TÜRKIYE CUMHURIYET
MERKEZ BANKASI

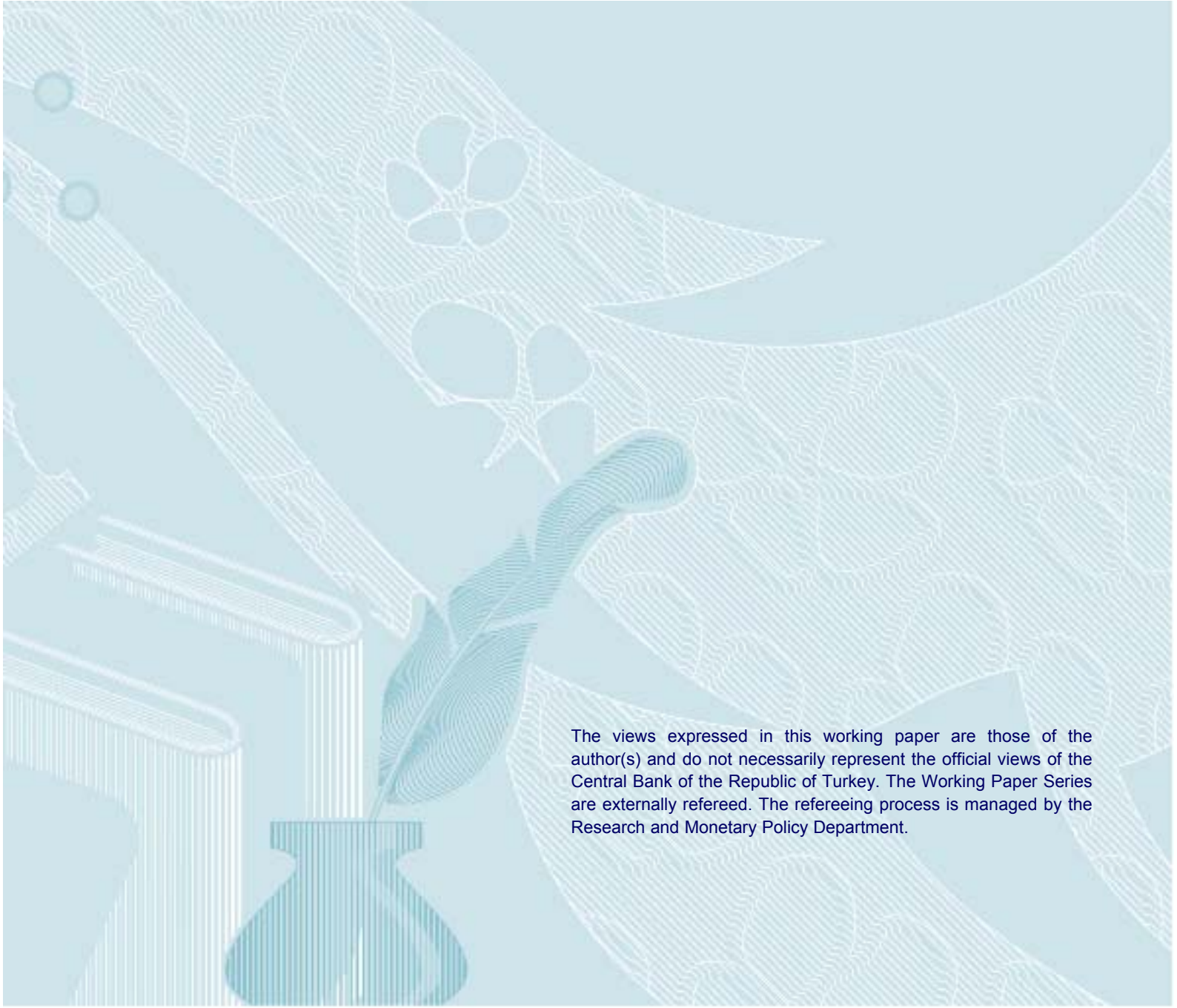# Monetary Policy in Turkey After the Global Crisis

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MONETARY POLICY IN TURKEY AFTER THE GLOBAL CRISIS[1]

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Abstract

Post-crisis spillovers and heightened capital flows have triggered a search for alternative monetary policy frameworks, especially for small open emerging economies. The Turkish experience since end-2010 sets out an interesting case in this respect. Faced with extreme volatility in cross-border capital flows, rapid credit growth and a sharp deterioration in the current account deficit, Central Bank of Turkey (CBT) has modified the conventional inflation targeting regime by adopting financial stability as a supplementary objective and enriching the set of policy instruments with a particular emphasis on credit and exchange rate channels. This study explains the underlying motivation why the CBT has adopted such a flexible policy, provides an overview of the new framework, and summarizes the initial results. The analysis conducted throughout the paper and the recent evidence suggests that the new policy framework has been quite effective in reducing the macro financial risks related to a sudden reversal of capital flows by engineering a "soft landing" of the Turkish economy. The policy has successfully shifted the composition of aggregate demand towards a more balanced growth path (rebalancing) without prejudice to the price stability objective.
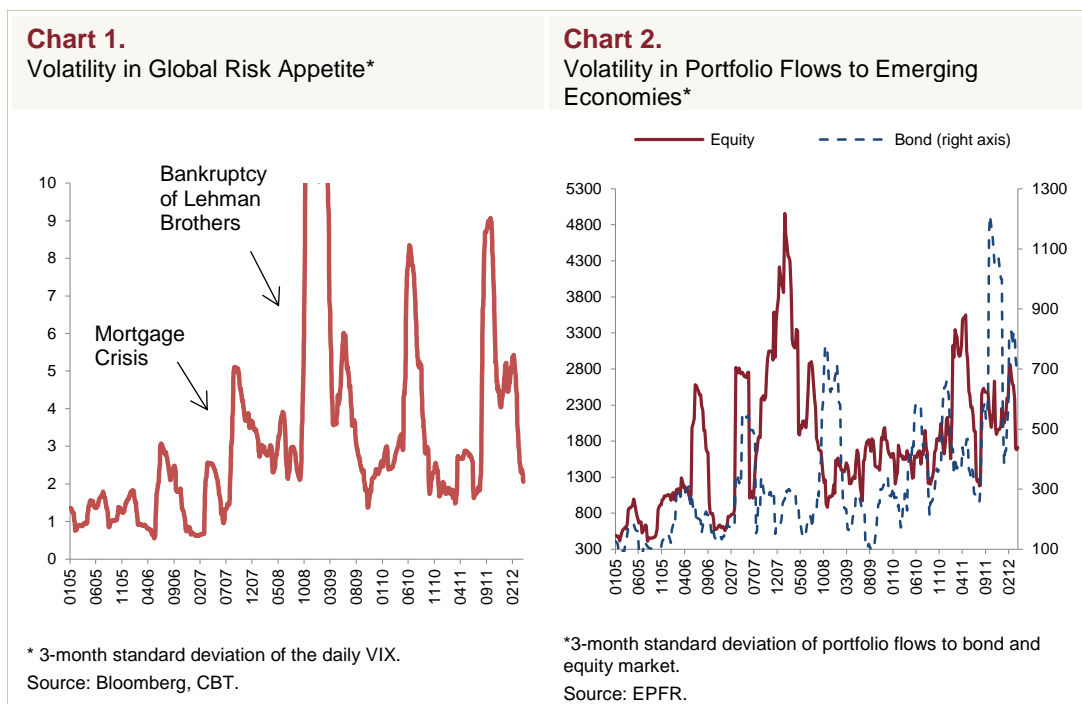

I. MOTIVATION FOR THE ADOPTION OF THE NEW POLICY FRAMEWORK

A Global Perspective: Why Do We Need a New Approach?

Changing view of the central banking in the post-crisis period was one of the main reasons why the CBT adopted an "unconventional" approach in monetary policy. One of the major lessons learnt from the global crisis is that while focusing on price stability, central banks should not overlook the risks accumulating in the financial system and the bubbles in asset prices. As a reflection of this lesson, the idea that the central banks should attach more weight to financial stability has gradually been highlighted across international platforms like G-20. Moreover, on the academic side, studies advocating the implementation of macro prudential policies for crisis prevention purposes have increasingly occupied the agenda in the recent economic literature (Bianchi and Mendoza 2011, Jeanne and Korinek 2010).

Not only the changing approach towards economic policies and central banking, but also the unusual global economic environment was influential in inducing the search for a new policy mix by the CBT. The devastating effects of the global crisis and subsequently-implemented policies by advanced economies as well as prevailing global imbalances led to unusual dynamics in the global economy. After four years of painful adjustment process since the outbreak of the crisis, deleveraging process in advanced economies still continues. The negative feedback between balance sheets of the public and banking system, particularly in advanced economies, continue to impede the recovery. Conventional monetary transmission mechanisms across advanced economies seem to be impaired due to ongoing financial stability concerns. All these developments increase the need to try alternative approaches, and thus encourage the central banks to stretch the boundaries of the conventional monetary policy framework.

