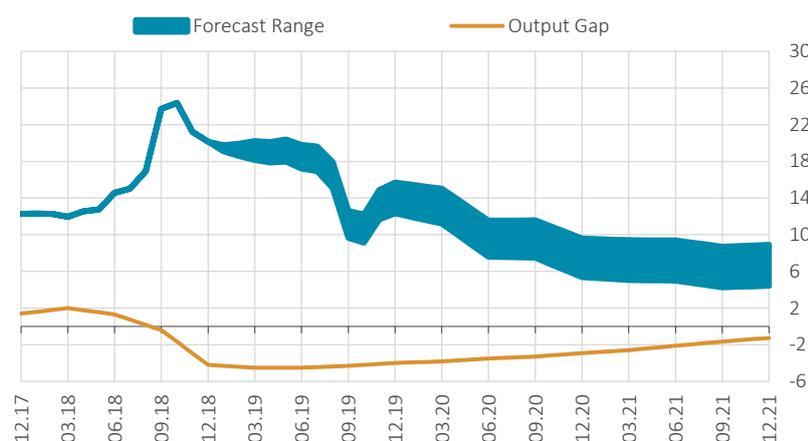
The above-mentioned forecasts are based on a framework in which there would be no additional deterioration in the global risk appetite and the recent recovery in Turkey’s risk premium would continue moderately. Projections rely on an outlook in which decisive implementation of a tight monetary policy stance would continue, and the monetary policy will focus on bringing down inflation to single digit figures in the second quarter of 2020 and ultimately to the 5% target. The tight monetary policy stance coupled with the rebalancing process expected to continue in the current account deficit will contribute to the improvement in the country risk premium, thereby containing exchange rate volatility.

Strengthened coordination between macroeconomic policies and particularly the policies supporting financial stability are expected to contain downside risks to the credit market and domestic demand, thereby contributing positively to macro balances and the disinflation process. These projections are consistent with an outlook that entails improvements in banks’ external financing conditions, the credit supply and confidence and efficient functioning of the credit channel. Meanwhile, demand conditions are projected to support disinflation throughout 2019 (chart 7.2.3).

Accordingly, the determinants of the fall in inflation in 2019 are judged to be the moderation of cost pressures driven by a modest appreciation trend in the real exchange rate and the expected slowdown in domestic demand. Under a tight monetary policy stance and strengthened policy coordination, it is forecasted that consumer inflation will come down to single-digit figures in the second quarter of 2020 and come closer to the 5% target by the end of 2021. Breaking the backward-indexation behavior with the support of the stable course of exchange rates and strengthened macropolicy coordination targeting disinflation, and pulling medium-term inflation expectations to levels consistent with forecasts and targets are crucial for the success of the disinflation efforts.

Unpredictable price fluctuations in items beyond the monetary policy domain, such as unprocessed food, alcoholic beverages and tobacco products, are a major factor causing deviation in inflation forecasts. For this reason, forecasts about the core inflation indicators are also publicly announced as well. Chart 7.2.4 shows inflation forecasts excluding unprocessed food, energy, alcoholic beverages, tobacco products and gold (B index). Annual inflation in the B index is projected to trend downwards and converge to the 5% target gradually in the medium term.

Chart 7.2.4: B Index Annual Inflation Forecast*



Source: CBRT, TURKSTAT.
* 70% confidence interval.

Comparison of the CBRT’s Forecasts with Inflation Expectations

The current high level of inflation appears to have been triggered not only by cost increases and demand-side pressures, but deterioration in the pricing behavior and inflation expectations also contribute to the economy-wide diffusion of the tendency to raise prices. Currently, 24-month forward expectations of the respondents of the Survey of Expectations hover above those projected by the CBRT (Table 7.2.2). Contributions from the fiscal policy to the rebalancing process and setting of administered prices and taxes in a way that weakens the backward-indexation mechanisms and remains consistent with the inflation targets will offer significant contribution to the expectations management. To contain the risks posed by elevated levels of inflation and inflation expectations to the pricing behavior, maintenance of the tight monetary policy stance is significant in the period ahead.

Table 7.2.2: CBRT Inflation Forecasts and Expectations

	CBRT Forecast	CBRT Survey of Expectations*	Inflation Target
2019 Year-end	14.6	16.5	5.0
12-Month Forward	13.8	15.9	5.0
24-Month Forward	7.8	12.0	5.0

Source: CBRT.

* Data from January Survey of Expectations.

7.3 Key Risks to Inflation Forecasts and the Likely Monetary Policy Response

The outlook underlying the medium-term projections presented in the Inflation Report is based on the Monetary Policy Committee’s judgments and assumptions. Nevertheless, various risks to these factors may affect the inflation outlook and necessitate changes in the monetary policy stance envisaged in the baseline scenario.

