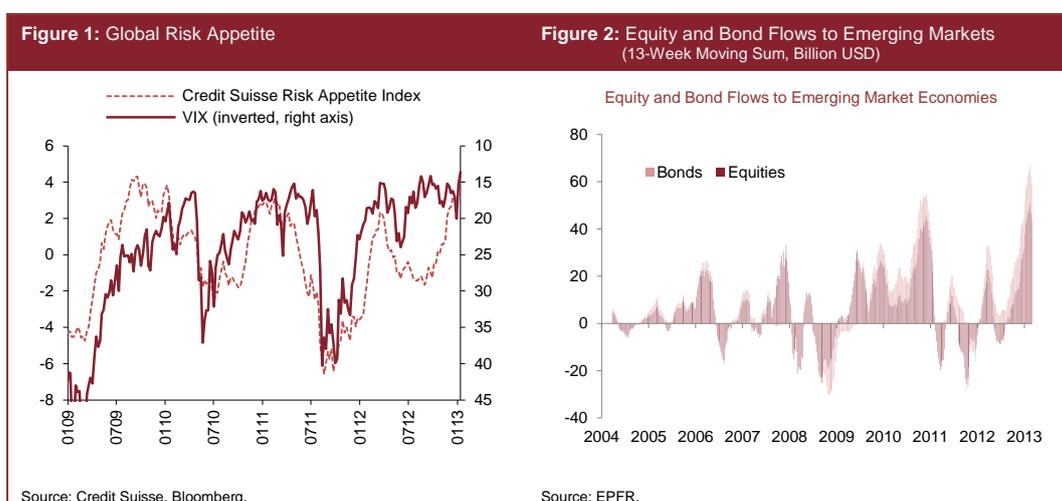


Hakan Kara¹

Central Bank of the Republic of Turkey

SAFEGUARDING MACROECONOMIC AND PRICE STABILITY AMID CAPITAL FLOW VOLATILITY

1. Accommodative monetary policies implemented by advanced economies in the post crisis period coupled with sharp swings in the risk appetite has led to heightened volatility in cross-border financial flows (Figure 1 and 2), shifting the focus from price stability to macro financial risks across emerging economies. Against this backdrop, many central banks in emerging economies have recently focused to alleviate the adverse consequences of the excessive movements in capital flows. Policy makers have been creative in formulating alternative tools, notwithstanding the constraints imposed by the existing policy frameworks.



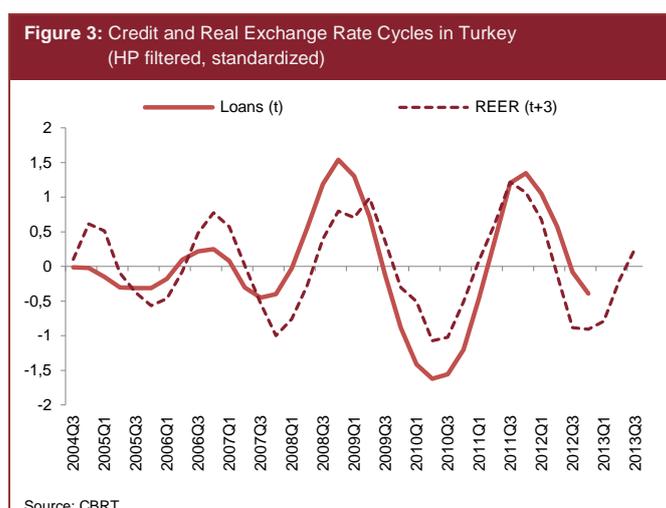
2. Recognizing the risks and the tradeoffs associated with capital flow volatility, policymakers have been responding with increasingly heterodox policy actions. The reactions and policy formulations have been quite diverse due to structural and institutional heterogeneities. For example, emerging markets have followed different approaches against recent capital inflow surges since mid-2012. High current account deficit countries tend to lean against currency appreciation and further worsening in the external balances. By contrast, current account surplus countries with concerns about household leverage have been accommodating some FX appreciation and a consequent reduction in their trade surplus. Some others have been attempting to maintain control of their monetary policy and exchange rates by imposing controls on foreign inflows. This note describes the Turkish approach to deal with capital flow volatility.