Post-crisis responses by the major central banks complicate the policy-making process in emerging economies. Quantitative easing in advanced economies and the ongoing fragilities in the global financial system has led to substantial volatility in capital flows in recent years. Chart 1 depicts the standard deviation of the VIX index, which one of the mostly cited global risk appetite indicators. The level of this index represents some measure of *risk*, while its volatility is more related to *uncertainty*. As clearly seen in Chart 1, uncertainty seems to have reached to unprecedented levels following the global crisis. As a consequence, capital flows towards emerging economies have been highly volatile (Chart 2). These developments constitute a major challenge for macroeconomic and financial stability in emerging economies, especially those with sizeable external financing needs. This environment calls for more *flexible* policies to ensure timely and effective responses to external shocks.
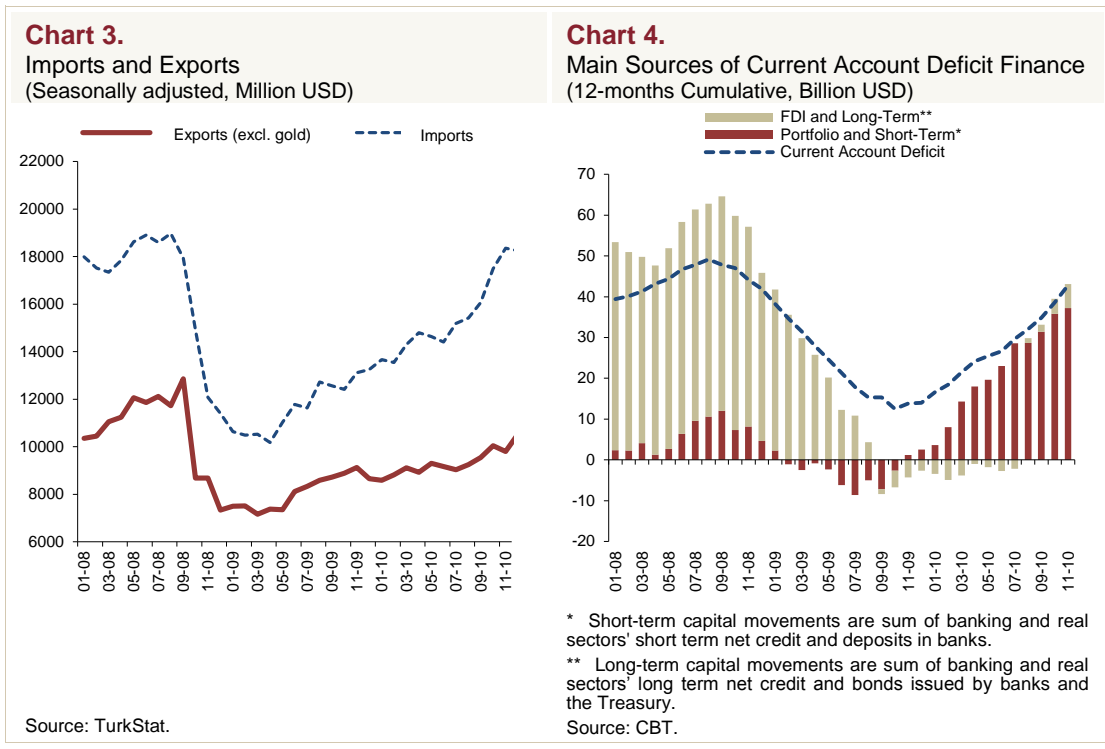
Chart 1.	Chart 2.
Volatility in Global Risk Appetite*	Volatility in Portfolio Flows to Emerging Economies*

* 3-month standard deviation of the daily VIX.
Source: Bloomberg, CBT.

*3-month standard deviation of portfolio flows to bond and equity market.
Source: EPFR.

### *Global Imbalances, Capital Flows and the Turkish Economy*

For a better comprehension of the key role played by the capital flows on macroeconomic balances and the policies implemented by the CBT as of late 2010, it will be useful to first review post-crisis dynamics of the Turkish economy. After contracting in 2009, Turkish economy experienced a rapid recovery on the back of strong fundamentals and solid domestic demand. The surge in capital inflows fuelled by historically low policy rates and quantitative easing policies across advanced economies supported domestic credit growth and led to an excessive appreciation in the Turkish lira. The rapid expansion in credit reinforced the growth in domestic demand and together with the strong Turkish lira resulted in higher demand for imports. However, exports remained depressed due to weak external demand and appreciated domestic currency. As a consequence, foreign trade and current account balance posted a notable deterioration (Charts 3 and 4), which increased the vulnerability of the economy against sudden reversals in the global risk appetite.

The excessively volatile nature of global risk appetite in the post-global crisis world together with increasingly short-term nature of current account finance raised further concerns about financial stability.[3] By the last quarter of 2010, current account deficit has been financed almost completely through short-term capital and portfolio investments (Chart 4).

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[3] Please refer to Başçı ve Kara (2011) for a more detailed exposition of this period.

Chart 3.
Imports and Exports
(Seasonally adjusted, Million USD)

Chart 4.
Main Sources of Current Account Deficit Finance
(12-months Cumulative, Billion USD)

* Short-term capital movements are sum of banking and real sectors' short term net credit and deposits in banks.
** Long-term capital movements are sum of banking and real sectors' long term net credit and bonds issued by banks and the Treasury.

Source: TurkStat.

Source: CBT.

Historically, volatility in capital flows has played a major role for macroeconomic stability in Turkey. Although it may not reflect a pure causality relationship, this evidence in itself suggests that containing the cyclical component of the current account deficit at some reasonable level and securing a balanced composition of foreign financing are important for achieving macroeconomic stability and sustainable growth. As illustrated in Chart 5, the hard landing in economic activity in 1994, 2001 and 2008 crises co-existed with a sudden stop in capital flows. Given an environment of fairly short-term and volatile financing, this observation points out the need for enhancing the resilience of the economy against abrupt changes in the global risk appetite. It also suggests that a more flexible approach could be useful in monetary policy, paving the way for a new policy framework.

Chart 5.
GDP Growth and Capital Flows

Source: TurkStat, CBT.
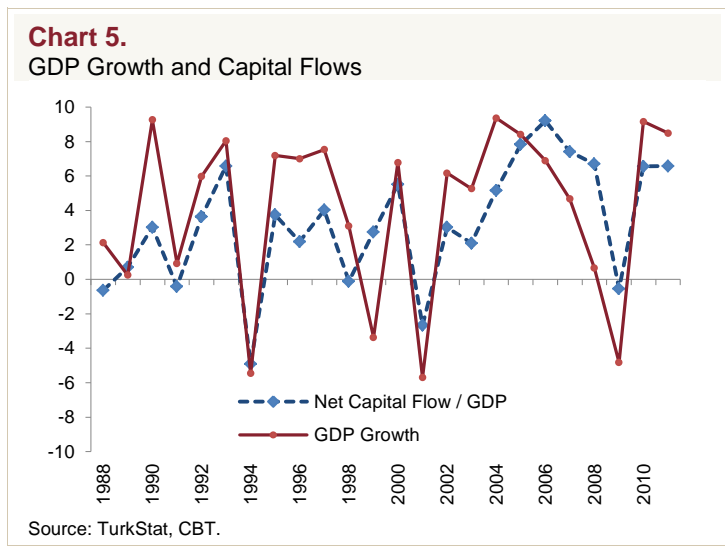
Financial Stability and Monetary Policy

In the light of all these assessments, the CBT designed and implemented a new monetary policy framework starting from late 2010. In this respect, the overall scope of inflation targeting was revised and financial stability was adopted as a supplementary objective. Accordingly, additional policy tools were developed in order to pursue multiple objectives.
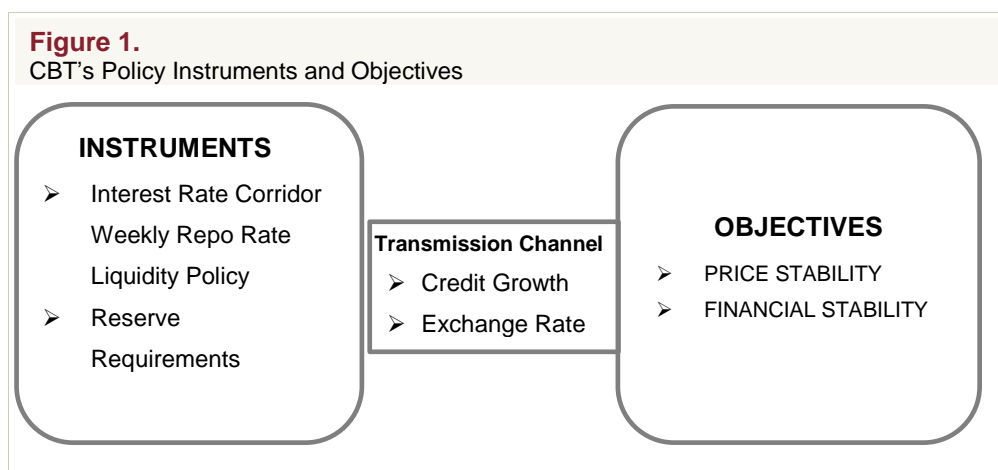
The new policy design aimed at constructing a framework to enhance the resilience of the economy against fragilities that are particularly driven by external balance, credit expansion and capital flows. Current account balance and the course of capital flows in Turkey entail noteworthy information on financial stability and macro financial risks. For example, higher risk appetite in times of strong global growth accelerates capital inflows; translates into rapid credit growth, increases maturity and exchange rate mismatches on balance sheets, leading to accumulation of risks by distorting resource allocation. In the meanwhile, the current account balance deteriorates through the appreciation of the local currency and rapid credit expansion. The deterioration in current account and the volatility in external financial flows turn into an adverse feedback loop and increase the risk of a "sudden stop", which can be regarded as some form of systemic risk. Therefore, current account balance and capital flows are at the center of the new policy design alongside with traditional variables like credit. Accordingly, policies implemented since late 2010 concentrated on alleviating the potential adverse effects of capital flow volatility, aiming at soft landing and improving the external financing structure.[4]

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[4] Needless to say, the notion of financial stability is more complex than to be captured by just capital flows, credit, and external balances. Moreover, financial stability indicators highly depend on the specific structure of the economy, and they may be time varying. For example, different indicators (like housing prices, foreign indebtedness of firms, etc.) may be more important in the future for financial stability, depending on the economic environment and/or structural changes.