The major macroeconomic risks that have the potential to change the outlook of the baseline scenario are as follows:

- Uncertainties over pricing behavior and rigidity in expectations
- Risks to the coordination between monetary and fiscal policies (administered prices, tax adjustments)
- Uncertainties pertaining to backward-indexation behavior
- Possible volatility in food prices
- The course of capital flows towards emerging market economies
- Supply-side tightening in bank loans
- Volatility in international crude oil prices.

Evaluations on the channels through which these risks may change inflation forecasts and the direction of this change are summarized in Table 7.3.1.

Recently-released data show that the real adjustment in economic activity continues and rebalancing has become more noticeable. The impact of weak demand conditions on inflation has become stronger and is likely to support disinflation throughout 2019. Nevertheless, several factors such as the elevated level of inflation expectations, volatility in exchange rates and deferred cost pressures keep upside risks to the inflation outlook in place.

The recent fall in inflation is attributed to the weakened aggregate demand and tightened monetary policy as well as the tax cuts of the last quarter of 2018 that are projected to expire in the first quarter of 2019 and some transitory factors that appeared in the short term. The outlook for the short-term inflation path to emerge while these temporary effects are taken back will be largely dependent on the firms' pricing behavior.

The impact of the surge in inflation on wage increases in 2019 remains as a risk factor for the medium-term inflation outlook. Wage increases in 2019 may push inflation up through the aggregate demand channel. However, it is projected that further state subsidies to employers would limit potential cost pressures to some extent. Despite the alleviating effect of the slowdown in economic activity and weak employment opportunities on wages other than the minimum wage, the strong backward-indexation behavior in wages may slow the decline in inflation.

Elevated levels of inflation and inflation expectations remain as risk factors to the inflation outlook through the pricing behavior channel. Economic agents have not yet fully attributed the recent improvement in inflation to the medium-term trend of inflation.³ These developments in expectations sustain the upside risks to the inflation outlook through the channels of wage adjustments and the pricing behavior.

In addition to the support that the macroeconomic rebalancing process offers to inflation, a decline in the indexation to past inflation in administered prices, taxes and wage adjustments that would weaken the backward-indexation mechanisms by anchoring expectations is significant to achieving a permanent fall in inflation.

Due to the persisting risks to price stability despite the partial improvement in recent months, the CBRT decided to maintain the tight monetary policy stance until the inflation outlook records a significant improvement. The essential element to shape the monetary policy decisions in the short term will be a trend of decline in inflation that can be considered as permanent.

There are also risks stemming from global monetary policies and risk appetite developments that may reduce capital flows towards emerging economies and feed into exchange rate volatility. In the last quarter of 2018, expectations became stronger that the subdued global growth and increased uncertainties regarding the global economy may lead to a normalization path in monetary policies of advanced economies that implies less tight policy stances compared to the previous period. This indicates

³ The course of indicators related to the perceptions of inflation uncertainty is analyzed in Box 3.1.

that portfolio flows towards emerging economies may follow a more favorable course in 2019. However, blurred global economic policies, high volatility in financial markets of advanced economies, and persisting geopolitical problems keep downside risk to portfolio flows to emerging economies brisk.

In the case of excessive market volatility due to fluctuations in global liquidity conditions and the risk sentiment, the CBRT may use liquidity measures intended for providing the market with the needed FX liquidity in a timely, controlled and effective manner. In addition, it may introduce additional tightening in monetary policy to contain the impact of these risks on inflation and inflation expectations.

Following a significantly stronger tightening than historical averages due to increased risk premiums in the third quarter of the year, credit conditions have registered a gradual easing since October. The rate and extent of this normalization are important to the prospects for economic activity. As cash flows and balance sheets of firms have been adversely affected by the increase in exchange rates and loan rates as well as the slowdown in economic activity, conducting the necessary assessments and analyses related to the asset quality of firms will have a role in shaping the credit market. Therefore, establishing coordination between the financial sector policies that restrict the balance sheet effects of the corporate sector and the monetary policy that focuses on inflation are crucial to prevent financial conditions from being caught in an inefficient tightening cycle.

The recent deceleration in economic activity driven by domestic demand indicates the presence of downside risks to inflation as well. Recently-mounting uncertainties over monetary policies of advanced economies and the prospects for global economic activity pose a downside risks to growth through the capital flows and foreign trade channels.

A weaker coordination between the monetary policy and the fiscal policy than envisaged in the baseline scenario is regarded as a risk with respect to disinflation and macroeconomic rebalancing. The fiscal policy outlook, on which the medium-term projections in the Inflation Report are based, incorporates a policy stance that focuses on disinflation and macroeconomic rebalancing and is coordinated with the monetary policy in line with the New Economy Program announced in September. Accordingly, the projections rest on an outlook where the fiscal policy implements a tight fiscal discipline, as envisaged in the New Economy Program. Moreover, it is assumed that administered prices and tax adjustments will be formulated in a way that will help reduce the backward-indexation behavior. If the fiscal policy significantly deviates from this framework leading to an adverse impact on the medium-term inflation outlook, the monetary policy stance may be revised.

