5. Financial Markets and Financial Intermediation

Following the Fed's announcement and launch of a normalization of its liquidity policies in May 2013 and after, emerging economies, particularly those with high external financing needs, experienced capital outflows. However, the fact that emerging economies with high external financing needs have room for political maneuverings allowed them to manage these shocks better, and the risk sentiment toward these countries have gradually recovered. The risk perception for Turkey began to improve after the CBRT's policy rate hike decision in late January and was further supported by the decreased domestic uncertainty at end-March.

The FCI for Turkey, which is calculated as the weighted average of various financial indicators, pointed to a significant tightening for the first quarter of 2014 (Chart 5.1). This was largely driven by the Turkish lira depreciation, slowing capital flows, falling stock prices and rising market rates (Chart 5.2). In this period, loan standards stood close to their historical averages. However, the first quarter's rapid tightening of financial conditions may not be representative for the rest of the year. In fact, financial conditions became less tight towards the end of the quarter. With the increased global risk appetite and the decreased domestic uncertainty at the end of March, the negative contribution of index variables to financial conditions declined. The fact that the slowdown in capital flows stopped, the depreciation of the Turkish lira reversed substantially and the CBRT eased its tight liquidity stance had a positive effect on financial conditions. In fact, data for the first two weeks of April available when writing this report show that the tightening of financial conditions may moderate in the second quarter, which curbs downside risks to loan growth.

Chart 5.1.
FCI and Credit Growth*

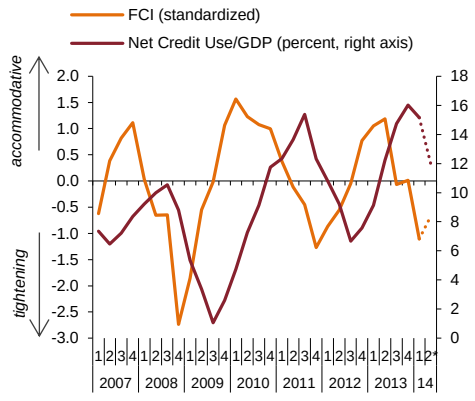
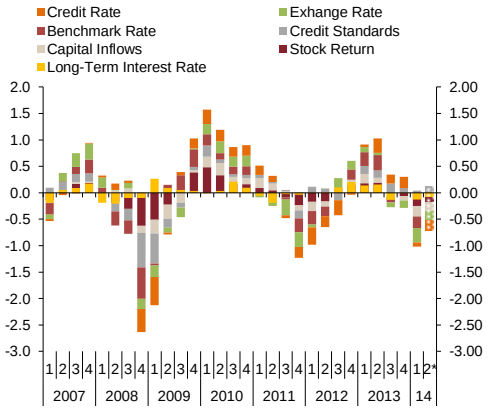


Chart 5.2.
Contributions to FCI



*Estimate for 2014Q2. The last observation for FCI is estimated using provisional data of the second week of April, while the latest data on price is used to represent price variables. Credit standards are assumed to remain flat while capital inflows are assumed to remain unchanged from 2013Q2. For further details on measuring the FCI, see the CBT Research Notes in Economics No. 12/31.
Source: CBRT.

5.1. Financial Markets

Global Risk Perceptions

In the first quarter of 2014, the most important factor that influenced global markets was the Fed's monetary policies. The Fed's taper of its asset purchases and the decreased uncertainty about

this tapering brought cheer to global markets, while the timing of policy rate hikes still remains uncertain. Another remarkable development was the talk about a new quantitative easing program to avert the risk of deflation in the Euro Area. With advanced economies having started to recover and monetary policies being normalized, emerging economies tightened their monetary policies to some extent. Accordingly, some emerging economies increased their policy rates in the first quarter.

In the first quarter, the reduction in the uncertainty that prevailed since May 2013 and the improved risk sentiment towards emerging markets caused regional EMBI indices to fall (Chart 5.1.1). The downtrend in risk premiums has become widespread across countries (Chart 5.1.2). As an exception, Russia's sovereign risk premium increased due to country-specific political developments. Another striking development was that economies with a larger need of external financing saw higher decreases in the sovereign risk premium. During this period, Turkey's sovereign risk premium experienced the highest decline among other countries. Besides global risk perceptions, this was mainly due to the CBRT's tight monetary policy stance and the reduced uncertainty about Turkey.

Chart 5.1.1.
Regional EMBI Indices
(Basis Points)

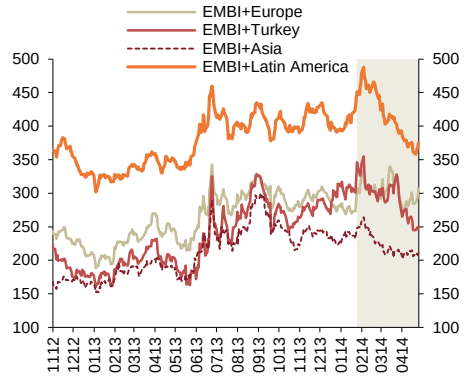
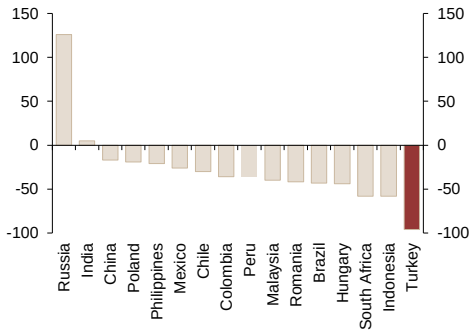


Chart 5.1.2.
EMBI Indices by Countries*
(Basis Points)

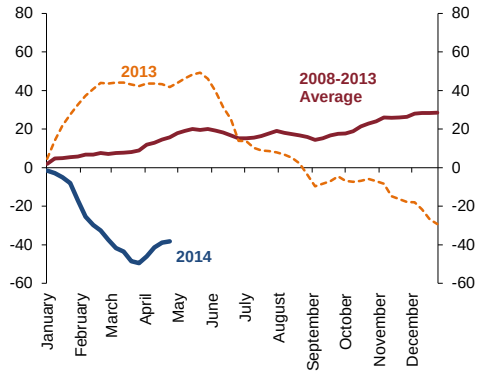


* Change from January 24, 2014 to April 25, 2014.
Source: Bloomberg.

Portfolio Flows

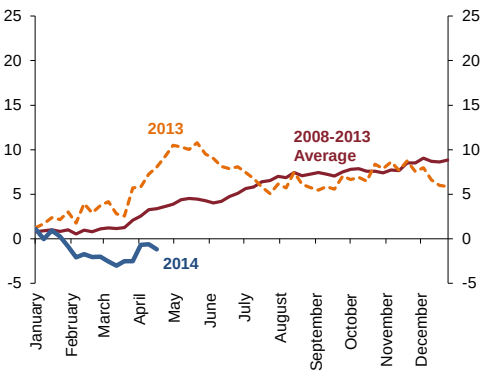
Capital flows to emerging economies have been weak and volatile since the Fed's hints about a gradual exit from the quantitative easing on May 22, 2013. In this period, capital flows shifted from emerging economies to advanced economies because of the relatively clouded growth outlook for emerging economies and the belief that the era of ample global liquidity ended. Thus, in 2013, capital flows to emerging economies dropped substantially below averages of past years, which continued into the first quarter of 2014 (Chart 5.1.3). In this period, Turkey also witnessed capital outflows, but, cumulatively from early 2013, net portfolio flows were close to averages of previous years. In the first quarter of 2014, the increased risk premium triggered portfolio outflows; however, both the CBRT's policy rate hike and the decreased domestic uncertainty have recently attracted portfolio flows into Turkey (Chart 5.1.4).

Chart 5.1.3.
Portfolio Flows to Emerging Economies*
(Billion USD)



* Includes stocks and bonds.
Source: EPFR.

Chart 5.1.4.
Portfolio Flows to Turkey*
(Billion USD)



Source: CBRT.

Exchange Rates

Thanks to the above developments, emerging market currencies have been re-gaining some of their earlier losses against the USD since the January 2014 reporting period (Chart 5.1.5). Even though the Turkish lira has moved in tandem with other emerging economies in this period, it has appreciated more on the back of the CBRT's January rate hike and the recently subsiding domestic uncertainty. Meanwhile, the relationship between the currency basket and the risk premium has continued, with the currency basket decreasing amid the rapidly falling risk premium. The currency basket went down from 2.76 as of January 24, a business day before the interim MPC meeting was announced, to 2.54 as of April 25, 2014 (Chart 5.1.6).

Chart 5.1.5.
TL and Emerging Market Currencies vs USD*
(22.05.2013=1)

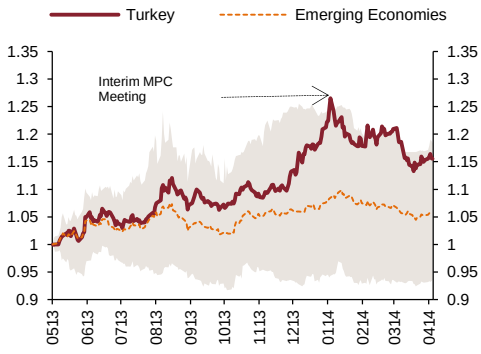
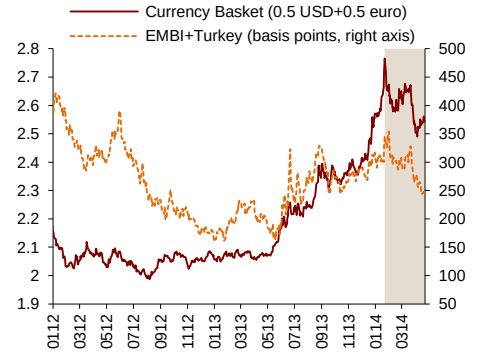


Chart 5.1.6.
Currency Basket and the Risk Premium



* Brazil, Chile, Colombia, Czech Republic, Hungary, Mexico, Poland, Romania, Philippines, Malaysia, South Africa, India, Indonesia, and Turkey. Shaded region denotes maximum and minimum values.
Source: Bloomberg.