POLICY INSTRUMENTS AND THE TRANSMISSION MECHANISM

In the traditional inflation targeting framework, central banks mainly aim at keeping inflation in line with the target by using a single instrument (short-term interest rate). In order to contain inflation, the output gap (deviation of aggregate demand from the potential level of output) and other variables affecting the medium term inflation outlook are taken into account. Financial stability or asset prices are not separately included in the objective function. In other words, the monetary authority reacts to variables such as credit growth and asset prices only indirectly through their impact on future inflation. On the other hand, a monetary authority with an explicit financial stability concern can directly respond to such variables. However, due to the tradeoff that may occasionally arise between financial stability and price stability, additional tools are needed besides the policy rate. Accordingly, the CBT diversified its policy tools before adopting the new policy mix.

The new policy mix entailed the joint use of the interest rate corridor between overnight borrowing and lending rates, liquidity policies and required reserves in addition to short-term policy rates. The main tools and the transmission mechanism utilized within the new policy framework can be summarized as in Figure 1. At the end of the diagram are policy tools: (i) interest rate corridor, one-week repo rate and liquidity management tools (ii) required reserves. More recently, "reserve option mechanism" have been added to this policy mix.[5] Using these tools, the CBT finally aims at affecting price stability and financial stability. The credit and exchange rate channels bridge the gap between the instruments and final objectives.

Figure 1.
CBT's Policy Instruments and Objectives

INSTRUMENTS	Transmission Channel	OBJECTIVES
➤ Interest Rate Corridor Weekly Repo Rate Liquidity Policy	➤ Credit Growth	➤ PRICE STABILITY
➤ Reserve Requirements	➤ Exchange Rate	➤ FINANCIAL STABILITY

Credit and Exchange Rate

The transmission channels of the new policy instruments, i.e. the interest rate corridor and required reserves were largely uncertain at the initial stage of the new policy. Since the policy was newly implemented, the existing economic literature provided little information regarding

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[5] See Alper, Kara, and Yörükoğlu (2012) for a detailed description of the design and implementation of reserve option mechanism.

the channels through which these tools affected price and financial stability. Theory and empirics were not much of a help. This required an additional effort in terms of communication policy.

To enhance the communication about the transmission mechanism, the CBT defined and highlighted two intermediate variables: credit and exchange rates. The policy became increasingly more explicit about the intended course of these variables. Since these variables are directly observable and the relevant data are announced without delay, they can be easily and directly monitored by the economic agents. Moreover, the relationship between credit and exchange rates with final objectives of price stability and financial stability can be easily communicated and well understood. This approach facilitated a more reliable and effective communication regarding the policy implementation, as it provided a clear and observable transmission from policy instruments to final objectives.[6]

In the traditional monetary policy implementation, in which price stability is the only objective and the short term policy rate is the single tool, the central bank does not need to have a separate impact on credit and exchange rate channels. This is because in this case what matters at the end is the net impact of these channels on inflation. To understand the mechanism, let us consider a case of traditional inflation targeting regime where inflation overshoots the target due to an acceleration in domestic demand. The central bank will raise policy rate to bring inflation back to the target path. Higher interest rate will slow down the credit volume and it will typically lead to an appreciation in domestic currency, both of which will lead to a fall in inflation. Therefore, raising policy rates during times of overheating would be enough, as under a conventional inflation targeting regime what matters for the monetary authority is putting inflation back to the target path.

However, if the central bank has financial stability concerns, hiking the policy rate may not be desirable as it would lead to exchange rate appreciation which may conflict with the financial stability objective. Therefore, the presence of financial stability as an explicit objective may require the use of credit and exchange rate channels separately. Accordingly, monetary authority may need to resort to other instruments alongside the short-term policy rate in order to affect both credit and exchange rate channels in the desired direction. That is why the CBT enriched the set of policy instruments during the adoption of the new policy framework.

Transmission Mechanism-1: Policy instruments, credit and exchange rates

Liquidity management and interest rate corridor are the key instruments for understanding the CBT's new policy framework. Therefore, we will first describe the underlying operational framework and then elaborate on the interaction between these policy instruments with the credit and exchange rate channels.

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[6] This is discussed in more detail in the next section.

Operational Framework: Liquidity Management and the Interest Rate Corridor

The CBT has various instruments at its disposal to affect the amount of liquidity and interest rates in the interbank money market. It can provide short term funds (daily, weekly, or monthly) to banks that are short of liquidity and borrow from those that have excess of it. The main instrument the CBT uses to manage the liquidity of the system and to change the stance of monetary policy is the one-week repo auctions. The area that lies between the rates at which the CBT can borrow and lend overnight in the money market is called the "interest rate corridor" (Figure 2).

Figure 2.
Operational Framework of CBT's Monetary Policy
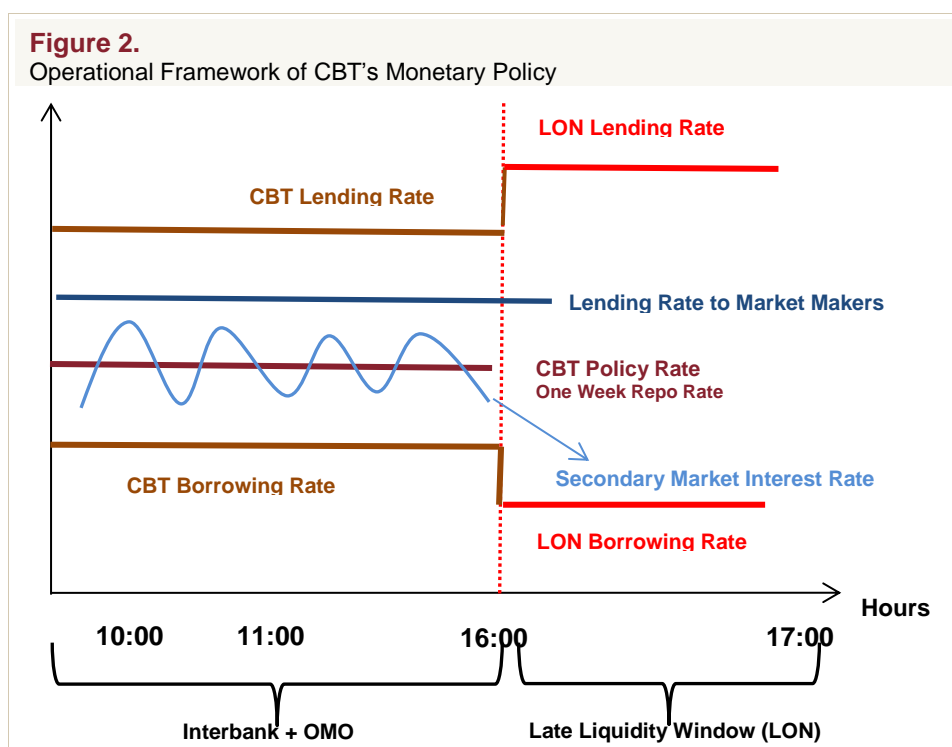
In the traditional inflation targeting framework, repo rate quoted on one-week quantity auctions and the interest rate corridor are revised by the Monetary Policy Committee (Committee) on a monthly frequency. In other words, short-term interest rates stay unchanged until the next meeting. Hence, once the rates are announced, short term money market rates fluctuate around the policy rate by only a small margin, reflecting the CBT's implicit commitment to keep the money market rates "almost" constant until the next MPC meeting. Since, the interest rate for the main funding operation (one-week repo) is pre-determined, average funding rate of the CBT stays flat throughout the whole month.

On the other hand, under the new system, there is no short-term commitment for the level of market rates or average cost of funding by the CBT. The key feature of the interest rate corridor is that the market interest rates can be changed on a daily basis by adjusting the quantity of funds provided through one-week repo auctions. Accordingly, the overnight rate

can be targeted anywhere inside the corridor, which sets the upper and lower bounds. In this structure, the width of the interest rate corridor determines the range of overnight interest rates that can be set by the CBT. In other words, the width of the corridor signals the maximum possible change that can be engineered in the short term market rates via daily liquidity operations. This framework allows the volatility of the short term interest rates to be used as an additional policy instrument.[7]

Under a conventional inflation targeting framework, the average cost of short term funds provided to banks by the central bank is typically equal to the policy rate, which is very close to the interbank money market rate by definition. However, as described above, the new corridor system allows the short term money market rates to persistently deviate from the average funding cost of the CBT (Chart 6). This differential, coupled with the active liquidity policy and interest rate corridor, allows the CBT to affect the credit and exchange rate channels in separate ways (see the discussion below).

