

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 for the upcoming 3-year horizon.

7.1. Current State, Short-Term Outlook and Assumptions

Financial Conditions

In the second quarter of 2017, the upward revision in global economic growth forecasts and low volatility in global financial markets drove the risk appetite upwards, leading to accelerated portfolio flows to emerging economies. Backed also by the tight monetary policy stance, Turkey attracted higher portfolio flows compared to past years and the Turkish lira appreciated, compensating for the majority of the past losses. Lingering low levels in global inflation rates keep expectations for mild monetary policy normalization of major central banks intact. In addition to the optimistic outlook in global conditions, domestic credit conditions also continued to be on a favorable track. Moreover, thanks to accommodative macroprudential policies as well as public measures and incentives, credit growth gained considerable momentum in the second quarter.¹

Although the rising risk appetite partially curbed cost pressures in the second quarter of 2017, the CBRT opted for a stronger monetary tightening in April to contain the risks to pricing behavior in an environment with an elevated inflation rate. Accordingly, the late liquidity window lending rate was raised from 11.75 to 12.25 percent and the system's funding requirement was further met via the late liquidity window. Policy rates were kept unchanged in June and July and the CBRT stated that the tight monetary policy stance would be maintained until the inflation outlook displays a significant improvement.

Inflation

In the second quarter of 2017, consumer inflation inched down by 0.39 points on a quarterly basis and remained broadly consistent with April projections at 10.9 percent. The partial improvement observed since April was driven by the falling oil prices and the recent appreciation of the Turkish lira. On the other hand, the fall in inflation remained limited due to the partial correction in food prices, the pickup in aggregate demand and the elevation in inflation expectations.

Demand Conditions

Economic activity in the first quarter proved stronger than the outlook envisaged in the April Inflation Report. The main drivers of the quarterly GDP growth were exports, construction investments and public spending. Machinery and equipment investments remained sluggish, while private consumption slowed due to demand that had been brought forward amid the adoption of incentives in the previous quarter. The recently released indicators also hint that the economic activity continued to recover in the second quarter. Against this background, output gap forecasts for the first and second quarters of 2017 were revised upwards compared to the April Inflation Report (Table 7.1.1, Chart 7.2.3).

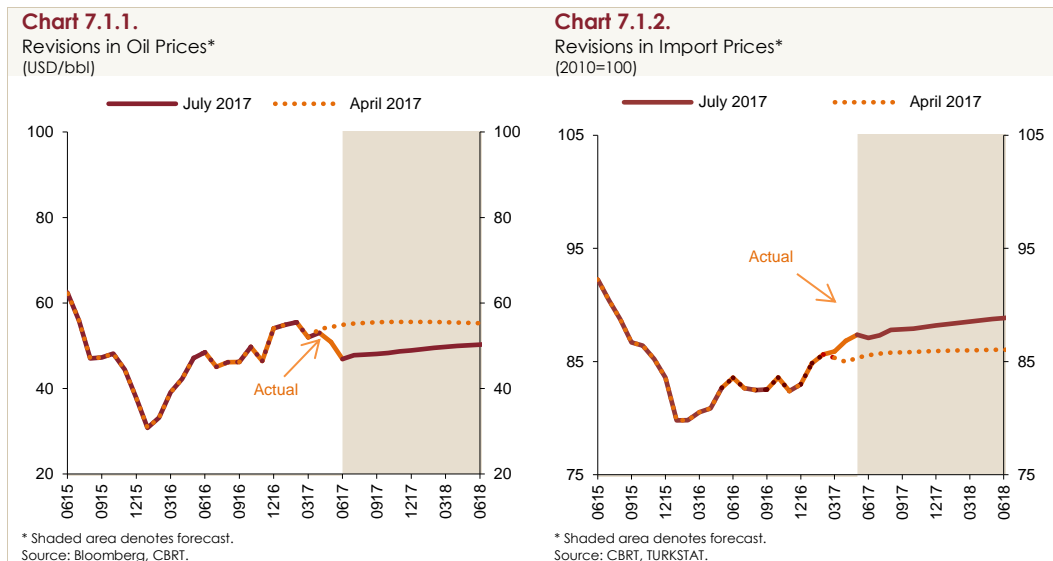
¹ Box 7.1 presents an analysis of unanticipated changes in the credit supply on macroeconomic variables.