Exchange rate developments across countries show that there has been a divergence among emerging economies as well. From May 22 to January 24, currencies of countries with a higher need of external financing depreciated more, yet this trend was reversed as of January 24. (Charts 5.1.7 and 5.1.8). In the first quarter of 2014, the Turkish lira performed better than other emerging market currencies. This is largely owed to the above developments as well as the CBRT's policy rate hike on January 28 and the decline in domestic uncertainty since the end of March.

Chart 5.1.7.
Emerging Market Currencies vs USD*

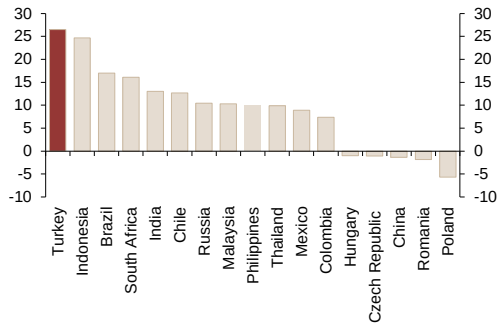
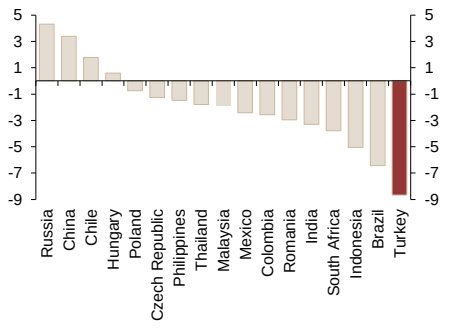


Chart 5.1.8.
Emerging Market Currencies vs USD**



* Percentage change from May 22, 2013 to January 24, 2014.
** Percentage change from January 24, 2014 to April 25, 2014.
Source: Bloomberg.

Recent developments had repercussions on the implied exchange rate volatilities of emerging market currencies as well, and the implied volatilities of emerging market currencies declined. Turkey's implied volatility of exchange rate moved in tandem with other emerging economies and posted a decrease in both 1-month and 12-month maturities (Charts 5.1.9 and 5.1.10). In this period, the implied 1-month volatility of exchange rate saw a bigger drop than the 12-month, which is attributable to the decline in Turkey's short-term domestic uncertainty. Thus, the difference between the implied 12-month and 1-month volatilities of exchange rate re-gained a positive value.

Chart 5.1.9.
Implied Volatility of Exchange Rates
(1-Month-Ahead)

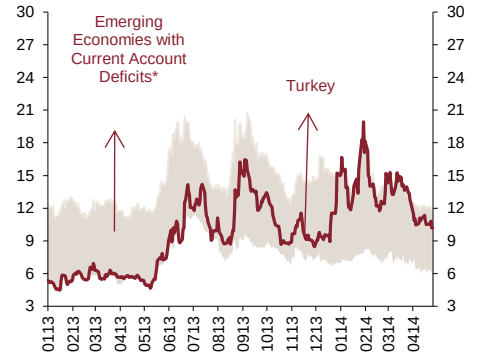
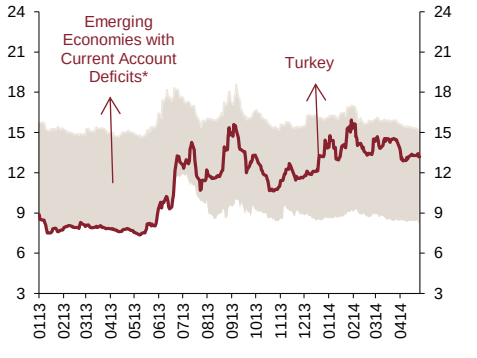


Chart 5.1.10.
Implied Volatility of Exchange Rates
(12-Month-Ahead)



* Brazil, Chile, Czech Republic, Hungary, Mexico, Poland, South Africa, Indonesia, Romania and Colombia.
Source: Bloomberg.

Monetary Policy

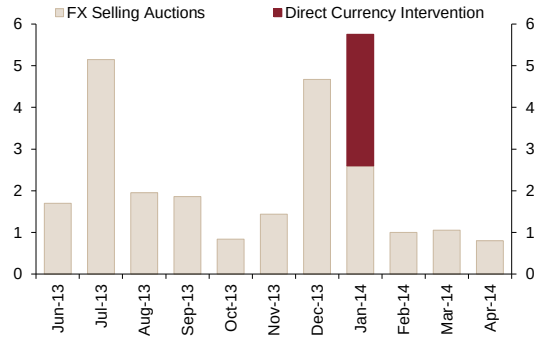
Due to external and internal developments that affected risk perceptions in early 2014, the Turkish lira depreciated significantly and risk premiums increased notably. The lagged effects of exchange rate movements and the unfavorable course of food prices will keep inflation hovering above target for quite some time, which may cause expectations to become rigid and the inflation inertia to strengthen. In order to contain the negative impact of these developments on inflation and macroeconomic stability, the CBRT decided at its interim MPC meeting on January 28 to deliver a strong and front-loaded monetary tightening and to simplify its operational framework. Accordingly, the marginal funding rate was raised from 7.75 to 12 percent, the interest rate on borrowing facilities

provided for primary dealers on repo transactions within open market operations from 6.75 to 11.5 percent, and the CBRT borrowing rate from 3.5 to 8 percent. Moreover, as per the late liquidity window, the CBRT's Interbank O/N borrowing rate between 4:00 p.m. and 5:00 p.m. was kept at 0 percent, while the lending rate was increased from 10.25 to 15 percent. With regard to the simplification of the operational framework, the CBRT decided to provide liquidity basically from the 1-week repo rate instead of the marginal funding rate, and the 1-week repo rate was increased from 4.5 to 10 percent. In this sense, the CBRT ceased to implement additional monetary tightening.

However, in view of the fact that there might be an economic slowdown through the confidence and balance sheet channels if the uncertainty persisted and the risk premium continued to rise, the CBRT stated that it would use its tools in a stabilizing manner to reduce banks' intermediary costs in case such risks materialized. In the March MPC meeting summary, the CBRT indicated that it would consider paying partial interest, if necessary, to the portion of reserve requirements held in Turkish liras in the upcoming period. Accordingly, and in the context of the normalization of monetary policy, the CBRT completed the regulatory change that allowed paying interest to Turkish lira reserve requirements. Due to the recently reduced uncertainty and the slightly improved risk premium indicators, the CBRT cut the late liquidity window lending rate down from 15 to 13.5 percent in April.

In the first quarter of 2014, the CBRT continued to inject FX liquidity into the market via FX selling auctions. Moreover, in January when the depreciation pressure on the Turkish lira heightened, a 3.151 billion USD worth direct currency intervention was made. As the decisions from the interim MPC meeting on January 28 were effective on controlling the depreciation of the Turkish lira, the liquidity provided via FX selling auctions in the rest of this quarter was relatively limited. From mid-2013, when FX selling auctions started, to end-January 2014, a total of 23.37 billion USD was sold, whereas between January 31 and April 22, the CBRT sold about 2.85 billion USD to the market (Chart 5.1.11).

Chart 5.1.11.
FX Sales and Direct Currency Interventions*
(Billion USD)



* As of April 22, 2014.
Source: CBRT.

The fact that the FX selling auctions were unsterilized added to the liquidity gap, while the increase in banks' use of the reserve options mechanism put downward pressure on the liquidity gap. As the increase in ROM use was limited, the financial system's need for liquidity increased (Chart 5.1.12). In this period, to provide a target-consistent inflation outlook, the liquidity stance was tightened, and so the BIST Interbank Money Market O/N rates settled around 12 percent, which is the

upper band of the interest rate corridor (Chart 5.1.13). Moreover, providing CBRT funds mostly via 1-week repo auctions caused the CBRT average funding rate to near 10 percent. However, with the decreased domestic uncertainty in April, certain liquidity measures were taken to slightly pull the BIST O/N repo rates down. Meanwhile, due to both the simplification of the CBRT liquidity policy and the system's increased need for funding, restrictions on 1-week repo auctions were lifted.

Chart 5.1.12.
CBRT Funding*
(2-Week Moving Average, Billion TL)

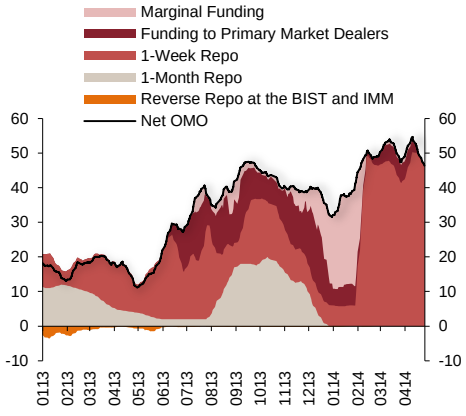
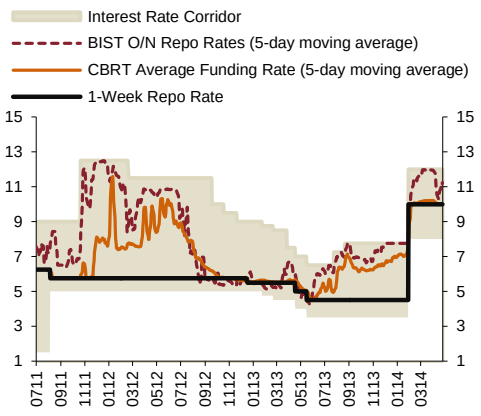


Chart 5.1.13.
CBRT Rates and BIST O/N Repo Rates
(Percent)



Source: BIST, CBRT.

As announced in the Monetary and Exchange Rate Policy for 2014, steps were taken to enhance the automatic stabilizing function of the ROM. Accordingly, effective as of January 31, FX reserve option coefficients were raised by 0.4 percentage points for tranches higher than 40 percent. In this period, the ROM remained advantageous due to the persistently high course of TL costs compared to FX costs as in the previous quarter. In fact, it is notable that banks continued to frequently opt for both gold and the FX reserve options mechanism (Charts 5.1.14 and 5.1.15). The rate of the use of this facility was 95 percent (56.8/60) for FX and 89 percent (26.8/30) for gold as of the maintenance period starting on April 25. The partial interest payment on Turkish lira reserve requirements might affect the use of the ROM in the forthcoming period.