Chart 6.
CBT Interest Rates and Overnight Repo Rates
(Percent)

Source: ISE, CBT.
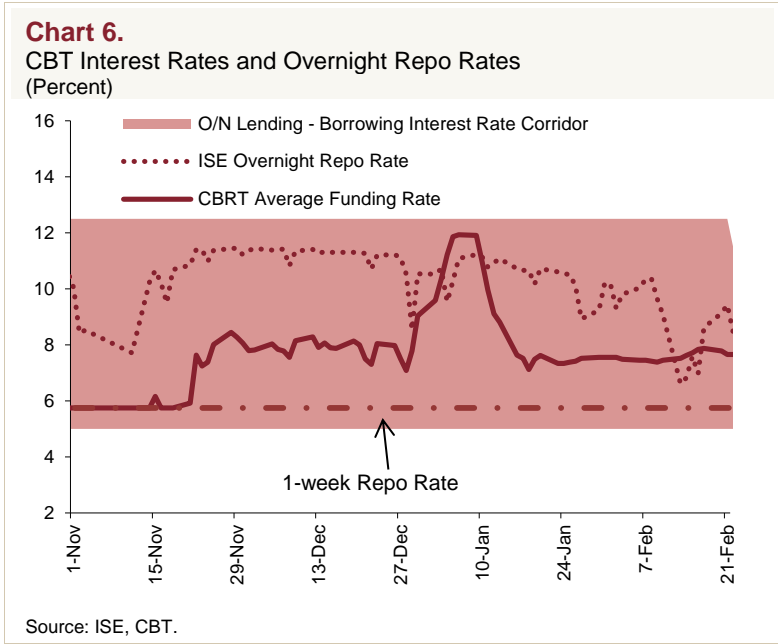
Overall, within the new setup, the interest rate corridor assumes an important role in the conduct of monetary policy. This new instrument allows the CBT to "fine tune" the monetary stance on daily and weekly frequencies, facilitating a swift response to rapid changes in risk appetite and providing a much-valued flexibility against uncertainties surrounding the global economy.

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[7] See Kara (2012b) for the motivation of this alternative instrument.

The Interaction of Corridor and Liquidity Policy with the Credit Channel

In the monetary transmission channel of the traditional inflation targeting framework, current and expected levels of short-term interest rates shape the yield curve and determine the monetary policy stance, which in turn affects banks' lending rates and lending standards. In the new framework, the transmission mechanism works in a similar way in the sense that the average cost of short term funds provided by the CBT is used as a control variable. However, unlike the previous framework, the short end of the yield curve is now affected via a mix of liquidity policies rather than just the single policy rate. More importantly, through the use of the corridor and liquidity facilities, the CBT can now control the marginal cost of credit at a high frequency for banks that have a liquidity shortfall.

This framework also lets the CBT use uncertainty regarding the funding rate as a policy instrument. In the case of an undesired acceleration (deceleration) in credit growth, the can increase (decrease) the uncertainty regarding the amount and cost of funding provided to banks and lead to a tightening (loosening) in credit supply. Particularly, implementing high frequency monetary tightening through the active use of wide interest rate corridor can have a sizeable impact on the credit supply. In this case banks usually take the upper limit of the interest rate corridor as a reference point when pricing the interest rate risk. As a consequence, the loan rate and loan-deposit spread are closely related to the upper bound of the interest rate corridor. Thus, in a market which the CBT is a net creditor, it can have a significant effect on credit rates and credit growth. For example, Chart 7 depicts that following October 2011, when the CBT opted for monetary tightening and occasionally raised average funding rate through interest rate corridor (additional tightening) while at the same time leaving the extent and duration of this tightening uncertain, loan rates exhibited a significant increase (Chart 7).
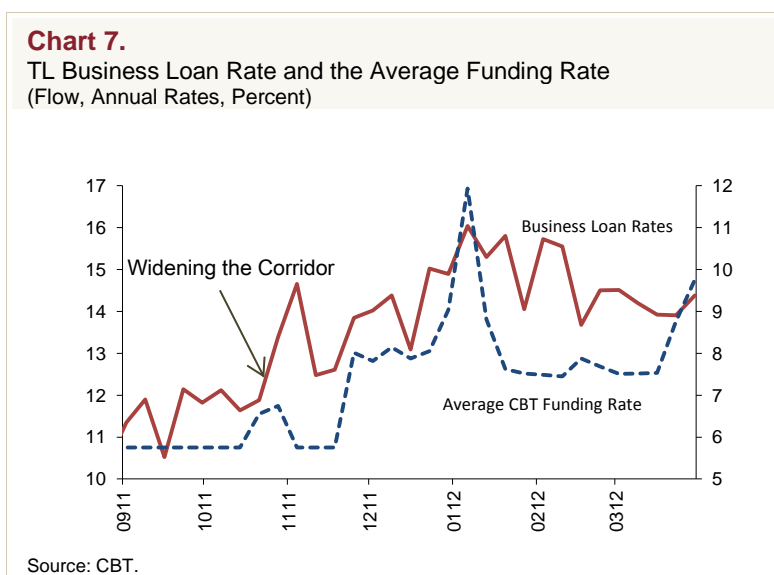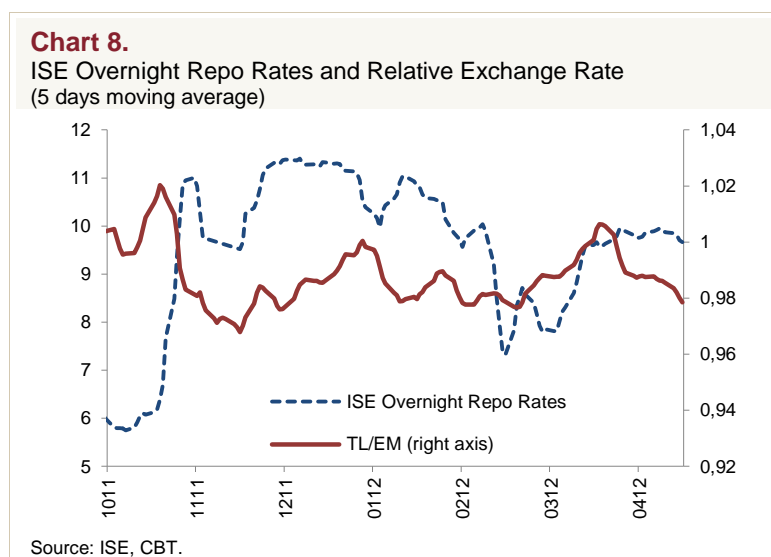
Chart 7.
TL Business Loan Rate and the Average Funding Rate
(Flow, Annual Rates, Percent)

Source: CBT.

Short-term interest rates affect the exchange rate mainly through uncovered interest rate parity condition, whereby an unexpected rise in domestic short-term rates strengthens the domestic currency. A wide interest rate corridor and liquidity facilities make it possible for the CBT to adjust overnight interest rates on a daily basis so as to smooth out the volatility in short term capital flows and exchange rate.

For example, in periods of high global risk aversion, during which emerging market countries like Turkey are likely to experience capital outflows, the CBT can prevent an excessive depreciation of the Turkish lira by supplying less liquidity than demanded by the market and let the short-terms rates rise. This policy also works by inducing banks to sell foreign exchange to meet their liquidity needs, which would also ease the depreciation pressure on the domestic currency.
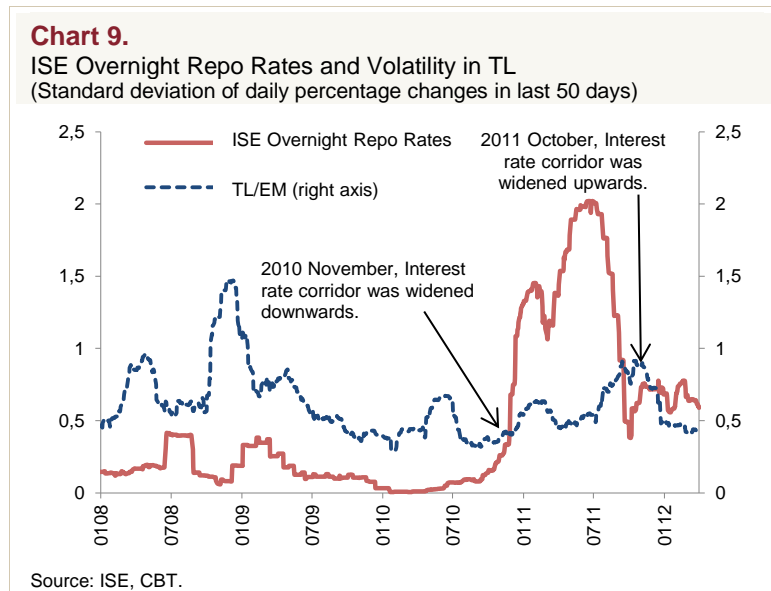
Chart 8 depicts the short term market rates versus the value of Turkish lira against a currency basket of peer emerging economies. Following the periods of significant hikes in short term market rates, the Turkish lira exhibits a relative appreciation.[8]

Chart 8.
ISE Overnight Repo Rates and Relative Exchange Rate
(5 days moving average)

Source: ISE, CBT.