The assumption for the annual growth rate of export-weighted global growth index, which is an indicator of external demand, was revised upwards compared to the previous reporting period due to the upward revision in the growth forecasts of Turkey's trading partners (Table 7.1.1).

Oil, Import and Food Prices

Owing to recent developments, assumptions for crude oil prices for the upcoming period were revised downwards compared to the April Inflation Report. In average terms, assumptions for crude oil prices, which were 55 USD in the April Inflation Report, were revised down to 50 USD for 2017. Meanwhile, assumptions for USD-denominated import prices were revised upwards for 2017 (Table 7.1.1, Charts 7.1.1 and 7.1.2).

In the first quarter of 2017, food inflation proved slightly higher than April projections at 14.34 percent. The current state of food inflation and food inflation realizations in the July-December periods of past years indicate the necessity to revise the year-end food inflation assumption stated in the April Inflation Report. Meanwhile, the rise in food inflation is expected to be limited gradually in the upcoming period via the measures to be taken by Food and Agricultural Products Markets Monitoring and Evaluation Committee. Accordingly, the assumption for food price inflation was set as 10 percent for end-2017 and kept unchanged at 7 percent for 2018.



Fiscal Policy and Tax Adjustments

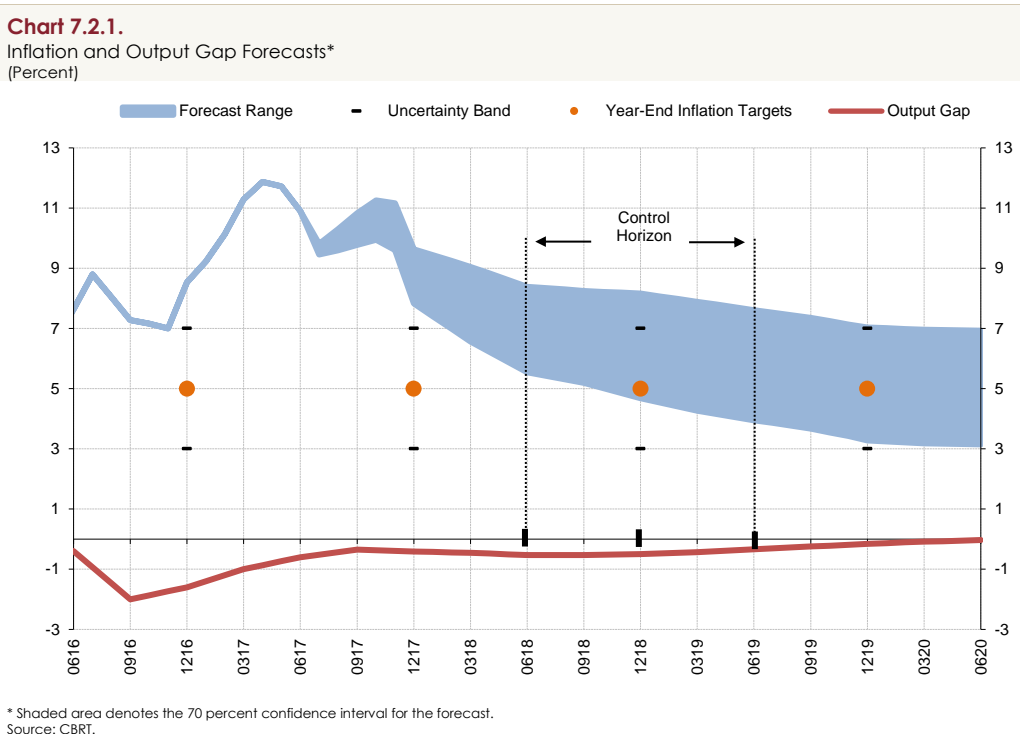
Medium-term projections are based on the assumption that fiscal discipline will be maintained and administered prices and taxes will not be subject to any unanticipated increase. Forecasts are based on the assumption that adjustments to taxes and administered prices will be consistent with the inflation target and automatic pricing mechanisms. As per the Council of Ministers Decree adopted in July 2017, the projected hike in the lump-sum SCT taxes on cigarettes and other tobacco products under the automatic mechanism was withheld, which was reflected onto the forecasts of the July Inflation Report.

