

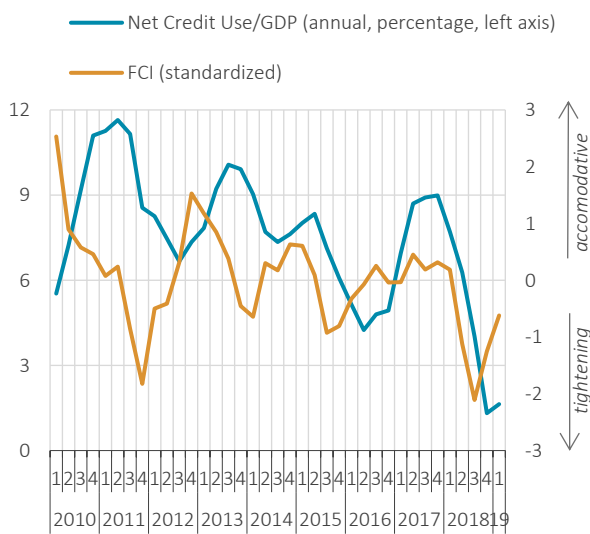
5. Financial Conditions and Monetary Policy

In the first quarter of 2019, global economic activity lost pace, inflation developments proved consistent with targets and economic policies were highly blurred. All these led to an apparent halt in the normalization processes of monetary policies of major central banks. Expectations for a slower normalization in monetary policies of advanced economies have led to a partial improvement in the global risk appetite, and risk premiums of emerging economies have exhibited a limited recovery since the end of 2018. Meanwhile, Turkey's risk premium has negatively diverged from other emerging economies due to uncertainties and geopolitical developments. As of late 2018, portfolio flows towards emerging economies continued mostly in debt securities markets, while portfolio movements in stock markets fluctuated.

Inflation indicators recovered somewhat in the first quarter of the year on account of imported input costs and domestic demand developments, yet risks to price stability persisted. Therefore, the CBRT maintained a tight policy stance. In view of the volatilities in financial markets, the CBRT employed its tool set efficiently by taking the necessary liquidity measures to enhance the efficient functioning of the markets and the transmission mechanism.

Owing to the relative improvement in financial conditions coupled with the measures in effect, the credit volume registered a partial improvement. Annual growth rate of commercial loans has increased, while the contraction in consumer loans has lost pace since the end of the first quarter of 2019. The Bank Loans Tendency Survey suggests that the increase in commercial loans was driven both by supply and demand, while the development in consumer loans was supply-driven, which was led by eased personal loan standards.

Chart 5.1: Financial Conditions and Credit Growth*

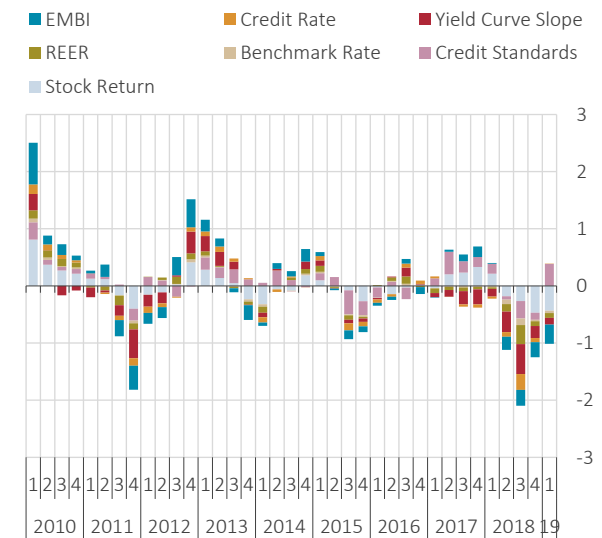


Source: CBRT.

* For further details on measuring FCI, see the CBRT Working Paper No. 15/13.

Net Credit Use is defined as the annual change in the credit stock and it is adjusted for exchange rate. GDP data for the first quarter of 2019 is forecast.

Chart 5.2: Contributions to FCI



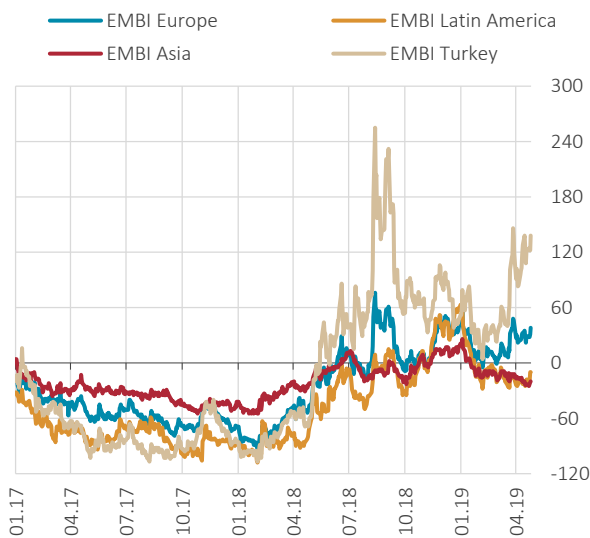
Source: CBRT.

The Financial Conditions Index (FCI) implies that the tightness in financial conditions eased somewhat, but financial conditions continued to have a tightening effect on economic activity in the first quarter of 2019 (Chart 5.1). However, out of the components of the credit market, loan standards contributed positively to the index. On the other hand, in line with the recent increase in the risk premium, the tightening effect of EMBI on financial conditions has increased notably. Moreover, the apparently tightening contribution of the yields of the stock market on the index persisted, albeit with a diminished pace (Chart 5.2).

5.1. Financial Conditions and the Monetary Policy

In the first quarter of 2019, global risk appetite was enhanced by the deceleration in global economic activity, pronounced prospects for more stationary monetary policies to be pursued by major central banks and diminished uncertainties over global trade. Risk premiums of emerging economies registered limited decreases in this period. Meanwhile, Turkey's risk premium diverged negatively from other emerging economies due to uncertainties and geopolitical developments (Chart 5.1.1). As of late 2018, portfolio flows towards emerging economies continued mostly in debt securities markets in the current Reporting period, while portfolio movements in stock markets fluctuated. In Turkey, portfolio outflows were seen in Government Domestic Debt Securities (GDDS) markets, while stock markets did not exhibit an evident improvement (Chart 5.1.2).

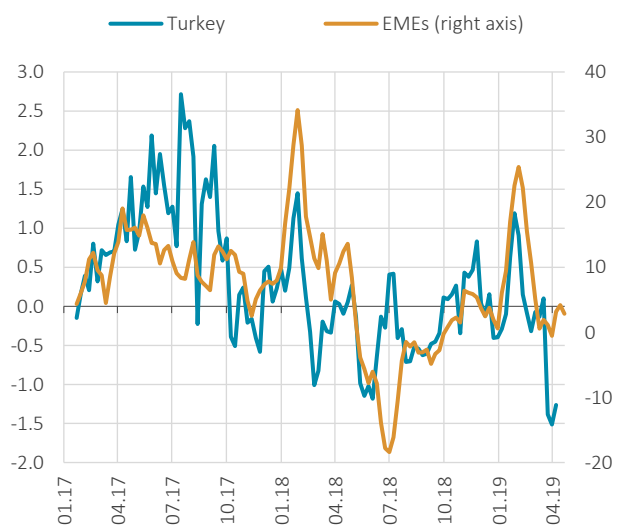
Chart 5.1.1: Regional Risk Premiums* (2 January 2017 = 0, Basis Point)



Source: Bloomberg.

* Shows cumulative changes since 2 January 2017.

Chart 5.1.2: Portfolio Flows in Emerging Economies* (4-Week Cumulative, Billion USD)

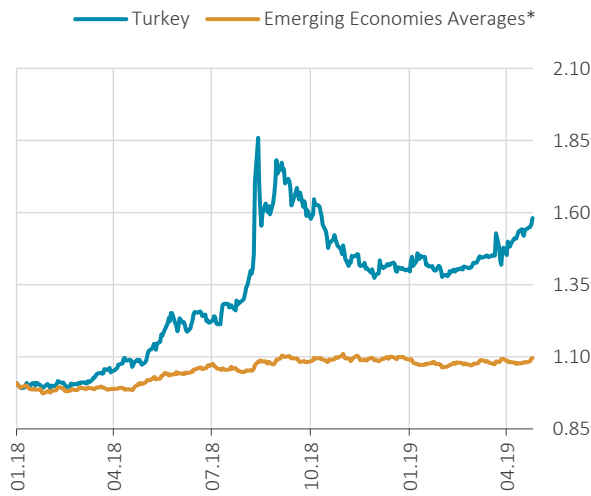


Source: EPFR, CBRT.

