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## Capital flows in the post-global financial crisis era: implications for financial stability and monetary policy<sup>1</sup>

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<sup>1</sup> This paper was prepared for the meeting. The views expressed are those of the author and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

# Capital flows in the post-global financial crisis era: implications for financial stability and monetary policy

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## Introduction

The last three years have been unusual for the major world economies. Output in advanced economies has slumped, deflation risk has risen, and policy rates have approached the zero limit as central bank balance sheets have greatly expanded. Emerging market economies have also faced challenges: the initial effect of the developed world's difficulties on them included a sudden reversal in capital flows, currency depreciation, and liquidity problems coupled with negative growth. At a later stage, the picture was reversed with a surge in capital inflows, credit growth and foreign exchange appreciation in the emerging economies. While developed countries coped with the crisis by deploying unusual monetary and fiscal policy measures, emerging market economies combined monetary policy measures with various sets of macroprudential instruments. Hence, the global financial crisis highlighted the importance of using a broader set of instruments for financial stability, and of coherent macroeconomic policies.

This paper provides a perspective on the Great Moderation and financial integration, and their implications for price and financial stability. While these two policy objectives are mutually compatible in normal times, we argue that in high-growth periods the usual monetary policy practices, based on adjusting short-term interest rates with the aim of maintaining price stability, may not be sufficient to eliminate financial risks. Therefore, policymakers should use a broader set of macroprudential policies to reconcile their financial stability aims with their price stability objective.

In arriving at this conclusion, we provide a historical perspective on the evolution of change in monetary policy objectives, starting with the Great Moderation. We pay particular attention to the linkage between the Great Moderation and global imbalances. These phenomena were also associated with the growing integration of the emerging market economies with the rest of the world. We conclude that the Great Moderation, global imbalances, and the integration of emerging market economies have important implications for monetary policy, and imply a growing need for financial stability. Financial stability is increasingly important as a focus of policy as emerging market countries grow faster, reducing inflation pressures, but also grapple with greater challenges in terms of surging capital flows and closer financial integration.

In the next section, we discuss some background issues regarding the Great Moderation and financial integration. Section 3 presents a discussion on the recent global financial crisis and its implications for emerging market economies. Section 4 provides perspectives from Turkey. Section 5 concludes.

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## 1. Background issues: the Great Moderation and financial integration

After the mid-1980s, the United States and other advanced economies experienced a substantial decline in macroeconomic volatility. This phenomenon is frequently referred to as “the Great Moderation”. Stock and Watson (2002) documented a significant decline in the volatility of output growth rate including consumption, total investment and their subcomponents. In addition, they showed a considerable moderation in wage and price inflation. As for international evidence, Stock and Watson (2005) show that other G7 economies also experienced a moderation in their business cycle fluctuations over the past three decades and an increase in synchronisation among their subgroups.<sup>2</sup>

Explanations for the Great Moderation fall into three categories (Bernanke (2004)): a change in the structure of the economy, improved macroeconomic policies, and good luck. Stock and Watson (2002) and references therein consider the structural change in the economy, including the shift in output from goods to services, information technology-led improvements in inventory management, and innovations in financial markets that facilitate intertemporal smoothing of consumption and investment. Bernanke (2004) claims that increased trade openness and international capital flows are examples of structural changes that contributed to macroeconomic flexibility and stability.

The second category of explanations, based on improved macroeconomic policies, focuses mainly on the role of monetary policy in increasing economic stability. In their empirical studies, Taylor (1999) and Clarida et al (2000) postulate an increase in the response of short-term interest rates to movements in inflation, an argument which is in line with the active Taylor-type rule. Blanchard and Simon (2001), on the other hand, show a strong co-movement of output and inflation volatility for both the United States and other developed economies. Thus, monetary policy is considered to have helped reduce output volatility. Stock and Watson (2002) estimate that 10–25% of the reduction in output volatility was due to improvements in monetary policy.

The good luck hypothesis is the third explanation for the Great Moderation and is based on the argument that the variance and frequency of shocks impinging on the economy has been smaller than usual.

### Implications

Among the three explanations for the Great Moderation, we focus on the first hypothesis of structural change and its implications. The factors that account for changes in the structure of economy include technological progress and improvements in business processes and inventory management, all of which are considered to be important contributory factors for steady GDP growth, reduced volatility, and increases in business cycle expansions (Stock and Watson (2002)). These factors are also considered to have contributed to increases in labour productivity, particularly after the second half of the 1990s. This productivity-driven growth could also have led to increases in economic capacity through a higher investment rate. Hence this supply side growth did not lead to any inflationary pressure, and thus monetary policy was expected to be more accommodative. In other words, with an increase in economic capacity, the policy rate could be reduced to accommodate productivity growth.