The course of prices of crude oil and other commodities also constitute risks to inflation in the upcoming period. Although crude oil prices have recently plunged, the sustained sharp uptrend in the US shale oil production coupled with projections for muted global economic activity pose a downside risk to crude oil prices. Meanwhile, geopolitical developments as well as the persisting volatility in global financial markets is an upside risk factor for crude oil prices. On the other hand, increased protectionism in global trade stands out as a downward risk factor for commodity prices due to its possible adverse effect on global growth. If the trade negotiations between the US and China yield a positive outcome in the upcoming period, crude oil, some industrial metals and agricultural prices may register an upside movement due to the increased demand from China. Accordingly, the monetary policy response will be determined in such a way to curb a possible deterioration in inflation expectations and pricing behavior, taking into account the direct and secondary effects of respective risks on inflation.

Table 7.3.1: Key Risks to Inflation Forecasts and Possible Impact Channels*

Risk	Assessment of Risks as against the Baseline Scenario and Possible Impact on Inflation (↑ ↔ ↓)	Indicators Monitored
<p>Uncertainties regarding the pricing behavior and expectation formation</p>	<p>Pricing Behavior and Expectation Channel:</p> <ul style="list-style-type: none"> • High levels of inflation may lead to additional deterioration in pricing behavior, thereby strengthening backward-indexation. ↑ • Inflation and exchange rate expectations may give rise to a mutually reinforcing cycle, which may lead to weak anchoring of inflation expectations. ↑ • Cumulative cost pressures on firms and decrease in their profitability, coupled with increased working capital costs, may change the historical relationship between inflation and output gap. ↑ • A prospective adjustment in tobacco sector’s prices in response to the tax adjustments in January indicates a risk to the inflation forecasts. • Uncertainties regarding the magnitude and duration of the discounts introduced under the “All-Out War on Inflation” program may affect short-term inflation forecasts. ↑ <p style="text-align: right;">↔</p>	<ul style="list-style-type: none"> • Core inflation indicators • Diffusion indices • Survey of Expectations • Stronger backward-indexation tendency in inflation expectations • Inflation indicators by sectors and sub-categories • Various output gap measures • Financial statements of firms and NPLs by sectors • Expectations of inflation and exchange rates
<p>Uncertainties pertaining to backward-indexation behavior</p>	<p>Pricing Behavior and Expectation Channel:</p> <ul style="list-style-type: none"> • The strong backward-indexation mechanism in wages may limit the sensitivity of wage inflation to cyclical conditions, leading to slower disinflation. ↑ • Labor cost pressures may pass through to consumer prices to a greater extent, unless these pressures are compensated for by the government support for employers or productivity gains. ↑ <p>Demand Channel:</p> <ul style="list-style-type: none"> • The anticipated real wage increases in 2019 may have an upward effect on inflation through the demand channel. ↑ 	<ul style="list-style-type: none"> • Real unit labor costs • Real wage and earnings • Partial labor and total factor productivity • Private sector wage formation • Indicators for consumption expenditures
<p>The course of capital flows towards emerging economies</p>	<p>Global Monetary Policies:</p> <ul style="list-style-type: none"> • Rising uncertainties regarding the monetary tightening process in advanced economies and the protectionist trade policies, high financial market volatility in advanced economies, and ongoing geopolitical problems may slow down capital flows towards emerging economies. ↑ <p>Global Risk Appetite:</p> <ul style="list-style-type: none"> • Protectionist trade policies may trigger concerns over global growth and affect the global risk appetite adversely. ↑ • Trade disputes between the US and China, ongoing uncertainties on Brexit, high public debt in Italy, the sharp fall in oil prices, and increasing volatility in advanced economies’ currencies may limit the global risk appetite. ↑ 	<ul style="list-style-type: none"> • Global risk appetite indicators • The course and composition of global capital flows, Turkey’s share • Developments in Turkish banks’ borrowing costs • Developments in firms’ borrowing from abroad

