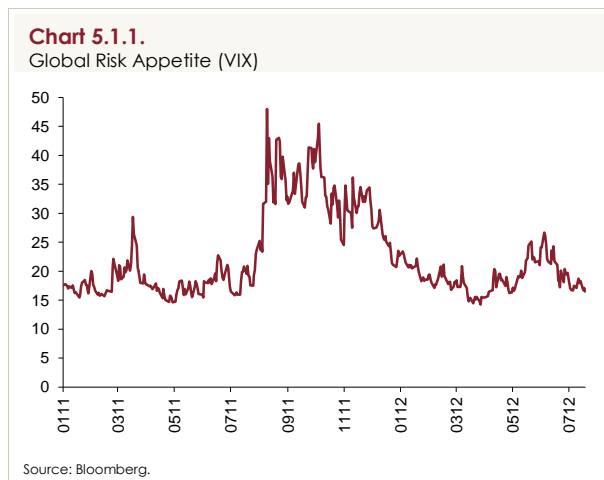


## 5. Financial Markets and Financial Intermediation

### 5.1. Financial Markets

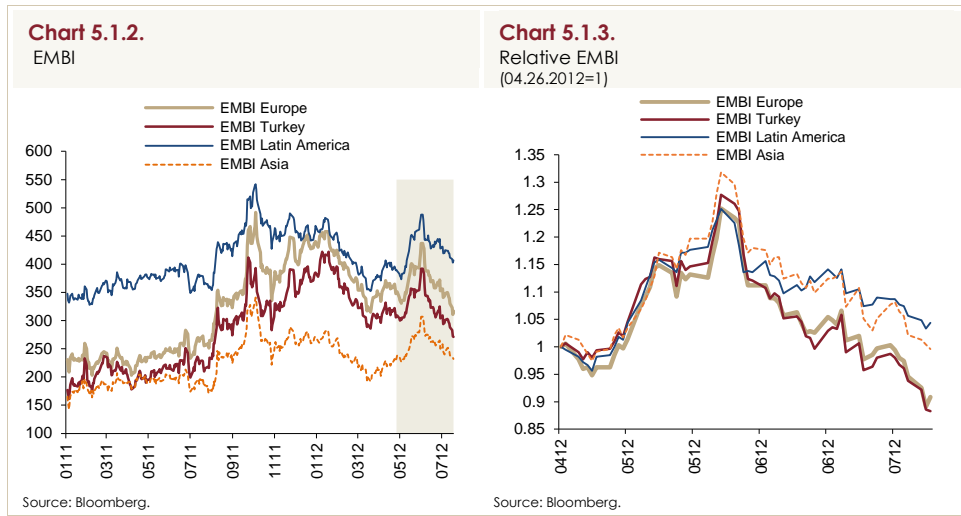
#### Global Risk Perceptions

Data released regarding the global economy in the second quarter of the year signal for a longer-than-expected period of recovery. Persisting downside risks on growth led advanced economies to continue with easing in monetary policy practices. In this period, the ECB, the Federal Reserve, the Bank of England and the Bank of Japan continued with monetary easing. Moreover, the ECB opted for a policy rate cut to bolster economic growth. Concerns over the Euro Area debt problem besides global growth in April and May led to the global risk appetite to attenuate (Chart 5.1.1). In June, more concrete measures were taken to weather the Euro Area debt problem and following the elections in Greece, expectations for Greece to exit from the monetary union faded. Monetary easing practices of advanced economies accompanied by diminishing uncertainties regarding the Euro Area debt problem have brought about a notable increase in global risk appetite since early June. Following the publication of the April Inflation Report, central banks of many emerging economies besides the major central banks took decisions to support economic growth. Despite the adopted measures, neither advanced nor emerging economies recorded improvement in growth forecasts (Table 2.1.1).

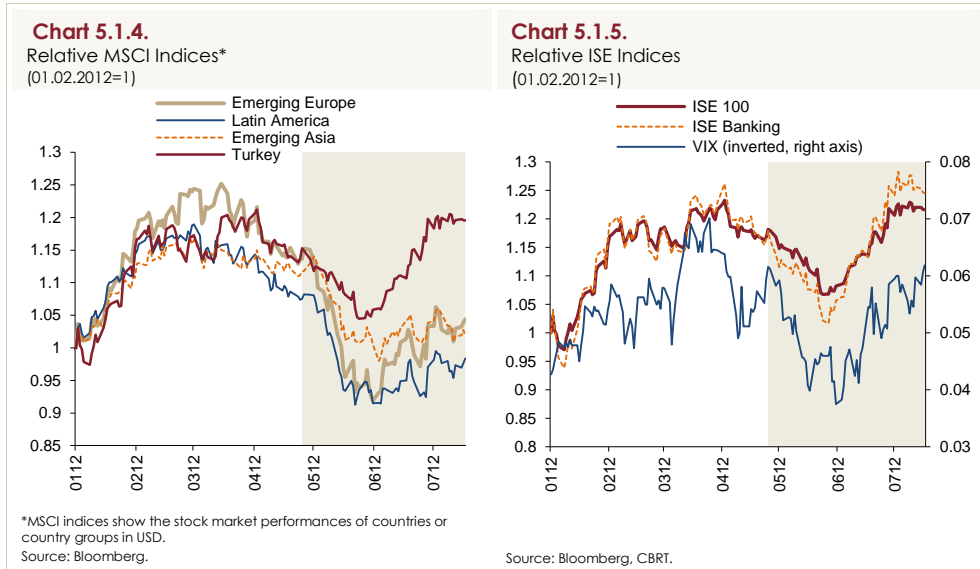


Parallel to the decline in the global risk appetite in April and May, risk premiums of emerging economies also increased (Chart 5.1.2). However,

favorable news coming from the Euro Area since June besides the lingering monetary easing in advanced economies led the risk premiums of emerging economies to decline. In this period, these favorable developments were consistent with the soft landing scenario of macroeconomic indicators, which ensured Turkey's risk premium to perform better than other emerging economies (Chart 5.1.3). In fact, sovereign credit rating of Turkey was upgraded in early June along with the realization of credit rating upgrades to some Turkish banks.

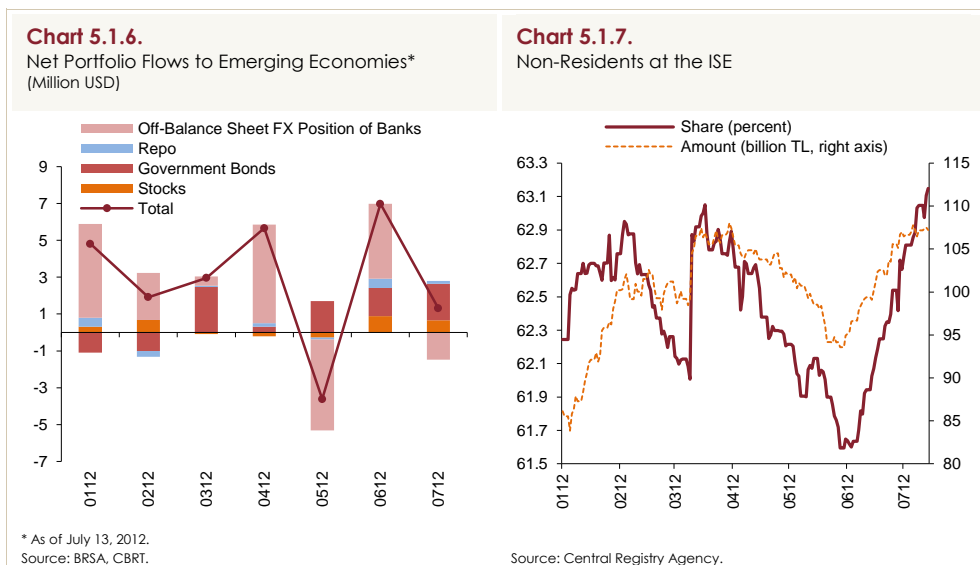


Global developments that determine the course of risk premiums were also influential on stock indices. In the second quarter of the year, stock markets in Turkey as well as in other emerging economies depreciated throughout May parallel to the decline in the global risk appetite, but have recently rebounded (Chart 5.1.4). In this period, following the credit rating upgrade especially in June, the ISE performed better than the stock markets of other emerging economies. Credit rating upgrade strengthened the perceptions regarding the sustainability of the favorable course of macroeconomic indicators in the longer term and also stimulated the interest towards investment tools in Turkey. Following the rating upgrades, the overall index in Turkey and especially the banking sector equities saw sudden appreciations (Chart 5.1.5).