Table 7.1.1.
Revised Assumptions

		April 2017	July 2017
Output Gap	2017Q1	-1.7	-1.0
	2017Q2	-1.5	-0.6
Food Inflation (Year-end Percent Change)	2017	9.0	10.0
	2018	7.0	7.0
Import Prices (Average Annual Percent Change, USD)	2017	4.4	6.2
	2018	0.5	2.0
Oil Prices (Average, USD)	2017	55	50
	2018	55	50
Export-Weighted Global Production Index (Average Annual Percent Change)	2017	1.8	2.1
	2018	2.0	2.2

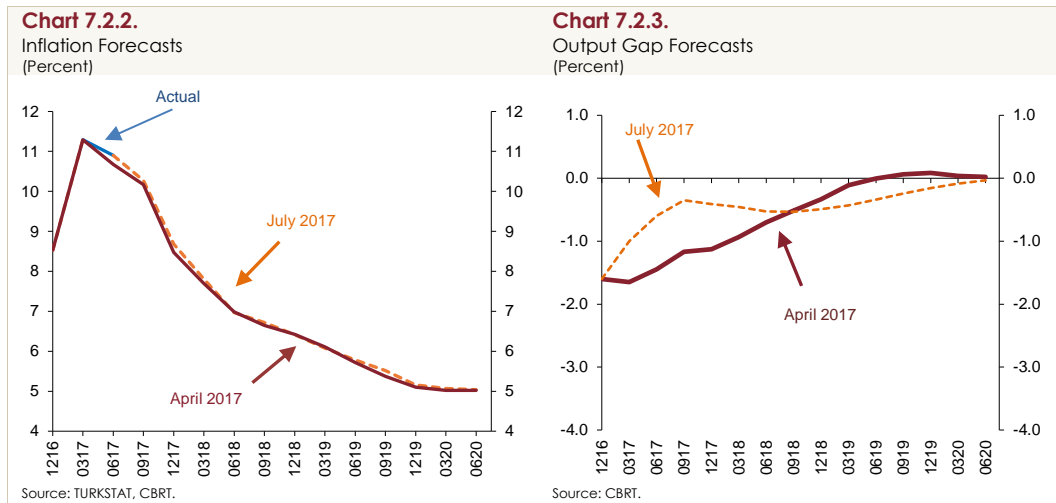
7.2. Medium-Term Forecasts

Given a tight policy stance that focuses on bringing inflation down, inflation is estimated to converge gradually to the 5-percent target. Accordingly, inflation is likely to be 8.7 percent at end-2017, and stabilize around 5 percent in the medium term after falling to 6.4 percent in 2018. Hence, inflation is expected to be, with 70 percent probability, between 7.8 percent and 9.6 percent (with a mid-point of 8.7 percent) at end-2017 and between 4.7 percent and 8.1 percent (with a mid-point of 6.4 percent) at end-2018 (Chart 7.2.1).



The year-end inflation forecast was revised upwards by 0.2 points for 2017 compared to the April Inflation Report (Chart 7.2.2). The upward revision in the output gap on the back of the recovery in economic activity drove the year-end inflation forecast for 2017 upwards by 0.2 points. Another factor affecting the forecasts was the revision of 2017 food inflation forecast from 9 to 10 percent. This revision pushed the year-end forecast for 2017 up by 0.2 points compared to the previous Report. On the other hand, the Turkish lira has followed a stable course and oil prices have registered a sizeable fall recently. Thus, despite the upward revision in assumptions for USD-denominated import prices, TL-denominated import prices pulled the year-end forecast for 2017 down by 0.1 point. Moreover, the automatic tax increase in tobacco products was withheld, which caused alcoholic beverages and tobacco products to decrease the year-end consumer inflation by 0.1 point compared to the previous Report. Accordingly, the year-end consumer inflation forecast for 2017, which was announced as 8.5 percent in the April Inflation Report, was raised to 8.7 percent.