Chart 5.1.14.
Banks' Use of ROM for FX*
(Percent)

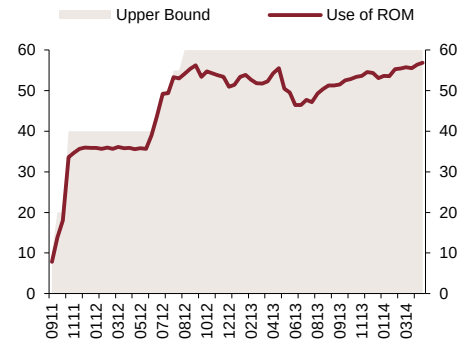
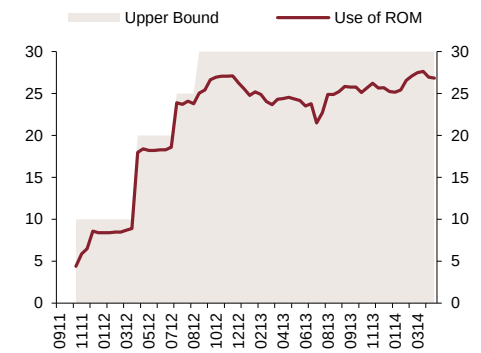


Chart 5.1.15.
Banks' Use of ROM for Gold*
(Percent)

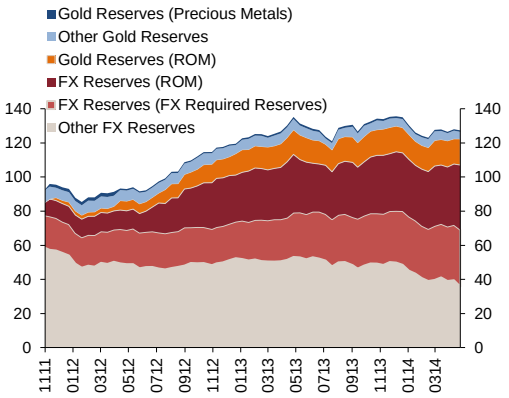


* As of the maintenance period.
Source: CBRT.

In the first quarter of 2014, the CBRT reserves first dropped, then increased (Chart 5.1.16). In this period, a total of 5.75 billion USD worth FX sales in January, of which 3.151 billion USD came from direct intervention, caused a decline in the CBRT reserves. Meanwhile, the reserves maintained by banks with regard to the FX and gold reserve options and the reserves held as FX reserve requirements restricted the decline in the CBRT reserves. Moreover, the re-payment of about 1.71 billion USD worth rediscount credits contributed to the CBRT reserves. The fact that the CBRT will continue FX selling auctions in the upcoming period will lower the CBRT reserves, while export rediscount credits will drive them higher. In addition, the recent fall in Turkish lira costs is expected to constrain the use of the ROM, which may put downward pressure on the CBRT reserves.

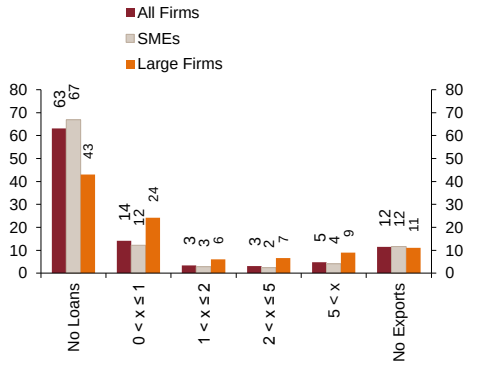
The recent fluctuation in exchange rates and the excessive depreciation may have an adverse effect on real sector firms with net FX position shortages. Yet, the fact that most real sector firms do not have FX debts may limit these risks (Chart 5.1.17). Moreover, it is noteworthy that the FX-denominated debt/export ratio is higher for large size firms (Box 5.2).

Chart 5.1.16.
CBRT FX Reserves*
(Billion USD)



* As of April 25, 2014.
Source: CBRT.

Chart 5.1.17.
Breakdown of Non-Financial Firms by FX-Denominated Loans/Exports*
(Percent)



* X denotes FX-denominated loans/exports. No Loans denote firms without any FX-denominated loans. No Exports denote firms with FX-denominated loans, but no exports. Number of firms is 9469. As of December 31, 2013.
Source: CBRT Sectoral Balance Sheets.

Market Rates

In the first quarter of 2014, emerging economies witnessed a gradual decline in market rates as the Fed's quantitative easing exit strategy became official (Charts 5.1.18 and 5.1.19). In this period, the cautious monetary policy and the more pronounced country-specific risks caused market rates in Turkey to rise, yet with these risks now fading, market rates dropped as of April. Compared to other emerging economies, Turkey's 5-year and 6-month market rates declined more rapidly from the previous reporting period (Charts 5.1.20 and 5.1.21).

Chart 5.1.18.
5-Year Market Rates
(Percent)

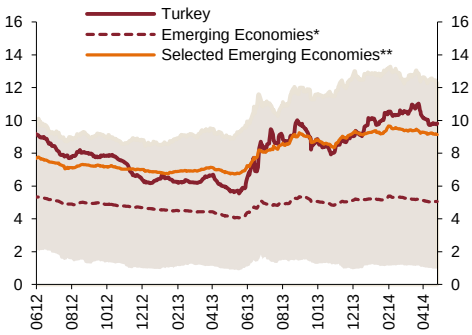
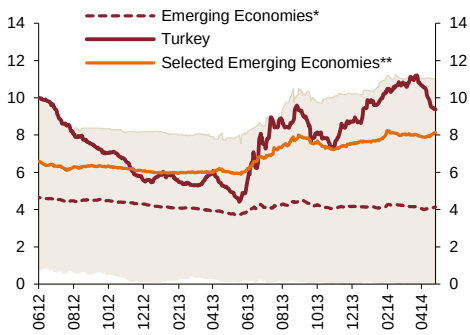


Chart 5.1.19.
6-Month Market Rates
(Percent)



* Brazil, China, Peru, Philippines, Poland, Thailand, Colombia, South Korea, India, Czech Republic, Malaysia, Chile, Mexico, Romania, South Africa, Hungary, Indonesia, Turkey (and also Israel for Chart 5.1.18).
** Brazil, India, South Africa and Indonesia. As of April 25, 2014.
Source: Bloomberg.

Chart 5.1.20.
Changes in 5-Year Market Rates*
(Percent)

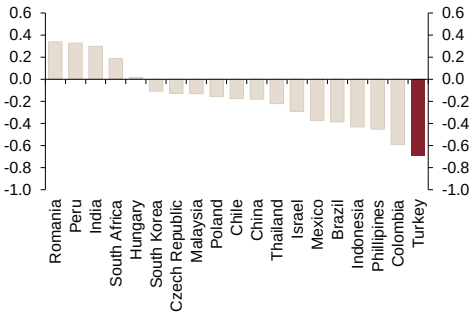
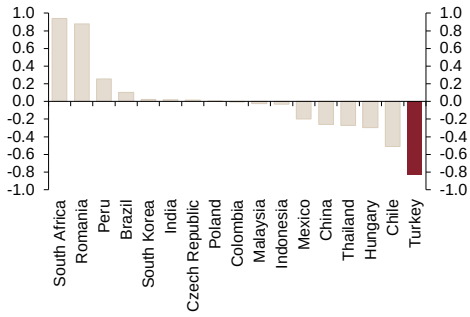


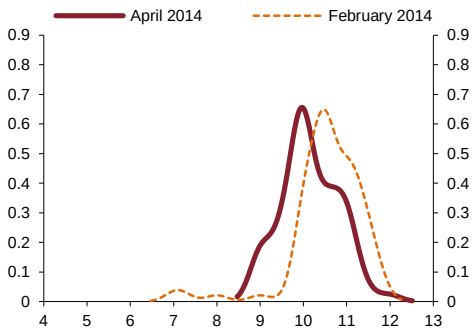
Chart 5.1.21.
Changes in 6-Month Market Rates*
(Percent)



* From January 24, 2014 to April 25, 2014.
Source: Bloomberg.

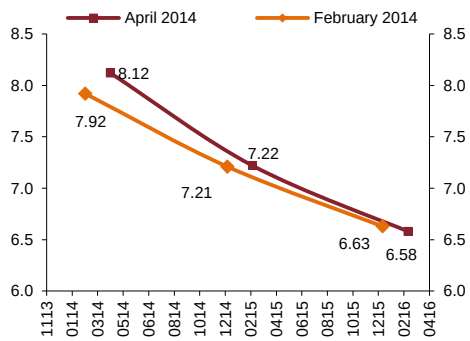
With the policy rate hike decision at the interim MPC meeting on January 28, the BIST O/N repo rate expectations had shifted slightly rightwards in March compared to February. Yet, the average of interest rate expectations appears to have dropped below the February average in April (Chart 5.1.22). On the other hand, inflation expectations, another factor that might be influential on market rates, remained virtually unchanged from February (Chart 5.1.23).

Chart 5.1.22.
Expected O/N Rates at the BIST Repo and Reverse Repo Market*



* CBRT Survey of Expectations.
Source: CBRT.

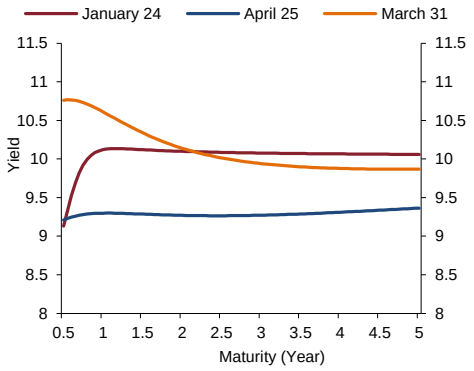
Chart 5.1.23.
Inflation Expectations*



* End of current month, current year-end, 12-month-ahead and 24-month-ahead policy rate expectations derived from the CBRT Survey of Expectations.
Source: CBRT.