Interaction between Capital Flows and Macro Financial Stability

3. Capital flow volatility may hamper macroeconomic and financial stability through excessive fluctuations in domestic credit and exchange rates in small-open-emerging economies. In fact, these two variables interact in such a way to create some kind of financial accelerator mechanism amplifying the business cycles: Capital inflows initially lead to currency appreciation and easy access to credit. Because of currency mismatches in balance sheets, an appreciation of

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the local currency typically improves the net worth of domestic agents (firms, government or households, depending on the country) in emerging markets. Moreover, in many countries currency appreciation may provide a temporary boost to domestic demand through a fall in relative prices of durable and capital goods. Coupled with the improved external financing conditions and compressed lending-deposit spreads, this may lead to excessive lending appetite and thus feed into rapid credit growth and systemic risk (see for example, Bruno and Shin 2012). Rapid credit growth increases relative prices of non-tradables, further increasing the appreciation pressures on domestic currency. The feedback between exchange rates and credit growth may turn into a spiral, which may eventually end-up with a sudden reversal of the cycle, disrupting macroeconomic and financial stability (Figure 3).



4. Conventional inflation targeting (IT) framework used by many emerging economies throughout the past decade is not sufficient to address challenges posed by capital flow volatility on macroeconomic and financial stability. Using a single policy rate may exacerbate the credit and exchange rate cycles. Although, it is possible to use FX intervention as a complementary tool in IT to deal with capital inflows, this may not be enough to address the core of the problem. For example, in these frameworks, when faced with capital inflows and rapid credit growth, conventional reaction is tightening monetary policy through policy rate hikes, yet conducting sterilized FX purchases to resist excessive appreciation. However, this reaction may exacerbate credit and exchange rate cycles: Higher interest rates may lead to more short term inflows and lower credit-deposit spreads. Moreover, FX purchases (even if sterilized through OMOs) may improve liquidity conditions of the banks, leading to higher lending appetite and rapid credit growth. As a result, the central bank may have to deal with more appreciation pressures and further credit expansion.
5. Against this backdrop, Central Bank of the Republic of Turkey (CBRT) has adopted a new policy strategy since end-2010 to address the challenges posed by volatile capital flows. Conventional inflation targeting regime was modified by incorporating financial stability as a supplementary objective. Although price stability is still the overriding objective, monetary policy also aims to smooth the macroeconomic volatility caused by excessive liquidity cycles. This means new policy framework should aim at either (i) dampening the capital flow cycle or (ii) reducing the sensitivity of credit and exchange rates to capital flows.

New Policy Framework and New Tools

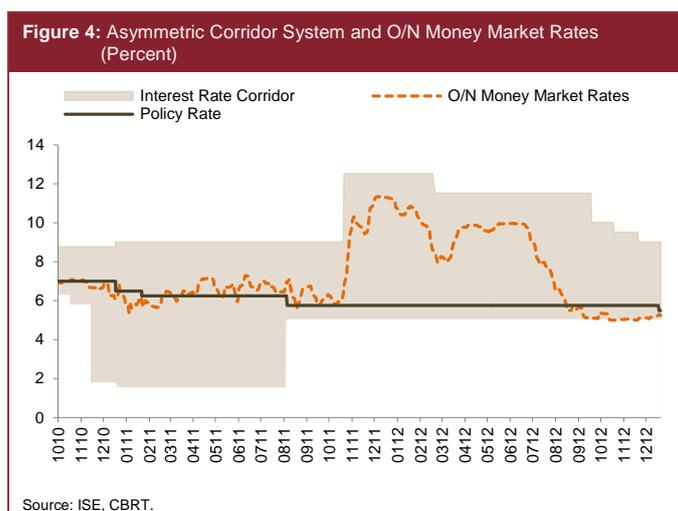
6. The policy framework designed and implemented by the CBRT in the last couple of years reflects the need to avoid the build-up of macro financial risks resulting from global credit and exchange cycles fueled by capital flows. Therefore, the new setup does not ignore significant exchange rate misalignments and/or excessive leverage (credit growth). This approach necessitates the use of a variety of policy instruments. Accordingly, the CBRT developed new instruments like the “asymmetric interest rate corridor” and the “Reserve Option Mechanism” in recent years.² The former aims at smoothing capital flows while the latter is designed to weaken the link between capital flows with domestic macroeconomic variables such as aggregate credit and current account deficit.