The width of the corridor can play an important role in smoothing exchange rate volatility. Raising the upper bound of the corridor in periods of weak risk appetite would limit the amount of capital outflows for a given level of domestic interest rate and country risk premium. On the other hand, interest rate volatility can be considerably increased by widening the interest rate corridor downwards in periods of strong capital flows. In other words, the system can be adopted to smooth the flow of capital in both directions. In fact,

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[8] Undoubtedly, as the relationship has an internal nature, causality can be directed from the exchange rate to the interest rate as well. Nevertheless, as short term market rates are variables that are largely controlled by the CBT and the chart shows relative exchange rates, causality is highly probable to be oriented from the interest rate to the exchange rate.

following the widening of the interest rate corridor downwards at the end of 2010, short term interest rate volatility displayed an upsurge, which contributed to a deceleration of capital flows. On the other hand, when the corridor was widened upwards in October 2010, exchange rate volatility has displayed a notable decline (Chart 9).

Chart 9.
ISE Overnight Repo Rates and Volatility in TL
(Standard deviation of daily percentage changes in last 50 days)

Source: ISE, CBT.

The Interaction of Required Reserve Policy with Credit and Exchange Rate Channels

Required reserves are mainly used for liquidity purposes and also for affecting credit supply. Capital inflows are typically associated with easing supply conditions, falling interest rates, and rapid credit growth. Higher required reserve ratios can limit the acceleration in credit supply, and contain macro financial risks. On the other hand, during a deceleration in capital inflows or increased risk perception, reduction of required reserves can reduce the risk of a credit crunch.

Unremunerated required reserves affects credits basically over two channels: (i) direct cost channel, (ii) liquidity channel. Changes in required reserve ratios directly affect the funding costs of banks. Therefore, banks are inclined to reflect the changes in required reserves into interest rates on credits and/or deposits (Alper and Tiryaki 2011). However, in an environment of low deposit rates, the additional cost introduced through changes in reserve requirement ratios remains limited. For example, the CBT terminated remuneration of required reserve ratios as of September 2010 and pulled the weighted averages of required reserve ratios to 13.3 percent until April 2011, which led to a direct cost effect of around 100 basis points (Başçı and Kara 2011). Even if this cost is fully reflected on lending rates by the banks, the effect on credit demand would not be significant, as the sensitivity of credits to interest rates is relatively limited in Turkey (Alper et al. 2011, EBRD 2010). Thus, the effect of required reserve ratios on credits through *cost channel* would be rather limited.

The impact of required reserves on credits mainly works through the liquidity channel, which functions interactively with the interest rate corridor and the liquidity management policies. Normally, under a conventional inflation targeting regime with short maturity of deposits, the liquidity withdrawn from the market through required reserve hikes can be easily substituted by the CBT funding, and therefore liquidity channel is expected to be ineffective. Nevertheless, under the current practice of the CBT, the corridor system and the active liquidity management strategy increases the volatility in short term rates limiting the substitutability of the deposits by the central bank funding. Therefore, in times of additional tightening implemented by the CBT, banks (at least the ones with liquidity needs) should act more cautiously against credit expansion. Hence, the effect of required reserves on credit supply would be amplified through the interest rate corridor.

As an additional tool, the CBT allows the banks to keep a certain ratio of Turkish lira required reserves in foreign exchange or gold. This flexibility, which is called the Reserve Option Mechanism has the potential to smooth out the effects of fluctuations in capital flows on the exchange rate and financial markets. For example, a rise in foreign exchange liquidity and a fall in foreign interest rates in times of accelerated capital inflows will lead banks to keep a larger part of their required reserves in foreign exchange. This can alleviate the appreciation pressure on the exchange rate and can support financial stability by reducing the excess lending in foreign exchange. In that sense, this mechanism would not only act as an automatic stabilizer for the foreign exchange, but also reduce the sensitivity of the credits to capital flows. [9]

Transmission Mechanism-2: Credits, Exchange Rate and Final Objectives

Having explained the impact of policy instruments on credit and exchange rates, in order to complete the transmission depicted in Figure 1, we will now bridge the gap between these two intermediate variables and the final objectives (price stability and financial stability).

Effect of Credit and Exchange Rate Channels on Price Stability

The CBT sets its monetary policy stance to ensure that medium term inflation outlook is consistent with the inflation target. To this end, the CBT makes use of the demand and cost channels. Credit plays an important role for the demand channel, while the exchange rate is the main determinant of the cost channel.

Credit channel directly affects the aggregate economic activity and the output gap. The ratio of credit to national income reached 50 percent by end-2011 in Turkey, pointing that the credit channel has a prominent role in financing consumption and investment. In the period ahead, as financial deepening increases, credit channel is expected to have a greater impact on aggregate demand. Therefore, the credit channel is the main transmission mechanism to affect the output gap and medium term inflation dynamics.

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[9] See Alper, Kara, and Yörükoğlu (2012) for the details of this mechanism.
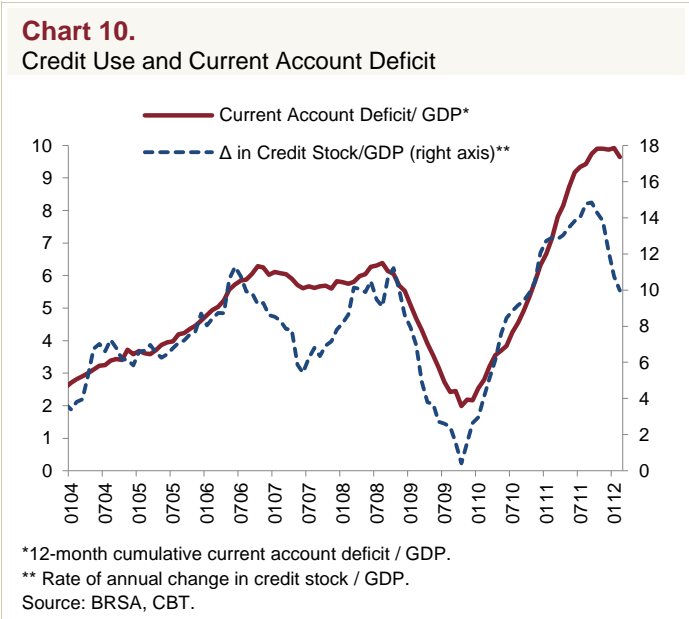
The exchange rate is a key variable for the cost channel. Given that imported intermediate inputs are intensely used in production in Turkey, exchange rate pass-through is typically the main channel for the short term inflation outlook. According to the recent forecasts made by the CBT economists, a 10 percent permanent depreciation of the Turkish lira against the Euro-USD basket increases the overall price index by around 1.5 percent over one year's time. A sizable fraction of the pass-through effect is materialized within six months (Kara and Öğünç 2012).

In sum, credit and exchange rates are important determinants of inflation dynamics basically through demand and cost channels.[10]

Interaction of Credit and Exchange Rate Channels with Macro Financial Risks:

Financial stability is a much broader concept than price stability. Thus, before elaborating on the impact of credit and exchange rates on financial stability, what we mean by financial stability should be made more explicit. As mentioned in the first section of the paper, the financial stability notion that the CBT considers reflects a macro perspective. In the case of Turkey, macro financial risks in recent years manifested themselves through rapid credit growth, external imbalances, and misalignment of the exchange rate.

In fact, credit and exchange rates directly interact with the current account balance and macro financial risks. For example, an acceleration in credit growth increases the expenditures on goods with high import component like durable consumption goods and investments. Moreover, as rapid credit growth can reduce saving rates in the short-term, it directly increases the current account deficit from a savings-investment perspective. Chart 10 shows that the current account balance exhibits a strong relationship with the credit use in the Turkish case.

Chart 10.
Credit Use and Current Account Deficit

— Current Account Deficit/ GDP*
- - - Δ in Credit Stock/GDP (right axis)**

*12-month cumulative current account deficit / GDP.
** Rate of annual change in credit stock / GDP.
Source: BRSA, CBT.

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[10] Undoubtedly, from a general equilibrium framework, credit and the exchange rate affect inflation through other macro variables like net exports and asset prices. However, as the net effects of these channels are ambiguous, this paper focuses only on direct channels.