Table 7.3.1: Key Risks to Inflation Forecasts and Possible Impact Channels*

Tight conditions in firms' access to finance	<p>Balance Sheet Channel:</p> <ul style="list-style-type: none"> Exchange rate- and input-cost-led deterioration of real sector's balance sheets and the slowdown in cash flows may lead to more significant slowdown in economic activity compared to Inflation Report projections. The increase in the number of insolvent firms may affect the country risk premium negatively. Deceleration in the rate of increase in residential and commercial real estate prices may decrease the value of collaterals that the firms put up against loans, and firms may be exposed to tighter credit conditions. <p>Bank Lending Channel:</p> <ul style="list-style-type: none"> The decline in banks' CARs might affect credit supply adversely. 	<ul style="list-style-type: none"> Developments in loan growth with a breakdown by public and private banks Developments in loan and deposit rates NPL breakdown by sectors and loan types, bad cheques and protested bills Unemployment insurance and Wage Guarantee Fund recipient statistics Yield spread on corporate bond issues Credit conditions (Bank Loans Tendency Survey) Financial and corporate sector balance sheets, financial flows Residential and commercial real estate prices (nominal/real) House sales, construction sector value added
Risks to the effective coordination between monetary and fiscal policies	<p>Demand Channel:</p> <ul style="list-style-type: none"> The disinflationary effect from demand conditions may be reduced, should direct or indirect supportive impact of fiscal policy on domestic demand and economic activity be stronger than envisaged in the current Inflation Report. <p>Risk Premium:</p> <ul style="list-style-type: none"> A significant deviation of the budget balance from the levels envisaged in the New Economy Program, through a fall in tax revenues due to the slowdown in economic activity or increased government spending, may cause an increase in the country risk premium, by raising the public sector borrowing requirement. <p>Administered Prices and Tax Adjustments:</p> <ul style="list-style-type: none"> The disinflation process may be delayed, should the path of administered prices and tax adjustments significantly exceed the path envisaged in this Report. 	<ul style="list-style-type: none"> Envisaged fiscal policy measures as part of the New Economy Program and the 2019 budget Developments regarding the interaction of monetary and fiscal policies Domestic demand indicators Developments in expenditure items sensitive to fiscal policy measures Administered prices and tax adjustments Budget, current account and other balance of payments indicators Output gap forecasts
A rise in financial market volatility caused by domestic factors	<p>Risk Premium:</p> <ul style="list-style-type: none"> Deterioration in risk perceptions towards Turkey due to factors that determine the risk premium or contagion effect that might arise from possible fluctuations in global financial markets may have an adverse impact on the country risk premium. 	<ul style="list-style-type: none"> Implied FX volatilities Risk premium indicators Global risk appetite indicators Exchange rates
Adverse effects of global protectionist trade policies on economic activity,	<p>Foreign Demand:</p> <ul style="list-style-type: none"> Protectionist trade policies may have a downward effect on the global growth outlook, primarily in the US and China. The additional 	<ul style="list-style-type: none"> Developments in protectionist trade policies Export-weighted global economic activity index

Table 7.3.1: Key Risks to Inflation Forecasts and Possible Impact Channels*

trade volume and prices	<p>customs tariff keeps the downward risks to the European Union’s economic activity alive. In such a case, a likely weakening in Turkey’s foreign demand might reduce capacity pressures.</p> <ul style="list-style-type: none"> • Sectoral capacity pressures may be experienced should demand head towards Turkey from countries exposed to protectionist measures in some sectors. ↑ <p>Global Inflation and Financial Conditions:</p> <ul style="list-style-type: none"> • The monetary policy response to protectionism-driven inflation in related countries may tighten global financial conditions and lead to the depreciation of the Turkish lira. ↑ 	<ul style="list-style-type: none"> • Global trade volume and inflation developments • Data on sectoral activity and prices • Monetary policy response in advanced and emerging economies
Crude oil and import prices	<p>Import Prices:</p> <ul style="list-style-type: none"> • Geopolitical developments and volatility in global financial markets pose upside risks for crude oil prices. ↑ • Risks regarding the weakening global growth are likely to cause a downward effect on commodity prices in the medium term. ↓ • There are upside risks to crude oil, some industrial metals and agricultural prices, should the trade negotiations between the US and China yield a positive outcome in the upcoming period, due to the increased demand from China. ↑ 	<ul style="list-style-type: none"> • Crude oil prices and supply/supply balance • OPEC decisions • Arrangements on domestic fuel oil prices • Imports and current account balance
Possible volatility in food prices	<p>Unprocessed Food Prices:</p> <ul style="list-style-type: none"> • Inflation expectations may be affected adversely due to a later-than-anticipated correction in unprocessed food prices that have recently soared relative to long-term trends. ↑ • There may arise additional inflationary pressure, should cost increases, which have been postponed for some time in certain sectors, particularly in food groups such as bread-cereals, milk and meat, be reflected onto consumer prices. ↑ 	<ul style="list-style-type: none"> • Developments in food prices by categories and sub-categories • Deviation of unprocessed food prices from historical trend • Food Committee measures and their implications

* Each risk row of the table presents evaluations on the channel through which inflation forecasts may change, along with the direction of that change, if the respective risk materializes. The signs ↑, ↓ indicate the direction in which the risks influence the inflation forecast (upside and downside, respectively). The sign ↔ denotes circumstances where the net effect on the inflation forecast is not clear. Indicators used in monitoring the risks are listed in the right column.

Box 7.1

An Evaluation of End-2018 Inflation Forecasts

Under the inflation targeting regime, the CBRT provides the public with comprehensive reviews of inflation developments through reports. This box gives a summary of the end-2018 inflation forecasts announced in Inflation Reports throughout 2018, along with the changes in the main assumptions underlying these forecasts.