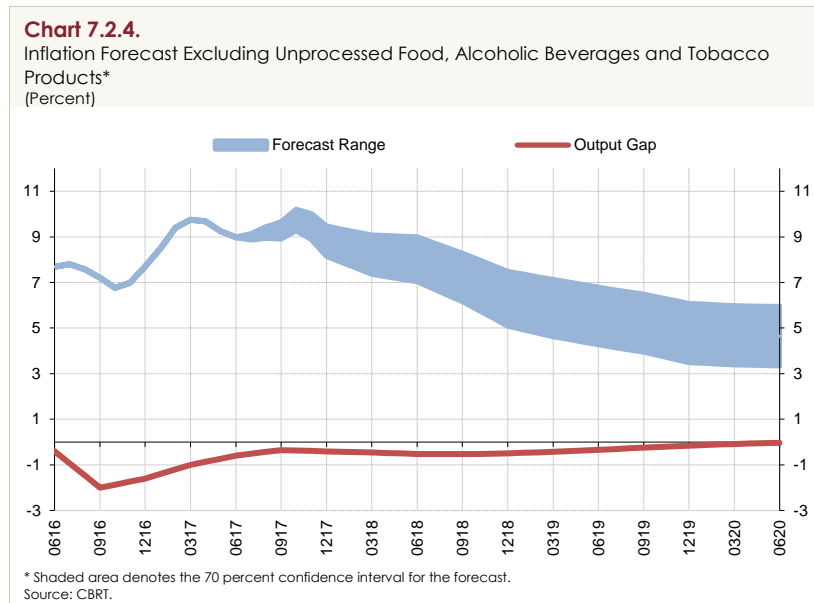
On the other hand, the consumer inflation forecast for 2018 was kept at 6.4 percent. The upward revision in the output gap is expected to push the year-end inflation in 2018 up by 0.1 point. Meanwhile, the revision in assumptions for TL-denominated import prices resulting particularly from falling oil prices pulled the inflation forecast down by 0.1 point. Hence, the year-end inflation forecast for 2018 has remained intact since the April Inflation Report.



Recent indicators suggest a decline in food and consumer inflation owing mostly to the unprocessed food prices (Chart 7.2.1). It is envisaged that consumer inflation will fall to single digits, while the annual rate of increase in core indicators will remain relatively flat. Inflation is likely to fluctuate in the remainder of the year and reach single-digits by end-2017. The improvement in the inflation outlook is expected to be more pronounced in early months of 2018. The CBRT will remain focused on the underlying trend of inflation rather than temporary fluctuations in the upcoming period.

Economic activity in the first quarter proved stronger than the outlook envisaged in April Inflation Report. Leading indicators suggest that the economic recovery gained momentum in the second quarter. Accordingly, output gap forecasts for 2017 were revised upwards (Chart 7.2.3). Meanwhile, the output gap is expected to support disinflation further on the back of the tight monetary policy stance in 2017, albeit at a slower pace compared to previous periods.

Unpredictable price fluctuations in items beyond the monetary policy domain, such as unprocessed food and tobacco products, are among major factors that cause a deviation in inflation forecasts. Hence, inflation forecasts excluding unprocessed food, alcoholic beverages and tobacco products are also announced, and these inflation forecasts are presented in Chart 7.2.4. Despite the volatile course of the consumer inflation and ignoring the effects of withdrawal of the temporary tax reductions in furniture and white goods in October as well as the base effects due to methodological changes in measuring clothing inflation, inflation excluding unprocessed food, alcoholic beverages and tobacco products is expected to remain flat and decline gradually to 4.6 percent in the medium term.



Comparison of the CBRT's Forecasts with Inflation Expectations

It is critical that economic agents take the inflation target as a benchmark in their plans and contracts and focus on the underlying trend of medium-term inflation rather than on temporary price fluctuations. Likewise, it is crucial that the CBRT's current inflation forecasts be compared with inflation expectations of other economic agents to serve as a reference guide. Currently, the year-end, 12-month-ahead and 24-month-ahead inflation expectations of the Survey of Expectations' respondents are above the CBRT's baseline scenario forecasts (Table 7.2.1). The hovering of inflation expectations above the target and particularly the exceeding of the 24-month-ahead inflation expectations beyond the uncertainty band necessitate the tight monetary policy stance to be sustained.