* Turkey data includes portfolio inflows to stocks and GDDS market. Repo is included in the GDDS data. Emerging Economy data is from the EPFR database. It includes all the database-covered funds' weekly net investments in equity and GDDS markets in emerging economies.

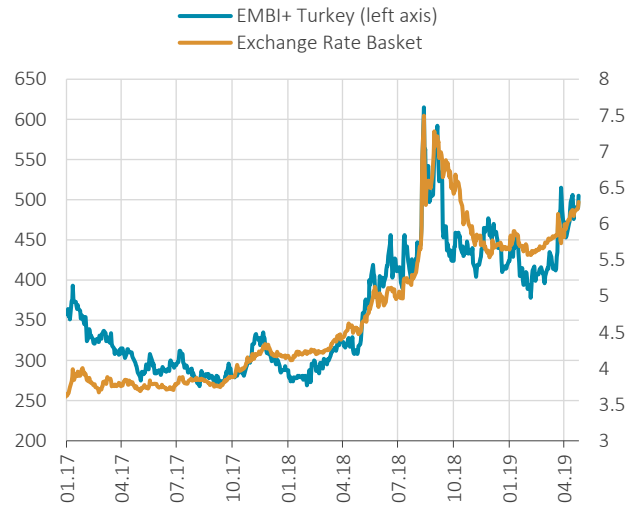
In the current Reporting period, despite the limited fall in global volatilities, emerging market currencies depreciated slightly due to the appreciation in the US dollar. The Turkish lira started to diverge from currencies of peer emerging market economies due to geopolitical risks as of February, and following the volatility in the foreign exchange market in the last week of March, depreciation in the Turkish lira became more remarkable (Charts 5.1.3 and 5.1.4).

Chart 5.1.3: Turkish Lira and Emerging Market Currencies against US Dollar (01.01.2018=1)



* Emerging Economies: Brazil, Chile, Colombia, Hungary, Malaysia, Mexico, Poland, Romania, S. Africa, India, Indonesia, the Philippines and Turkey.

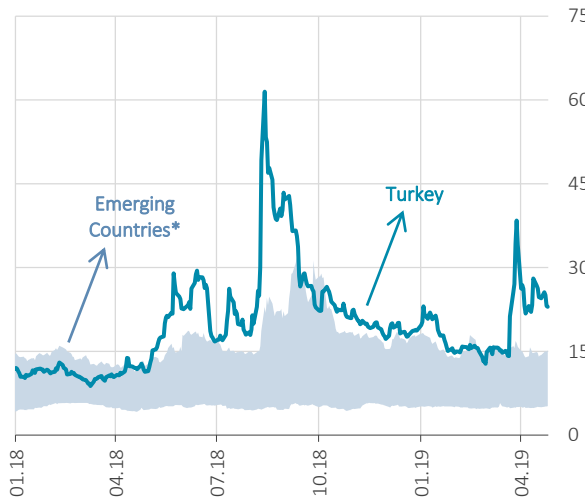
Chart 5.1.4: Exchange Rate Basket* and EMBI Index of Turkey



* Exchange rate basket represents the value of the Turkish lira against 0.5*USD+ 0.5*euro.

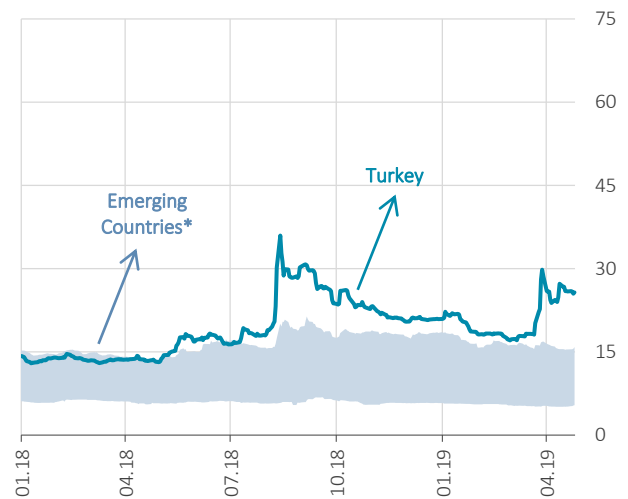
In line with the exchange rate developments, implied volatility of the Turkish lira increased in the current Reporting period (Chart 5.1.5). In April, the volatility in the Turkish lira implied by 12-month forward options converged to that implied by 1-month forward options, pointing out that the current level of the volatility in the Turkish lira is expected to continue for some time (Chart 5.1.6).

Chart 5.1.5: FX Volatility Implied by Options (1-month Forward)



Source: Bloomberg.
* Emerging Economies: Brazil, Indonesia, the Philippines, S. Africa, Colombia, Hungary, Malaysia, Mexico, Poland, Romania, Chile.

Chart 5.1.6: FX Volatility Implied by Options (12-month Forward)



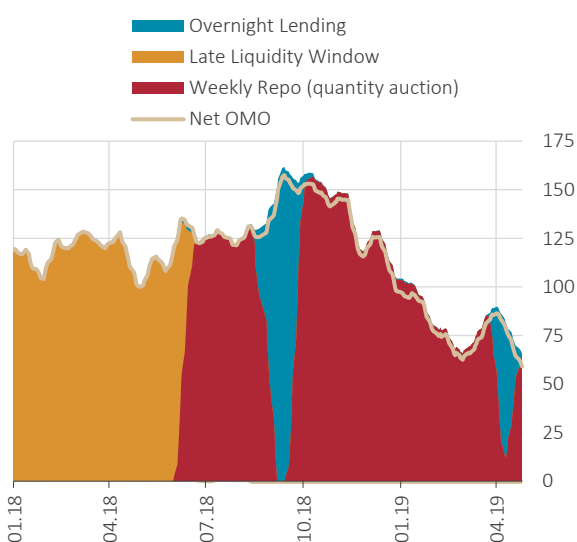
Source: Bloomberg.
* Emerging Economies: Brazil, Indonesia, the Philippines, S. Africa, Colombia, Hungary, Malaysia, Mexico, Poland, Romania, Chile.

Monetary Policy

In January and March 2019, inflation prospects proved slightly better; yet in view of the persisting risks to price stability, it was decided to maintain the tight monetary policy stance in the MPC Meetings of January and March 2019. In the MPC Meeting of April 2019, it was emphasized that higher food and imported input costs and the elevated course of inflation expectations constituted risks to price stability despite the disinflationary effects of domestic demand developments. This led the Committee to maintain the tight monetary stance (Table 5.1.1).

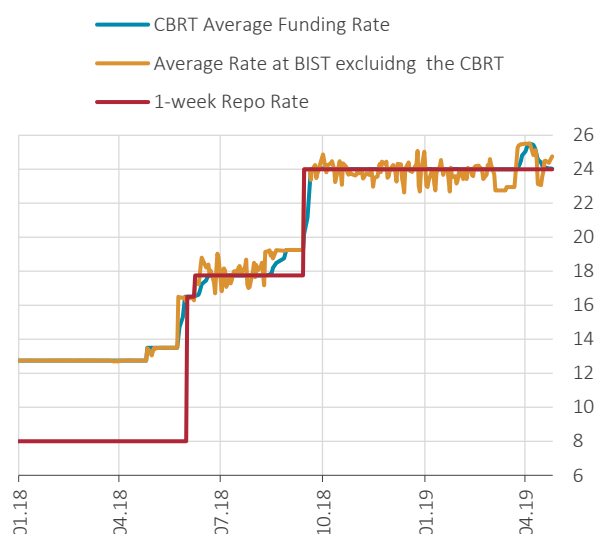
In the current Reporting period, the one-week repo auction rate was kept unchanged at 24%, and TL and FX management tools were put into effect. The entirety of the CBRT funding was made through weekly repo auctions from 14 September 2018 to 22 March 2019. However, in consideration of the developments in financial markets, weekly repo auctions were suspended between 25 March 2019 and 8 April 2019 and funding was provided at 25.5%, i.e. the overnight lending rate. The CBRT resumed weekly repo auctions starting from 8 April 2019 (Chart 5.1.7). Consequently, the average interest rate at the BIST Interbank Repo market, calculated excluding CBRT transactions, increased between 25 March 2019 and 8 April 2019, but started to fluctuate around the policy rate again as funding was made through weekly repo auctions (Chart 5.1.8).