Asymmetric Interest Rate Corridor

7. The asymmetric corridor system basically amounts to using the central bank short term borrowing and lending rates as separate tools to smooth capital flow volatility. Coupled with the active liquidity policy, this becomes a very flexible cyclical tool which helps to dampen especially high frequency capital flow volatility. It can also be used to react to undue misalignments in exchange rates. For example, during capital inflows, widening the corridor by cutting lower bound (O/N borrowing rate) provides the ability to reduce the attractiveness of short term carry trade without creating excessive credit growth. During capital outflows, widening the corridor by hiking the upper bound (O/N lending rate) constitutes a credible threat against currency speculations. By squeezing liquidity through daily operations, the CBRT is able to smooth sudden outflows and sharp movements in exchange rates. On the other hand, the corridor can also be used as a macroprudential tool in the sense that credit-deposit spreads tend to be sensitive to the width of the interest rate corridor. Wider corridor means wider spreads, somewhat curbing the banks’ appetite to extend loans. Since marginal loans during rapid credit growth phases are typically funded through external borrowing, curbing the lending appetite of the banks indirectly slows down capital inflows.
8. The main contribution of the asymmetric interest rate corridor system is the flexibility it provides to react to capital flows. In the traditional inflation targeting framework, interest rates are fixed for a predetermined period (typically for one month). In other words, central bank short-term interest rates depicted in Figure 4 stay unchanged between the periodical monetary policy meetings. Once the rates are announced, short term money market rates stay close to the policy rate, reflecting the central bank’s implicit commitment to keep the short term money market rates constant until the next meeting. However, under the new system implemented by the CBRT, there is no rigid commitment to keep the level of market rates constant at a predetermined rate. Market interest rates can be changed, if needed, 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.
9. Interest rate corridor may also be used to change the composition of inflows during “capital flood” episodes. This could be achieved by creating short-term interest rate uncertainty in money markets via liquidity management facilities. The short-term interest volatility created using

² For the design and implementation of the new policy framework, see Başçı and Kara (2011); Kara (2012); Alper, Kara and Yörükoğlu (2013).

interest rate corridor would discourage short term capital flows, yet it would be less relevant for long-term investors.



10. Figure 4 shows the implementation of corridor policy. Since end-2010, the CBRT have been using the interest rate corridor as an active policy tool. There are three main phases during this period:

- i) *QE2 and surging capital inflows at the end of 2010.* During this period, lower bound of the interest rate corridor (O/N borrowing rate) was cut significantly and interest rate volatility was increased to discourage short term capital inflows.
- ii) *Intensification of the Euro Area debt crisis.* As a consequence, global markets witnessed a sharp reversal in risk sentiment during the last quarter of 2011. In order to avoid a sudden stop and to contain the depreciation of the exchange rate, interest rate corridor was widened by increasing the upper bound (O/N lending rate).
- iii) *Removal of tail risks associated with a break-up in euro-area.* There has been a resurgence in capital inflows to emerging markets since mid-2012. In order to avoid appreciation pressures, the CBRT responded by increasing the liquidity injected to the money market and thus lowering the short term market rates. Moreover, lending rate was cut gradually and the corridor was shifted downwards to support credit growth.

Reserve Option Mechanism

11. A recent instrument introduced by the CBRT to dampen the impact of capital flows on the domestic economy is the Reserve Option Mechanism (ROM). ROM is a mechanism that allows banks to voluntarily hold a certain fraction of their Turkish lira reserve requirements in foreign exchange and/or gold.³ Voluntary reserves accumulated through ROM create a buffer to ease the roll-over risk of the domestic banks against sudden stops. ROM is a market friendly and efficient mechanism since each bank can solve its own optimization problem regarding the utilization of this facility. By providing the banks with the flexibility to adjust their composition of reserves depending on the changes in external financing conditions, ROM has the potential to alleviate the impact of capital flows on the exchange rate and aggregate bank loans. This feature ensures

³ See Alper, Kara and Yörükoğlu (2012) for a more comprehensive discussion of the Reserve Option Mechanism.