Upward revisions to output gap forecasts and TL-denominated import prices stemming from the increase in oil prices during the first half of 2018 played a major role in revisions to year-end inflation forecasts. In the second half of the year, upward revisions to assumptions for Turkish lira-denominated import prices, food prices and the underlying inflation, due to the sharp depreciation in the Turkish lira, pushed the year-end inflation forecast markedly higher. The increased volatility in financial markets prompted tightening of financial conditions more than anticipated which resulted in downward revisions to the output gap (Table 1).

Table 1: Inflation Report Assumptions for 2018

	January IR	April IR	July IR	October IR	Actual
Food Prices (year-end % change)	7.0	7.0	13.0	29.5	25.1
Export-Weighted Global Production Index (annual average % change)	2.7	2.9	2.6	2.5	2.5*
Import Prices (annual average % change)	7.4	4.8	6.3	6.0	5.3*
Brent Crude Oil Prices (annual average, USD/bbl)	66	68	73	75	71

Source: CBRT.

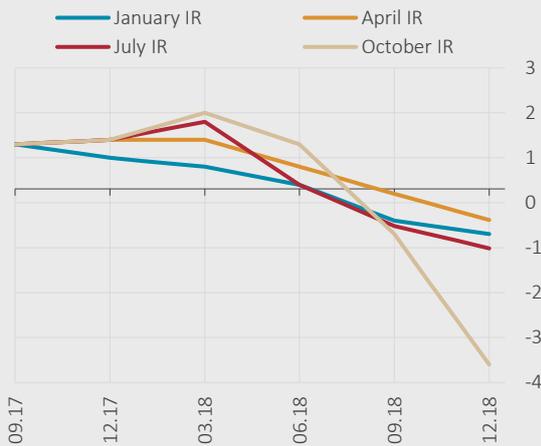
* Forecasts as of January 2019.

Inflation hit 20.3% at the end of 2018. The depreciation of the Turkish lira amid global and geopolitical tensions was one of the key drivers of the increase in inflation throughout the year. These developments pushed inflation significantly upwards after the second half of the year in items sensitive to the exchange rate in particular, whereas increased perceptions of uncertainty deteriorated inflation expectations and pricing behavior. Additionally, the volatility in food prices, especially stemming from the unprocessed food prices, were among factors creating inflationary pressures in 2018.

January Inflation Report (2018-I)

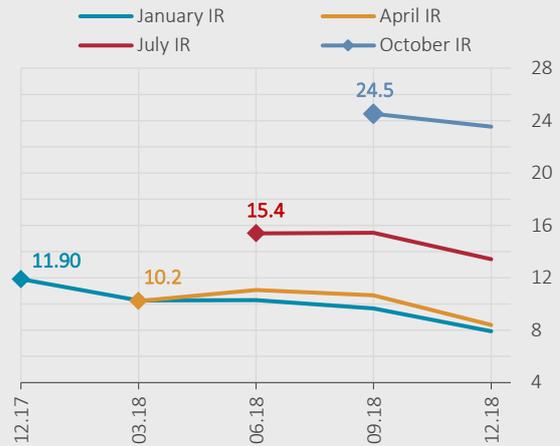
Cost pressures on inflation increased as of the second half of 2017. This upsurge was driven by the depreciation of the Turkish lira against the currency basket, its cumulative effects and also increases in import prices, especially oil. Besides the cost channel, stronger-than-anticipated aggregate demand conditions depending on the robust economic activity contributed to the upward pressure on inflation. In this period, medium-term forecasts were based on the assumption that the CBRT's policy stance would be tight and the cost pressures on inflation would gradually weaken, thereby contributing to the disinflation process in 2018. Furthermore, milder course of economic activity and credit growth in addition to the continued strong coordination between monetary and fiscal policies were indicated among factors supporting the disinflation process in 2018. In this framework, with a tight policy stance that focuses on bringing inflation down, consumer inflation was projected to decline to 7.9% at end-2018 from its level of 11.9% at end-2017.

Chart 1.a: Revisions to Average Output Gap Forecasts (%)



Source: CBRT.

Chart 1.b: Revisions to Inflation Forecasts in 2018* (%)



Source: CBRT, TURKSTAT.

*The series show the projected inflation path from the start of the corresponding period to the end of year.

**The initial points in series show the actual inflation values.

April Inflation Report (2018-II)

Although consumer inflation was in line with January Inflation Report projections as of the first quarter of 2018, developments in exchange rates and oil prices increased upside risks to the near-term inflation outlook, especially after mid-March. Besides cost pressures, aggregate demand conditions also drove inflation higher due to the robust course of the economic activity. In fact, upward revision in the national income data and the solid economic activity in the first quarter of 2018 prompted an upward revision to output gap forecasts over the inter-reporting period (Chart 1.a). Thus, based on the revisions to the output gap and to TL-denominated import prices because of the developments in oil prices and exchange rates, the year-end inflation forecast for 2018 was revised up to 8.4%.