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<sup>2</sup> By historical standards the recent financial crisis led to a severe recession, although Clark (2009) argues that this does not necessarily imply a return to the volatility level observed in 1970s or the end of the Great Moderation.

The downside of the productivity and investment acceleration could be an increase in the current account deficit unless domestic savings are sufficient. However, Valderrama (2007) argues that the acceleration in labour productivity could depress the domestic saving rate since the expected increase in the wages of more productive workers would immediately change their expenditure. Therefore, the increase in labour productivity and the deterioration in global imbalances could be associated with the Great Moderation.

The change in the structure of economy may also imply improvements in the sophistication of financial markets that facilitate the intertemporal smoothing of consumption. Although they do not make their case clear theoretically, Blanchard and Simon (2001) argue that improvement in financial markets might lead to a decrease in the volatility of consumption services, non-durables and investment. Another effect of the improvement in financial markets through the decline in consumption and output volatility is a fall in precautionary saving. Hence, as business cycle volatility falls, and a country faces less risk and financial markets improve, we may expect that firms and consumers will reduce their aggregate saving and increase their leverage. Thus, overall financial risk may accumulate and asset volatilities increase. Therefore, the incoherence of financial risks and business cycle volatility imply that monetary authorities, while focusing on the price stability objective, may not necessarily rule out a broader set of macroeconomic risk measures.

From an open economy perspective, a decrease in output volatility and precautionary savings could also impair the external balance or asset position of the economy. In a two-country business cycle model, Fogli and Perri (2006) find that as the relative volatility of any shocks falls and the home country faces less risk vis-à-vis its partners, its precautionary motive is weakened, and the component of its external assets accumulated for self-insurance purposes falls. They consider this to be a driving factor behind the global imbalances.

The decline in inflation and output volatility is also considered to result from the improvement in monetary policy, which has moved the economy closer to the efficient frontier. Bernanke (2004) points out that a more credible monetary policy is the underlying factor behind a shift in the Taylor curve. An outcome of this shift in volatility, as well as a fall in the inflation rate over time, brought a decrease in short-term interest rates in the United States and other industrialised economies. We believe that this also contributed to the excessive build-up of leverage and other financial risks, and to divergence of short-interest rates from the level required for financial stability.

### **International aspect and global imbalances**

From an international perspective, the Great Moderation in the US and other industrialised economies is also a period during which the US current account balance deteriorated – a phenomenon later known as “global imbalances”. During this period, the emerging market economies also became more integrated with international financial and goods markets. Fogli and Perri (2006) claim that the global imbalances are partially an outcome of efficient market responses to structural change in the world economy. Caballero et al (2008), on the other hand, argue that the global imbalances could be explained by the growth experience of the major economies including the United States, Japan, Europe and emerging market economies. More importantly, they claim that the equilibrium is an outcome of the differences in the capacity for producing sound financial assets. In addition, they argue that the asset market collapse in Japan, emerging market crashes in the 1990s and early 2000s, and the

increasing integration of faster-growing countries such as China have led to a sustainable reallocation of savings towards the United States, and to lower interest rates.<sup>3</sup>

Obstfeld and Rogoff (2009) claim that global imbalances and the recent financial crisis are outcomes of economic policies in the 2000s, and that both are therefore the product of common causes. We argue that the common causes of these two phenomena could be partially attributed to the Great Moderation. The particular features of this framework are as follows: loose monetary policy in the absence of an inflationary threat, lower global real interest rates, financial innovation and deregulation in financial markets and regulatory weaknesses. These features were coupled with the greater financial and trade globalisation and, as a result, policies in the United States and other advanced economies have also affected the emerging markets and other developing economies. In its Financial Stability Review, ECB (2004) states that “Large and growing U.S. current account deficits have generally been perceived as posing a significant risk for global financial stability, at least since 2000”.

There is a clear understanding that, during the Great Moderation, monetary policy or other structural changes have improved the ability of the economy to absorb shocks, thereby dampening its volatility. Blanchard et al (2010a), on the other hand, provide a framework in which they state that these policies did not mitigate the effect of financial shocks that struck advanced economies during the recent crisis. They argue that, during the Great Moderation, macroeconomic risks were accumulated, tail risk was largely ignored, and firms and consumers had high leverage and exposure to broader financial risks. This structure in advanced economies, particularly in the United States, makes it necessary to use a wider set of policy instruments, and not only short-term interest rates with a price stability objective (see Figure 1).

### **Emerging market economies and financial integration**

As discussed above, the increase in global financial integration is another important aspect of the past three decades. However, the initial stage of financial integration was mostly among the advanced economies. With the removal of restrictions on international financial transactions, financial innovations, and progress in information technologies, emerging market economies (EMEs) also started to be involved in financial integration. The increase in de facto financial integration as measured by total inflows to and outflows from EMEs is presented in Figure 5.