On the other hand, excessive appreciation in the exchange rate fuels the demand for directly imported goods. As a result, both credit expansion and over-appreciation of the local currency deteriorate the current account balance and may increase the fragility of the economy against abrupt changes in capital movements. Under such circumstances, a monetary authority that attaches some direct weight to financial stability will opt for a slower growth in credits and a less appreciated local currency (as the CBT did since end-2010) as long as this does not conflict with the objective of achieving price stability.
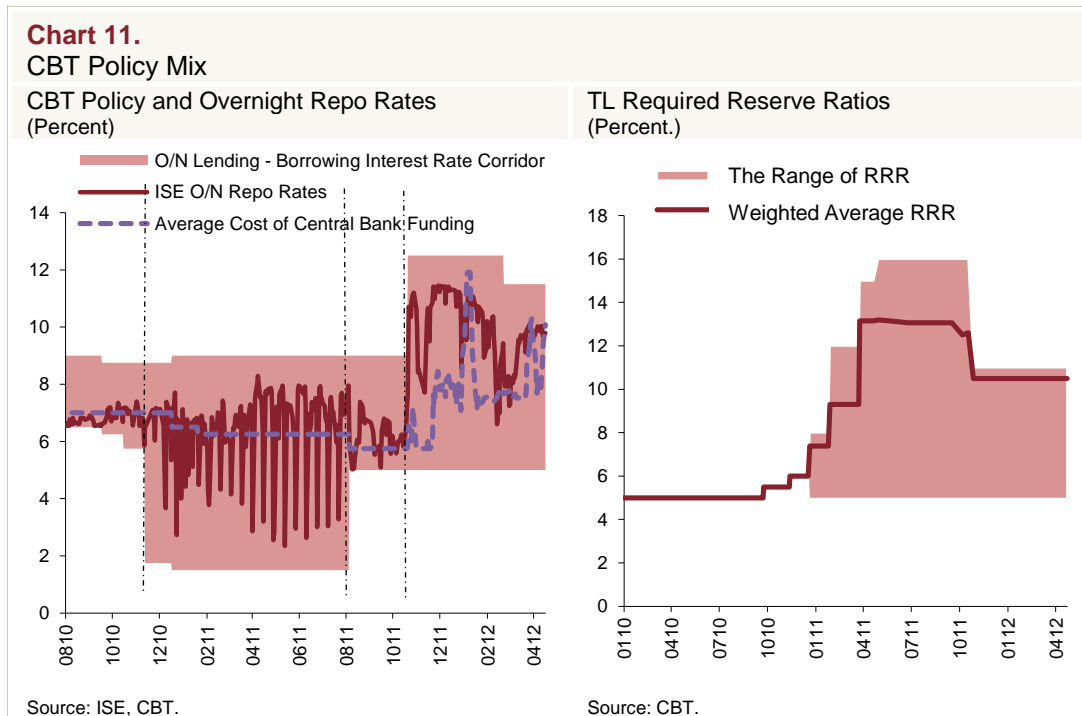
Credits and exchange rates can be also considered as direct indicators for the health of the overall economic environment. In other words, credits and exchange rate can be regarded as "symptoms" of macro financial risks since the macroeconomic imbalances led by capital movements are mostly (not always) reflected in credit and exchange rate movements. For example, during times of surging inflows, typically, deterioration in the current account balance and excessive appreciation in the Turkish lira simultaneously appear. Admittedly, reasonable growth in credits and realistic exchange rate levels, *per se*, do not completely solve the possible problems related to financial stability; yet they imply a relatively lower probability for the event of a crisis. In fact, information content of the credit variables regarding financial stability is increasingly emphasized in the academic literature in recent years. In this context, rapid credit growth and excessive appreciation of the local currency are found to be primary leading indicators for a possible crisis (Tornell and Westermann 2005, Mendoza and Terrones 2008, Mendoza 2009, Jordà et. al. 2011, Reinhart 2012, Gourinchas and Obstfeld 2012, Schularick and Taylor 2012).

II. IMPLEMENTATION AND OUTCOMES

In this section, we summarize the monetary policy strategy that has been implemented by the CBT since the last quarter of 2010 and assess the effectiveness of these policies in attaining final objectives.

Monetary Policy Implementation

Chart 11 summarizes the course of the CBT's main policy instruments since the implementation of the new policy mix. The Chart on the left depicts the interest rate corridor, CBT average funding rate and short term interest rates in the ISE market, which are the most relevant variables for the monetary policy stance under the current framework. The chart on the right side shows the evolution of required reserve ratios, which is a complementary tool.

Chart 11.
CBT Policy Mix

CBT Policy and Overnight Repo Rates (Percent)	TL Required Reserve Ratios (Percent.)

Source: ISE, CBT.

Source: CBT.

The policies implemented since the adoption of the new framework can be discussed in three periods:

November 2010 - August 2011: Strong Capital Inflows

In this period, the main goal can be briefly described as ensuring a "soft landing" in the economy. Following the quantitative easing packages implemented by advanced economies, developments such as rapid short-term capital inflows, appreciated Turkish lira and widening current account deficit aggravated macro financial risks during this period. Thanks to the favorable inflation outlook, monetary policy could focus on discouraging short-term capital inflows and preventing excessive appreciation of the exchange rate. Policies implemented in this period aimed at containing domestic credit growth and rebalancing domestic and external demand to minimize macro financial risks caused by the rapid deterioration in the current account deficit and the quality of its finance. In this respect, the interest rate corridor has been widened downwards as of the end of 2010. This created a marked volatility in overnight interest rates in the money market (Chart 11) and helped contain very short-term capital inflows by increasing downside risks on overnight interest rates. Meanwhile, required reserve ratios were hiked to offset the potential expansionary impact of the low levels of short term rates on credit growth. The hike in required reserve ratios also helped strengthen the credit channel of monetary policy, as the banks became more dependent on CBT funding to meet their increased liquidity requirements.

August 2011 - October 2011: Euro Area Debt Crisis and Increased Uncertainty

As of the second half of 2011, global risk appetite worsened amid deepening sovereign debt problems in the euro area. Increased uncertainty regarding the global economic outlook led to a marked slowdown in capital flows to emerging market countries. The CBT acted by

narrowing the interest rate corridor to decrease the volatility in short-term interest rates with a view to limit the extent of capital outflows. One-week repo rates were also cut to reduce the downside risks on economic activity driven by unfavorable external demand conditions. In addition, ample foreign exchange liquidity was provided to the market to avoid the possibility of a sudden stop. On the other hand, reserve requirements were kept at high levels as credit growth continued its strong pace and short-term interest rates remained low.

Post-October 2011 Period: Surge in Inflation and Monetary Tightening

Starting from October 2011, developments on the inflation front have dominated the implementation of monetary policy. Inflation started rising due to the depreciation of the domestic currency amid the worsening risk appetite coupled with the administered price hikes in the last quarter of 2011. Overnight lending rates were raised considerably in October in order to prevent deterioration in the medium-term inflation expectations. The CBT implemented a strong tightening by widening the interest rate corridor upwards and reducing the amount of funding provided by one-week repo auctions (so called-additional tightening). In order to avoid an undesired tightening in liquidity and credit conditions, reserve requirement ratios were lowered.
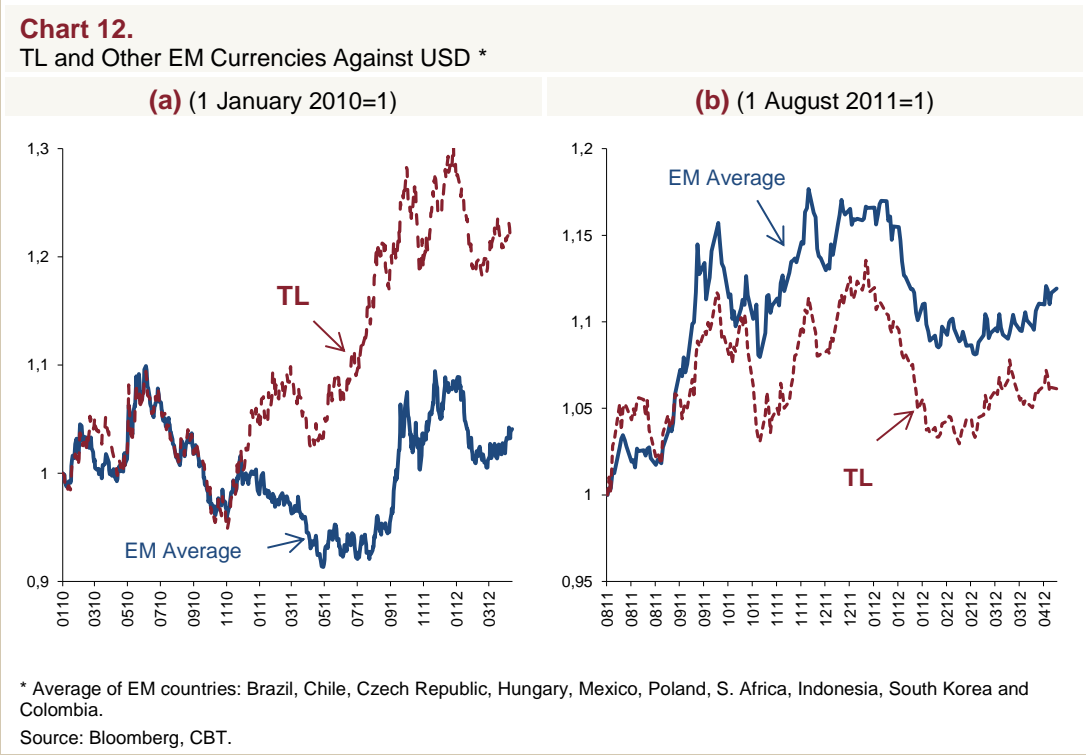
The interest rate corridor was slightly lowered In February, as the risk of a sudden stop in capital inflows decreased due to the significant steps taken to resolve the Euro area debt crisis. Following the improvement in the global risk appetite, short-term interest rates were kept relatively flat during the early months of 2012. Additional monetary tightening was implemented again in the second quarter with an aim to contain the adverse effects of temporary factors on inflation outlook and limit the risks regarding the pricing behavior. Implementation of more frequent additional tightening not only helped contain credit growth but also reduced inflation uncertainty by curbing exchange rate volatility. These policies, in turn, have prevented a possible deterioration in inflation expectations, amid a period of intensified supply side pressures and double digit inflation.