July Inflation Report (2018-III)

In the second quarter of 2018, consumer inflation overshoot the April forecast significantly. The main drivers of the deviation in inflation forecasts were the markedly higher-than-expected import prices in Turkish-lira terms and food prices, particularly for unprocessed food.

In the first quarter of 2018, economic activity was slightly stronger than the April forecast. However, due to the sharp depreciation of the Turkish lira and heightened uncertainty perceptions, financial conditions became tighter than expected. Thus, having estimated that demand conditions would slow in the second quarter at a faster rate than envisaged in its April Inflation Report, the Bank revised its 2018 output gap forecasts downwards for the last three quarters relative to the previous report (Chart 1.a).

Oil and commodity prices continued to rise in the second quarter of 2018, and unprocessed food inflation significantly exceeded the April Inflation Report assumptions. Considering these developments, assumptions for oil, import and food prices were revised upwards. In this regard, the year-end annual consumer inflation forecast was revised upwards by 5 points to 13.4%. This rise was mainly driven by the upward revision made to the TL-denominated import price assumption in the July Inflation Report because of the developments stemming from oil prices and exchange rates.

October Inflation Report (2018-IV)

Consumer inflation, which surged in the third quarter, remained significantly above the forecasts of the July Inflation Report. The deviation of inflation forecasts was mainly driven by the cumulative impact of the depreciation of the Turkish lira and the deterioration in pricing behavior impaired by expectations and backward indexation.

Data releases and the backward revisions indicated that the economic activity in the second quarter was slightly stronger than the forecasts of the July Inflation Report. Accordingly, the output gap forecasts for the second quarter were revised slightly upwards. As a result of the tighter-than-anticipated financial conditions, the slowdown in demand conditions was expected to gain pace, and the output gap was projected to widen significantly in the last quarter (Chart 1.a).

After the July Inflation Report, import prices denominated in Turkish lira exerted upside pressure on inflation. The bulk of this pressure stemmed from the rapid depreciation of the Turkish lira along with the increase in the pass-through from exchange rates to inflation. Furthermore, energy prices excluding fuel remained above the assumptions of the previous report. Moreover, the outlook for food inflation deteriorated in the third quarter. Accordingly, the inflation forecast for end-2018 was revised up to 23.5%, implying a 10.1- point rise compared to the July Inflation Report.

Actual Inflation at the end of 2018

Remaining 3.2 points below the October Inflation Report forecast, the year-end consumer inflation realized as 20.3%. The main drivers of the deviation in inflation forecasts were the lower-than-expected import prices denominated in Turkish lira caused by the appreciation of Turkish lira and the decline in oil prices in the last quarter. Additionally, waning of the elevated volatility in financial markets affected pricing behavior positively in this period. Weaker domestic demand conditions owing to slowdown of economic activity drove the underlying inflation down during the last two months of the year in particular. Following the October Inflation Period, special consumption tax (SCT) on automobiles, white goods and furniture was lowered temporarily, causing core goods inflation and consequently the consumer inflation to decline. The last column of Table 2 displays how each of these factors contributed to the deviation of 3.2 points between expected and actual year-end inflation rates.

Table 2: Revisions to end-2018 Inflation Forecasts

	January IR	April IR	July IR	October IR
Inflation Forecasts (%)	7.9	8.4	13.4	23.5
Sources of Revisions*				
	Apr-Jan	Jul-Apr	Oct-Jul	Dec-Oct
Food	0.0	1.4	3.8	-1.0
Import Prices (TL)	0.4	2.3	4.1	-0.6
Underlying Inflation	0.0	1.3	2.5	-0.5
Output Gap	0.1	-0.1	-0.3	-0.1
Adjustments to Alcoholic Beverages, Tobacco Products and Other Taxes	0.0	0.1	0.0	-1.0

Source: CBRT.

* The first three columns show the sources of revisions in the inter-reporting period, while the last column shows the sources of the deviation between actual inflation and the October Inflation Report forecast. Inflation ended 2018 at 20.3%.

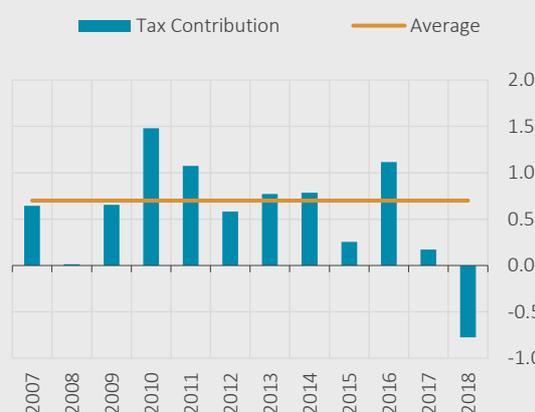
In conclusion, end-2018 inflation forecasts were increased gradually throughout the year due to the rise in TL-denominated import prices, the developments in food prices, and deterioration in pricing behavior (Chart 1.b). The deviation between the actual inflation rate in December and the year-end forecast in October was caused by the rapid fall in TL-denominated import prices driven by the mild course of the Turkish lira coupled with the decline in oil prices and the correction in food prices as well as the underlying inflation due to the effects of tax adjustments. The CBRT has explained revisions to forecasts and their reasons transparently to the public through Inflation Reports, fulfilling the commitment of accountability on a regular basis.