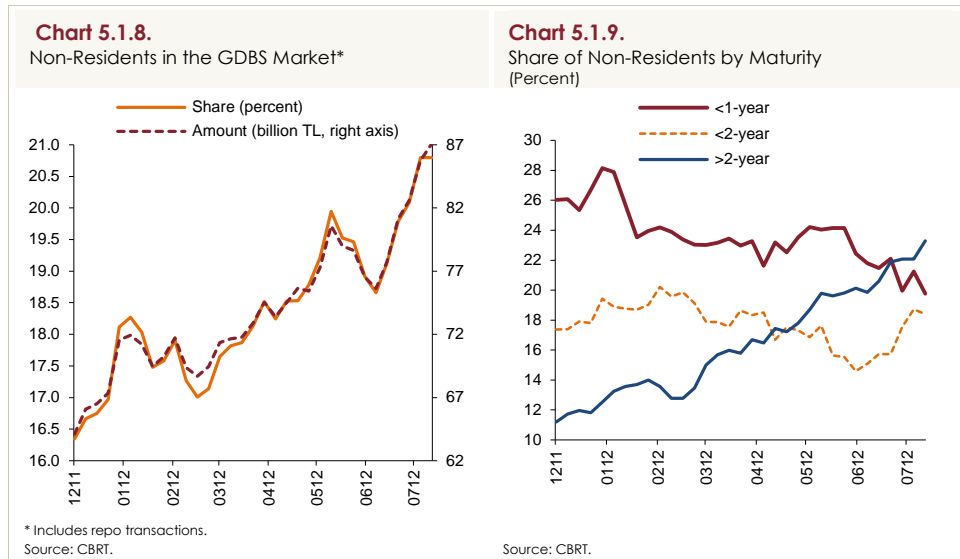


### Portfolio Flows

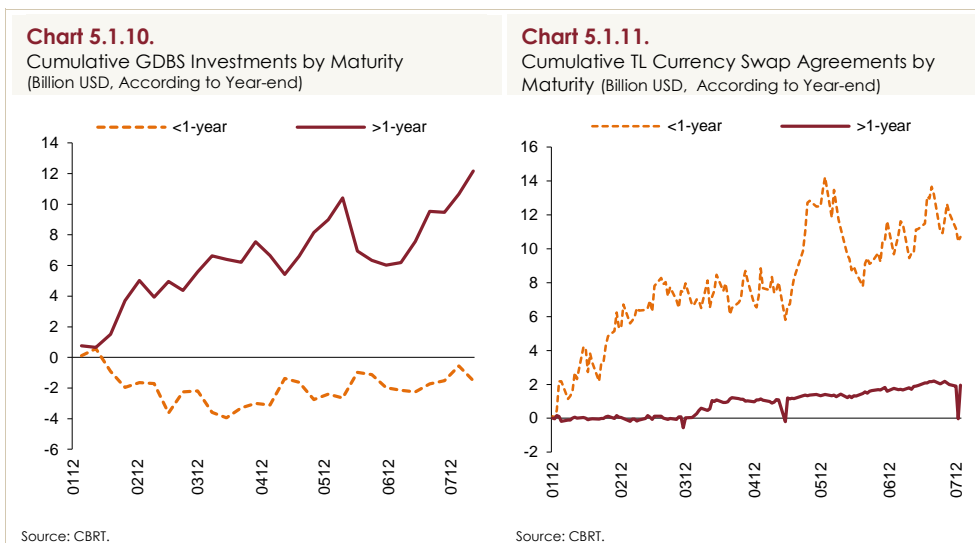
Due to the negative developments in Europe, capital inflows to emerging economies, including Turkey, declined during May (Chart 5.1.6). Creation of the atmosphere of confidence regarding the solution of the problems in Europe as of June besides the better-than-expected inflation and current account deficit figures as well as credit rating upgrades stimulated the non-residents' investments in Turkey. Against this background, the share of non-residents went up at the ISE in June (Chart 5.1.7).



Share of non-residents in the GDBS market continued to trend upwards in the second quarter (Chart 5.1.8). Non-residents in the GDBS market have lately tended towards securities with maturities of longer than two years (Chart 5.1.9). This indicates that medium-term expectations of foreign investors regarding inflation and other macroeconomic indicators are positive.

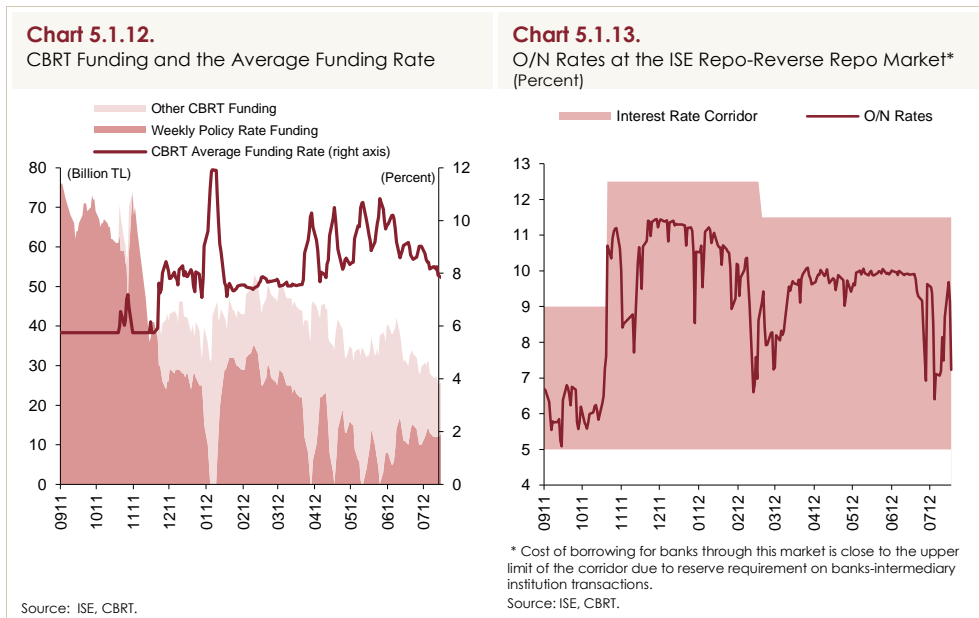


In 2012, total cumulative GDBS investments of non-residents were longer than 1 year maturity; and outflows were seen in maturities shorter than 1 year (Chart 5.1.10). TL cross currency swap agreements which have a significant share in portfolio flows trended upwards in the first half of 2012. These investments, a great part of which had maturities less than 1 year, maintained the same trend also in the second half of 2012 (Chart 5.1.11).



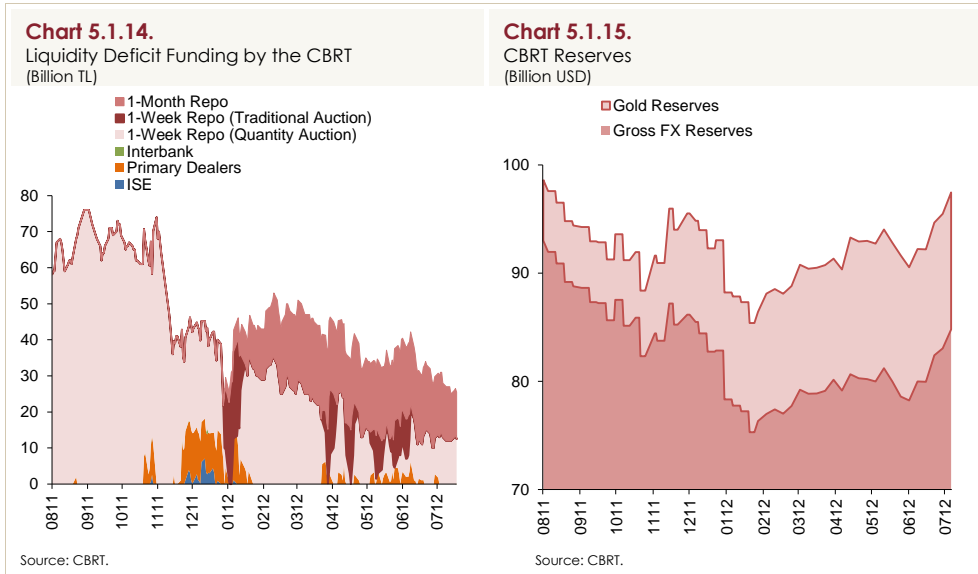
## Monetary Policy Implementation

In order to prevent any deterioration in the inflation outlook to stem from temporary rises in inflation, the CBRT emphasized in the April MPC Meeting that additional monetary tightening might be implemented more frequently. Accordingly, additional tightening was implemented between May 4-11 and 21-25 (Chart 5.1.12). Notwithstanding the expectation for a decline in inflation, the CBRT intended to contain the risks on pricing behavior to stem from the inflation which will post higher-than- expected figures until the last quarter of the year. Accordingly, the existing tight stance was preserved at the May MPC Meeting and the CBRT opted for an additional monetary tightening between May 31 and June 4. In fact, in the second quarter of the year, alternative funding tools except for the weekly repo funding implemented under the quantity auction method were used more frequently compared to the first quarter. In the subsequent period, monetary policy preserved its tight stance. However, both the average funding rate and the overnight market rate in July were ensured to become low amid soaring risk appetite (Charts 5.1.12 and 5.1.13). Persisting uncertainties despite the favorable developments in the global economy led the flexibility in the monetary policy to be maintained.



At the May MPC Meeting, in order to underpin financial stability, the flexibility for Turkish lira reserve requirements that can be held in foreign currency was raised from 40 percent to 45 percent. The said flexibility provides the banks with an easing in Turkish lira and foreign exchange liquidity management and acts as an automatic stabilizer against external financing shocks. This facility will contribute to the easing of the volatility on foreign exchange liquidity and exchange rate. On the other hand, so as to diminish the cost gap to arise from holding Turkish lira required reserves in Turkish lira or foreign exchange, a higher fraction of foreign exchange per each unit of Turkish lira was decided upon for additional increases in allowance ratios. Thus, the sum corresponding to the 40 percent of Turkish lira required reserve liabilities was to be multiplied by "1" as in the past, while the second tranche corresponding to 5 percent was to be multiplied by "1.4". Then, it was facilitated to hold these liabilities upon the resulting amount in the USD and/or euro. The said facility was raised by 5 points to 55 percent in June and July and for the sum that corresponds to third and fourth tranches of 5 percent, coefficients were determined as "1.7" and "1.9". Additionally, the upper limit for the facility to hold Turkish lira required reserves in gold was raised to 25 percent in June. Meanwhile, the amount corresponding to 20 percent of the facility was to be used by being multiplied by "1" as in the previous case; whereas the second tranche corresponding to 5 percent was to be multiplied by "1.5". Required reserves will continue to be used under macroprudential measures in a way to observe financial stability in the forthcoming period.