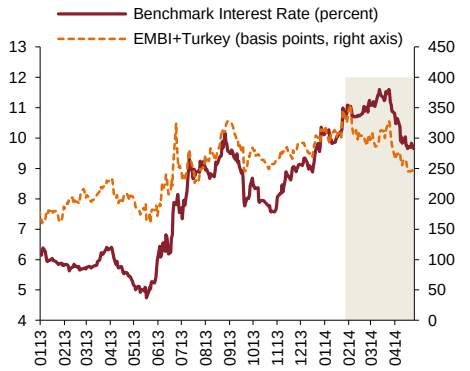
Interest rates were significantly higher across all maturities from January 24 to end-March, with the highest increase occurring in short terms, thereby causing the slope of the yield curve to turn negative. Starting from April, interest rates decreased across all maturities and the yield curve flattened (Chart 5.1.24). The larger increase in short-term interest rates during the first period of the quarter is believed to have been caused by the cautious monetary policy stance, the strong policy rate hike and the intensive domestic uncertainty until the end of March. Unlike the risk premium, the benchmark interest rate increased in the beginning of the quarter; yet later, the benchmark rate displayed a similar pattern to the risk premium again (Chart 5.1.25).

Chart 5.1.24.
Yield Curve*
(Percent)



* Calculated from the compounded returns on bonds quoted at the BIST Bonds and Bills Market by using ENS method.
Source: BIST, CBRT.

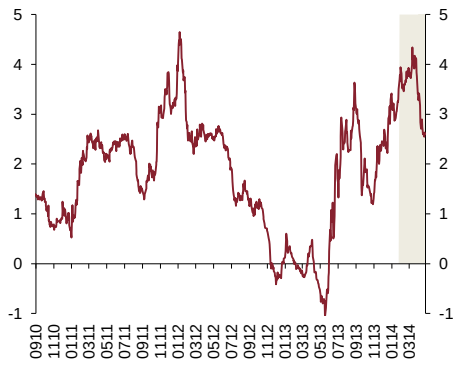
Chart 5.1.25.
Benchmark Interest Rate and EMBI+Turkey



Source: BIST, Bloomberg.

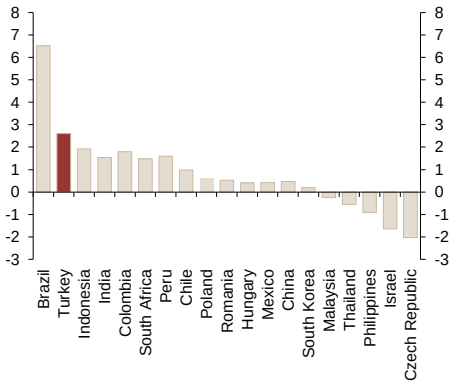
The 2-year real interest rates were up in the first quarter on higher nominal interest rates notwithstanding the rise in 24-month-ahead inflation expectations; but as of April, real interest rates returned to their quarter-ago levels due to falling nominal interest rates (Chart 5.1.26). Turkey's 2-year real interest rate continued to rank high among other emerging economies (Chart 5.1.27).

Chart 5.1.26.
2-Year Real Interest Rates for Turkey* (Percent)



* Calculated as the difference between 2-year discounted bond returns derived from the yield curve and the 24-month-ahead inflation expectations derived from the CBRT Survey of Expectations. As of April 25, 2014.
Source: BIST, CBRT.

Chart 5.1.27.
2-Year Real Interest Rates* (Percent)



* Calculated as the difference between 2-year government bond returns of countries and the 24-month-ahead inflation expectations derived from the Consensus Forecasts. As of April 25, 2014.
Source: Bloomberg, Consensus Forecasts, CBRT.

Loan Rates and Banking Sector Funding Costs

After falling to a 3-year low in mid-2013, consumer loan rates trended upwards until early 2014, but flattened in recent months. The increase in housing loan rates, which are affected mostly by long-term rates, remained relatively lower (Chart 5.1.28). The rate rise in commercial loans, which are largely extended in short term, was more significant (Chart 5.1.29).

Chart 5.1.28.
Consumer Loan Rates
(Flow, Annualized, Percent)

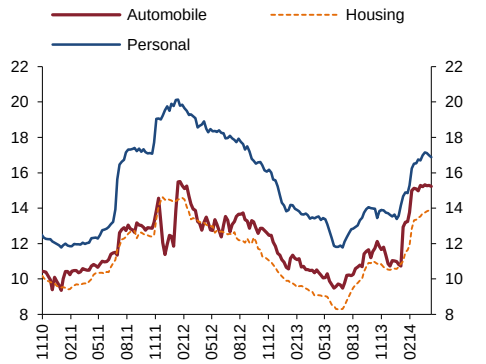
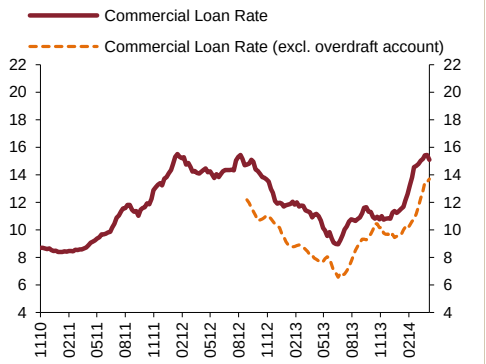


Chart 5.1.29.
TL Commercial Loan Rates
(Flow, Annualized, 4-Week Moving Average, Percent)



Source: CBRT.

In the first quarter of 2014, in tandem with the CBRT's funding costs, deposit rates increased by about 300 basis points compared to the previous quarter. However, the higher increase in commercial loan rates during the same period widened the gap between these two loan rates (Chart 5.1.30). Although commercial banks indicate in the Loan Tendency Survey that there is no significant tightening for commercial loan standards, higher non-interest charges and tightened collateral requirements as well as rising profit margins imply that credit costs have increased substantially for firms. This is possibly due to the banks' expectations for overall economic activity. Yet, as banks expect a limited reduction in both domestic and external funding costs for the upcoming quarter, firms' credit cost conditions may loosen slightly. Primary market rates on domestic issues of bills and bonds also increased in line with the deposit rate and the CBRT's average funding rate in this period (Chart 5.1.31).

Chart 5.1.30.
TL Commercial Loan Rate and Deposit Rate (Flow, Annualized, 4-Week Moving Average, Percent)

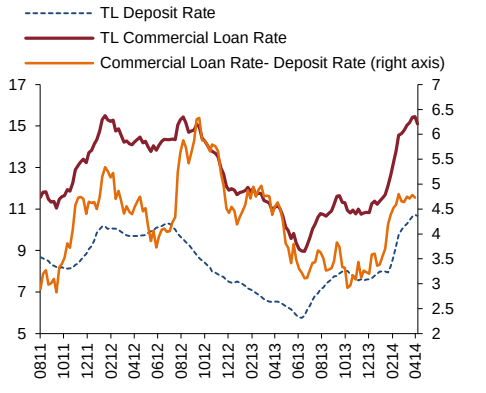
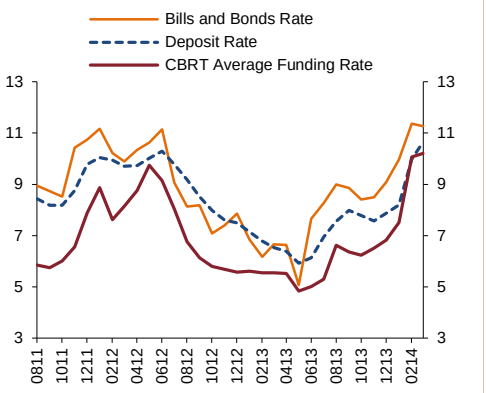


Chart 5.1.31.
Primary Market Rates on Domestic Issues of Bills and Bonds by Banks (Percent)



Source: CBRT.

5.2. Credit Volume and Monetary Indicators

The six-quarter rise in the net credits to GDP ratio, which is critical for financial stability and closely monitored by the CBRT, ended in the first quarter of 2014 (Chart 5.2.1). This is largely attributed to the measures taken by the BRSA and the tightening of financial conditions. The downward trend in annual net credit utilization is expected to continue into the second quarter. The increase in firms' external net credit utilization in this period shows that firms were able to easily access external funds (Chart 5.2.2).

Chart 5.2.1.
Domestic Credit Stock and Net Credit Utilization
(Percent of GDP, Annualized)

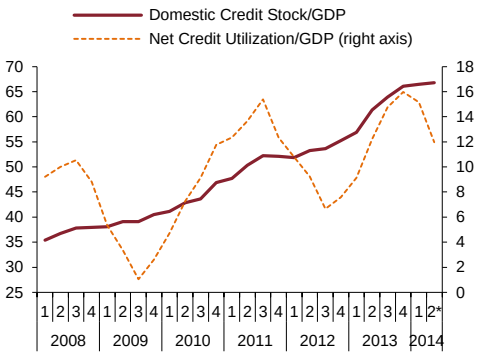
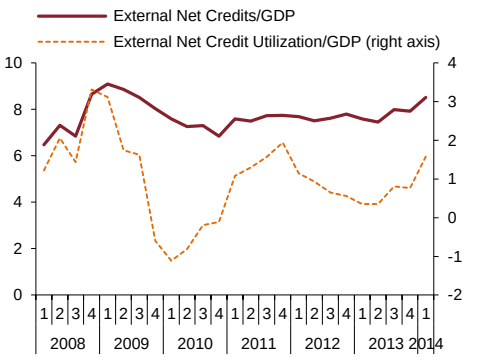


Chart 5.2.2.
External Credit Stock and Net Annual Credit Utilization (Billion USD)



* As of April 2014.
Source: CBRT.