Chart 5.1.7: CBRT Open Market Operations (2-week Moving Average, billion TL)



Source: CBRT.

Chart 5.1.8: Short Term Rates (%)



Source: BIST, CBRT.

In addition to these policy decisions, the CBRT also employed the tools it has other than the policy rate to enhance the efficient functioning of the markets and the transmission mechanism against the volatilities and unhealthy price formations in financial markets (Table 5.1.1). The TL liquidity crunch in the foreign swap market in the last week of March led to an uptick in swap rates. Limits of the Turkish lira swap facility against foreign exchange were raised to contain the effects of this liquidity crunch. Accordingly, the CBRT raised the total **outstanding** swap sales transaction limit in its TL Currency Swap Market gradually from 10% of the transaction limits at the Foreign Exchange and Banknotes Markets to 40% as of 4 April 2019, thereby contributing to the normalization of the TL liquidity crunch in the offshore swap market. Moreover, FX deposits against TL deposits auctions were suspended on 25 March 2019.¹

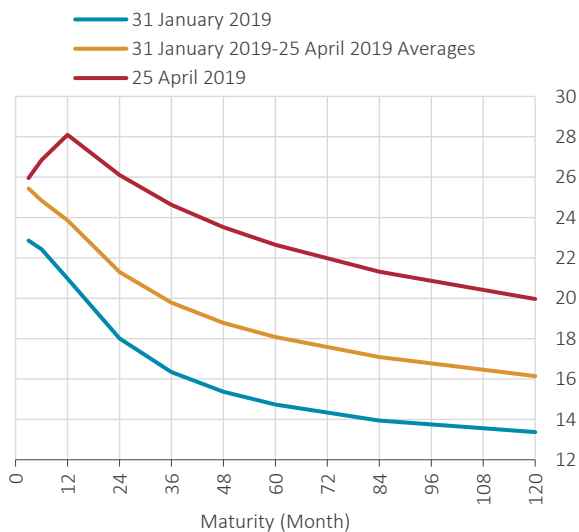
¹ Evaluations regarding the effects of these transactions on the CBRT international reserves are available in Box 5.2.

Table 5.1.1: Monetary Policy Decisions of 2019 and their Rationale

Date	Policy Decision	Rationale
16 January 2019	<ul style="list-style-type: none"> The policy rate (one-week repo auction rate) was kept constant at 24%. 	<ul style="list-style-type: none"> The tight monetary policy stance was maintained in view of the persistent risks to price stability despite some improvement in the inflation outlook led by developments in imported input costs and domestic demand conditions.
18 January 2019	<ul style="list-style-type: none"> On 18 January 2019, the CBRT decided to exclude deposits/participation funds of official institutions from the liabilities subject to reserve requirements. Additionally, considering the significant decline in the liabilities under the Provisional Article 6 of the Communiqué on Reserve Requirements, the relevant article was revoked. 	<ul style="list-style-type: none"> In consideration of the banks' liquidity conditions, it was decided to introduce changes to the Turkish lira liquidity.
16 February 2019	<ul style="list-style-type: none"> Turkish lira reserve requirement ratios were reduced by 100 basis points for deposits and participation funds with maturities up to 1 year and for other liabilities with maturities up to (and including) 3 years, and by 50 basis points for all other liabilities. Furthermore, the upper limit of the facility of holding standard gold converted from wrought or scrap gold collected from residents was increased from 5% to 10% of Turkish lira reserve requirements. 	<ul style="list-style-type: none"> In consideration of the developments in financial markets, it was decided to introduce changes to the Turkish lira liquidity.
6 March 2019	<ul style="list-style-type: none"> The policy rate (one-week repo auction rate) was kept constant at 24%. 	<ul style="list-style-type: none"> In addition to the previous MPC decisions, it was emphasized that external demand maintained its relative strength, while economic activity displayed a slow pace due to tight financial conditions.
22 March 2019	<ul style="list-style-type: none"> 1-week repo auctions were suspended. 	<ul style="list-style-type: none"> In view of the developments in financial markets, it was decided to suspend the 1-week repo auctions for a while.
25 March 2019	<ul style="list-style-type: none"> FX deposit auctions against TL deposits were suspended. The CBRT raised the total outstanding swap sales transaction limit in its TL Currency Swap Market gradually from 10% of the transaction limits at the Foreign Exchange and Banknotes Markets to 40% as of 4 April 2019. 	<ul style="list-style-type: none"> In view of the fluctuations and unhealthy price formations in financial markets, it was decided to introduce changes to liquidity tools.
8 April 2019	<ul style="list-style-type: none"> 1-week repo auctions were resumed. 	<ul style="list-style-type: none"> In consideration of the developments in financial markets, 1-week repo auctions were resumed.
25 April 2019	<ul style="list-style-type: none"> The policy rate (1-week repo auction rate) was kept constant at 24%. 	<ul style="list-style-type: none"> The CBRT decided to maintain the tight monetary policy stance, emphasizing that higher food and import prices and the elevated course of inflation expectations pose risks to price stability.

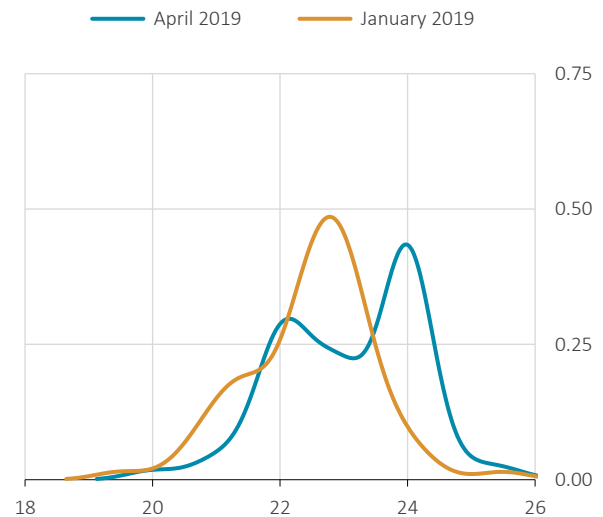
In the current Reporting period marked by sustained tight monetary policy by the CBRT, the yield curve maintained its negative slope², yet the rise in the sovereign risk premium has pushed the currency swap rates up in all maturities since the previous Reporting period (Chart 5.1.9). On the other hand, it is notable that the slope of the yield curve has become positive in maturities up to 1 year. The distribution of expectations for the CBRT weighted average funding cost obtained from the CBRT Survey of Expectations of April reveals that respondents' three-month-forward monetary policy expectations grew tighter compared to the figures of January (Chart 5.1.10).

Chart 5.1.9: Recent Currency Swap Yield Curve (%)



Source: Bloomberg.

Chart 5.1.10: Distribution of Expectations for the CBRT Weighted Average Funding Cost* (July 2019, %)



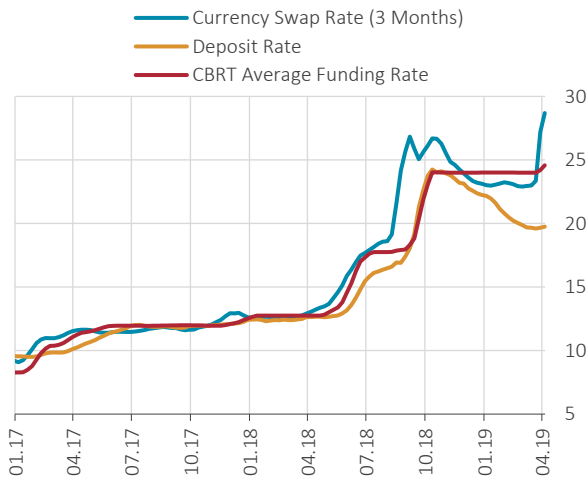
Source: CBRT.
* CBRT Survey of Expectations.

5.2 Credit Conditions

In the first quarter of 2019, banks' funding costs diverged remarkably in terms of domestic and external transactions (Chart 5.2.1). In line with the shortage in the currency swap market in the last week of March, 1-month currency swap rates increased notably due to the TL liquidity shortage in the currency swap market abroad (Chart 5.2.2). Moreover, as a result of the policy measures against increased volatility in financial markets, the CBRT weighted average funding rate increased temporarily. Against this background, TL deposit rates, which started to recede in the previous Reporting period, followed a flat course as of late March. Foreign exchange deposit rates also exhibited a similar outlook (Chart 5.2.3).