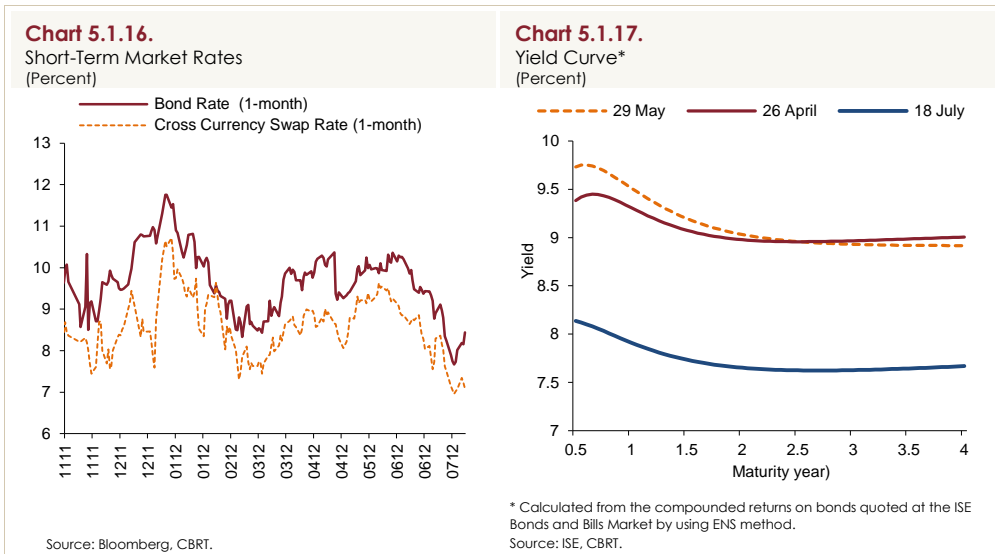
Through cost and liquidity channels, these facilities ensure liquidity requirements of the banks to be met in a more permanent and flexible manner. In fact, these facilities contribute to the decline in the Turkish lira liquidity deficits of banks (Chart 5.1.14). Moreover, facilitation of holding Turkish lira required reserves in foreign exchange and gold favorably affects the CBRT's foreign exchange and gold reserves (Chart 5.1.15). Total reserves have trended upwards since early 2012.



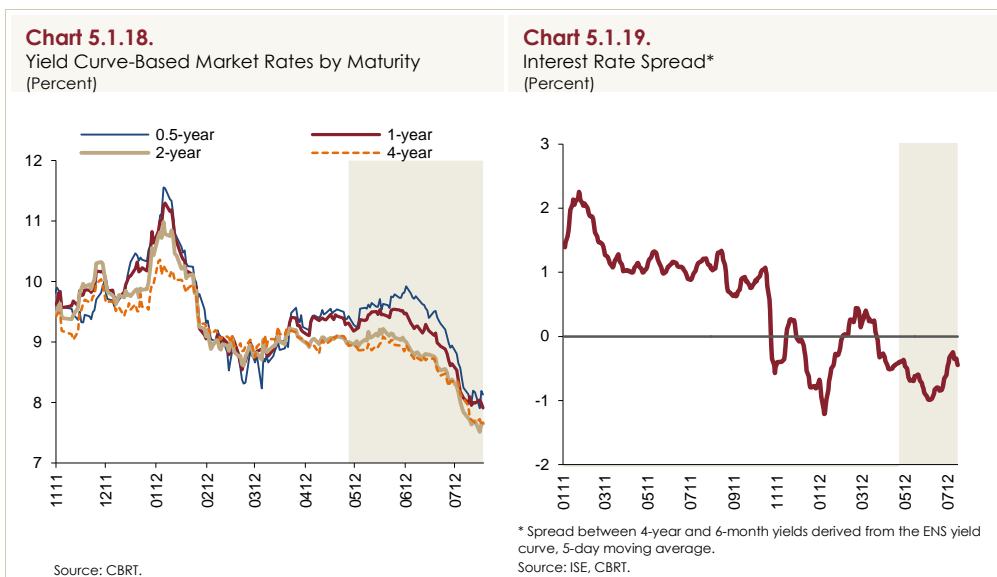
In order to enhance liquidity managements of banks and help them project their total funding costs, the CBRT continued to announce the funding amount on the days of quantity auctions besides the upper limit for the monthly repo auctions in the second quarter of the year. Under the scope of the TL liquidity projections, the lower limit for the May funding quoted at the policy rate was preserved as TL 1 billion, while the upper limit thereof was reduced from TL 6 billion to TL 5 billion. In July, the amount of this funding was set between the range of TL 0.5 billion and TL 6.5 billion. The upper limit for the monthly repo auctions held under the traditional auction method was not changed and the upper limit was preserved as TL 5 billion.

### Market Rates

In May, more frequent implementation of additional monetary tightening led to a rise especially in short-term rates in the GDBS markets. Short term cross currency rates moved similar to GDBS rates (Chart 5.1.16, Box 5.1). However, the faster-than-expected decline in inflation following May, the favorable course of global risk perceptions, the sustained balancing in the current account deficit, the support granted by domestic demand conditions to disinflation and the credit rating upgrade led the market rates to record a decline in all maturities (Chart 5.1.17).

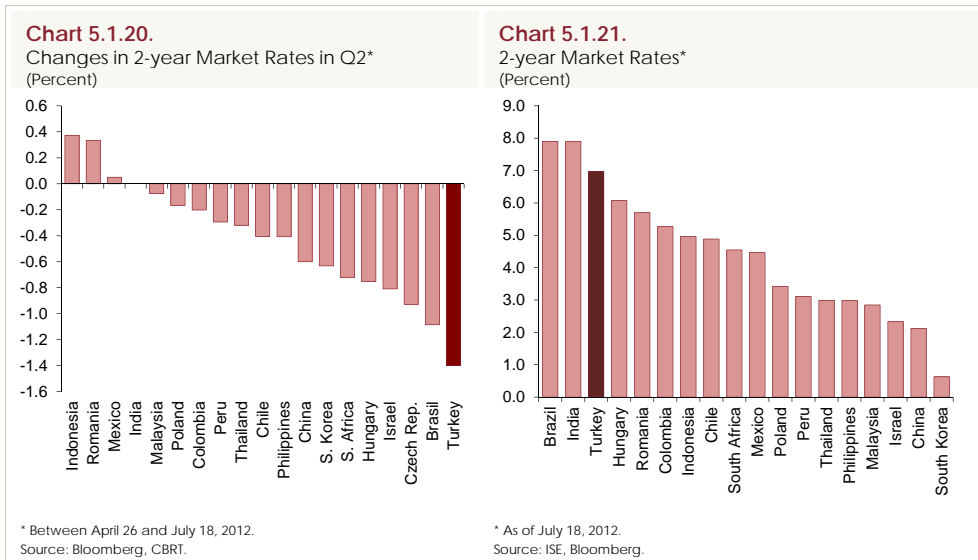


Interest rates in differing maturities exhibit similar trends, yet the spread between long and short-term rates is slightly flat, but still has a negative trend thus implying that the CBRT's monetary policy stance is relatively tight (Charts 5.1.18 and 5.1.19).

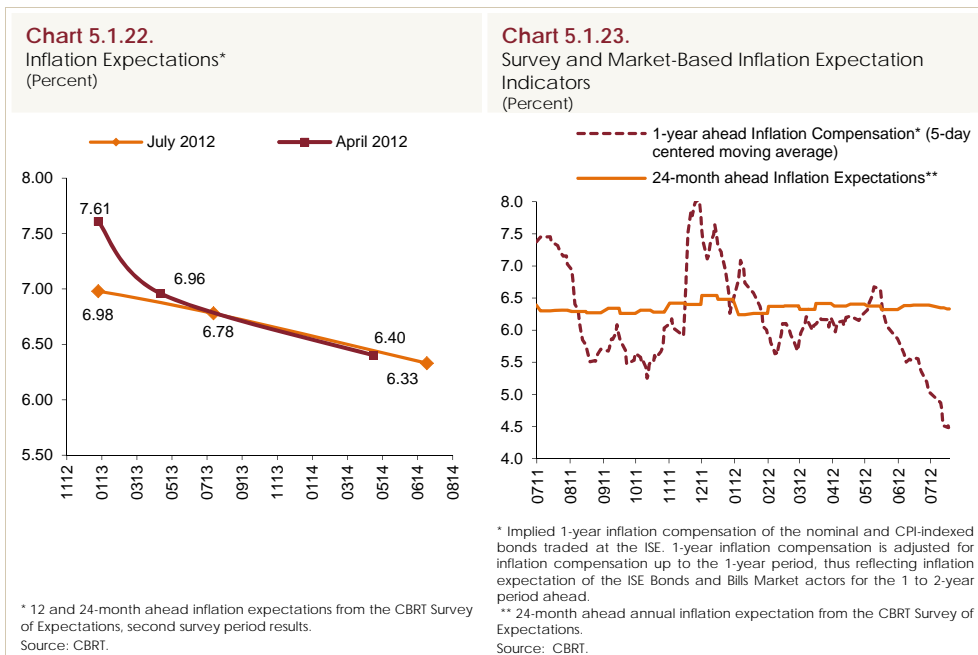


Following the release of the April Inflation Report, due to the aforementioned favorable cyclical developments exclusive to Turkey, 2-year market rate recorded a higher decline than other emerging economies (Chart 5.1.20). Nevertheless, 2-year market rates in Turkey still linger in relatively high levels (Chart 5.1.21).