During the Great Moderation, some features of the integration of EMEs with advanced economies could be summarised as follows. First, EMEs did not have even capital account liberalisation (de jure liberalisation). For instance, although most countries have removed capital inflow and outflow controls over time (eg Latin American countries), countries such as China and India still maintain significant capital controls. In addition, with the outbreak of the Asian financial crisis, countries including Malaysia and Thailand re-imposed or increased capital controls with the aim of insulating their economies from the adverse affect of sudden capital reversals. Thus, the liberalisation of capital accounts has been uneven, and some EMEs have considered restrictions in case of any external or domestic shocks.

Second, taking the early 1990s as a benchmark point, capital flows have displayed a steep and rising trend over the past two decades (Figure 5). However, one important feature of capital flows is that they are known to be volatile. In particular, there have been major swings

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<sup>3</sup> For other explanations of global imbalances, see Blanchard et al (2005) on the portfolio balance approach, Obstfeld and Rogoff (2004) on the reallocation of demand for traded versus non-traded goods and domestic versus foreign goods, and Dooley et al (2003) on the “Bretton Woods II” argument.

in capital flows: the first big wave of capital flows continued through the 1990s until the Asian crisis of 1997–98. After that, capital flows were muted until 2002, after which they accelerated rapidly until the recent financial crisis of 2007–08 (2008 saw a particularly sudden reversal). A recent wave of inflows was seen in 2009–10.<sup>4</sup>

Third, after the 1997–98 Asian crisis, many EMEs – particularly China and Korea and other Asian economies – have experienced increases in domestic savings, current account surpluses and an accumulation of foreign exchange reserves. Therefore, one fundamental change is that capital flows are no longer helping to finance current account deficits; rather they are serving to help most of the EMEs accumulate foreign exchange. Among many other factors, the accumulation of foreign exchange reserves is considered to reduce the effect of negative external shocks and sudden capital reversals in the economy, thus increasing the economy's resilience to external shocks.

Fourth, EMEs have also undergone regime changes in their monetary and exchange rate policies. With greater integration and the removal of capital controls, some countries also had monetary policy independence as their primary objective while moving toward a more floating exchange rate regime, and explicit inflation targeting. For instance, Brazil, Peru, Mexico, Turkey, and South Korea are among the EMEs that adopted inflation targeting in the 2000s.

### **Implications for monetary policy and financial stability**

As capital movements across borders can pose challenges for monetary authorities, they have important implications for price and financial stability. First of all, countries that are more dependent on international capital flows for private or public financing are more prone to the risk of “sudden stops” or reversals in capital flows. Sudden stops are in general associated with large exchange rate movements, which may have a substantial impact on the real and financial economy, and hence lead to a financial crisis. On the other hand, a surge in capital inflows often leads to monetary growth, currency appreciation, and loss of competitiveness, which can undermine exports and the trade balance, and trigger domestic lending and asset price booms. Empirical evidence suggests that the acceleration of GDP growth during episodes of large capital inflows is followed by a significant and persistent drop in growth rates (Cardarelli et al (2009)). Another concern over international capital flows is the loss of monetary policy independence in the context of the trilemma in open economy macroeconomics when a fixed exchange rate regime is adopted. Even in the absence of a fixed exchange rate regime, capital inflows can still pose challenges for monetary authorities. For example, capital inflows may impose inflation pressure, which requires a tightening of monetary policy. However, tighter monetary policy, by increasing the short-term interest rate, can attract additional capital inflows and lead to stronger currency appreciation, thus putting the economy into a spiral where more risks are accumulated and financial stability concerns are aggravated. Additionally, as argued in BIS (2008), transmission of monetary policy through conventional channels of interest rate and exchange rate may have declined with capital flows including the bank intermediation of flows.

In addition to posing challenges to monetary policy, capital flows can also raise financial stability concerns due to different risk exposures. One feature of EMEs, particularly in Latin America, is that they have high exposure to foreign exchange risk, which is an important threat to financial stability. For instance, if a recipient of capital flows is engaged in unhedged FX borrowing while its asset side is denominated in local currency, a sharp depreciation with a capital reversal could substantially increase its debt burden. Currency mismatches on an aggregate level are also linked with banking and debt crises (eg Chile in the 1980s and

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<sup>4</sup> See IMF (2007) for a detail discussion on managing large capital flows to EMEs.

Mexico in the 1990s (BIS, 2008)). Another aspect of capital flows, particularly short-term portfolio flows or bank loans, is the liquidity concerns that may arise. In particular, bank lending financed by short-term foreign borrowing is a major source of vulnerability since it creates both maturity and currency mismatches. In addition, these types of bank lending are also associated with consumption and credit booms, which create additional risk through loose credit rationing.