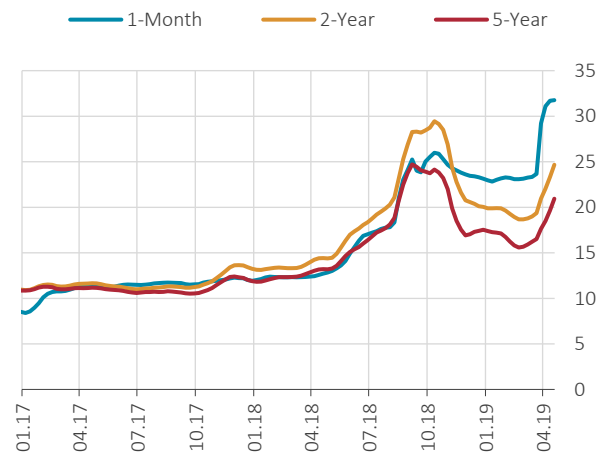
² A detailed analysis on how to interpret the slope of the yield curve is available in Box 5.1.

Chart 5.2.1: Indicators of Banks' Funding Costs
(4-week Moving Average, %)



Source: CBRT, Bloomberg.

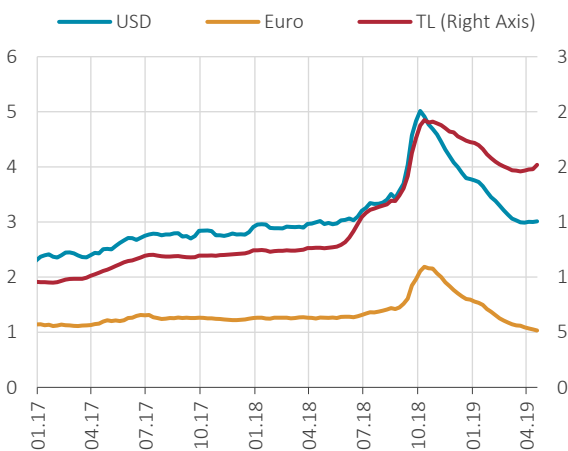
Chart 5.2.2: TL Currency Swap Rates
(4-week Moving Average, %)



Source: Bloomberg.

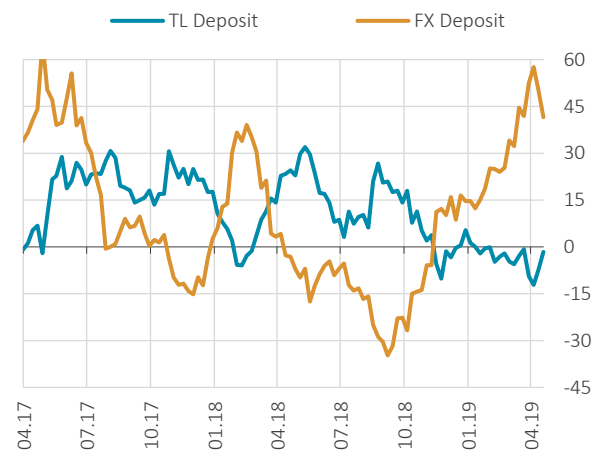
The divergence that started in the last quarter of 2018 in favor of foreign exchange deposit accounts in the currency composition of deposits, the leading funding source of banks, continued in the first quarter of 2019 (Chart 5.2.4). Despite the rise in the share of FX deposits, banks' funding costs increased because credit growth was led by Turkish lira credits and the currency swap rates increased. TL currency swap rates across maturities indicate a marked rise in short-term rates (Chart 5.2.2).

Chart 5.2.3: Deposit Rates (Flow Data, Annual Rate, 4-Week Moving Average, %)



Source: CBRT.

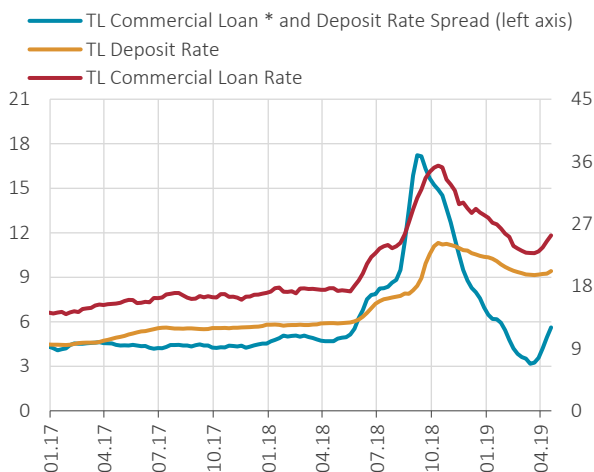
Chart 5.2.4: TL and FX Deposit Growth Rates (13-Week Moving Average, Adjusted for Exchange Rate, %)



Source: CBRT.

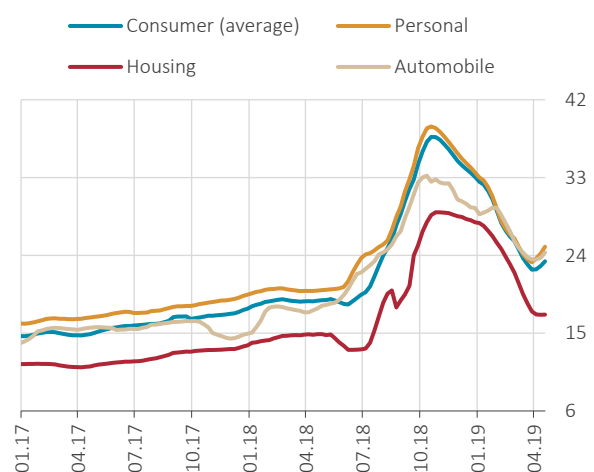
As a result of these developments, banks reflected the rise in the short-term funding costs in commercial loan rates, which have recently recorded a considerable rise in credit volume and which have relatively shorter maturities, compared to personal and housing loans. After exceeding past averages in the previous Reporting period, the loan-deposit rate spread declined notably in the first quarter of 2019 (Chart 5.2.5). Decreased loan rates owing to measures in effect coupled with the partially eased credit standards in the first quarter were influential in this decline. As indicated by the Banks Tendency Survey (BTS), all factors except the outlook regarding the industry or the firms eased credit standards in the first quarter of the year. On the other hand, according to the BTS responses, the fall in consumer loan rates proved notable due to the easing in standards for retail loans (Chart 5.2.6).

Chart 5.2.5: TL Commercial Loan and TL Deposit Rate
(Flow Data, Annual, 4-Week Moving Average,%)



Source: CBRT.
* Overdraft Account, Credit Card and Zero-rate Loans Excluded.

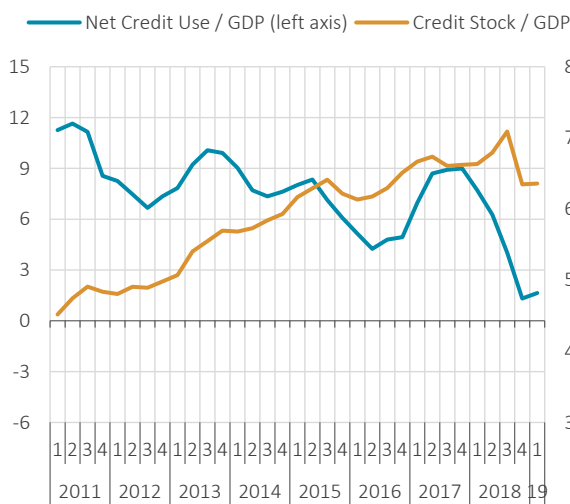
Chart 5.2.6: Consumer Loan Rates (Flow Data, Annual, 4-Week Moving Average, %)



Source: CBRT.

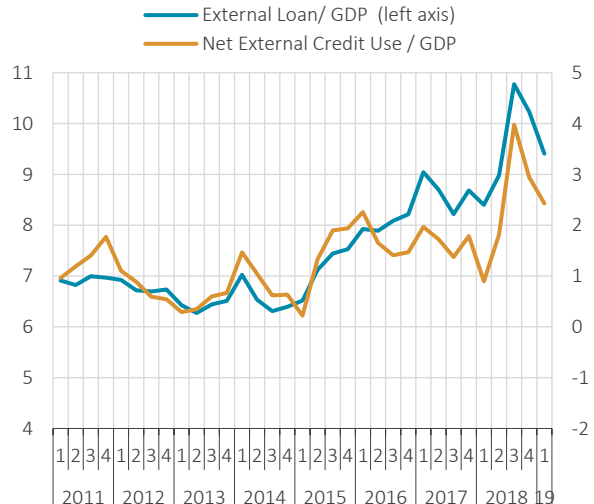
Owing to the measures in commercial and consumer loans enforced in the first quarter of 2019, the loan/GDP ratio continued to fall as the rise in credit growth lagged behind that in GDP in the inter-reporting period. The credit volume contracted compared to the end of the first quarter of 2019 and net credit use receded to negative levels (Chart 5.2.7). Similarly, the stock of credits of firms provided from abroad as well as the net credit use have also posted a decline recently (Chart 5.2.8).