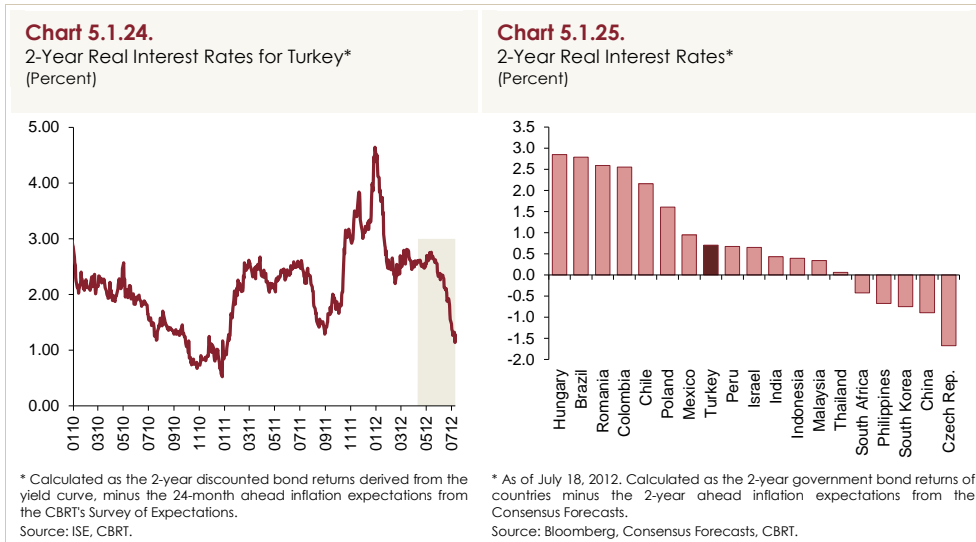




Being among factors influential on market rates, inflation expectations recorded a marked decline in short-term maturities compared to the period preceding the April Inflation Report (Chart 5.1.22). The Survey of Expectations does not exhibit a significant change in medium-term inflation expectations, while inflation compensation that mostly reflects market expectations fell below the survey expectations following the release of May inflation figures; and then recorded a sharp decline (Chart 5.1.23). This is also attributed to the recently favorable data regarding inflation besides the diminished uncertainties in inflation (see October 2011 Inflation Report, Box 5.1).

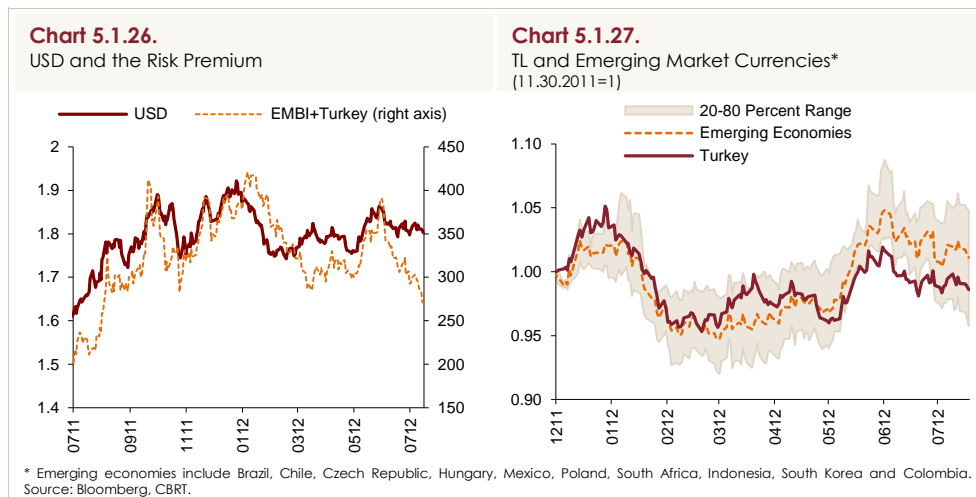


The decline in market rates in the second quarter of the year also influenced real interest rates (Chart 5.1.24). Accordingly, Turkey's real interest rates ranked below other emerging economies compared to the April reporting period (Chart 5.1.25).

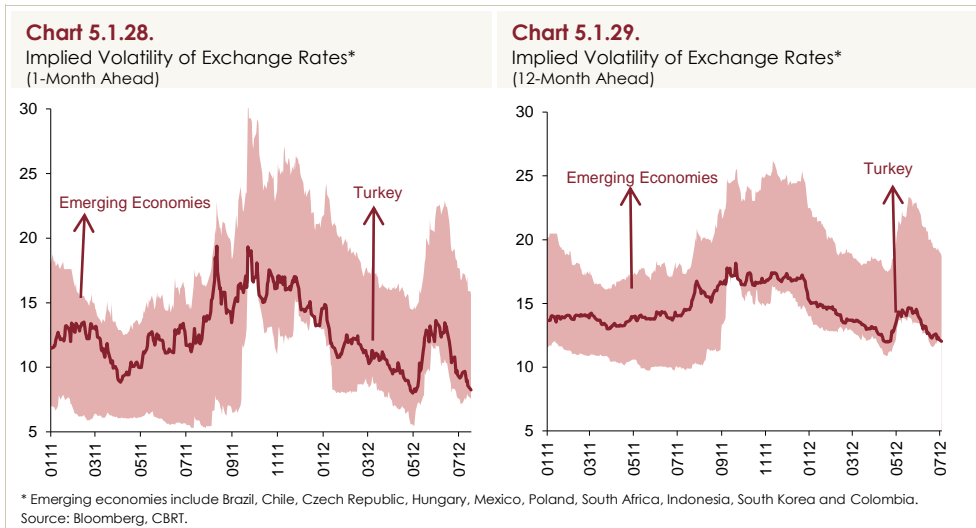


### Exchange Rate Markets

In the second quarter of the year, the Turkish lira followed a volatile course like other currencies in peer emerging economies. Parallel to the developments in the risk premium, the Turkish lira depreciated against the USD throughout May, but re-appreciated in June (Chart 5.1.26). In this period, in tandem with the better-than-expected macroeconomic indicators and the credit rating upgrade in June, the Turkish lira performed better than the currencies of other emerging economies (Chart 5.1.27).

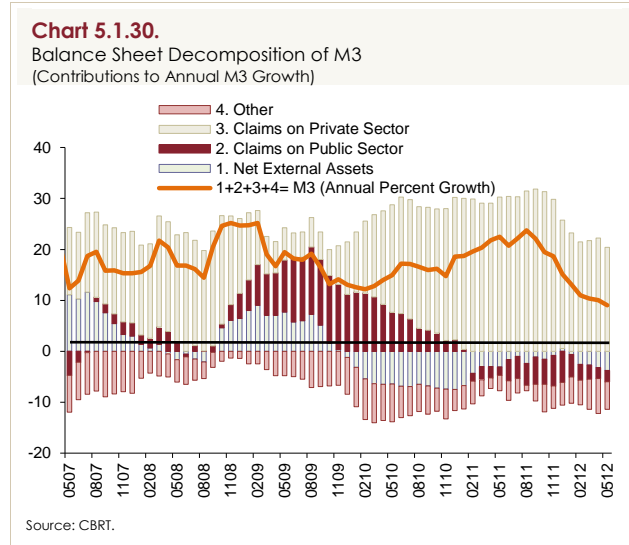


Also influencing the implied exchange rate volatility of the currencies of emerging economies, improvements in the global risk appetite in June and July led them to decline to a remarkable extent. Recently released macroeconomic indicators remained consistent with the soft landing scenario and the CBRT maintained its tight monetary stance, which gave way to the implied volatility of the Turkish lira to realize lower both in short and long-term maturities than the currencies of other emerging economies in the second quarter of the year (Charts 5.1.28 and 5.1.29). Relatively low risk perceptions regarding the Turkish lira reflect the confidence in the monetary policy besides the country's economic performance.

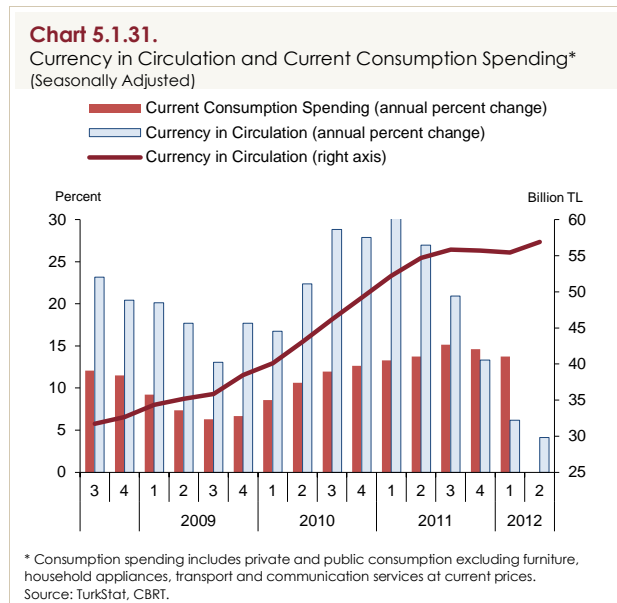


### Monetary Developments

Effects of the measures for tightening taken in the second quarter of 2011 continued to shape monetary indicators. Accordingly, the annual growth of M3, the broad measure of money supply, continued to decline. In fact, the balance sheet decomposition of M3 points that the downward trend in Claims on Private Sector, which mostly consist of bank loans extended to non-financial private individuals and institutions, has recently lost pace. Meanwhile, Claims on Public Sector continued to provide negative contribution to M3 growth. The fall in Net External Assets is mainly attributed to the increase in the liabilities of commercial banks' against non-residents. Lastly, parallel to bank profits, the item Other continued to generate non-deposit resources for the banking sector in the second quarter (Chart 5.1.30).