Table 7.2.1.
CBRT Inflation Forecasts and Expectations

	CBRT Forecast	CBRT Survey of Expectations*	Inflation Target
2017 Year-end	8.7	9.5	5.0
12-month-ahead	6.9	8.4	5.0
24-month-ahead	5.7	7.9	5.0

* As of July 2017.
Source: CBRT.

7.3. Risks and the Monetary Policy

The mild recovery in global economic activity became more pronounced, due particularly to advanced economies in the first quarter of 2017. The considerable fall in volatility in global financial markets and the increased risk appetite cause global financial conditions to have an intensified support on economic activity. Moreover, the optimistic outlook in the consumer and the real sector confidence indices as well as the favorable course of some commodity prices, especially oil, also improve expectations regarding global economic activity. The favorable global growth outlook and the resulting fall in unemployment notwithstanding, the normalization of monetary policy in advanced economies is believed to prove mild due to the absence of an apparent wage-driven pressure on inflation. These factors support portfolio flows to emerging economies including Turkey.

Despite the current favorable outlook in global economic activity, downside risks to global economy are also present. In particular, the high risk appetite and low volatility cycle in financial markets may reverse should the Fed's policy rate hike and the balance sheet downsizing prove faster than envisioned. This may generate volatility in security prices in advanced economies, which may decelerate growth. Moreover, lower risk appetite may cause fluctuations in portfolio flows to emerging economies as well. In addition, the course of Brexit and effects of the blurred global economic policies such as foreign trade protectionism that is on the agenda of many countries, particularly the US, are also being monitored closely.

In line with the positive course of the global financial markets, domestic financial conditions also proved more accommodative in the second quarter. This was driven by macroprudential policies, public measures and incentives as well as acceleration of credits backed by the Credit Guarantee Fund, for which the limits were raised and terms of use were eased as of March. On the other hand, owing to strong capital inflows to especially the government bond markets as of March, the share of foreign investors within the domestic debt stock increased, and the Treasury raised external borrowing against strong foreign demand, which provided domestic banks with considerable room on the supply side. As the upper limit defined for credits secured by the Credit Guarantee Fund is near and as the supply-side effects have recently stepped in for the banking sector; credit growth, which lost pace starting from June, is expected to stabilize as of the second half of the year. The improvement in credits in the first half of the year is monitored closely with regard to its impact on the aggregate demand and economic activity.

Recently released indicators confirm the previous assessments that downside risks to economic activity have abated and the economic recovery will prove more robust as of the second quarter of the year. Compared to previous periods, the pickup in economic activity spilled over to a wider range of

sectors via exports, which signals stable recovery in growth. The gradual improvement in tourism revenues, the strengthened confidence channel, the positive effect of the cumulative depreciation on net exports and the restored commercial relations with Russia support growth. Moreover, the measures and incentive packages to boost consumption and investment expenditures as well as reduced uncertainty and improved financial conditions will continue to spur growth. The improvement in employment and the fall in the unemployment on the back of the ongoing recovery constitute a ground for a sustained favorable outlook and increased contribution of domestic demand to growth. Investment is envisaged to exhibit a gradual improvement as uncertainties wane and the climate of confidence grows stronger. On the other hand, having posed a downside risk to growth recently, the pace of recovery in tourism revenues, uncertainties regarding monetary policies of advanced economies, the course of capital flows and geopolitical developments continue to be downside risk factors on growth in 2017 as well.

The monetary tightening has started to have visible favorable effects on inflation. Consumer inflation receded on the back of falling oil prices as well as the recent stable course of the Turkish lira, and remained broadly consistent with the forecasts in the April Inflation Report. The medium-term inflation outlook seems to have improved since the previous reporting period and the recovery in underlying inflation is expected to continue gradually. However, considering that the rigidity in expectations and the pricing behavior remains to a great extent, the improvement in the core inflation outlook is deemed to be insufficient and requires a tight monetary policy stance.

Even though the inflation peak is presumably over in 2017, inflation is still likely to follow a fluctuating course in the second half. The correction in food prices is yet to be completed, thereby necessitating a cautious stance regarding the persistence of the recent decline in the food inflation driven by base effects. Furthermore, temporary tax reductions in white goods and furniture to be taken back in October as well as the methodological changes in clothing may lead to short-term fluctuations in inflation and temporary increases in core inflation. The inflation outlook is projected to witness a recovery as of year-end, which is expected to be more pronounced in early 2018.