Chart 5.2.7: Domestic Credit Stock and Net Credit Use*
(%)



Source: CBRT.
* GDP data for the first quarter of 2019 is forecast.

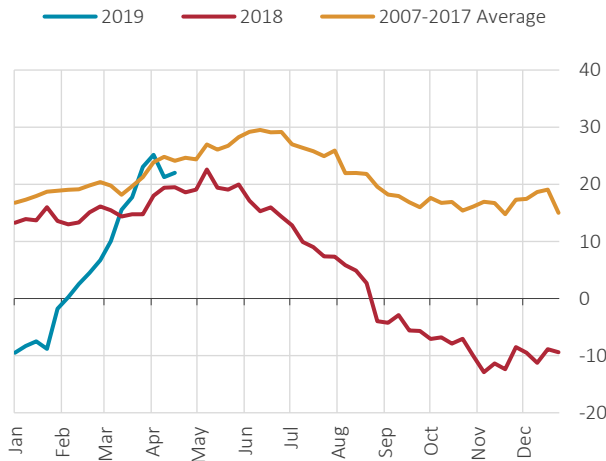
Chart 5.2.8: Firms' Credit Stock Provided from Abroad and Annual Net Credit Use* (%)



Source: CBRT.
* GDP data for the first quarter of 2019 is forecast.

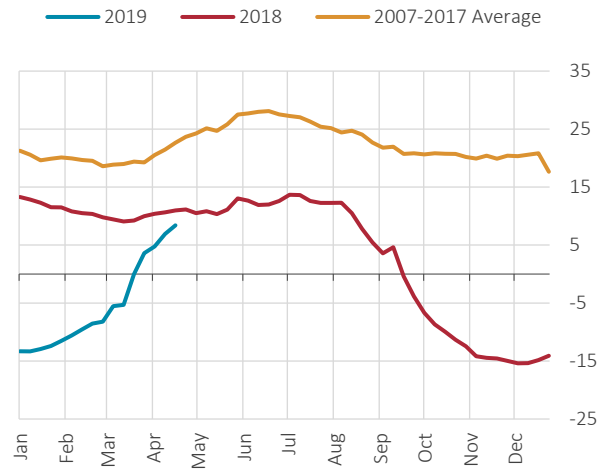
Recently-enforced measures pushed commercial loan growth up to the level of historical averages. On the other hand, the acceleration in consumer loans proved slower and more limited amid demand-driven effects, and the weekly growth rate trend of consumer loans in 2019 remained behind past averages and the trend of the previous year. In fact, the BTS suggests that the uptick in commercial loans was both supply and demand-driven, and the acceleration in retail loans was mostly supply-driven due to the easing in personal loan standards (Charts 5.2.9 and 5.2.10).

Chart 5.2.9: Commercial Loan Growth (13-Week Moving Average, Adjusted for Exchange Rate, %)



Source: CBRT.

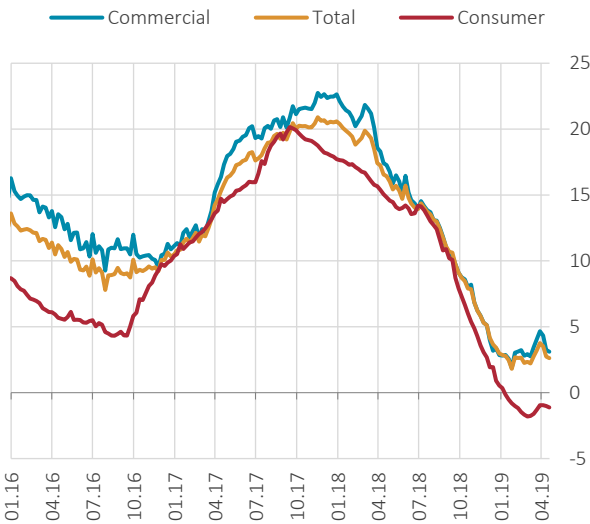
Chart 5.2.10: Consumer Loan Growth (13-Week Moving Average, %)



Source: CBRT.

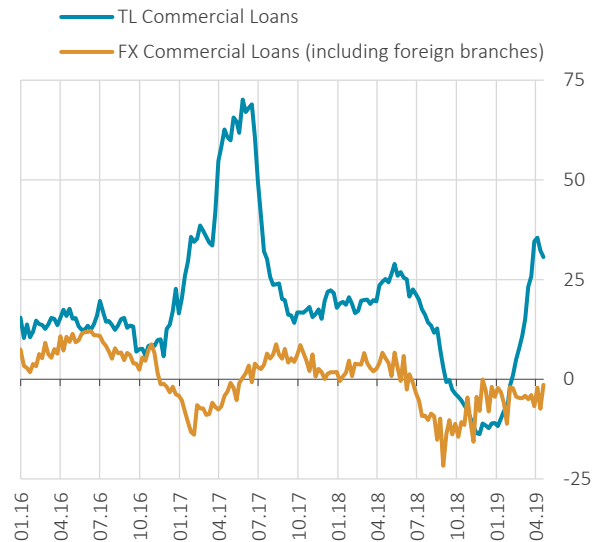
At the end of the first quarter of 2019, the deceleration in the annual growth rate of commercial credits was replaced by an uptrend. Meanwhile, due also to the decision allowing the extension of credit maturities, annual growth rate of consumer loans has recently trended upwards (Chart 5.2.11). TL commercial credits, which receded in the last quarter of 2018, increased remarkably owing to the acceleration led by the SME Value Credits extended under the Treasury-backed CGF in January and March. The slowdown in FX loans that witness limited easing in credit standards is believed to be demand-driven (Chart 5.2.12).

Chart 5.2.11: Annual Loan Growth (Adjusted for Exchange Rate, %)



Source: CBRT.

Chart 5.2.12: TL and FX Commercial Loan Growth (13-Week Moving Average, Adjusted for Exchange Rate, %)

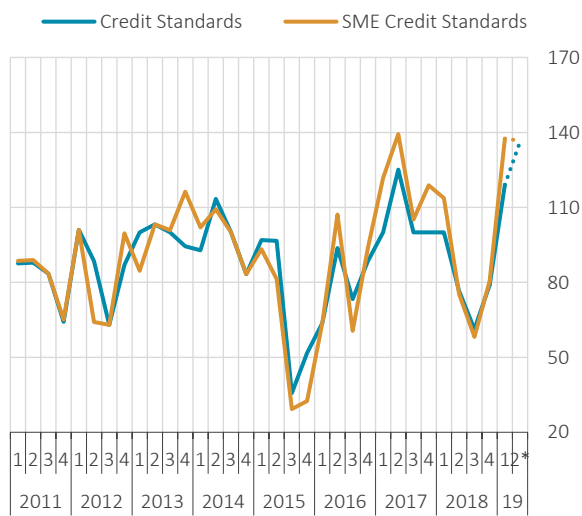


Source: CBRT.

According to the Bank Loans Tendency Survey, banks, which eased commercial credit standards in the first quarter of 2019, expect further easing in the second quarter (Chart 5.2.13). The easing in the first quarter stemmed from the easing in SME standards due to the measures taken for the SMEs, which is envisaged to continue in the second quarter. As for the terms and conditions for commercial credits, profit margins on average credits and riskier credits were eased, but tightening persists in terms of collaterals and maturities.

Survey results show that banks witnessed an increase in demand for commercial credits in the first quarter of 2019, and a further rise is expected for the second quarter (Chart 5.2.14). SME credit demand remained unchanged in the first quarter of the year, yet an increase is expected in the second quarter. Factors that had a notable effect on the credit demand are the restructuring of debts, mergers, acquisitions, restructuring and the discounts and facilitations offered by sellers in cash purchases. Meanwhile, fixed investments continue to pull the credit demand down.