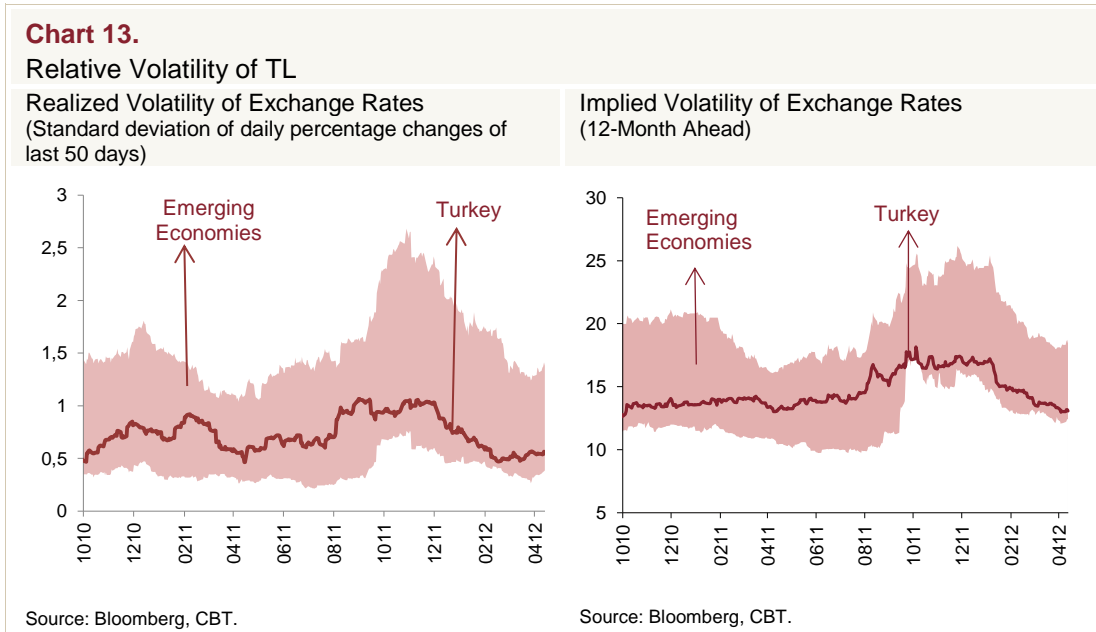**The Effect of Implemented Policies on Credit and Exchange Rate**

Main focus of the monetary policy is price stability and financial stability. Therefore, the success of the new policy framework should be evaluated in terms of these two objectives. However, before doing that, it is also important to assess the impact of the policies on credit and exchange rates, since these intermediate variables have been playing a crucial role in the transmission and communication of the recent policy mix. The capacity of the monetary policy instruments to affect credit and exchange rates in the desirable way is directly related to credibility of the policies. Thus, before elaborating on the course of final objectives, we will first describe the evolution of credit and exchange rates following the implementation of the new policy mix.

One of the main goals of the policies implemented since late 2010 was to contain the divergence between domestic and external demand. To this end, the CBT aimed at aligning the exchange rates close with economic fundamentals while slowing credit growth to more
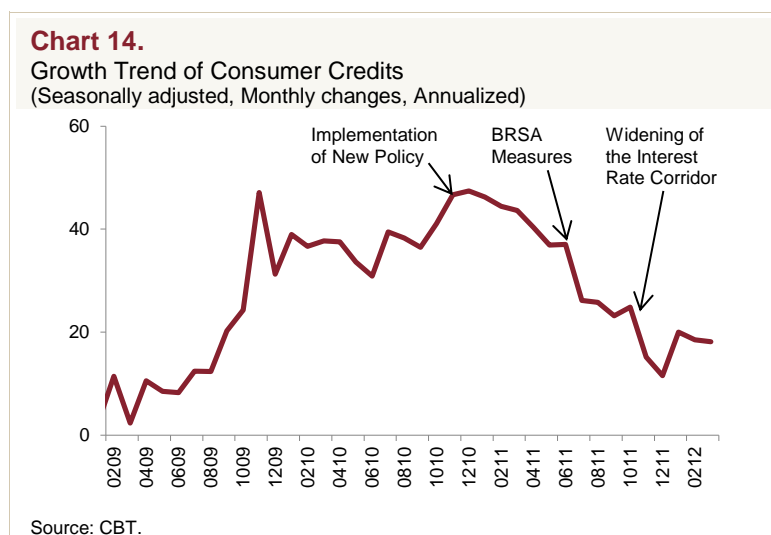
reasonable levels. Chart 11 indicates that exchange rate has largely moved towards the intended path since late 2010. In general, emerging market currencies have a strong common component. In fact, Chart 12 shows that until November 2010 the value of the Turkish lira and the currencies of peer emerging markets moved together. However, following the adoption of the new policy mix in November 2010, Turkish lira has notably diverged from emerging market economies. Until August 2011, a period which was marked by intensification of the Euro area debt crisis, relative depreciation of the Turkish lira reached around 20 percent (Chart 12a). After August, the deterioration in the global risk appetite led to a sharp depreciation in emerging market currencies against the USD; yet the Turkish lira faced a more limited depreciation (Chart 12b). This observation suggests that the policies implemented by the CBT have been useful in shielding the economy against an abrupt swing in domestic financial markets during the Euro area debt crisis. The fact that Turkish lira has already experienced a "correction" before the intensification of the Euro area sovereign debt problems has contained the risk of a sudden stop in capital flows, consistent with the objective of inducing a soft-landing in the economy.

Chart 12.
TL and Other EM Currencies Against USD *

(a) (1 January 2010=1)　　　　**(b)** (1 August 2011=1)

* Average of EM countries: Brazil, Chile, Czech Republic, Hungary, Mexico, Poland, S. Africa, Indonesia, South Korea and Colombia.
Source: Bloomberg, CBT.

Under the new policy framework, exchange rate volatility has been low compared to other emerging economies. In fact, although the Turkish lira depreciated significantly in 2011, its volatility has remained relatively muted (Chart 13). More importantly, in the period which was marked by heightened sovereign debt problems in the Euro area (from August 2011 to the year-end), the rise in the volatility of the Turkish lira was significantly lower among peer currencies.

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Chart 13.
Relative Volatility of TL

Realized Volatility of Exchange Rates (Standard deviation of daily percentage changes of last 50 days)	Implied Volatility of Exchange Rates (12-Month Ahead)

Source: Bloomberg, CBT.   Source: Bloomberg, CBT.

Following the adoption of the new policy framework, credit growth has also moved towards desired direction. Chart 14 shows the monthly momentum of credit growth. The chart suggests that credit volumes have posted a gradual slowdown following the CBT's policy response since end-2010 (Chart 14). The slowdown in credit growth has become more pronounced with the measures taken by the BRSA as of mid-2011. Credit growth lost further momentum after October 2011 following the widening of the interest rate corridor to the upside and tightening in liquidity conditions. Thus, the growth momentum, which was around 50 percent in the last quarter of 2010, gradually decelerated and declined to 15-20 percent. In other words, credit growth has moved to more reasonable levels in the context of financial stability.

Chart 14.
Growth Trend of Consumer Credits
(Seasonally adjusted, Monthly changes, Annualized)

Source: CBT.

In short, recent evidence suggests that, by using a variety of instruments, the CBT has been able to affect both credit growth and exchange rates in the desired direction.

Needless to say, the effectiveness of recent policies should be evaluated with respect to achieving final objectives rather than the impact on intermediate variables. Thus, in the next section, the outcomes of the new policy mix are assessed in terms of attaining the final objectives (price stability and financial stability).

Final Objectives and Outcomes

Financial Stability: Rebalancing and "soft-landing"

To motivate the new policy framework, the CBT underlined the importance of rebalancing and soft landing; i.e., changing the composition of the growth towards net exports and containing the cyclical component of the current account deficit. Chart 15 indicates that the current account deficit has started to shrink since mid-2011. By the first quarter of 2012, the non-energy current account deficit was almost closed. Moreover, Chart 16 depicts a notable improvement in the quality of the financing. By end-2010, virtually all the financing was through short term capital inflows and portfolio movements. After the adoption of the new policy mix, the composition of the external financing shifted towards more long-term borrowing and foreign direct investments. These developments suggest that the policies implemented by the CBT were quite effective in containing the risk of a sudden stop.

Chart 15.
Current Account Balance
(Seasonally Adj., Quarterly Average, Million USD)

* Forecast.
Source: TurkStat, CBT.

Chart 16.
Main Sources of Current Account Deficit Finance
(12-months Cumulative, Billion USD)