The growth rates of loans extended to the non-financial sector, which have been trending upwards since September 2012, began to fall remarkably as of 2014. This fall is more evident in consumer loans due to the scope of the measures that the BRSA introduced in the beginning of the year. An analysis of total loans with regard to credit supply and demand shows that both the supply and the demand declined, but the decline in demand was relatively larger. This was mostly due to the BRSA's decisions and the sentiment towards the overall economic outlook. Against these developments, loans extended to the non-financial sector adjusted for the exchange rate effect posted a 21.5 percent year-on-year growth at the end of the first quarter of 2014 (Chart 5.2.3) and a 10.4 percent growth in annualized terms as of the first-quarter average (Chart 5.2.4). Although this slowdown may also be attributed to seasonal elements, the wide gap between two growth rates provides a projection over the future scale of the decline in the rate of total loans. According to the Loan Tendency Survey, currently, expectations of both banks and households for overall economic activity have a strong influence.

Chart 5.2.3.
Annual Growth Rate of Loans
(Adjusted for Exchange Rate Effect, 13-Week Moving Average, Annualized, Percent)

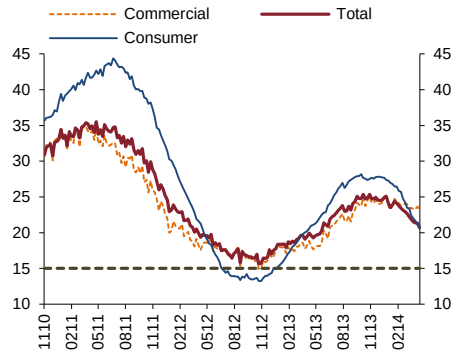
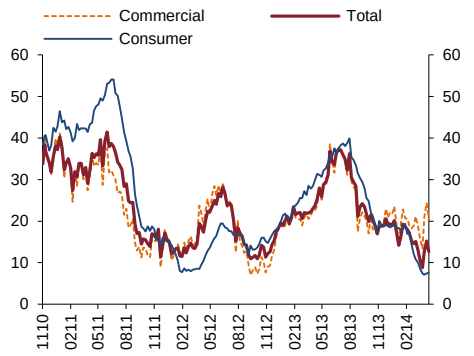


Chart 5.2.4.
Quarterly Growth Rate of Loans
(Adjusted for Exchange Rate Effect, 13-Week Moving Average, Annualized, Percent)



Source: CBRT.

The fall in consumer confidence following the measures that the BRSA adopted in February about consumer loans led to a significant slowdown in the rate of consumer loan growth. The effect of these developments is evident when compared with the past years' average (Chart 5.2.5). The rise in consumer loan rates during this period also supported the downtrend. Broken down by subcategories, this downtrend was evident across all categories, particularly in automobile loans (Chart 5.2.6). In the Loan Tendency Survey, banks stated that they kept standards for housing loans unchanged, but tightened those for automobile and personal loans. Yet, on the consumer demand side, the demand for automobile, housing and personal loans dropped sharply due to the decreased consumer confidence. In the second quarter, the financial tightening is expected to moderate while consumer loans might recover slightly owing to seasonal factors.

Chart 5.2.5.
Consumer Loan Growth
(Adjusted for Exchange Rate Effect, 13-Week Moving Average, Annualized, Percent)

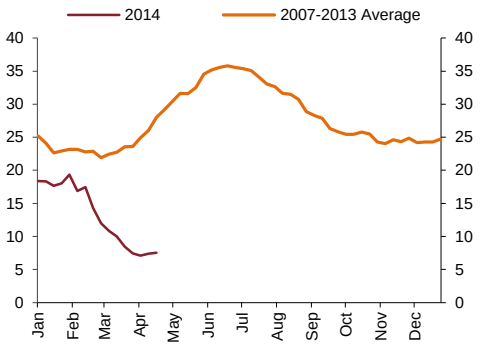
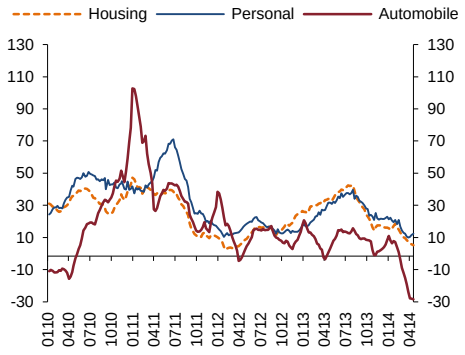


Chart 5.2.6.
Weekly Growth Rate of Consumer Loans
(13-Week Moving Average, Annualized, Percent)



Source: CBRT.

Commercial loans, which make up 65 percent of total loans, remained close to the past years' average in 2014 (Chart 5.2.7). The growth rate of TL commercial loans, which are barely sensitive to interest rates, was flat, while the growth rate of FX-denominated commercial loans dropped significantly (Chart 5.2.8). According to the Loan Tendency Survey, banks kept loan standards almost unchanged for both SMEs and large firms. Yet, in terms of maturities, long-term loan standards were tightened slightly. The tightening in both domestic and external financing conditions was not reflected

in TL-denominated loan standards, whereas FX-denominated commercial loan standards were tightened notably. The fact that TL-denominated commercial loan standards were kept unchanged was attributed to the fact that the BRSA's February measures addressed TL-denominated consumer loans. On the demand side, due to debt restructuring, there was an increase in the SMEs' loan demand, while investment demand, on the other hand, has fallen. Banks expect the loan demand of enterprises to rise in the second quarter of the year thanks to SME loans. Moreover, banks expect some tightening in financing conditions, particularly in external financing conditions.

Chart 5.2.7.
Commercial Loan Growth
(Adjusted for Exchange Rate Effect, 13-Week Moving Average, Annualized, Percent)

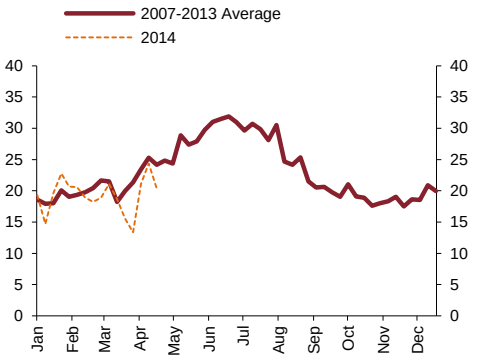
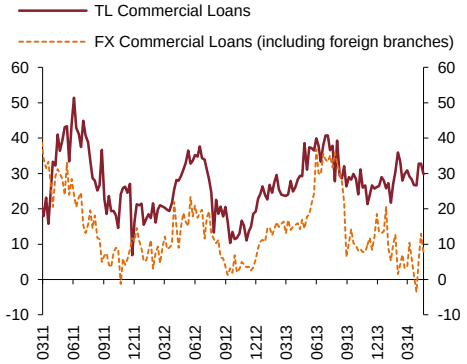


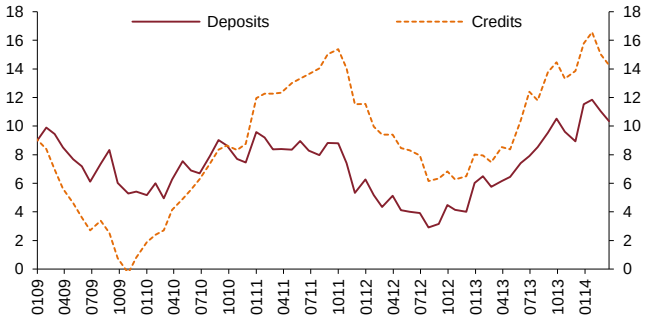
Chart 5.2.8.
Growth Rates of TL and FX Commercial Loans
(Adjusted for Exchange Rate Effect, 13-Week Moving Average, Annualized, Percent)



Source: CBRT.

In general, the slowdown in loan growth and especially the more rapid decline in consumer loans are expected to support the re-balancing of the economy. This loan growth composition is consistent with an outlook where domestic demand has little support for economic activity and net exports make more contribution. In addition, the loan growth that has been slowing due to the tight monetary policy stance, the macro prudential measures and the weak capital flows is expected to gradually converge with the pace of deposit growth (Chart 5.2.9). The decline in the gap between loan and deposit growth is assessed as a factor that will enhance the resilience of the banking sector against possible financial fluctuations by also reducing the banking sector's need for external financing.

Chart 5.2.9
Growth of Credits and Deposits*
(Annual Change/GDP)



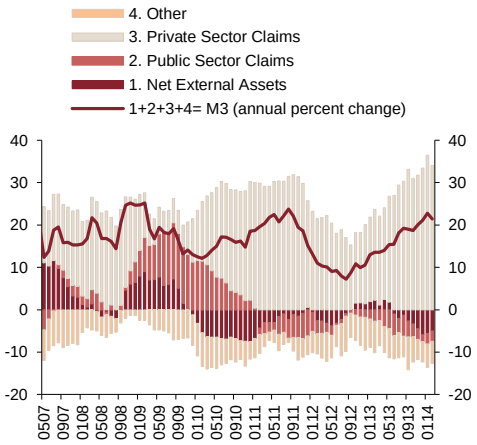
* Including participation banks, excluding interbank deposit and not adjusted for exchange rate effect.
Source: TurkStat, CBRT.

Monetary Indicators

The annual growth of M3, the broad measure of money supply, continued to trend upwards in the first quarter of 2014 amid rising credits extended to the private sector. The annual rate of increase in the credits extended to the private sector remained limited compared to end-2013 due to the decline in February despite the large increase in January. On the other hand, the increase in the absolute values of items that made a negative contribution to M3 growth in January declined again in February and helped M3 to decline at a limited pace in February (Chart 5.2.10).

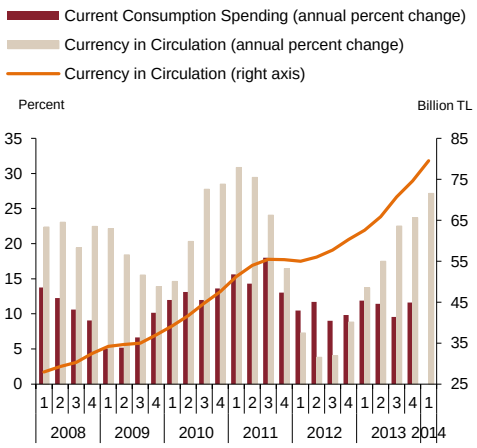
The negative contribution of the Public Sector Claims to M3 growth increased from end-2013 in the first quarter of the year, while that of net external assets weakened. Meanwhile, the item Other that displayed a relatively steady course in line with bank profitability is still a non-deposit funding resource for the banking sector.