Box 7.2

The Interaction Between Monetary and Fiscal Policies in a Structural General Equilibrium Model

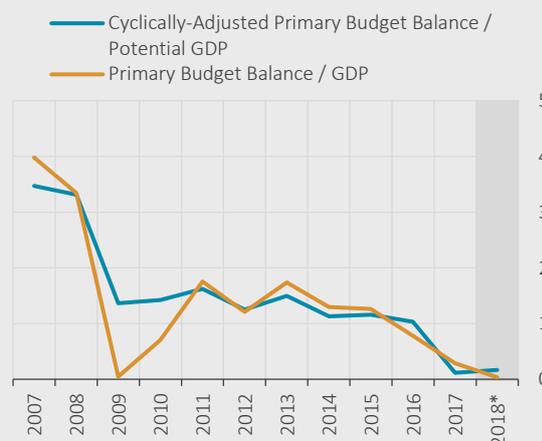
As the Turkish economy has faced many global and geopolitical shocks in recent years, the interaction and coordination between monetary and fiscal policies have gained greater importance in order to limit the effects of these shocks and to diminish policy trade-offs. While the monetary policy stance has been gradually tightened because of a rise in inflation mainly stemming from the exchange rate and import prices since the last quarter of 2016, many fiscal policy measures were taken by using the fiscal space generated by fiscal discipline in order to prevent the slowdown in the economy and to prevent the contraction in loans from causing a negative cycle. Thus, fiscal policy supported economic activity in 2017 while tax adjustments were set to limit the rise in inflation at the same time (Chart 1, Chart 2). The sliding scale tariff applied to fuel prices in 2018 is an important example of how recent fiscal policy has sought to reduce the volatility in inflation (Box 3.2). In this context, while the monetary policy framework is given in this box, it is emphasized how inflation and output gap volatility are affected in a situation where fiscal policy is established to ensure debt stability as well as to minimize the fluctuations in inflation and output gap.

Chart 1: Contribution of Tax Adjustments to Inflation (%)



Source: CBRT, TURKSTAT.

Chart 2: Cyclically-Adjusted Primary Budget Balance (As a share of potential GDP, %)



Source: Ministry of Treasury and Finance, CBRT calculations.
* Estimation.

In this box, the interaction between monetary and fiscal policies in Turkey is examined through a small-scale structural dynamic general equilibrium model. The model used consists of total supply, total demand, a monetary policy interest rate rule, fiscal policy spending and tax rules, and debt dynamics equations. A detailed explanation of the model can be found in Büyükbaşaran, Çebi, and Küçük (2018). For this analysis, fiscal policy spending and tax rules are important:

Spending Rule
$$\hat{g}_t = \rho_g \hat{g}_{t-1} + (1 - \rho_g)[g_y \hat{y} gap_{t-1} + g_b \hat{b}_t] + \epsilon_t^g \quad (1)$$

Tax Rule
$$\hat{t}_t = \rho_t \hat{t}_{t-1} + (1 - \rho_t)[t_y \hat{y} gap_{t-1} + t_b \hat{b}_t] + \epsilon_t^t \quad (2)$$

The fiscal policy rules described in Equations (1) and (2) respond to debt stability and the output gap. $\hat{y}gap$ represents the output gap, i.e. the percentage deviation from the potential value of the gross domestic product (GDP). \hat{g}_t , \hat{t}_t and \hat{b}_t denote the ratio of budget expenditures, tax revenues and public debt stock to GDP, respectively. The parameters g_y and g_b in equation (1) show the sensitivity of public expenditures to output gap and debt stock, respectively. The parameters t_y and t_b in equation (2) display the sensitivity of tax revenues to output gap and debt stock, respectively. The fiscal smoothing parameters (ρ_g and ρ_t) play an important role in determining the sensitivity of fiscal policy instruments to debt stock and the output gap. It is assumed that the public sector can change parameters g_y , g_b , t_y and t_b with the changes made in expenditures and tax policies.

In short, different expenditure and tax policies correspond to different g_y , g_b , t_y and t_b parameter values. When constructing fiscal policies, important variables are taken into consideration in terms of macro economy such as budget balance, growth and inflation. If more than one variable is included in the policy objective function at the same time, different fiscal policies can be applied depending on the priority given to a variable in case of trade-offs between these variables. Differences in fiscal policy implementations cause changes in resource allocation and macro balances in the economy.