*Short-term capital movements are sum of banking and real sectors' short term net credit and deposits in banks.
** Long-term capital movements are sum of banking and real sectors' long term net credit and bonds issued by banks and the Treasury.
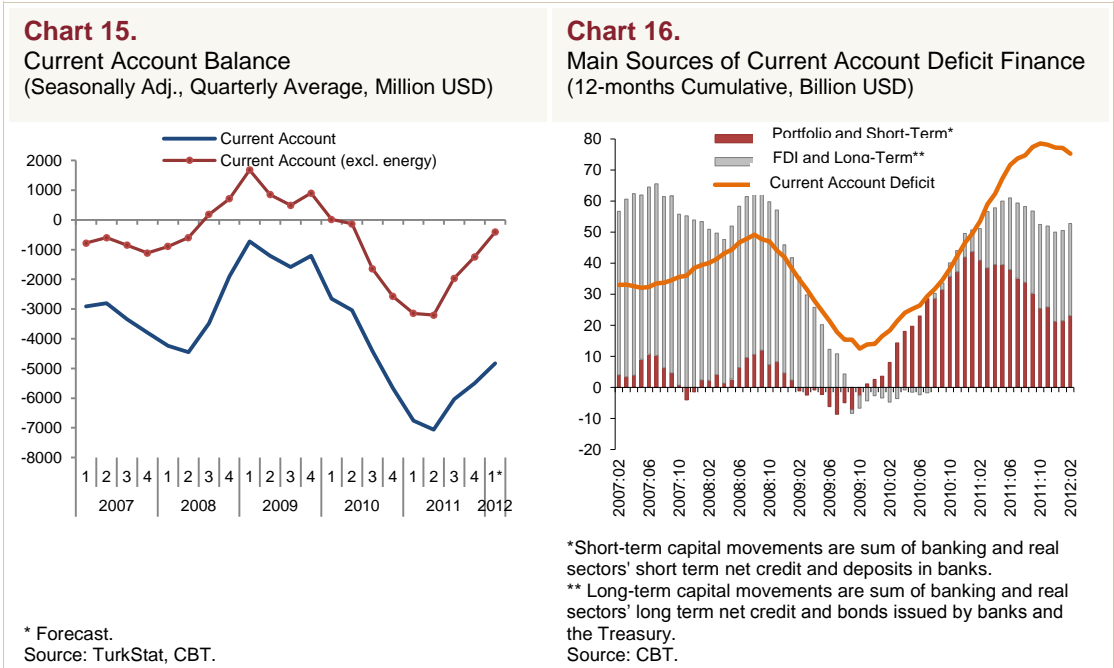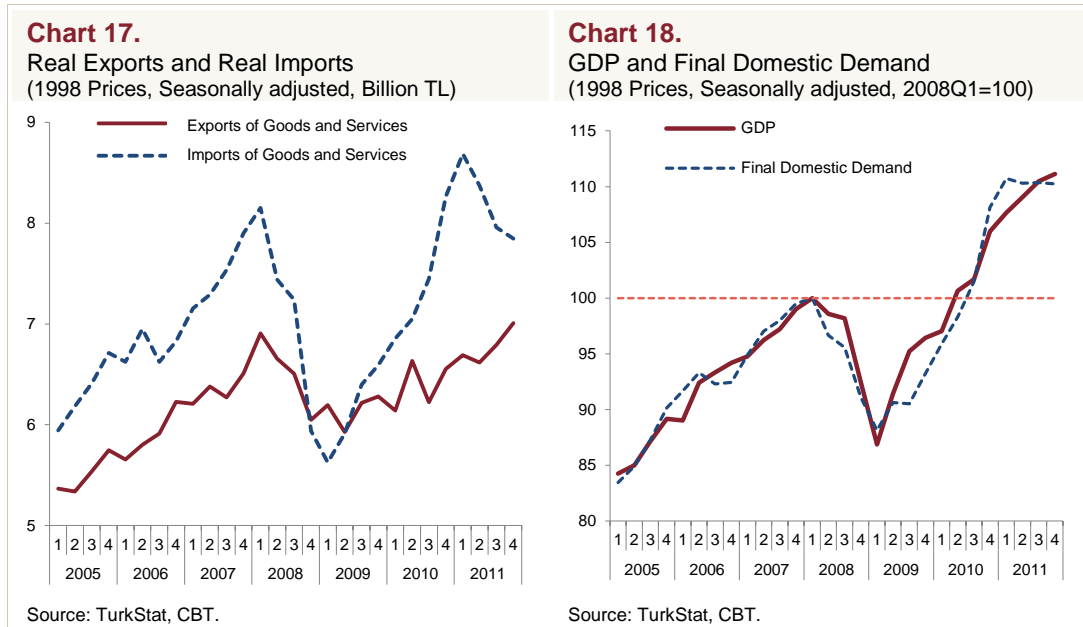Source: CBT.

Chart 17 illustrates the course of exports and imports after the adoption of the new policy mix. Rebalancing is quite evident here, in the sense that imports have fallen in real terms while real exports have maintained their upward trend. As a consequence, there has been a notable increase in the contribution of net exports to growth. The shift in the composition of the growth can be also observed in Chart 18 through the developments in domestic final

demand and the GDP.[11] Domestic final demand (consumption+investment) has followed a flat course since the first quarter of 2011, while GDP continued to grow, albeit at a slower pace. In other words, contrary to the previous periods, the improvement in the current account deficit did not come at the expense of a contraction in the economy. This observation also confirms that the policies implemented were quite successful in engineering a rebalancing in the economy and reducing the risk of a sudden stop.

Chart 17.
Real Exports and Real Imports
(1998 Prices, Seasonally adjusted, Billion TL)

Source: TurkStat, CBT.

Chart 18.
GDP and Final Domestic Demand
(1998 Prices, Seasonally adjusted, 2008Q1=100)

Source: TurkStat, CBT.

Price Stability

Emergence of many adverse factors during the last quarter of 2011 caused inflation to jump to 10.5 percent at the end of 2011, leading to a significant overshooting the official target of 5.5 percent.[12] At first sight, high levels of inflation in 2011 may imply that the policy mix has sacrificed price stability in exchange of financial stability. Nonetheless, two important factors should be taken into consideration when interpreting the inflation dynamics: Firstly, a rough accounting shows that almost half of the inflation in 2011 can be explained by increases in imports, administered products and unprocessed food (Table 1). Under the assumption that such sharp movements will not be repeated in 2012, inflation is expected to assume a gradual downward path, should the secondary effects remain contained.

**Table 1.**

Breakdown of 2011 Inflation

2011 Inflation	**10.5**
Contribution of Import Price Pass-Through	2
Contribution of Unprocessed Food Prices	2
Contribution of Tax Increases in Tobacco Prices	1.1
Source: CBT.	

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[11] All series are seasonally adjusted.
[12] For further information on the reasons for the breach of the inflation target, please refer to the Open Letter addressed to the Government on January 31, 2012 (http://www.tcmb.gov.tr/yeni/duyuru/2012/DUY2012-10.php).

Secondly, medium term inflation expectations are anchored notwithstanding the sharp increase in inflation in 2011. Chart 19 shows the inflation realizations and medium term (two years ahead) expectations. Inflation expectations have recently followed a fairly stable course. The behavior of inflation expectations exhibit a notable change compared to the past episodes of 2006 and 2008: following the upsurge in inflation between 2006 and 2008, medium term expectations had deteriorated considerably, whereas following the rise at end-2011 expectations remained quite stable. In fact, Başkaya, Gülşen and Kara (2012) find that inflation targets had a considerable weight in driving 24-month ahead inflation expectations during this period.

Chart 19.
Inflation and Medium Term Expectations

Source: TurkStat, CBT.
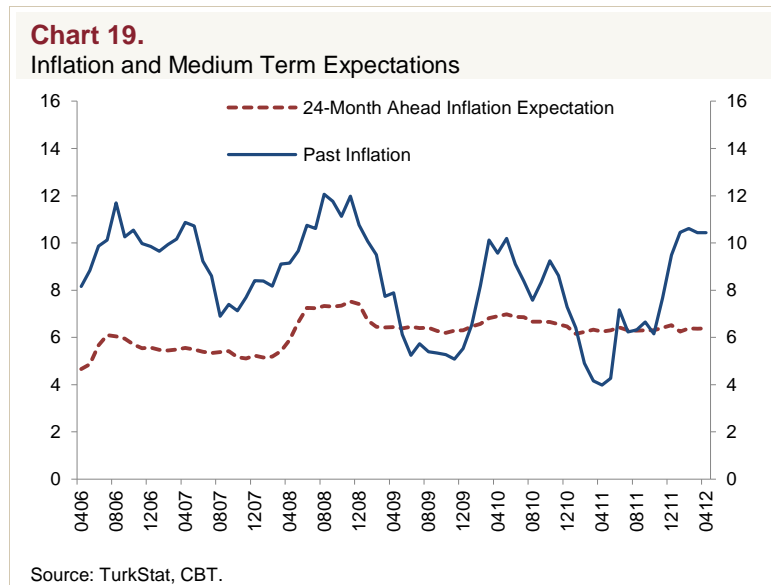
All in all, medium term inflation expectations seem to be anchored despite the upsurge in inflation in 2011. This observation indicates that the CBT did not hamper price stability objective while dealing with financial stability.

III.   CONCLUSION AND FINAL REMARKS

Turkey has a strong institutional structure for safeguarding *micro* financial stability (financial stability focusing on institutional or sectoral basis). Nevertheless, an institutional framework for overseeing systemic and macro financial risks was missing until 2011. The CBT aimed at partly filling this gap since late 2010.[13] Accordingly, the CBT has designed and implemented a new monetary policy framework incorporating financial stability with a macro perspective. While formulating the new monetary policy, the CBT was mainly motivated by two main developments following the global crisis: (i) the changing landscape of central banking at a global scale, (ii) the extraordinary global conditions and heightened capital flow volatility.

This paper provides an overview of the new framework, and summarizes the initial results. Since the policy framework is relatively new, conducting formal empirical research regarding the effectiveness of the policy is not possible at this point. Therefore, the paper adopts a

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[13] Özatay (2012), Ersel (2012), Akkaya and Gürkaynak (2012) provide fruitful discussions regarding the quality and design of the institutional structure on related issues.

descriptive approach. The analysis conducted throughout the paper suggests that the new policy framework has proved quite efficient in smoothing out the adverse effects of the capital flow volatility. More importantly, new policy mix implemented by the CBT has been successful in engineering a soft landing and rebalancing of the economy without hampering the price stability objective. As a consequence, for the first time in the recent history of the Turkish economy, current account deficit started shrinking without undergoing a crisis. All these observations suggest that the Turkish experience deserves a close attention as an example of how the existing inflation targeting frameworks can be modified to allow for more room regarding macroeconomic and financial stability.

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