Chart 5.2.10.
Balance Sheet Decomposition of M3
(Contributions to Annual M3 Growth)



Source: CBRT.

Chart 5.2.11.
Currency in Circulation and Current Consumption Spending*
(Seasonally Adjusted)



* Consumption spending includes private and public consumption excluding furniture, household appliances, transport and communication services at current prices.
Source: TurkStat, CBRT.

The seasonally adjusted currency in circulation continued with a rising annual growth in the first quarter of 2014 (Chart 5.2.11). However, the tight monetary policy stance suggests that the growth rates of consumer loans will slow and the private domestic demand will lose some momentum due to the macro prudential measures and the weak capital flows. This raises the expectation that the upward trend in the currency in circulation might be temporary in the upcoming period.

Box 5.1 Forecasting Exchange Rates Using Yield Curves

Introduction

Forecasting the future course of exchange rates is crucial for both policymakers and financial markets. Many studies based on various theories and techniques for forecasting the exchange rates are present in the related literature. Time series techniques and theory-based forecasting methods are among the most widely used ones. The time series techniques are centered on using estimation methods such as ARIMA and VAR models, while theory-based estimation methods are built on international parity conditions such as purchasing power parity and uncovered interest parity (UIP). In addition to these techniques, judgmental methods, which are based on the analysis of the balance of payments, inflation, growth and external market developments, are also commonly used on the practical side.

This box forecasts USD/TL and EUR/TL exchange rates over various forecast horizons from 1-month to 1-year by using the technique developed by Chen and Tsang (2013) for advanced economies. This technique is based on the UIP condition and the liquidity premium theory that explains the term structure of interest rates. According to the UIP condition, the expected yield on investing in one of two bonds (local and foreign currency denominated) with similar risk and maturity should not be different from the expected return on investing in the other bond. Otherwise, investments would shift towards the bond with higher expected return and the yield of this bond would fall, while the others' would increase. The UIP condition can be formulated roughly as follows:

$$i_{m,t} = i^{f}_{m.t} + \Delta s^{e}_{m,t}$$

Here, i_m is the yield on the local currency denominated bond with m years to maturity; i_m^f is the yield on the foreign currency denominated bond with the same maturity and Δs_m^e is the expected rate of change in the exchange rate in m years. In practice, the difference between the riskiness of the two bonds and uncertainties about the exchange rate distort this relationship. So, in reality, such problems are eliminated, at least partially, with the correction of this condition by taking into account the difference in riskiness as follows:

$$i_{m,t} = i^{f}_{m.t} + \Delta s^{e}_{m,t} + \theta_{m,t}$$

Here, θ represents the difference between the riskiness of the two bonds and the uncertainty premium associated with the exchange rate. This premium is determined by risk and structural differences between two countries. Accordingly, Chen and Tsang (2013) attempt to forecast the rate of change in exchange rates by using the yield spread over treasury bonds and the structural differences between two countries. However, unlike the common practice, they utilize the whole yield curve in their study, instead of using interest rates at a single maturity as well as other factors. According to the liquidity premium theory, an interest rate at any maturity is composed of the average of the short-term interest rates expected to materialize until that maturity plus the liquidity premium associated with the corresponding maturity.

$$i_{m,t} = (i_{1,t} + {i_{1,t+1}}^{e} + {i_{1,t+2}}^{e} + \ldots + {i_{1,t+m-1}}^{e})/m + \lambda_{m,t}$$

Here, i_m represents the interest rate for m periods, i_1 is the 1-period interest rate, e stands for expectation and λ_m is the liquidity premium for m periods. Accordingly, the yield curve contains crucial information regarding the economy and future expectations since the future course of the short-term interest rates is determined by expectations on macroeconomic variables, primarily the monetary policy, inflation and economic activity.

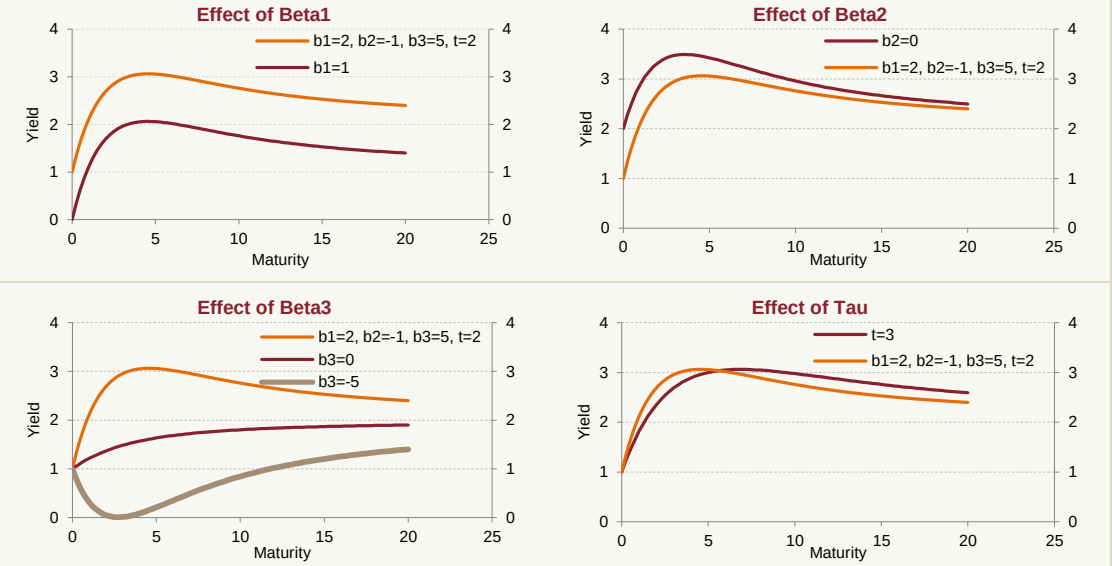
Data, Methodology and Results

In order to use the whole yield curve rather than a single interest rate in estimating the exchange rate, one should summarize the location, slope and shape of a yield curve. Otherwise, yields for each maturity could separately be used as an explanatory variable. This is impossible in practice and econometrically problematic.[1] At this point, the yield curve modeling approach proposed by Nelson and Siegel (1987) is very helpful. Accordingly, a yield at any maturity is modeled by a function as follows:

$$i_t(m) = \beta_{1,t} + \beta_{2,t}\left(1 - e^{-\tau m}/\tau m\right) + \beta_{3,t}\left(1 - e^{-\tau m}/\tau m - e^{-\tau m}\right) + \varepsilon_t$$

Here, i represents the yield; β_1, β_2, β_3 and τ are the parameters and m represents the maturity. This functional form generates a yield curve, which starts at the $\beta_1+\beta_2$ point, makes a "u" or "n" shape when the maturity reaches τ years and asymptotically converges to β_1 when the maturity extends to infinity. In a yield curve with such parameters, β_1 defines the location of the curve, while β_2 is the slope (in opposite sign) and β_3 represents the shape of the curve (curvature). This relation is depicted in Figure 1 using hypothetical yield curves for various parameter values.

Figure 1. Effects of Nelson-Siegel Parameters on Yield Curve



In Figure 1, the parameter values for the orange curve, which starts at 1, gets twisted as maturity is close to 2 years and converges to 2 as maturity increases, are set as β_1=2, β_2=-1, β_3=5 and τ=2. In the first panel, the fall of the location parameter β_1 to 1 shifts the yield curve 1 point down and the yield falls from 2 to 1 in the long term. In the second panel, the rise of the slope parameter β_2 from -1 to 0 raises the starting point of the yield curve by 1 point, thus the slope also falls by 1 point. In the third panel, the fall of the curvature parameter from 5 to 0 removes the n shape, while the same parameter falling later to -5 reverses the direction of the curvature. However, all three curves start at the same point and converge to the same point. In the last panel, the curvature parameter τ rising from 2 to 3 causes the curve to twist 1 year later.

[1] The presence of several explanatory variables not only reduces the degrees of freedom, but also causes multicollinearity problem.

By utilizing this structure of the Nelson-Siegel (NS) function, Chen and Tsang (2013) forecast the exchange rates of several advanced market currencies against USD by using the location, slope and curvature differences between the yield curves of the respective countries and the US. For example, in order to forecast the CAD/USD exchange rate, the authors firstly calculate the yields at various maturities using the Canadian yield curve and the US yield curve, and then subtract the US yields from the Canadian yields to obtain relative yields. In the next step, the authors use these relative yields to calculate the relative yield curve based on the NS approach and regress 1, 3, 6, 12, 18 and 24-month changes in exchange rates on β_1, β_2 and β_3 values of this curve, labelling them as level (L), slope (S) and curvature (C), respectively. These three parameters reflect information regarding interest rate spreads as well as risk and structural differences between the two economies.

In order to test for the forecastability of USD/TL and EUR/TL exchange rates using yield curves, this box derives yield curves for the US and the Euro Area using yields on fixed-term treasury yields for various maturities released by the Fed and by the ECB. To obtain relative yield series for the Euro Area and the US at various maturities, these yields are subtracted from the Turkish treasury bond yields obtained from the yield curves estimated by the CBRT. In the next stage, the relative yield curve parameters for TR-EU and TR-US are estimated using the NS approach for each day in the sample period. In addition, by obtaining data on the bid rates for USD and euro from the CBRT's official website, exchange rate changes are calculated for various maturities using the 30, 61, 91, 182 and 365-day-ahead values of the bid rates. As yields are expressed as continuously compounded values, changes in exchange rates are also measured as logarithmic differences for consistency. The sample covers the January 2010 -February 2014 period in order to focus more on the recent period and exclude the effects of the global financial crisis, which persisted for a long time after starting in 2008. The relative yield curve parameters for the sample period are illustrated in Charts 1 and 2.