Chart 5.2.13: Commercial Loan Standards**

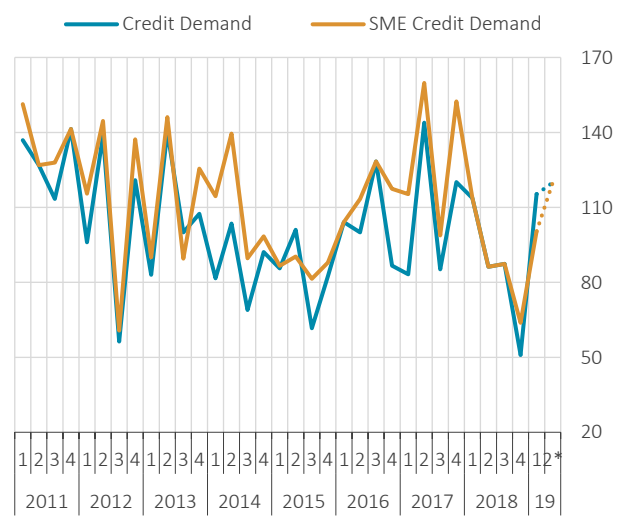


Source: CBRT.

* Data for the second quarter of 2019 denote expectations.

** Index values above 100 indicate easing in loan standards; and increased loan demand.

Chart 5.2.14: Demand for Commercial Loans**



Source: CBRT

* Data for the second quarter of 2019 denote expectations.

** Index values above 100 indicate easing in loan standards; and increased loan demand.

Box 5.1

A Comparative Analysis of the Slope of the Yield Curve

The yield curve is basically a tool that graphically displays returns at different maturities of a debt instrument of the same type in terms of risk, liquidity and taxation. Yield curves contain important information for policy makers as well as being used as indicators for various market pricing. In particular, the slope of a yield curve and its change over time provide central banks with important hints on monetary policy stance, interest rate expectations, and the course of a number of macro-variables such as inflation and growth. This box, after giving a brief introduction of the yield curve and its dynamics, explores how interpretations of the position and slope of yield curves differ across developed and developing countries.

Slope of Yield Curve and Economic Cycle

The yield curve shows how interest rates differ in short, medium and long terms. The slope of the yield curve indicates the direction of this differentiation, in other words, the higher the maturity, the higher or lower the returns. There are two main reasons why short and long-term interest rates are often different. The first one is the expectations regarding the short-term interest rate and the second is the term premium.

The effect of the expectations on the yield curve is due to the investor's option of investing in different maturities. For example, an investor who wants to make use of their money for a period of two years may either invest in a two-year bond or invest in a one-year bond and re-invest the amount accrued a year later in a new one-year bond. As the return of the two-year bond is already known before the investment action, there is no uncertainty about how much it will yield. However, investing in one-year maturity bonds carries some uncertainty since the return of the one-year bond is not known at the beginning of the second year. Therefore, the investor has to use the one-year (i.e. short-term) interest rate expectation to calculate the expected return. The *expectations hypothesis* in the economic theory states that the returns of these two different investment options should be equal. If the two-year bond yields a higher (lower) return than does the sum of the estimated annual returns from one-year bonds, then the investors prefer investing in the two (one)- year assets, resulting in the convergence of total returns of the two investment options. Under this hypothesis, the long-term interest rate will be a function of the short-term interest rate and short-term interest rate expectation, and the difference of the short and long-term interest rates (slope of the yield curve) will also reflect the short-term interest rate expectations.

At this point, inflation expectations should also be taken into account. As the yield curve consists of nominal returns, interest rate expectations also reflect inflation expectations. Therefore, differentiation of inflation expectations at different maturities may affect the slope of the yield curve. Especially in developed countries, medium and long-term inflation expectations are well-anchored and are close to the official inflation target. Although inflation expectations may deviate from the target in the short term, such deviations are but minor thanks to the policy response. Therefore, inflation expectations have similar implications on yields of all maturities and do not affect the slope of the yield curve. However, this mechanism may be different for developing countries as discussed below.

On the other hand, the slope of the yield curve may not only be related to interest rate expectations, the term premium mentioned above may also be effective. The term premium is an additional return that investors demand for investing in the long rather than the short term. Due to the fact that taking positions in longer-term investments is often riskier, the term premium is expected to be positive in theory. The size of the term premium, which may vary over time depending on the relative demand conditions of the bond, is affected by factors such as the risk sensitivity of investors and the level of development of the markets.

In summary, the slope of the yield curve is determined by the term premium and interest rate expectations. If the term premium is positive, the yield curve will be positively sloped if there is no sufficiently high negative effect from short-term interest rate expectations. However, from time to time, the yield curve may become flatter or may be inverted. In such a case, short-term interest rates should be expected to decline beyond the positive term premium.

The fact that long-term interest rates contain some information about the short-term interest rate expectations makes the slope of the yield curve an indicator that needs to be closely monitored by central banks. The flattened or inverted (negatively sloped) yield curve may indicate that short-term interest rates will drop in the future and hence economic activity may slow down and inflation will decline. Being a handy tool in estimating the economic cycles and inflation, the yield curve is also seen as an indicator of the tightness of the monetary policy stance. Accordingly, a positively sloped yield curve as an indication of the maturity indicates that the monetary policy stance is neutral or loose, whereas a flat or inverted yield curve implies a tight monetary policy stance.

Developed Countries

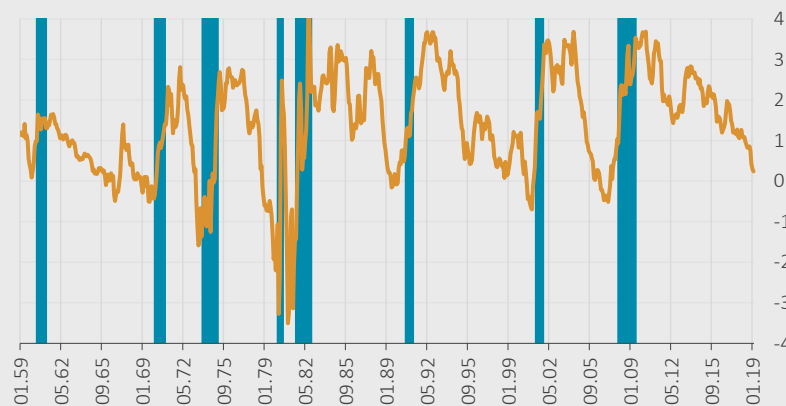
There are a number of empirical studies in the academic literature, linking the inverted yield curve to the economic recession (see Mishkin, 1990; Estrella and Hardouvelis, 1991). The underlying reason for this finding is that the slope of the yield curve is related to the monetary policy stance. Monetary tightening results in short-term interest rates in excess of the long-term ones. In turn, higher short-term interest rates contribute to slowing the economy down (Bernanke and Blinder, 1992). On the other hand, in the event that a central bank does not implement any monetary tightening, but financial market participants foresee an economic recession, the expectation that the central bank will try to stimulate the economy by lowering interest rates in the future may also cause long-term interest rates to decline compared to short-term interest rates. Studies for the US economy confirm the inverse relationship between the slope of the yield curve and economic activity. These studies reveal that the slope measured in terms of the yield difference between Treasury bonds with 10-year and 3-month maturities gives signals about an economic deceleration four to six quarters in advance. The yield curve has successfully predicted every recession (National Bureau of Economic Research (NBER) definition) that took place in the US since 1950 except for the false signal in 1967 (Chart 1). This relationship for the US economy was found to be valid for some other developed economies (for Germany, Canada and the UK see Estrella and Mishkin, 1997, and Bernard and Gerlach, 1998).

Recent Developments in the US Yield Curve and Debates on Economic Recession

The US economy has been steadily growing for some time, and the normalization of monetary policy is ongoing. The inversion of the US yield curve has recently caused debates on the possibility of an economic recession in the near future (Chart 2). However, some analysts argue that a low and even negative term spread will not result in an economic recession today,

contrary to the historical experience. As a factor supporting this argument, it is asserted that a decline in long-term interest rates may reflect expectations of a decline not only in short-term interest rates, but also in term premium (Bauer and Rudebusch, 2016). Considering that the central banks of developed countries continue their accommodative monetary policy, the term premium is expected to maintain its current low levels. Additionally, considering that the natural policy interest rate may have decreased (Williams, 2017), it is also argued that low long-term interest rates indicate new normal levels for interest rates rather than a recession in the economy.