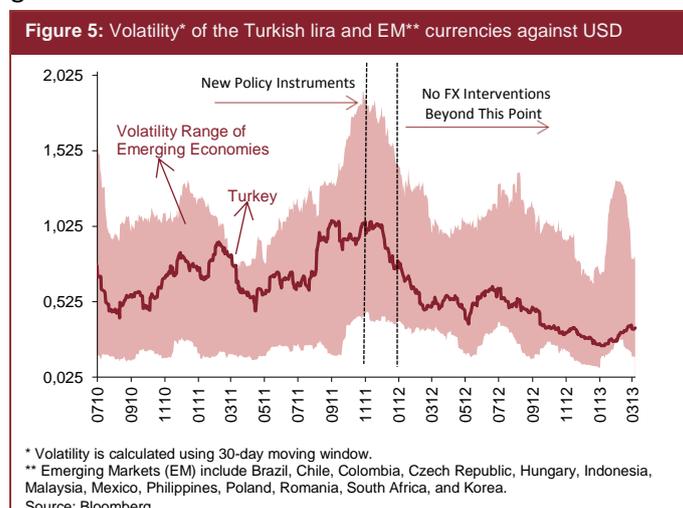
that the system works as some sort of an automatic stabilizer, reducing the adverse impact of the excessive volatility in capital flows on the macroeconomic and financial stability.

12. Overall, asymmetric interest rate corridor and the ROM are two new instruments designed to ease the policy trade-offs posed by cross border capital flows. The corridor aims to dampen the capital flow cycles, while the ROM weakens the adverse feedback loop between capital flows, exchange rate, and bank lending.

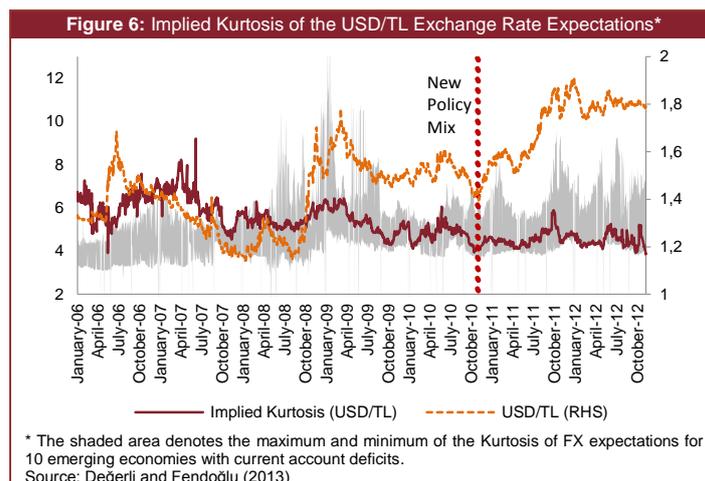
Effectiveness of the New Instruments

Exchange Rate Volatility

13. One approach to assess the effectiveness of the new monetary policy framework is to look at the impact of specific instruments on the exchange rate volatility. Several recent studies conducted by the CBRT staff provide evidence on the role of the new instruments in reducing FX volatility. Using a GARCH framework, Akçelik et al (2012) find that the active interest rate corridor (adjusting the liquidity conditions frequently to counterbalance exchange rate movements) has been associated with lower FX volatility. In a companion paper, Oduncu *et al* (2013) show that ROM has had a significant role in reducing the excess volatility of nominal exchange rates.
14. Another way to assess the effectiveness of the new instruments is to compare volatility of Turkish lira with peer currencies before and after the introduction of new instruments. Figure 5 shows the relative volatility of Turkish lira has decreased considerably compared to peer emerging market currencies despite the fact that CBRT did not resort to direct FX interventions since the beginning of 2012.