Chart 1. Relative Yield Curve Parameters for Turkey-EU

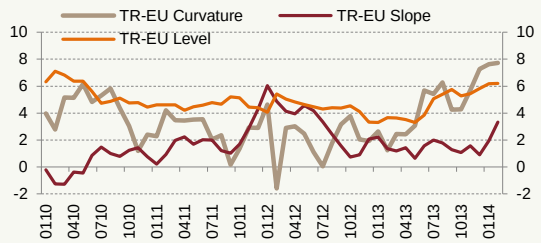
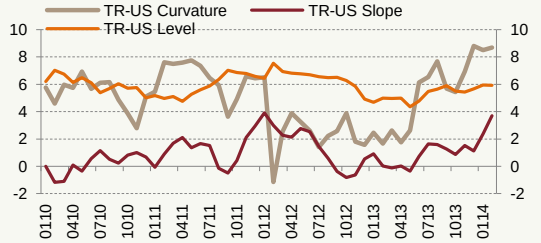


Chart 2. Relative Yield Curve Parameters for Turkey-US



Using these data, a regression model is estimated as follows:

$$\Delta s_{m,t} = \lambda_0 + \lambda_1 L_t + \lambda_2 S_t + \lambda_3 C_t + \lambda_4 \theta_t + u_t$$

Here, Δs_m represents the change in exchange rate for the upcoming m years; L, S, C are the parameters obtained from the relative yield curve; θ is the global risk appetite. According to the estimation results displayed in Table 1, the relative yield curve parameters deliver statistically stronger results for EUR/TL than for USD/TL estimations. According to signs of statistically significant coefficients, when the location parameter L increases, the TL appreciates[2], whereas when the slope of the relative yield curve

[2] For example, according to the location parameter estimate in the 6-month-ahead euro forecasting model, a 1-point increase in Turkey's treasury yields at all maturities relative to the euro area yields causes the EUR/TL exchange rate to decline by 2x4.677 = 9.35 percent in 6 months on average.

increases, the TL depreciates.[3] The curvature parameter C, on the other hand, does not contribute significantly except for the forecasting of 12-month-ahead exchange rate for USD. The signs of the coefficient estimates are consistent with the findings by Chen and Tsang (2013) for the CAD/USD, JPY/USD and GBP/USD rates. Also, the appreciation of TL as a result of the increase in Turkish treasury bond yields at all maturities is fairly reasonable in economic terms. The same conclusion applies to the depreciation of the TL as a result of the steepening yield curve amid declining short-term Turkish treasury bond yields.

Table 1. Exchange Rate Forecasting Using Relative Yield Curve Parameters

Dependent Variable: Change in Exchange Rate	EUR/TL 1-month	EUR/TL 3-month	EUR/TL 6-month	EUR/TL 1-year	USD/TL 1-month	USD/TL 3-month	USD/TL 6-month	USD/TL 1-year
Constant	6.088**	19.728***	35.784***	50.565***	2.884	12.135***	36.191***	69.724***
	[2.577]	[6.895]	[7.563]	[9.822]	[2.423]	[4.483]	[3.634]	[9.950]
Level	-0.485	-2.312	-4.677***	-5.413***	-0.25	-0.988	-5.042***	-8.511***
	[0.550]	[1.435]	[1.659]	[1.855]	[0.478]	[0.955]	[0.697]	[1.445]
Slope	-0.375	-0.832	-1.696*	-3.198***	-0.185	-0.173	0.925	-1.291***
	[0.259]	[0.568]	[0.848]	[0.612]	[0.287]	[0.561]	[0.576]	[0.365]
Curvature	-0.011	0.298	1.029	0.985	0.115	0.185	0.41	-1.116**
	[0.224]	[0.412]	[0.695]	[1.386]	[0.178]	[0.401]	[0.444]	[0.535]
VIX	-0.119**	-0.302**	-0.461**	-0.609	-0.050	-0.238	-0.237	-0.155
	[0.052]	[0.124]	[0.194]	[0.389]	[0.077]	[0.194]	[0.143]	[0.117]
Number of observations	49	47	44	38	49	47	44	38
R-squared	0.161	0.348	0.527	0.409	0.044	0.173	0.647	0.74
F-statistic	2.115*	5.594***	10.845***	5.703***	0.501	2.198*	17.856***	23.487***

Standard errors are calculated using the Newey-West heteroskedasticity and autocorrelation consistent estimator.
*,**,*** denote significance in 10 percent, 5 percent and 1 percent levels, respectively. Standard errors are in parentheses.

Another striking point regarding the estimation results is that the explanatory power of NS parameters is lower across shorter maturities, but gets remarkably higher for longer maturities. This shows that exchange rates are greatly affected by factors other than economic fundamentals in the short term (factors described as "noise" in financial markets); whereas economic fundamentals have a greater explanatory power on exchange rates in longer term.

Conclusion

The simple econometric analysis conducted in this box provides promising results on forecasting USD/TL and EUR/TL exchange rates, which are among the most important financial prices for the Turkish economy. In particular, the relative yield curves are more successful in forecasting exchange rates over longer horizons where financial noise declines. According to findings, when yields are relatively higher in Turkey, the TL appreciates; whereas, when the yield curve gets relatively steeper, the TL depreciates. Thus, the CBRT's ability to instantaneously affect the yield curve within the flexible interest rate corridor has the potential to restrict the spillovers from the fluctuations in global capital flows to the domestic market. Moreover, it is noteworthy that the signs and magnitudes of the estimated coefficients are similar to the values obtained by Chen and Tsang (2013) for advanced economies. Yet, to achieve stronger results and to reach more accurate conclusions, additional analyses and tests should be performed.

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Chen, Y. and K.P. Tsang, 2013, What Does the Yield Curve Tell Us about Exchange Rate Predictability?, The Review of Economics and Statistics, 95(1): 185-205.

[3] For example, according to the slope parameter estimate in the 1-year-ahead USD forecasting model in Table 1, a 1-point increase in the slope of Turkey's yield curve relative to the US yield curve (i.e. if the S parameter –the opposite sign of the slope– decreases by 1 point) causes the USD/TL exchange rate to rise by 1.29 percent in 1 year on average.

Box 5.2 Foreign Currency Liabilities and Exchange Rate Risk of Firms in Turkey

Creating retained earnings (profitability) and channeling these to investments are vital to the growth of firms operating in the real sector. The average firm profitability in Turkey (or potential to create internal funds) is lower compared to firms' profitability in similar countries.[4] This restricts firms' ability to invest by using their internal funds and prompts their need to use external funds by borrowing in order to grow. The fact that the local currency denominated funds provided by the domestic financial system in Turkey is limited and the external finance premium is high compels firms to borrow in foreign currency. Borrowing in foreign currency is often described as liability dollarization, which is measured as the ratio of the FX-denominated debt to total debt, and has become very common in Turkey, particularly among large and exporting firms. Accordingly, Turkish firms tend to have higher liability dollarization ratios than firms in similar countries.[5]

The FX-denominated liabilities of non-financial firms in Turkey are higher than their FX-denominated assets. The net FX position of these firms (the difference between their liabilities and assets) calculated on a macro basis amounted to 173 billion USD as of January 2014. High net FX-denominated liabilities can increase the vulnerability of firms' balance sheets to sudden stops in capital inflows or to capital reversals. Therefore, a possible interruption in capital inflows due to an increase in the exchange rate volatility may cause firms' profitability to shrink and the investment sentiment to deteriorate.

This box utilizes the balance sheets, income tables and debt information of more than 9 thousand firms obtained from the CBRT's Sectoral Balance Sheets and the BAT Risk Center dataset. Hence, firms' vulnerability driven by FX-denominated debts, which are sensitive to exchange rate movements, is analyzed on a micro basis. These firms, which account for 58.2 percent of sales, 72.5 percent of exports and 40.1 percent of FX-denominated debt in the overall economy, hold a major share in total economic activity.

The fact that firms earn revenues in foreign currency via exports may reduce the exchange rate risk associated with their FX-denominated debt (i.e. natural hedge). Therefore, exchange rate risk is measured as the ratio of FX-denominated debt to exports in this box and based on this indicator, firms are classified into three risk groups. In the first group, firms with no exports and whose FX debt makes up more than 5 percent of their gross sales are classified as high-risk. In the second group, firms with export revenues and whose FX debt makes up more than three times of their exports are classified as medium-risk; in the third group, firms whose FX debt make up less than three times of their exports are classified as low- risk.[6] The analysis uses mainly end-2013 data.[7]

[4] Özmen, Şahinöz and Yalçın (2012).
[5] Alp (2013).
[6] The medium-risk criterion is based on the assumption that the average maturity of firms' FX-denominated debt is three years. Hence, firms' 3-year exports balance out with their FX debt and this ratio's being higher than 3 means that these firms carry more risk.
[7] Data on debt are as of end-2013; balance sheet and income tables are as of end-2012. Detailed analysis considering the time dimension is available in Hülagü and Yalçın (2014).

As emphasized earlier, liability dollarization of non-financial firms in Turkey is very high, yet declining. The ratio of sales-weighted liability dollarization fell from 55.1 to 44.3 percent in 2006-2013. However, the share of long-term (with an original maturity of more than one year) FX-denominated debt in total FX debt increased in the same period as well. An analysis of these ratios by risk groups shows that high-risk firms have high liability dollarization ratios that barely change over time (Chart 1). On the other hand, the FX debt of these firms is mostly long term and the share of long-term debt increased from 76.1 percent in 2006 to 86.4 percent in 2013 (Chart 2). These findings imply that firms can hedge against short-term exchange rate volatility, which largely offsets any adverse effects on FX-denominated debt service.