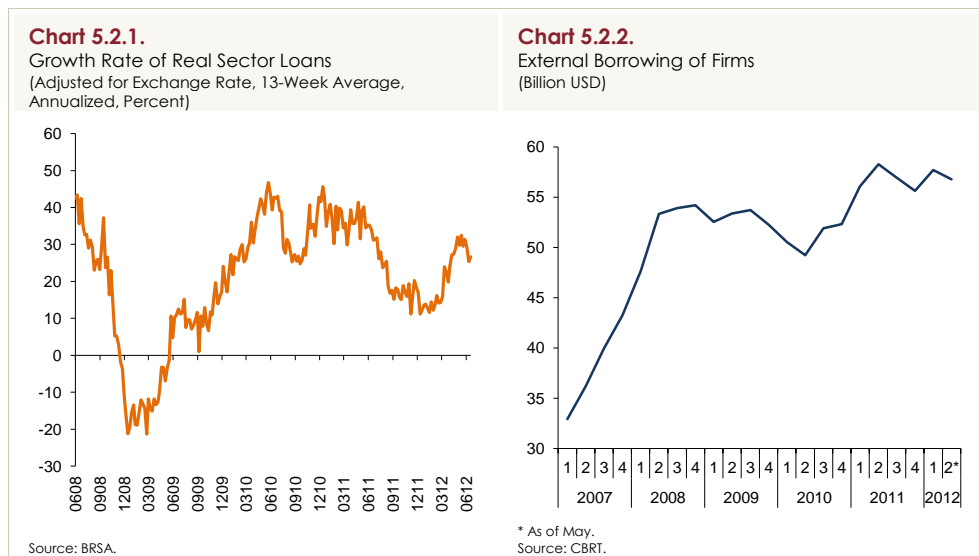


The rate of increase in the seasonally adjusted money in circulation continued to decline in the second quarter of the year (Chart 5.1.31). Nevertheless, in terms of level, the same item exhibits a rebound on a quarterly basis, albeit limited. This is consistent with the projection that current consumption spending will experience a mild quarterly recovery in the second quarter of the year.



## 5.2. Financial Intermediation and Loans

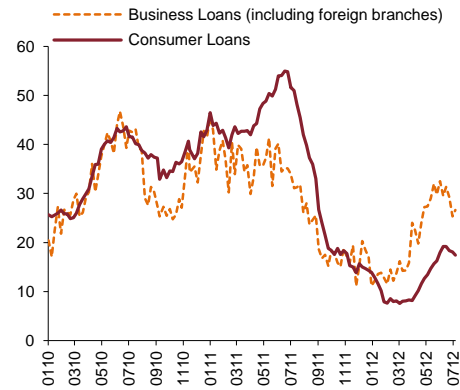
Growth rate of loans extended to the corporate sector by domestic banks has increased as of late March mostly upon seasonal trends; yet trended downwards again as of early June (Chart 5.2.1). This was attributed to the slight easing in lending standards of banks in the first quarter besides the recovery in economic activity as of the second quarter. Accordingly, real sector loans posted a year-on-year increase by 17.5 percent in the second quarter, growing by 22.2 percent in annualized terms (Chart 5.2.1). Meanwhile, external borrowing by the corporate sector has increased in the first five months of the year (Chart 5.2.2).



In the second quarter of the year, growth rate of consumer loans lagged behind business loans extended to the corporate sector (Chart 5.2.3). Notwithstanding the more remarkable decline in consumer loan rates compared to business loan rates, the lower growth rate of consumer loans points to the weak demand for consumer loans. Despite the flat course of domestic demand since the second quarter of 2011, the composition of consumption and investment spending has gradually shifted towards domestically manufactured products, which led to an increase in loan demand of firms for working capital. A substantial part of the growth in consumer loans was driven by seasonal effects. Compared to the same period of the preceding years, growth of consumer loans has notably been lower than the average of the 2007-2011 period (Chart 5.2.4).

**Chart 5.2.3.**

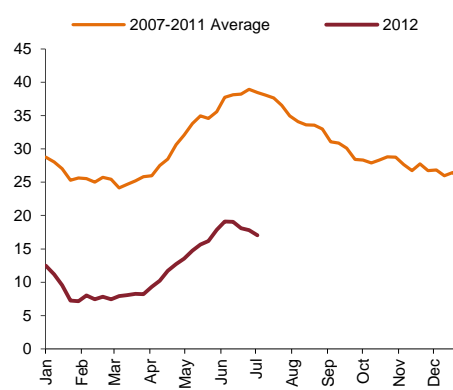
Growth Rates of Business and Consumer Loans\*  
(Adjusted for Exchange Rate, 13-Week Average, Annualized, Percent)



\* Including automobile loans extended by consumer financing firms.  
Source: CBRT.

**Chart 5.2.4.**

Consumer Loan Growth  
(Adjusted for Exchange Rate, 13-Week Average, Annualized, Percent)

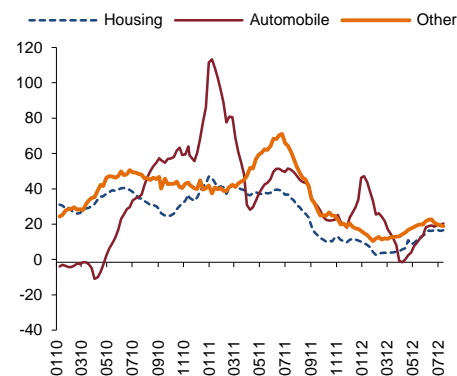


Source: CBRT.

Growth rates of consumer loans started to edge up in the first quarter of the year. Being also influenced by seasonal factors, this recovery became more pronounced in the second quarter of the year (Chart 5.2.5). Nonetheless, growth rates of consumer loans still exhibit a relatively poor outlook compared to the period preceding monetary tightening. Banks raised the interest rates on housing, automobile and other consumer loans to a sizeable extent following the CBRT'S monetary tightening in October 2011 (Chart 5.2.6).

**Chart 5.2.5.**

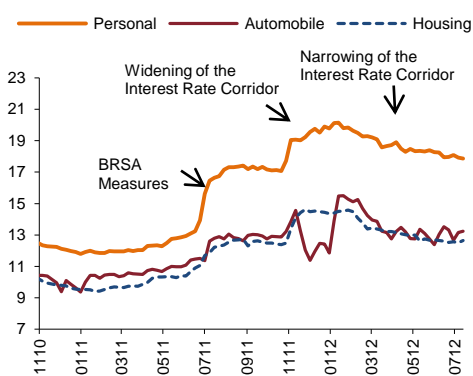
Weekly Growth Rates of Consumer Loans\*  
(13-Week Average, Annualized, Percent)



\* Including automobile loans extended by consumer financing firms.  
Source: CBRT.

**Chart 5.2.6.**

Consumer Loan Rates  
(Flow, Annualized, Percent)



Source: CBRT.

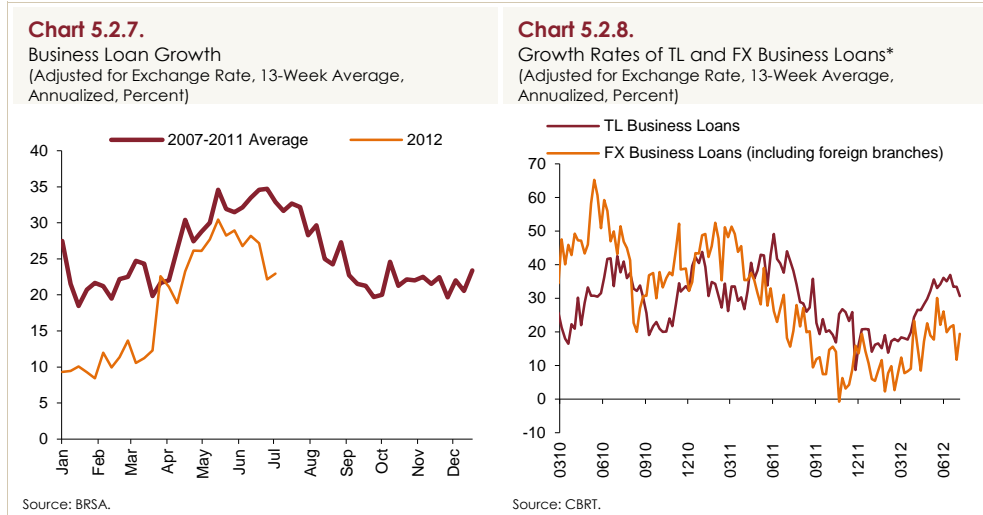
In addition to the rising interest rates, the tightening in retail and automobile loans in the last quarter of 2011 was influential on the growth rates of these loans. The Loan Tendency Survey suggests that banks opted for a slight easing in standards applied to retail loans, while a limited tightening was implemented in housing loans in the first quarter of 2012 due to the negative

expectations regarding the real estate markets. As for the standards regarding retail loans, the competition among banks eased lending conditions, while factors regarding risk perception had a tightening role for standards. Additionally, in all types of consumer loans, conditions for fees and commissions excluding interest experienced tightening in the first quarter. The Loan Tendency Survey of April reports that a slight easing is expected in credit standards in all types of consumer loans, especially in retail loans in the second quarter. As a matter of fact, interest rates on retail and housing loans assumed a modest downward trend in the first quarter following the surge amid the monetary tightening in October and declined further in the second quarter of the year. All these developments indicate that the aggravated concerns of banks over the credit risk in the preceding two quarters have waned since the second quarter of 2012.