Against this background, the CBRT decided to maintain the tight monetary policy stance in June and July. The tight stance in monetary policy will be maintained until the inflation outlook displays a significant improvement. The CBRT formulates monetary policy by taking the medium-term inflation outlook into account, thus focusing on the developments in underlying inflation rather than the anticipated fluctuations driven by the base effects during the year. Inflation expectation, pricing behavior and other factors affecting inflation will be closely monitored, and further monetary tightening will be delivered if needed.

Developments in fiscal policy and tax adjustments are monitored closely with regard to their effects on the inflation outlook. The baseline monetary policy stance is formulated under the assumption that fiscal discipline will be maintained and there will be no unanticipated hikes in administered prices. A revision of the monetary policy stance may be considered should the fiscal policy deviate significantly from this framework, and consequently have an adverse effect on the medium-term inflation outlook.

In recent years, sustaining fiscal discipline has been one of the key factors in lowering the sensitivity of the Turkish economy against external shocks. The room provided by fiscal discipline facilitated the implementation of an expansionary fiscal policy in the recent period. Structural measures to provide room for countercyclical fiscal policies will enhance the coordination of monetary and fiscal policy, and improve macroeconomic stability.

Developments in the credit market have come to be more influential on real economy amid the financial deepening in Turkey that accelerated starting from 2003. Identifying changes in credit growth that stem from credit supply developments is crucial to the reliable evaluation of the effects of credit growth on macroeconomic variables. A variety of shocks exogenous to the credit market may have contemporaneous effects on macroeconomic variables such as credit growth and economic growth. Therefore, identifying the effects of credit supply shocks becomes challenging as well as essential. This box identifies credit supply and credit demand shocks through a Bayesian structural vector autoregression (VAR) model and analyzes the effects of unanticipated changes in credit supply on macroeconomic variables such as growth and inflation.²

Data Description

Due to the structural transformation that was experienced in the post-2002 period as well as the insufficiency of historical data pertaining to credit markets before 2002, the analysis covers the period from 2003Q2 to 2016Q4. Endogenous variables include the real credit volume (total credits deflated by CPI and adjusted for the exchange rate), the commercial credit and deposit rate spread, real GDP, D index (CPI excluding unprocessed food, alcoholic beverages and tobacco products), policy rate and the nominal exchange rate (USD/TL). Moreover, global liquidity conditions are captured by an exogenous variable, which is composed of USD and euro-denominated credit flows to emerging economies. Variables with seasonal pattern (credit volume, GDP and D index) are seasonally adjusted, and all variables except credit-deposit rate spread and policy rate are in first differences for stationarity.

Identification of Structural Shocks

Six structural shocks were identified by setting zero and sign restrictions on the impulse-response functions of endogenous variables. These shocks include aggregate demand shock, aggregate supply shock, monetary policy shock, capital flow shock, and finally, credit supply and credit demand shocks, which constitute the main focus of this study. Sign and zero restrictions used in identifying structural shocks are summarized below (Table 1):

- Shocks which move credit-deposit rate spread and credit growth in opposite directions within the same period are identified as credit supply shocks, while shocks influencing these variables in the same direction within the same period are defined as credit demand shocks. For example, a negative credit supply shock increases the credit-deposit spread and decreases credit growth. However, a negative demand shock causes credit-deposit rate spread to decrease, while it also slows down the credit growth. In line with the literature, both shocks are assumed to have no significant contemporaneous impact on macroeconomic variables such as inflation, economic growth and policy rate.

² This box is based on Büyükbaşaran et al. (2017), which present technical details and further elaborations of the model. A similar approach is adopted by Barnett and Thomas (2013).

- Other structural shocks are defined by similar restrictions. Accordingly, an aggregate supply shock is identified as a shock that affects inflation and growth in opposite directions in the same period, while the aggregate demand shock is specified as a shock which causes a contemporaneous and parallel movement in inflation and economic growth, thereby resulting in a monetary policy reaction.