For example, in a period when the debt stock is relatively high, a fiscal policy framework that prioritizes debt stock stability may choose to make a relatively larger cut in public spending, given the low tax revenues due to low growth, while a fiscal policy that prioritizes the growth outlook may decide to increase spending, at the expense of increasing the debt stock. In this box, an analysis is made to show how the implications of budget discipline, growth and price stability in the objective function of the fiscal policy can have consequences for macro balances. Four different objective (loss) functions have been selected to represent different priorities of fiscal policy:

$$L1 = 0.01var(\pi) + 0.2var(ygap) + 1.0var(b) \quad (3)$$

$$L2 = 0.01var(\pi) + 1.0var(ygap) + 0.2var(b) \quad (4)$$

$$L3 = 1.0var(\pi) + 1.0var(ygap) + 0.2var(b) \quad (5)$$

$$L4 = 1.0var(\pi) + 1.0var(ygap) \quad (6)$$

Here, $var(x)$ represents the variance (volatility) value from the structural general equilibrium model of variable x , inflation π , output gap $ygap$ and debt stock b . Fiscal policy is assumed to select the parameters g_y , g_b , t_y and t_b to minimize L1, L2, L3 and L4 loss functions. Here, L1 prioritizes debt discipline, L2 prioritizes the output gap outlook, L3 gives priority to the inflation outlook and output gap without ignoring budget discipline and L4 is constructed to represent a fiscal policy that gives equal importance to inflation and growth. Table 1 shows the optimal parameter selections (g_y , g_b , t_y and t_b) for each objective function as well as what these parameters imply in terms of inflation, output gap and debt stock volatility.

Table 1: Optimal Parameter Choices under Different Objective (Loss) Functions of Fiscal Policies

	Spending Rule		Tax Rule		Standard Deviation			L1	L2	L3	L4
	g_y	g_b	t_y	t_b	Inflation	Output Gap	Debt Stock				
Optimal L1	-1.0	-1.0	0.0	0.5	1.299	2.955	5.224	29.1	14.2	15.9	5.2
Optimal L2	-0.1	-0.3	0.5	0.9	1.298	2.288	5.483	31.1	11.3	12.9	3.5
Optimal L3	-0.2	-0.3	0.4	0.9	1.296	2.289	5.482	31.1	11.3	12.9	3.5
Optimal L4	-1.0	0.2	-0.6	0.3	1.242	2.042	16.245	264.8	57.0	58.5	2.9

According to this, fiscal policy implementations (such as L3), which give more importance to the volatility in inflation and output gap, are more successful in decreasing the volatility of inflation and output gap compared to the loss function that gives more importance to debt stability (L1)¹. In order to understand what the alternative fiscal rule practices summarized in Table 1 imply for the interaction of monetary and fiscal policies, it would be useful to focus on the macroeconomic effects of the cost-push shock under different fiscal policy implementations. Within the framework of the structural general equilibrium model used, the inflation rate increases as the output decreases after the cost-push shock and this situation results in a trade-off in terms of monetary policy. The reason for the trade-off is that an increase in the interest rate against the rise in inflation following the shock will bring the output further down. On the other hand, following the cost-push shock in the model, fiscal policy responds, to varying degrees, by increasing public spending under all loss functions. In other words, a tight monetary policy and expansionary fiscal policy mix is preferred following the cost-push shock, and thus the decreasing effect of the inflation shock on the output is offset by expansionary fiscal policy implementations².

Interpreting the optimal parameter choices implied by the cost-push shock of alternative objective functions with different priorities described above, it is observed that the L1 loss function, which gives the most importance to debt stability, reflects a policy choice that reduces the volatility of debt stock at the expense of increasing the volatility in inflation and output. On the other hand, if a loss function, which gives more importance to reducing inflation and output volatility such as L4, is adopted, it is observed that the decrease in the output at the beginning is deeper than other specifications, but output recovery is realized faster due to the high increase in public spending. In such a case, it should be noted that such a fiscal policy preference would require relatively higher fiscal space, as the increase in public spending would increase the debt stock more than others, and the implementation of this kind of policy would be limited in periods when the country risk premium is sensitive to debt stock or budget developments.

The findings of the study indicate that fiscal policies which take into account inflation and output gap volatility without permanently giving up the fiscal discipline, are effective in reducing the volatility and limiting the effects of shocks.

References

Büyükbaşaran, T., Çebi, C. ve H. Küçük, 2018, "The Interaction between Monetary and Fiscal Policies in a Small Scale Structural Model", *CBRT Research Notes in Economics*.

¹ Although the L2 loss function gives less importance to inflation stabilization than the L3 loss function, optimal response parameters and volatility levels related to fiscal policy rules are calculated in similar values for two loss functions. This is due to the fact that the output gap stabilization is largely sufficient for inflation stabilization because the real exchange rate and risk premium are not modeled clearly in the structural model used here.

² A more detailed explanation of impulse-response functions can be found in Chart 3 of Büyükbaşaran, Çebi, and Küçük (2018).