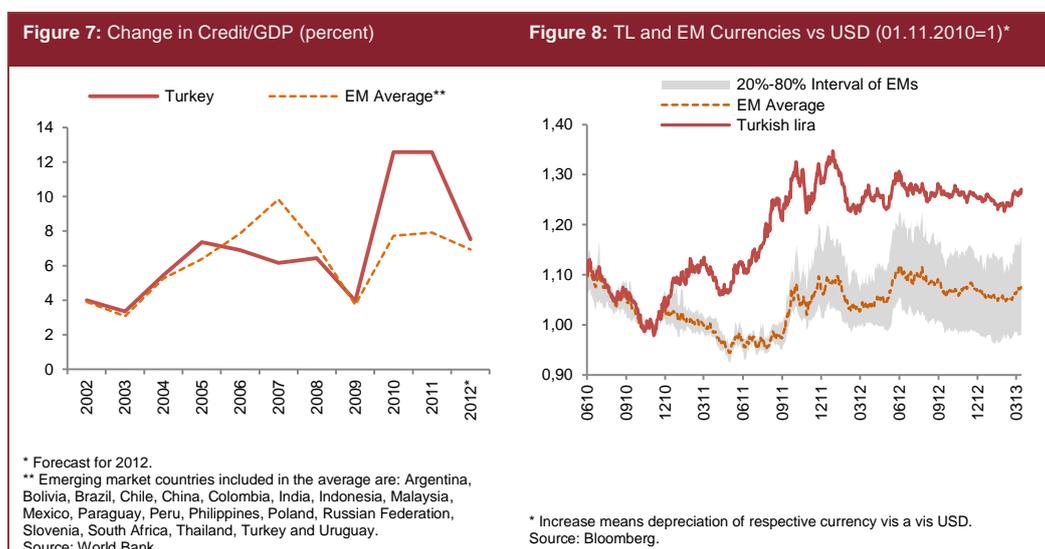


15. Using distributions extracted from options prices, Değerli and Fendoğlu (2013) find that, after the introduction of new policy instruments, implied volatility of Turkish lira *vis a vis* US dollar has decreased considerably compared to peer emerging market currencies. More importantly, the relative kurtosis of the distribution has declined markedly during the same period (Figure 6). This result is important because, by definition, the kurtosis of the distribution is associated with the probability of a large swing in exchange rates (or capital flows). These observations suggest that the adoption of the new policy mix and the introduction of new instruments may have considerably reduced the tail risks associated with sharp movements in capital flows.



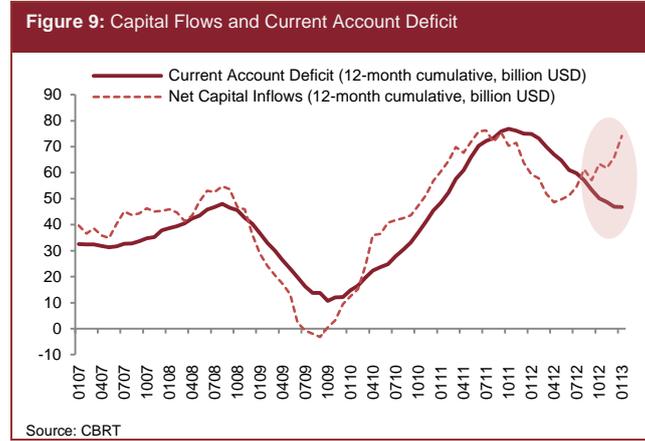
Repercussions of the New Policy Framework on Credit, Exchange Rates, and External Balance

16. The reflections of the new policy framework on macro financial variables are even more striking. Since the launch of the new policy mix at end-2010, credit growth has slowed down to more reasonable levels. After reaching a historical peak in 2010, net new borrowing to GDP ratio in Turkey reverted back to emerging market average in 2012 (Figure 7). Moreover, appreciation pressures on domestic currency have eased substantially after the adoption of the new policy mix. Turkish lira, which has been moving closely with peer economies until end-2010, displayed a relative depreciation of around 15-20 percent in 2011, which was an engineered move to align Turkish lira closer with fundamentals (Figure 8). Once credit growth and exchange rate have been brought to more reasonable levels, the CBRT focused on stabilizing macro financial risks by weakening the impact of capital flows on domestic macroeconomic variables.



17. As described above, the policy instruments have been geared to resist against appreciation pressures on domestic currency and contain rapid credit growth in order to weaken the link loop between capital inflows and macro financial risks. To support this objective, the CBRT has been mopping up a sizeable fraction of the total inflows through ROM and reserve requirement policy during the past year. Figure 9 depicts that, these efforts have been yielding some fruit recently. The relationship between capital flows and current account deficit has been much weaker than

implied by the past behavior of two series. In other words, Turkey was able to bring down the current account deficit in the past year despite the continued strength in capital inflows. This achievement is remarkable, given that historically, the adverse feedback loop between current account deficit and capital flows has been an important source of macro financial risk for Turkey. Overall, these observations suggest that the new policy mix has been quite effective in containing the undesired impact of capital flows on macroeconomic stability.



SUMMARY

18. Persisting volatility in cross-border financial flows and the increased emphasis on financial stability during the post-crisis period have shifted the focus to macro financial risks across emerging markets. Central banks have adopted different approaches depending on structural and institutional constraints. This note describes the main ingredients of the Turkish approach and shows that the new toolkit developed by the CBRT has been so far effective in weakening the link between capital inflows and external imbalances, without resorting to direct capital control measures.

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