Chart 1: US Yield Curve and Recession Periods* (Spread Between 10 Year Maturity and 3 Month Maturity Treasury Bonds, Monthly Averages, %)

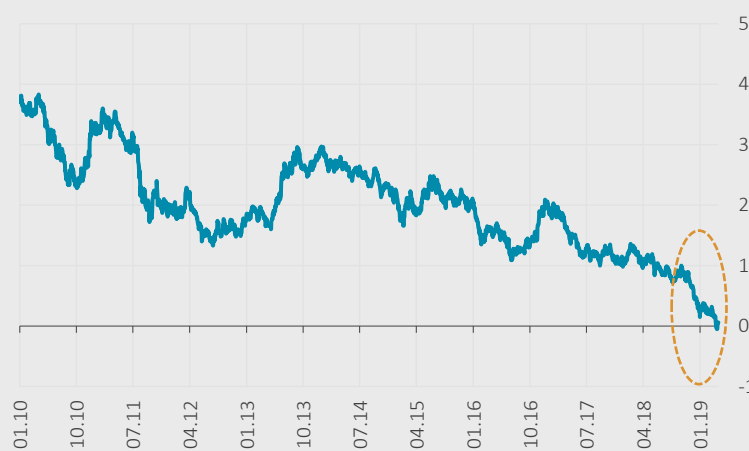


Source: New York Fed.

* Shaded areas indicate recession periods determined by NBER.

Moreover, the US monetary policy implementation in the post-crisis period has been highly effective on the term premium. Both the impact of asset purchase programs on long-term interest rates, and fading of uncertainties over future policy steps thanks to the forward guidance led to a decline in the term premium. There are also studies with findings that the term premium declined significantly and even turned to negative in some periods.¹ In this context, the inverted yield curve may reflect not only the short-term interest expectations but also the negative term premium, albeit partially.

Chart 2: Slope of the US Treasury Yield Curve (Spread Between 10 Year Maturity and 3 Month Maturity Treasury Bonds, %)



Source: FRED.

¹ Studies based on Adrian et al. (2013), Hördahl and Tristani (2014), Kim and Wright (2005) indicate that negative term premium has been observed recently.

Developing Countries

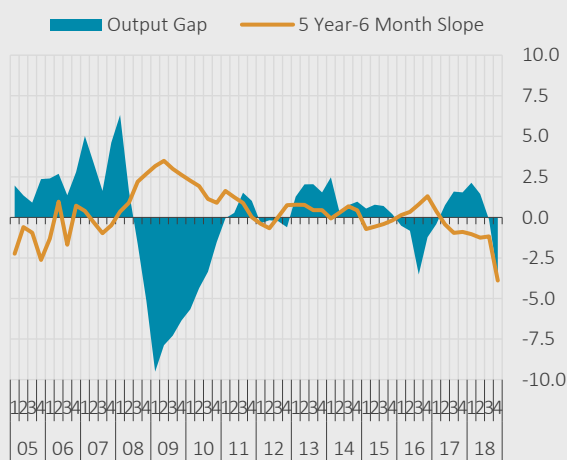
The relationship between the slope of the yield curve and economic activity for some developed countries, the US in particular, has not been clearly established for developing countries. As a possible explanation, some studies argue that developing countries' bond markets have less liquidity than those of developed countries. For the yield curve to give reliable signals about economic activity, there should exist a bond market with sufficient liquidity and long maturities. Additionally, in developing countries, particularly the mid to long end of the yield curve is said to be affected by global financial conditions. For example, Chen et al. (2005) conclude in their studies on five particular developing Asian countries that the US bond market developments rather than domestic bond markets provide sounder indications for economic growth.

In addition, since the risk premium and inflation are more volatile in developing countries than developed ones, tight monetary policy practices in these countries may affect economic activity positively. A tight monetary policy stance for a limited time may lead to an inverted yield curve by lowering the exchange rate and inflation expectations without implying a slowdown in economic activity, as external variables (such as exchange rates, import prices) can be effective in the course of inflation in small open economies where expectations are not fully anchored. The tightening of the monetary policy stance leads to an increase in short-term rates, and may lead to a decline in future inflation expectations and a decrease in long-term interest rates if the action is regarded as credible. Empirical studies for developing countries also support this relationship. Moreno (2008) found that inflation expectations and risk premium in developing countries were lower and more stable compared to the past, which contributed to the decline in long-term returns. The analysis by Barroso et al. (2014) shows that there is an inverse relationship between short-term interest rates and slope of the yield curve. Both studies suggest that foreign interest rates or term spreads have a statistically significant impact on local long-term interest rates.

Additionally, as a result of the tight monetary policy stance in developing countries, short-term interest rates that are higher than long-term rates, together with favorable risk premium conditions, may accelerate economic activity by attracting capital inflows.

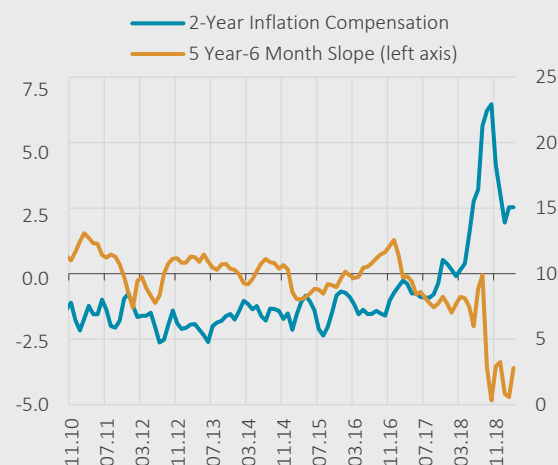
An analysis of the course of economic activity and the slope of the yield curve for Turkey reveals concurrence of an inverted yield curve with the times when the economy is growing above potential, in particular (Chart 3). By contrast, particularly in the wake of 2018 Q2 and Q3 marked by soaring inflation expectations, the slope of the yield curve became even more negative and inflation expectations declined rapidly in response to , the CBRT's monetary tightening measures (Chart 4).

Chart 3: Yield Curve Slope and Output Gap for Turkey
(Quarterly Averages, %)



Source: Bloomberg, CBRT.

Chart 4: Yield Curve Slope and Inflation Compensation for Turkey
(Monthly Averages, %)



Source: Bloomberg.

References

- Adrian, T, R. Crump and E. Moench (2013), "Pricing the term structure with linear regressions", *Journal of Financial Economics*, vol 110, no 1, pp 110-38.
- Barroso, Joao B. and Kohlscheen, Emanuel and Lima, Eduardo J. A., (2014), "What Have Central Banks in EMEs Learned About the International Transmission of Monetary Policy in Recent Years?" BIS Paper No. 78f.
- Bauer, Michael D. and Glenn D. Rudebusch (2016), "Why Are Long-Term Interest Rates So Low?" FRBSF Economic Letter 2016-36.
- Bernanke, B. and A. Blinder (1992), "The Federal Funds Rate and the Channels of Monetary Transmission", *American Economic Review*, vol. 82(4).
- Bernard, H. and S. Gerlach (1998), "Does the Term Structure Predict Recessions? The International Evidence", *International Journal of Finance and Economics*, vol. 3(3).
- Chen, Ming H; Wang, Kai L. and Yen, Meng F. (2005), "The Predictive Power of the Term Structures of Interest Rates: Evidences for the Developed and Asian Emerging Markets."
- Estrella, Arturo and Mishkin, Frederic S. (1997), "The Predictive Power of the Term Structure of Interest Rates in Europe and the United States: Implications for the European Central Bank." *European Economic Review*, 41(7), July 1997.
- Estrella, Arturo and Hardouvelis, G. (1991), "The term structure of interest rates and its role in monetary policy for the European Central Bank." *European Economic Review*, vol. 41
- Hördahl, P and O. Tristani (2014): "Inflation risk premia in the euro area and the United States", *International Journal of Central Banking*, vol 10, no 3.
- Kim, D and J. Wright (2005), "An arbitrage-free three-factor term structure model and the recent behavior of long-term yields and distant-horizon forward rates", *Finance and Economics Discussion Series*, Board of Governors of the Federal Reserve System, no 2005-3.
- Mishkin, Frederic (1990), "What Does the Term Structure Tell Us about Future Inflation?" *Journal of Monetary Economics*, 25.
- Moreno, R. (2008), "Transmission Mechanisms for Monetary Policy in Emerging Market Economies." BIS Paper No. 35.
- Williams, John C. (2017), "Interest Rates and the 'New Normal.'" FRBSF Economic Letter 29.

Box 5.2

Developments Regarding the CBRT's International Reserves

The Central Bank of the Republic of Turkey (CBRT) compiles and publishes data and statistics on issues that fall within its area of responsibility in a timely, comprehensive and transparent manner consistent with international standards.