Chart 1. Liability Dollarization by Risk Groups (Percent)

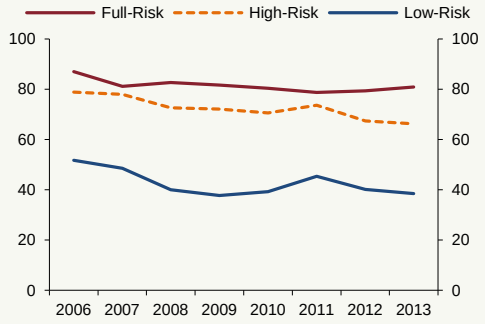
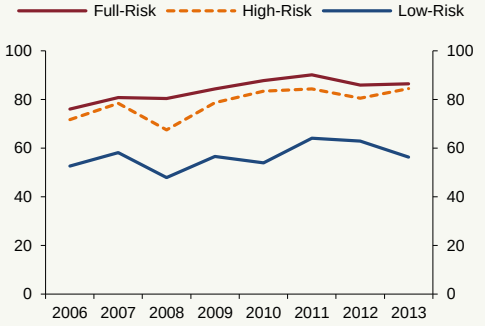


Chart 2. Long-Term Maturity of FX-Denominated Debt by Risk Groups (Percent)



Source: CBRT Sectoral Balance Sheets.

The high-risk firms included in the dataset represent a limited share of total firms by number, yet hold about one third of total FX debt. Moreover, about half of the FX debt of firms in the high-risk group belong to SMEs and are almost entirely long-term (Charts 3 and 4).[8,9]

Chart 3. Number of Firms by Risk Groups and Size* (Percent)

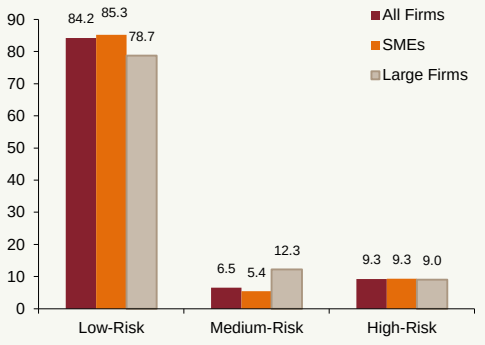
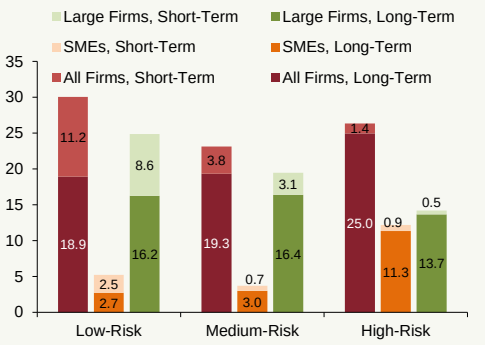


Chart 4. FX-Denominated Debt of Firms by Risk Groups, Size and Maturity* (Billion USD)



* As of December 2013.
Source: CBRT Sectoral Balance Sheets.

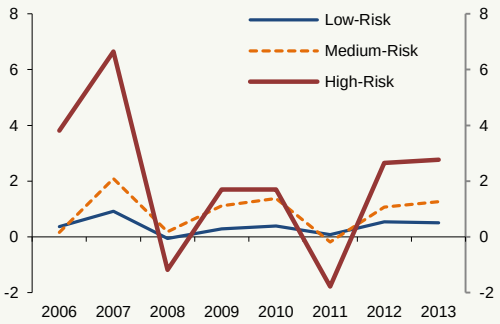
[8] The size of assets criterion is used for the construction sector whose net sales differ largely by years and for holding companies, while the net sales criterion is used for other sectors. As per the net sales criterion, firms whose net sales in 2012 are less than 10 million EUR are small-sized, between 10 and 50 million EUR are medium-sized, and more than 50 million EUR are large-sized. According to size of assets criterion, firms whose total assets in 2012 are worth less than 10 million EUR are small-sized, between 10 and 43 million EUR are medium-sized, and more than 43 million EUR are large-sized.

[9] Özmen and Yalçın (2007) concluded that the dollarization ratios of firms vulnerable to exchange rate risk, especially SMEs, decreased significantly due in part to the flexible exchange rate regime implemented after the 2001 crisis.

In addition to classifying firms into risk groups, the analysis is enriched by using net FX profits (FX profits plus FX loss) due to FX transactions on goods and services (net FX profits), and estimated FX-denominated financial expenses.[10] Hence, FX-denominated activities resulting from goods and services trade and FX-denominated financial expenses due to FX-denominated debt are assessed by risk groups and sectors.

The course of sales-weighted average net FX profit margins (net FX profits/gross sales) by risk groups is given in Chart 5. Accordingly, during 2006-2012, firms made net FX profits on average. Due to exchange rate shocks, firms' net FX profits declined in 2008 and 2011. Although high-risk firms posted net FX loss in 2011, the net FX profits made in other years more than compensated for these losses. In fact, during 2006-2012, net FX margins were on average 1.82 percent for high-risk firms, 0.97 percent for medium-risk firms and 0.39 percent for low-risk firms. Accordingly, despite the exchange rate volatility, the average net FX profit margins of high-risk firms were higher than those of the other risk groups.

Chart 5. Net FX Profit Margins by Risk Groups
(Net FX Profits/Gross Sales)



Source: CBRT Sectoral Balance Sheets.

The calculations have shown that firms with high FX-denominated debt and therefore with FX-denominated financial expenses make more net FX profits. In fact, there is a high correlation (0.89) between the net FX profits of high-risk firms and their financial expenses weighted by liability dollarization ratio. Similarly, there is also a high positive correlation between the FX-denominated debt and the net FX profits. These findings imply that high-risk firms tend to balance off the exchange rate risk due to their FX-denominated debt by possessing FX-denominated assets and gaining net FX profits from exchange rates through transactions of goods and services. This view is supported by the information that the net FX profits of 54 percent of high-risk firms made up more than half of their financial expenses in 2013.

On a sectoral basis, sectors with high FX-denominated debt have high net FX profits (Chart 6). The number of firms by sectors in high-risk group is shown in Chart 7. Holding companies as well as energy, construction and tourism sectors each have an FX debt of more than 2 billion USD. Prices in the energy sector are determined in tandem with the international price movements. Therefore the exchange rate risk is directly associated with the price adjustments in the sector. For example, in natural gas distributing companies, prices are set mostly in line with the exchange rate developments, and therefore, the exchange rate risk is controlled to a large extent. On the other hand, there are also products and services whose prices are publicly administered and do not reflect exchange rate movements automatically. As for the construction sector, prices of raw materials are mostly set in foreign currency, which causes the final pricing to be denominated in foreign currency to some degree. In addition, there are a number of large construction firms that have foreign affiliations and partnerships, which are mostly financed by their headquarters in Turkey; but being separate legal entities, their FX revenues are not reported within the domestic balance sheets of their headquarters, which suggests that the exchange rate risks of these firms might be lower than expected.

[10] The financing expense estimate for FX-denominated debt is obtained by multiplying the total financing expense by the liability dollarization ratio.

Likewise, the gradually increasing tourism revenues and the FX-denominated pricing that has become widespread across hotels may restrict the exchange rate risk of the tourism sector.

Chart 6. Sectoral FX-Denominated Debt and Net FX Profits in High-Risk Firms* (Million USD)

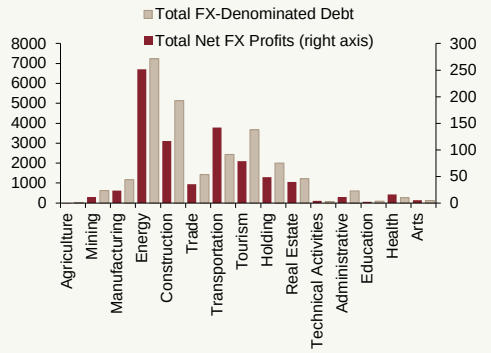
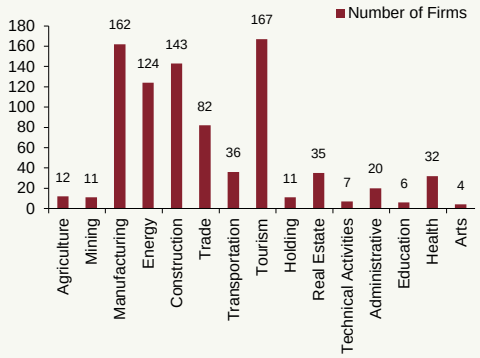


Chart 7. Number of High-Risk Firms by Sectors



* As of December 2013.
Source: CBRT Sectoral Balance Sheets.

For a more detailed analysis of the possible exchange rate risk of firms, the ratio of net FX profits to financial expenses weighted by FX debt is calculated, where a lower ratio suggests fragility driven by FX-denominated debt. Accordingly, the analysis focuses more on high-risk firms, which have a net exchange profit to financial expenses ratio below 50 percent. According to the data on 2012 balance sheets, there are 396 firms falling into this category, which can be identified as full-risk firms. Most of these firms operate in the manufacturing (80), tourism (74), construction (68), trade (49) and energy (40) sectors. The total asset weighted current and liquidity ratios as well as asset profitability and the average FX-denominated debt are shown in Table 1. Accordingly, the current and liquidity ratios of full-risk firms are close to those of low-risk firms. Yet, the asset profitability of full-risk firms is less than that of other firms. Moreover, the average FX debt in full-risk firms equals 31.9 million USD and mostly in long-term.

Table 1. Liquidity Indicators and Profitability by Risk Groups

	Current Ratio (2012)	Liquidity Ratio (2012)	Asset Profitability (Percent, 2012)	FX-Denominated Debt (Simple Average, Million USD, December 2013)
Full-Risk	3.33	1.24	2.04	31.9
High-Risk	2.68	0.89	3.30	30.7
Medium-Risk	1.92	0.54	3.79	38.5
Low-Risk	3.62	1.48	4.27	6.5

Source: CBRT Sectoral Balance Sheets.

In sum, firms with no or limited export revenues borrow heavily in foreign currency and presumably carry exchange rate risk. However, a closer look at the data reveals that high-risk firms with large FX-denominated debt have higher net FX profit margins on average over time than those of other firms. In addition, full-risk firms with a low net FX profits to FX financial expenses ratio are inclined to hold cash. Moreover, in sectors with relatively high liability dollarization ratio, there are activities that are not classified under export revenues, but are priced in foreign currency and generate FX-denominated revenues. For real sector firms in Turkey, findings based on the current dataset suggest a lower exchange rate risk than implied by macroeconomic data.

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