Table 1. Variables, Restrictions and Decomposition of Shocks in Structural VAR

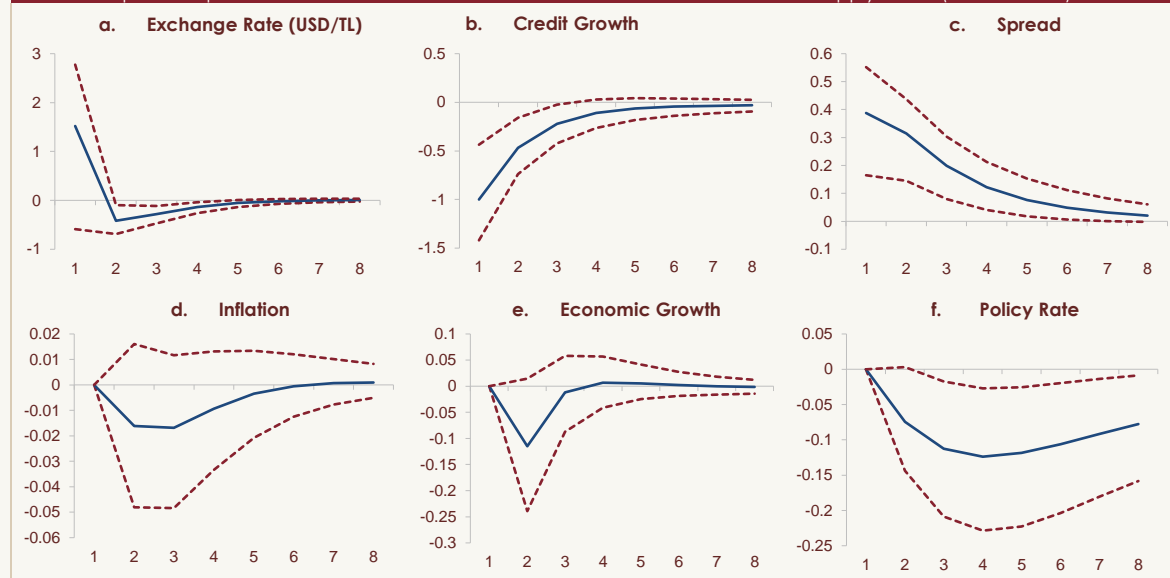
Variables	Capital Flow Shock	Credit Demand	Credit Supply	Total Supply	Aggregate Demand	Monetary Policy Shock
Exchange Rate	-					
Credit Growth		+	-			
Spread		+	+			
Inflation	-	0	0	+	+	+
Economic Growth		0	0	-	+	+
Policy Rate		0	0		+	-

Notes: All restrictions are first-period restrictions and imposed simultaneously. Plus sign (+) indicates that the respective shock has a positive effect, while minus sign (-) implies that the shock has a negative effect and 0 denotes that the respective shock has no contemporaneous effect on the corresponding variable. Null lines show that no restriction is imposed on the respective variable regarding the impact of the corresponding shock. No restrictions are imposed on impulse-response functions after the first period.

Impulse-Response Functions

Chart 1 displays the impulse-responses of the selected macroeconomic variables to an unanticipated credit supply shock³ (an unexpected increase in the credit-deposit spread) that leads to a 1-point decline in real credit growth.

Chart 1. Impulse-Response Functions of Selected Macroeconomic Variables to a Credit Supply Shock (Baseline Model)



³ A negative credit supply shock may be due to unanticipated changes in lending appetite, which may result from tighter macroprudential policies, increased riskiness of collaterals, higher liquidity constraints of banks etc.