On the other hand, developments regarding banks' financing are also influential on the decline in consumer loan rates. As cross currency swap transactions have longer maturities than deposits, banks prefer using the sizeable amounts of financing provided from abroad through cross currency swaps in the first half of the year, in financing consumer loans and business loans for investment purposes, which have longer maturities on average. Due to this preference of banks, consumer loan rates and TL-denominated long-term business loan rates fell notably in the first half of the year. Nevertheless, short-term business loan rates did not exhibit a trend alike.

The jump in the growth rate of business loans as of the last week of the first quarter was reversed in late June (Chart 5.2.7). This jump was seen in only one week, highlighting that this is a one-time event not pointing to a strong acceleration in business loans. In fact, upon adjusting for this rise through 13-week average estimation, the decline in the growth rate of business loans in late June was seen to be more severe than the average of the preceding years. This trend was more evident in FX-denominated loans rather than TL-denominated loans (Chart 5.2.8). Data on the decomposition of business loans according to maturity show that the hikes in TL and FX-denominated loans in April were concentrated on loans with maturities of shorter than one year. In fact, results of the Loan Tendency Survey indicate that the slackening in standards for long-term loans in the first quarter did not enhance the demand for long-term loans used by firms mostly for investment purposes. In this period, the effect of fixed investment among other determinants of the loan demand

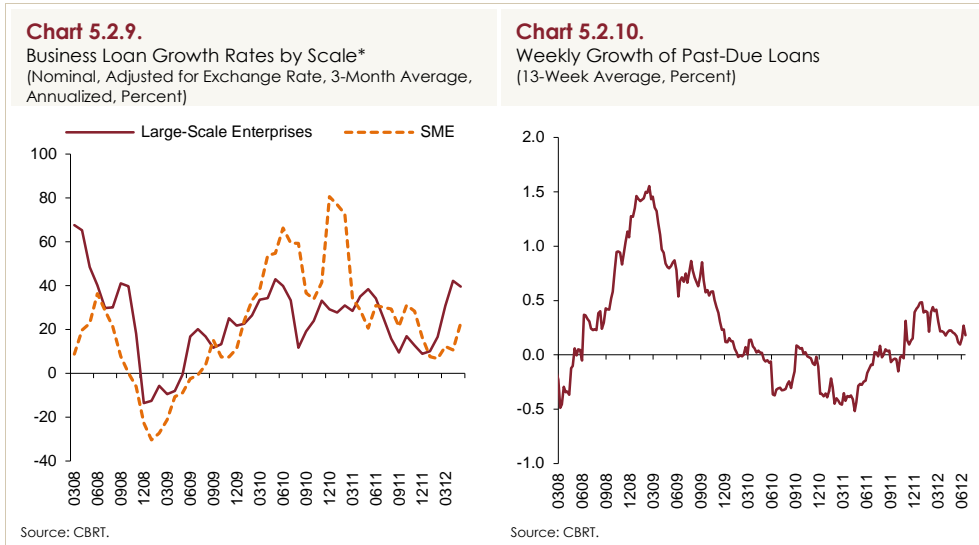
of firms fell drastically, while the demand for business loans was mostly oriented towards restructuring of debts and capitalization of the enterprises.



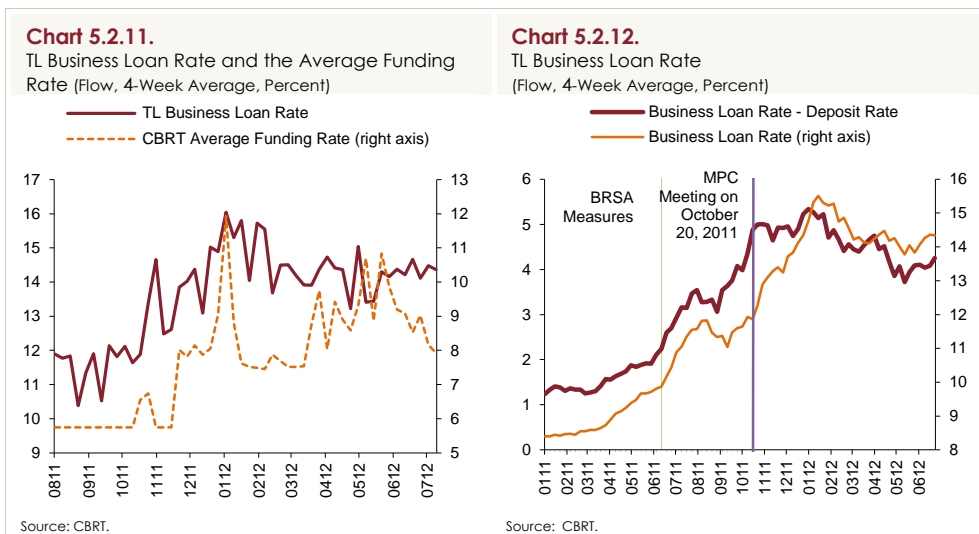
An analysis of business loans by scale reveals that growth rates of loans extended to large-scale enterprises and to SME have diverged since March (Chart 5.2.9). This stemmed from tighter lending conditions applied by banks for the SME, which have more fragile financial conditions than large-scale enterprises as of the last quarter of 2011, which was marked by aggravated concerns of banks on credit risk. In tandem with the re-acceleration of SME loans as of May, the divergence between loan growth rates according to scale was partially closed. As per the implementation of Basel II, which was effected on 1 July 2012, the lower risk weight regarding the SME loans to be placed in the retail portfolios of banks is believed to bolster SME loans on the supply-side in the forthcoming period.

In the Loan Tendency Survey released in April, banks stated that parallel to the favorable perceptions regarding economic activity, they may preserve the partial easing in the standards for loans extended to both large-scale enterprises and SME in the second quarter. Furthermore, the rise in the growth rate of non-performing loans in the first quarter being replaced by a decline again in the second quarter also supports the mentioned approach by banks (Chart 5.2.10).

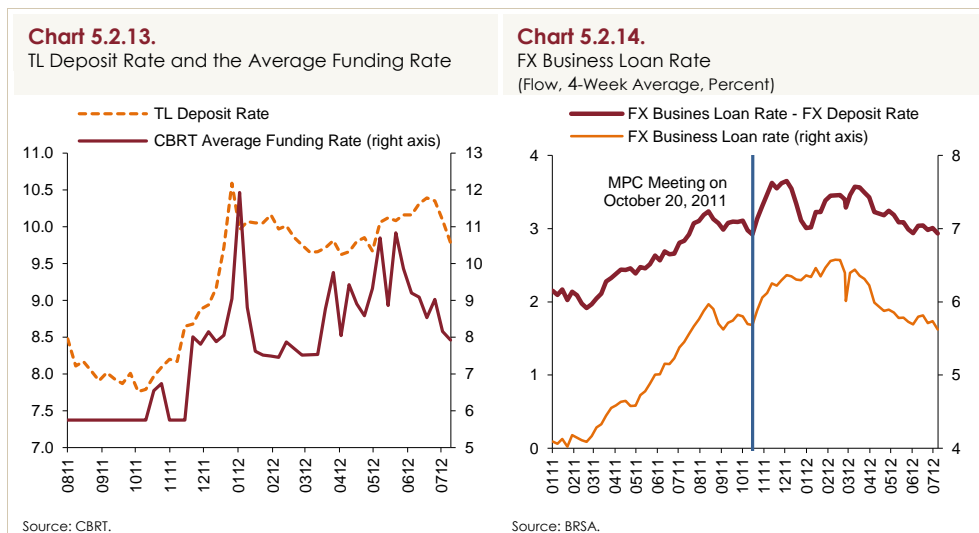




The upper limit of the interest rate corridor was raised in October, and following this decision, owing to effective liquidity policies, the average interest rate on funding provided by the CBRT soared (Chart 5.2.11). In line with this, business loan rates also surged; yet, edged down following the slight reduction in CBRT's overnight lending rate in February. In periods of additional monetary tightening implemented as of March, as the CBRT pointed to a tighter monetary policy outlook, banks are thought to base their decisions of loan rates on the upper limit of the interest rate corridor in this period. The course of spread between loan and deposit rates were mostly shaped by the movements in loan rates from the start of the year to May. Meanwhile, as of May, the rise in deposit rates played a great role on the loan-deposit rate spread (Chart 5.2.12).



Recent monetary policy measures taken by the CBRT have proved influential on deposit rates as well. More frequent implementation of additional monetary tightening by the CBRT as of late April led to a month-on-month increase by 100 basis points in the CBRT's average funding rate in May. On the other hand, climbing unrest in the Euro Area attenuated the risk appetite, which led to a plunge in the financing provided by banks through cross currency swap transactions in May. Against this background, deposit rates have seen a slight increase as of May (Chart 5.1.13). Despite the fall in the weighted average funding rate of the CBRT in June, the rise in deposit rates continued, which is attributed to banks' efforts towards improving balance sheet besides the competition in deposit markets. In fact, deposit rates recorded a slight slackening following June.



FX-denominated business loan rates decreased by around 60 basis points in the second quarter (Chart 5.2.14). In this period, as the decline in interest rates on foreign currency accounts was more limited, the fall in FX-denominated loan-deposit rate spread lagged behind the fall in loan rates.