In this respect, the CBRT is one of the few central banks that publish their balance sheets on a daily basis, and its activities can be followed daily via the “Analytical Balance Sheet”. On the other hand, regarding the reserves data, in addition to weekly data release intended to provide the public with timely information, the International Reserves and Foreign Currency Liquidity Table¹ that member countries are liable to report within the framework of the Special Data Dissemination Standards (SDDS) set by the International Monetary Fund (IMF) is also published on the CBRT website on a monthly basis. This table is also reported to relevant institutions as the detailed main statistics that allows for cross-country comparison. In this way, data regarding the changes in reserves can be closely monitored by the markets.

International Reserves and Reserve Adequacy

The concepts of gross and net international reserves have recently become a topical issue due to discrepancies in all these disclosed data driven by different publication times and contents. While international reserves have a generally accepted definition as gold and foreign currency-denominated assets that are readily available to and controlled by monetary authorities, there is no such an internationally accepted definition for the “net reserve” concept since different liability items or expected foreign exchange outflows from these reserves are not standardized.

Therefore, “reserve adequacy” indicators measuring the short-term external liability coverage capacity of reserves are defined based on gross international reserves rather than net reserves. As external financing need also declines even when banks use their FX reserves held at the Central Bank for their potential FX payments (such as paying down external liabilities or covering deposit withdrawals), the entirety of gross reserves including banks' reserves held at the Central Bank is taken into account in reserve measurement indicators. Considering that traditional reserve indicators focus only on a single aspect of potential sources of risks and often fail to compare the reserve levels of countries with structural differences, the IMF has developed, after a series of empirical and scenario analyses, a new reserve adequacy metric for developing countries, which also takes into account the exchange rate regime implemented by those countries.² This method introduces a comprehensive perspective that also takes the structural fundamentals of the countries into account. Another important issue regarding reserve measurement is that not only official reserves but also external foreign exchange deposits of the banking system and corporates should be taken into consideration in discussions about the adequacy of reserve assets held against the external liabilities of a country.

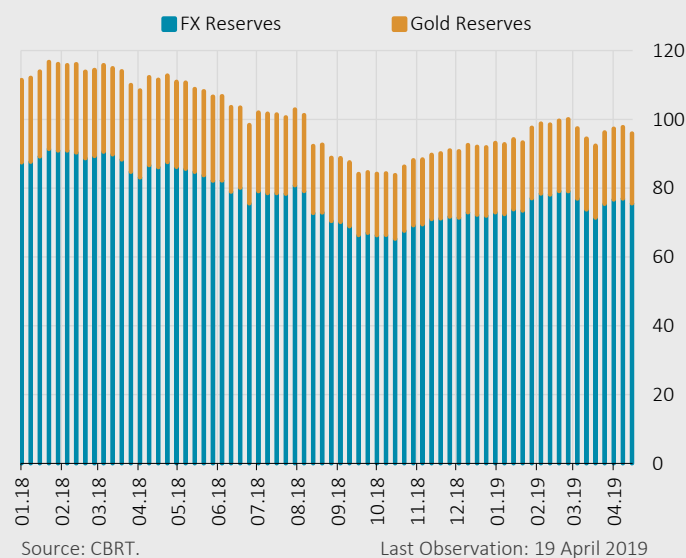
¹ Developed in collaboration with the IMF, the Bank for International Settlements (BIS) and the European Central Bank (ECB).

² For detailed information, see Assessing Reserve Adequacy – Specific Proposals (2015), IMF Policy Papers, Assessing Reserve Adequacy – Further Considerations (2013), IMF Policy Papers, Assessing Reserve Adequacy (2011), IMF Policy Papers.

Factors Leading to Changes in International Reserves

Under the international reserves management policy, the CBRT's primary objective is to strengthen and efficiently manage its international reserves. However, short-term fluctuations may be observed in reserves data due to monetary and exchange rate policy implementations shaped by domestic and foreign economic and financial conditions as well as due to conjunctural developments (Chart 1). In this context, foreign exchange liquidity transfers to/withdrawals from the banking sector via changes in foreign exchange (FX) and Turkish lira (TL) reserve requirements ratios, changes in banks' free FX reserves held in the CBRT accounts, FX sales to energy-importing state-owned enterprises, external debt and other FX transactions executed on behalf of the Republic of Turkey Ministry of Treasury and Finance, FX borrowings of the Ministry in Turkey and abroad, and foreign exchange reimbursement of export rediscount credits are listed among the main items affecting the international reserves. For instance, in the third quarter of 2018, there was a gradual downward trend in the CBRT reserves mainly due to the reductions in TL and FX reserve requirement ratios. Meanwhile, although the export rediscount credits are recorded on the CBRT's balance sheet in Turkish lira terms, their reimbursement made in foreign exchange stands out as a policy instrument that regularly increases the CBRT reserves in the medium/long term. Considering the credits extended until 19 April 2019, the export rediscount credits to be reimbursed in the rest of 2019 are expected to increase the foreign exchange reserves by approximately 14.1 billion US dollars.

Chart 1: CBRT International Reserves (Billion US Dollars)



Complementary policy instruments used by the CBRT to enhance the effectiveness of TL and FX liquidity management may also indirectly affect its international reserves. Accordingly, FX transfers arising from banks' use of the CBRT facilities such as FX Deposits Against TL Deposits Auctions, FX collateral deposits, TL Currency Swap Market and Reserve Options Mechanism on their own initiative depending on the financial market conditions may lead to periodic fluctuations in reserves. As a matter of fact, recent domestic and international market developments have led to a more active use of the CBRT's TL Currency Swap facility, and these swap transactions have recently become the main item affecting the CBRT reserves.

Through the TL Currency Swap facility initiated in November 2018, the CBRT engages in swap transactions with the domestic banks where the CBRT receives FX and provides TL in the spot

leg. At the maturity of these swap transactions, the banks make their repayments to the CBRT in TL at the forward exchange rate agreed on the transaction date (which nets the Turkish lira and US dollar legs' yields), and the CBRT transfers the amount of foreign currency received on the transaction date back to the banks. Swap transactions are recognized in accordance with international accounting standards.

In the banking sector, foreign currency liabilities account for a large share on banks' balance sheets due to the typical inclination of households and firms for FX deposits, as opposed to loans which are predominantly denominated in Turkish lira and account for a significant portion of assets. This leads to an FX short position on banks' balance sheets. As required by the banking regulation related to the exchange rate risk management and net FX position, banks offset their on-balance sheet FX short positions with swap, forward, option and other derivative transactions, of which the forward legs are recorded off-balance sheet. FX swaps come to the fore as the most frequently-used derivative instrument by the banks in this context. Considering that banks' need for swaps generally increases (decreases) during periods when residents' FX deposits increase (decrease), in particular, the swap facility provided by the CBRT can be said to act counter-cyclically. From this perspective, the CBRT's swap facility provides banks with flexibility in their TL and FX liquidity management, and serves as an additional facility for them. Additionally, interest rates applied in the CBRT's TL Currency Swap transactions act as a reference for offshore swap rates.

Factors such as liquidity positions, developments in market interest rates, risk premium and transaction costs affect the banks' use of the CBRT's swap facility, which can also cause fluctuations in the CBRT reserves. In fact, as the offshore TL swap rates remained lower than the CBRT's policy rate from the launch of the facility in November 2018 until the last week of March 2019, the banks' utilization of the swap facility remained limited. However, following the depreciation of the TL in the last week of March 2019, short-term offshore swap rates tested historic highs as a consequence of a TL liquidity squeeze in offshore markets. So, in order to provide the banks with flexibility in their TL and FX liquidity management and to contribute to the normalization of offshore swap rates, the CBRT gradually increased the banks' transaction limits at the TL Currency Swap Market, which were initially limited to 10% of their transaction limit at the Foreign Exchange and Banknotes Markets, to 40%. Moreover, the CBRT suspended the FX Deposits Against TL Deposits Auctions on March 25, 2019, thereby bolstering the TL liquidity in the market through this channel. The high level of offshore TL swap rates and the imbalance between supply and demand have led to a significant increase in utilization rates of the CBRT's currency swap facility. The CBRT will maintain its TL Currency Swap facility also in the upcoming period to assist banks in their liquidity management.

Conclusion

Reserve adequacy indicators are defined based on gross reserves. Considering the typical inclination of households and corporates for FX deposits in the banking sector, it is necessary to take both official reserves and external foreign exchange deposits of the banking system and corporates into consideration when evaluating the adequacy of all reserve assets held against the external liabilities of a country. In addition, thanks to the promising trend in export and tourism revenues, the process of current account rebalancing is expected to trigger a significant improvement in reserve adequacy indicators. Although short-term fluctuations may be observed in reserves data due to monetary and exchange rate policy implementations and conjunctural developments, international reserves are expected to maintain their upward trend in the coming period.