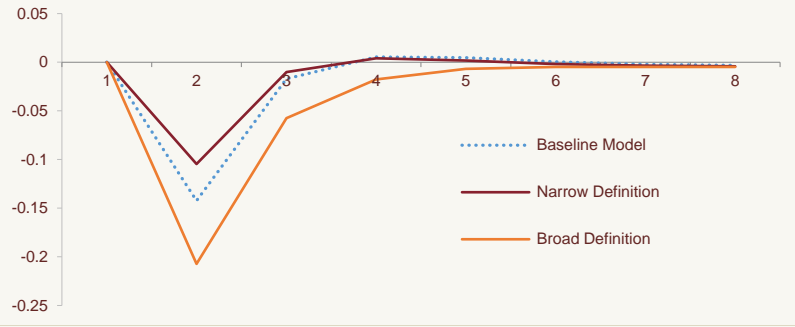
In Chart 1, solid lines indicate the median value of the responses that the respective macroeconomic variable gives to the negative credit supply shock, and dashed lines show the 68 percent credibility interval for the responses. Firstly, a credit supply shock that reduces credit growth by 1 percentage point in the initial period corresponds to an increase by 0.4 points in the credit-deposit rate spread. This credit supply shock leads to a 0.14-point contraction in economic growth in the second quarter (Chart 1e). The effect of the credit supply shock on economic growth is temporary and dies out in the fourth quarter, while the cumulative response is about -0.16 percentage points at the end of the third quarter. The policy rate responds by a limited decline against the negative credit supply shock, which partially compensates for the adverse effect of the shock on growth.

On the other hand, credit supply shock has a more limited and uncertain effect on inflation compared to growth. This might be due to the fact that credit supply shock has opposite effects on exchange rate and economic activity, which are the main determinants of inflation. In fact, in case of a negative credit supply shock, the nominal exchange rate also registers a sizeable depreciation in the same period. This points out that periods of tight credit conditions coincide with periods of relatively weak capital flows. Accordingly, the inflationary pressure caused by the depreciation of the exchange rate and the disinflationary pressure stemming from the slowdown in demand renders the total effect of the credit supply shock on inflation uncertain.

The Role of Global Financial Conditions on Credit Supply

Changes in credit supply presented in the baseline model reveal the effects of both domestic and external factors on credit conditions. To decompose the macroeconomic effects of the changes in credit supply led by domestic developments, it was assumed that a capital flow shock that causes an appreciation in Turkish lira and a fall in inflation would at the same time cause a decline in the credit-deposit rate spread and an increase in credit growth. Accordingly, new restrictions were added to Table 1. Under these new restrictions, changes in credit supply led by external conditions are attributed to capital flow shock rather than a credit supply shock, and a shock identified as a credit supply shock now reflects the changes in credit conditions driven mostly by domestic dynamics. Accordingly, using this narrow definition, a credit supply shock led by domestic factors (macroprudential tightening, elevated uncertainty in the economic outlook etc.), which causes a 1-percent contraction in credit has a cumulative effect of -0.11 points on growth at the end of three quarters.

Lastly, by excluding the global liquidity indicator, an exogenous variable, from the baseline model, credit supply shock was defined more broadly in a way to include the effects of global liquidity conditions on credit supply. In such a case, the impact of an unanticipated change in the credit supply on growth is much stronger. Accordingly, the cumulative median effect of a credit supply shock which results in a 1-percent contraction in credit causes the real GDP growth to decline by 0.26 percentage points at the end of the third quarter.

Chart 2. Comparison of Alternative Credit Supply Shocks on Growth

These two alternative identifications of credit supply shock show the significance of global liquidity conditions and capital flows on the credit supply in Turkey. A broader definition of a credit supply shock implies that unanticipated changes in the credit supply have stronger and more long-lasting effects on economic growth. In the Turkish economy, a 1-point decrease in credit growth has a cumulative median effect on GDP growth that varies between -0.11 and -0.26 points at the end of three quarters depending on the definition of the credit supply (Chart 2).⁴

In sum, model-based results suggest that credit supply shocks have significant yet temporary effects on growth, while their effects on inflation are rather limited. Moreover, the results show that global liquidity and capital flows have a considerable impact on credit conditions. In particular, an improvement in domestic credit conditions that can stem from an easing in macroprudential policies or use of the Credit Guarantee Fund has stronger effects on growth when supported by favorable external financing conditions.

References

- Barnett, A. and R. Thomas, 2014, Has Weak Lending and Activity in the UK been Driven by Credit Supply Shocks?, *The Manchester School*, 82(S1): 60-89.
- Büyükbaşaran, T., H.G. Karasoy-Can and H. Küçük-Yeşil, 2017, Identifying Credit Supply Shocks in Turkey, Work in progress.

⁴ Stability of these results was tested against different priors, data selection and sign restrictions.