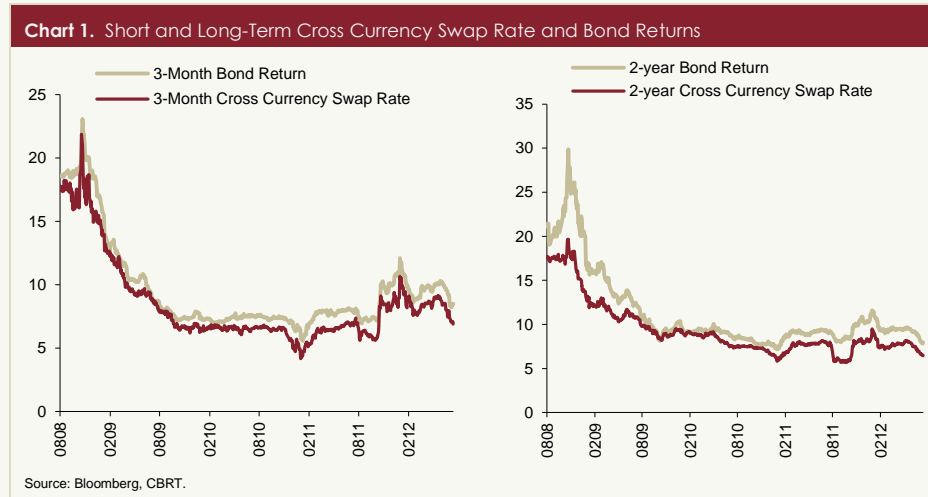
As a result, the effect of the monetary tightening implemented in October got slightly alleviated on loans in the second quarter. Nevertheless, the acceleration seen both in consumer and business loans in the second quarter was largely driven by seasonal factors, and growth rates attained by end-June hover around eligible levels for financial stability. Moreover, the change in the composition of loan growth in favor of the firms is also likely to affect the current account balance favorably in the medium term. Estimating that the rebound in

domestic economic activity and aggregated demand will continue at a modest pace, loan developments in the period ahead are expected to be largely shaped by demand-side factors.

Box  
5.1

## The Relation Between Cross Currency Swap Rates and Bond Returns

In the last decades, financial markets have been more complex, integrated and interrelated as a result of spreading and the diversification of derivative instruments. However, the arbitrage mechanism minimizes the mismatch between the prices of the rapidly increasing number of financial instruments and the functioning of financial markets. On the other hand, the more common use of derivative instruments in Turkey had some major impacts on financial markets. Hence, this Box analyzes the relation between bonds market and TL/USD cross currency swap markets. The co-movement of cross currency swap rates and bond returns in recent years hints for a close relation between these two markets in Turkey (Chart 1).



### The Arbitrage Mechanism between Cross Currency Swap Rates and Bond Returns

A cross currency swap agreement is a financial instrument that provides the exchange of payments on principal and interest denominated in two different currencies between parties. In general, the interest on one leg is fixed and the other is floating in these agreements. The floating rate on cross currency swaps is commonly quoted as LIBOR versus fixed rate on the other leg and interest payments are annual in general (Hull, 2009). The cash flow structure of the fixed rate leg of the cross currency swap is similar to coupon bonds. The cash flow structure of a hypothetical TL/USD cross currency swap with a nominal value of 1 USD is shown in Table 1.

**Table 1. Cash Flow of a Cross Currency Swap**

	Initial Cash Flow	Periodic Cash Flow	Final Cash Flow
In USD	-1	+LIBOR <sub>t</sub>	+1+LIBOR <sub>t</sub>
In TL	+S <sub>0</sub> *	-S <sub>0</sub> .r <sub>d,0</sub> *	-S <sub>0</sub> (1+r <sub>d,0</sub> )

\* S<sub>0</sub> and r<sub>d,0</sub> are spot exchange rate and the cross currency swap rate in TL.

Cross currency swap agreements enable hedging against exchange rate risk and thus provides comparability of the returns on financial instruments in different currencies. Covered interest parity is also based on this comparability. Assuming absence of transaction costs and market imperfections, the return that is provided to an investor through a derivative instrument with no exchange rate risk should be equal to the return that can be provided through another financial instrument in domestic currency with similar cash flow and risk profile. Otherwise, covered interest parity allows for an arbitrage opportunity. The return from a foreign financial instrument will equal the total net cash flows from a cross currency swap in domestic currency with no exchange rate risk. (Popper, 1993). In that case covered interest parity can be expressed as follows:

$$r_d = r_f + r_{s,d} - r_{s,f}$$

Where  $r_d$  and  $r_f$  show the return on domestic and foreign financial instruments, respectively, while  $r_{s,d}$  and  $r_{s,f}$  denote the rate on domestic and foreign currency leg of the cross currency swap, respectively. The above expression also shows the relation between cross currency swap rate and bond returns. For example, a bank in Turkey converts the USD-denominated syndication loan with LIBOR cost to fixed-rate and TL-denominated liability through a cross currency swap, and the cost of the liability to the bank is the interest on the TL leg of the cross currency swap.<sup>1</sup> If the return of a TL bond with the same maturity exceeds this interest rate, the bank obtains a riskless arbitrage return. However, in that case, bond returns would fall and cross currency swap rates would rise, thus eliminating the arbitrage opportunity. Hence, the arbitrage mechanism relates bond returns to cross currency swap rates.

<sup>1</sup> The cost of syndication loan converted to fixed-rate TL-denominated liability through cross currency swap is  $r_f + r_{s,d} - r_{s,f} = LIBOR + r_{s,d} - LIBOR = r_{s,d}$ . The TL cost of the syndication loan changes to  $r_{s,d} + 1\%$  if the original cost is LIBOR+1% instead of LIBOR.

The theoretically smooth arbitrage mechanism may be impaired in practice mainly due to transaction costs, varying conditions and operating hours in different markets, legal restrictions on short-selling and investors' portfolio structure and the insufficient liquidity or funds of investors (Shleifer and Vishny, 1997; Gromb and Vayanos, 2010). Furthermore, due to differences in credit riskiness, investors may face different costs while borrowing in foreign currency. Hence, this provides riskless profit opportunity to some investors, whereas the others may not benefit from the arbitrage opportunity.

### **Methodology and Findings**

This Box analyzes the long-run relation between daily bond returns and TL/USD cross currency swap rates for different maturities during August 2008 and January 2012 period by co-integration relationship. A co-integration implies that any deviation from the equilibrium relation between bond returns and cross currency swap rates is stationary and temporary. In other words, in case of a co-integration relation, bond returns and cross currency swap rates do not deviate from each other systematically and permanently. Moreover, if the co-integration vector comprising the long-run equilibrium relation can be expressed as  $[b, -b, c]$ , where  $b$  is the error correction coefficient and  $c$  is a stable constant, the covered interest parity condition holds in the long run.

This Box estimates the co-integration relation and coefficients through the unrestricted error correction model by Pesaran, Smith and Shin (2001) as below:

$$\Delta Y = \Delta X\delta + \gamma Y_{-1} + \theta X_{-1} + \varepsilon$$

Where  $Y$  is the dependent variable,  $X$  is the vector of independent variables,  $\varepsilon$  is the error term,  $\delta$ ,  $\gamma$  and  $\theta$  are the coefficients. The above model concludes that the series are co-integrated if  $\gamma$  is significantly less than zero by using the critical values estimated by Pesaran, Smith and Shin (2001). Meanwhile, as the model's specification requires setting one of the series as the dependent and the other series as the independent variable, the co-integration tests are conducted separately for bond returns and cross currency swap rates for every maturity.

<b>Table 2. Pesaran, Smith and Shin Co-Integration Test Results</b>						
<b>Dependent Variable</b>	<b>Cross Currency Swap Rate</b>			<b>Bond Return</b>		
		<b>Error Correction Coefficient</b>	<b>Long-Run Equilibrium Coefficient<sup>a</sup></b>		<b>Error Correction Coefficient</b>	<b>Long-Run Equilibrium Coefficient<sup>a</sup></b>
<b>Maturity</b>	<b>t-statistic</b>			<b>t-statistic</b>		
1-month	-5.624****	-0.154	0.926	-2.848	-0.033	1.095
2-month	-4.695****	-0.108	0.891	-3.746***	-0.033	1.016
3-month	-6.157****	-0.102	0.902	-3.608***	-0.035	0.977
6-month	-3.026**	-0.033	0.835	-3.016**	-0.025	0.974
9-month	-1.777	-0.014	0.640	-2.726	-0.019	0.905
1-year	-1.143	-0.008	0.284	-3.045**	-0.019	0.739
2-year	-1.073	-0.006	-	-3.136**	-0.021	-
3-year	-1.219	-0.007	-	-2.640	-0.016	-
4-year	-1.165	-0.006	-	-2.247	-0.017	-

<sup>a</sup> Shows the ratio of the coefficient of the cross currency swap rate to the coefficient of the bond return.  
 \*\* Statistically significant at 90 percent.  
 \*\*\* Statistically significant at 95 percent.  
 \*\*\*\* Statistically significant at 99 percent.  
 Source: Duran and KÜÇÜKSARACI (2012).

Table 2 shows that bond returns and cross currency swap rates are co-integrated at shorter maturities, while the statistical significance of the co-integration and the error correction in deviations from the equilibrium relation decline at longer maturities. At shorter maturities, bond returns and cross currency swap rates are mainly determined by near-term monetary policy expectations, while credit risk, liquidity risk and other factors adversely affecting arbitrage are more evident at longer maturities, and hence, the relation between bond returns and cross currency swap rates weaken. These findings are also consistent with other country experiences presented by Skinner and Mason (2012).

Furthermore, the finding of a higher statistical significance in co-integration relation where the cross currency swap rates are selected as the dependent variable hints that the arbitrage mechanism works from bond returns to cross currency swap rates. This finding is highly reasonable as banks and foreign investors particularly respond to bond markets through cross currency swap transactions. Moreover, short position in cross currency swaps can easily be taken, while short-selling in bonds is quite challenging.

On the other hand, the long-run equilibrium coefficients in Table 2 are close to 1, especially at shorter maturities. Accordingly, a 1 percent increase in bond returns raises cross currency swap rates by about 1 percent, which thus indicates that covered interest parity condition holds at least in the short term. Error correction coefficients for short maturities also show that deviations from the equilibrium relation between bond returns and cross currency swap rates are not permanent and arbitrage mechanism is strong especially at maturities up to 3 months.

### **Conclusion**

The empirical findings in this Box discussed with respect to covered interest parity condition and the arbitrage mechanism show a strong relation between bond returns and cross currency swap rates in Turkey especially at short maturities, while the market dynamics differ at longer maturities. Furthermore, the empirical results indicate that investors benefit from arbitrage opportunities usually through cross currency swap transactions. However, the findings also show that the spread between bond returns and cross currency swap rates is more permanent, especially at maturities of 1 year or more.

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Box  
5.2

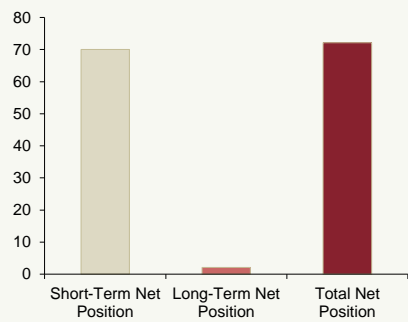
Net Financial FX Position in Turkey

This Box analyzes the net FX position of Turkey released in November 2011 Financial Stability Report by its maturity breakdown. Short-term FX position is the difference between assets and liabilities with maturity equal to or less than 1 year. The Box discusses the net FX position of households, non-financial firms (corporate sector), banks, non-bank financial institutions, CBRT and the public sector.

**Households**

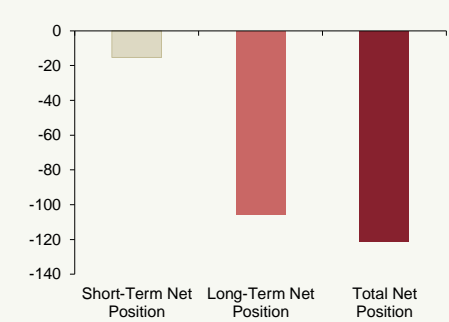
As of 31 March 2012, FX assets of households comprise of deposits and Eurobonds. With the amendment to the Decree No. 32 on the Protection of the Value of Turkish Currency, households are not allowed to borrow in FX-denominated or FX-indexed loans. FX-indexed loans borrowed prior to this amendment constitute the FX liabilities of households. Moreover, FX liabilities of households also include FX-indexed loans borrowed from consumer financing firms. The analysis of FX assets and liabilities of households by term-to-maturity demonstrates that households have net FX position surplus in both short and long-term as of 31 March 2012 (Chart 1).

**Chart 1.** Net FX Position of Households in the Short and Long Term\* (Billion USD )



\* As of March 31, 2012.  
Source: CBRT.

**Chart 2.** Net FX Position of the Corporate Sector in the Short and Long Term\* (Billion USD )



\* As of March 31, 2012.  
Source: BRSA, CBRT.

In addition to the above FX assets and liabilities, households also have FX-denominated investment funds and retirement funds which have a relatively small share in their portfolios. Furthermore, households also have unregistered gold and FX assets, the amount of which is not known, and hence, not included in the analysis.<sup>2</sup>

<sup>2</sup> Households and the corporate sector also take position in derivative markets. However, due to absence of data on the liability or asset breakdown of derivative instruments, these are not included in the analysis.

### Corporate Sector

As of 31 March 2012, FX assets of the corporate sector comprise of FX deposits in domestic and foreign banks, Eurobonds, export receivables, portfolio and direct investment by foreigners. FX deposits of the corporate sector in foreign banks and export receivables are assumed to be short term, while portfolio and direct investment by foreigners are long term. FX deposits at the domestic banks and the Eurobonds are decomposed as short and long-term. FX liabilities of the corporate sector, which is decomposed into short and long-term by term-to-maturity, contain FX-denominated and FX-indexed loans borrowed from domestic and foreign banks in addition to import liabilities.

Corporate sector has net FX position deficit in both short and long term (Chart 2). However, the share of short-term FX position is low in the total FX position. Given the fact that firm owners or partners may hold their income also in their personal accounts, a part of the FX position surplus of households may in fact be owned by the corporate sector.

### Financial Sector

A majority of FX assets in the banking sector balance sheet constitutes Eurobonds, FX-denominated and FX-indexed loans, FX reserve requirements and receivables from banks. Main FX liabilities in the banking sector balance sheet are foreign currency and precious metal deposit accounts, funds from the repo transactions and external loans. Balance sheet assets and liabilities are decomposed as short and long-term by term-to-maturity. The off-balance sheet FX position of the banking sector includes currency swaps as well as forward, futures and option transactions. The off-balance sheet derivative instruments are also decomposed as short and long-term by term-to-maturity.

The FX assets and liabilities of the non-bank financial institutions including factoring, financial leasing and consumer financing firms are decomposed as short and long-term by term-to-maturity, while their off-balance sheet foreign currency position is not decomposed, but simply accepted to be short term.

As of 31 March 2012, the financial sector including banks and non-bank financial institutions has a net FX position deficit of about USD 90 billion in the short term, with an almost equal amount of net FX position surplus in the long term (Chart 3).

**Chart 3.** Net FX Position of the Financial Sector in the Short and Long Term\* (Billion USD )

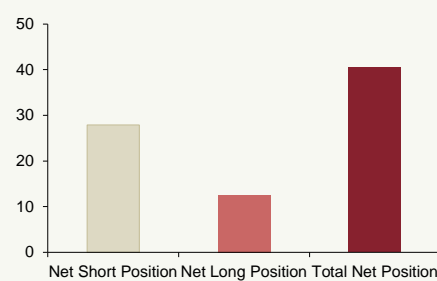


**CBRT**

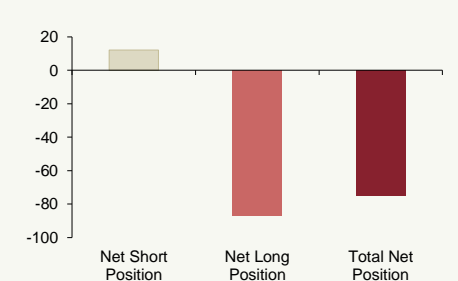
The CBRT conducts reserve management by directing the foreign currency resources of its own or other institutions to FX-denominated instruments. The CBRT's FX assets including gold, domestic correspondents, domestic credits, provisions for claims under legal proceedings, miscellaneous receivables, foreign credits and share participations are accepted as long term. Convertible FX receivables including cash and correspondent accounts are decomposed as short and long term.

CBRT's FX liabilities including banks' deposits, public deposits, FX assets of extrabudgetary funds including SDIF, letters of credit and provisional liabilities are assumed to be short term, while notes and remittances payable and foreign credits are accepted as long term. Banks' deposits contain FX reserve requirements in addition to TL required reserves that can be kept as foreign currency or gold. As of 31 March 2012, the CBRT has a net FX position in both short and long term (Chart 4).

**Chart 4.** Net FX Position of the CBRT in the Short and Long Term\* (Billion USD )



**Chart 5.** Net FX Position of the Public Sector in the Short and Long Term\* (Billion USD )



### Public Sector

FX assets of the public sector comprise FX deposits and securities of the general budget and extrabudgetary institutions as well as regulatory and supervisory institutions, social security institutions, state economic enterprises, funds, local governments, revolving funds and other public institutions. FX liabilities of the public sector include Eurobonds and loans. FX assets and liabilities of the public sector are decomposed as short and long term. The public sector has USD 12 billion of net FX position surplus in the short term, while USD 87 billion net FX position deficit in the long term (Chart 5).

### Conclusion

The Box decomposes the net FX position of Turkey to short (with a maturity of equal to or less than 1 year) and long-term components. The analyzed sectors are households, non-financial firms, banks, non-bank financial institutions, CBRT and the public sector. As of 31 March 2012, Turkey has a net FX position surplus of USD 4.3 billion in the short term, while a deficit of USD 87 billion in the long term (Table 1).

Table 1. Net FX Position of Turkey in the Short and Long Term  
(Billion USD)<sup>3</sup>

	Short-Term	Long-Term	Total
Households	69.98	2.09	72.08
Corporate Sector	-15.27	-105.68	-120.95
Financial Sector	-90.38	90.79	0.41
CBRT	27.91	12.57	40.48
Public	12.06	-86.77	-74.71
<b>Total</b>	<b>4.31</b>	<b>-87.00</b>	<b>-82.69</b>

Calculation and the maturity decomposition of FX position are significant indicators showing the degree of exchange rate and foreign currency liquidity risk for Turkey. Analysis of the total FX position deficit by sectors hints information on the possible imbalances that may be caused by sectoral divergences. This Box demonstrates that Turkey's net FX position deficit is USD 82.69 billion. On a sectoral basis, households, CBRT and the financial sector have net FX position surplus, while other sectors have net FX position deficit. Meanwhile, Turkey has a net FX position surplus in the short term.

<sup>3</sup> The figures in Table 1 for the financial sector comprising of banks and non-bank financial institutions differ from May 2012 issue of the Financial Stability Report since the off-balance figures of the non-bank financial institutions are also included in net FX position calculations as well as due to revisions in financial sector figures.