In summary, while emerging market economies have become increasingly integrated with global financial markets and have established relatively sound macroeconomic fundamentals in recent years, they still have several sources of vulnerabilities. For instance, compared to historical standards in advanced economies, EMEs still display unstable macro environments including volatile growth rates, volatile asset prices, and underdeveloped financial markets (Figures 2, 4 and 6). Therefore, surges in capital flows in these economies are a major source of financial stability concerns, and may lead to the dual misalignment of price and financial stability (Figure 5).

## **2. The emerging market economies and the financial crisis: issues and consequences**

The global financial crisis that started in the advanced economies had important effects on EMEs' real economies and financial markets. Driven partially by trade linkages, the EMEs' output – as measured from peak to trough – showed substantial declines with considerable variation across countries and subgroups.<sup>5</sup> On the other hand, the effects on financial markets were characterised by a collapse in asset prices and private credit growth, an increase in risk premia, and exchange rate depreciation. All these effects were closely linked to the reversal in capital flows and global deleveraging.

To counter the adverse effects of the global crisis, EMEs took various measures to calm the financial markets and to revive the real economy. These measures included a variety of monetary and fiscal policy measures. As the crisis took hold within the EMEs and liquidity problems developed, central banks started to reduce policy interest rates and to take additional quantitative measures. Some EMEs, including Turkey, were able to lower the policy rate quickly and substantially. The monetary authorities also faced the possibility that lower policy rates might fail to stimulate the economy if a liquidity trap or high default risks should prevent them from taking effect. For this reason, they also moved to boost the credit supply by applying non-interest rate instruments such as a reduction in reserve requirements, the acceptance of a broader range of collateral, and credit easing. Additionally, central banks were also involved in foreign exchange interventions and provided foreign exchange liquidity to domestic markets with a view to reducing exchange rate volatility and its disruptive effect on international trade (see, for example, Ghosh et al (2009) for additional discussion of policy options for EMEs).

In their extensive analysis of the linkages between the advanced economies and the EMEs during crises, Kose and Prasad (2010) note a strong yet gradual divergence between the business cycles of advanced economies and those of EMEs. They claim that this divergence implies a decline in EMEs' vulnerability to shocks emanating from advanced economies, and hence an improvement in their resilience. On the other hand, Kose and Prasad's empirical findings suggest that the convergence of business cycles among EMEs has increased.

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<sup>5</sup> See IMF (2010) and Kose and Prasad (2010a) for further details of country and subgroup variations among EMEs.

In addition to studies that focus on the divergence of business cycles between the two groups of countries, several papers have looked at the differing impact of the crisis on various EMEs. For instance, Izquierdo and Talvi (2010) find that the resilience of Latin American economies during the global financial crisis was buttressed by strong fundamentals that included low inflation, an external and a fiscal surplus, a sound banking system, a large stock of international reserves and a flexible exchange rate regime. These strengths are believed to have characterised other EMEs that also experienced at least some combinations of the above-listed factors. On the other hand, Berkmen et al (2009) examine the role of financial factors and find the results consistent with the essential problems that drove the advanced economies into the crisis. They claim that the countries with a more leveraged domestic financial system and faster credit growth suffered a larger output loss during the crisis. Similarly, Blanchard et al (2010b) highlight the role of a high level of short-term external debt in output loss during the crisis. As additional explanations that account for increased resilience among EMEs, Kose and Prasad (2010) also consider a large buffer of foreign exchange reserves, greater trade linkages among EMEs and greater diversification of production and export patterns.

In addition to the fundamental factors and monetary policy measures listed above, EME central banks used various tools that explicitly target financial stability, and hence reduce vulnerabilities attributable to leverage, liquidity and market risk, and interconnectedness. To shed some light on the issue, CGFS (2010) surveyed central banks on how they conceived macroprudential policy and used macroprudential instruments. Examples of macroprudential instruments used by central banks during and after the crisis include loan-to-value caps, debt-to-income limits, foreign currency lending limits, aggregate credit growth ceilings, limits on interbank exposure, countercyclical or dynamic provisioning, loan-to-deposit limits, and limits on open currency positions. These are broadly classified as measures targeting credit growth, and those that focus on the size and composition of bank balance sheets. CGFS reports summary results of the survey with responses by 33 central banks that used these instruments. The survey's most remarkable result is that EMEs significantly outnumbered advanced economies as users of some type of macroprudential instrument. We believe that this was a significant factor in the better performance of EMEs both in coping with the crisis and in managing its aftermath. Thus, macroprudential policy action can be an important element in assuring price and financial stability.

### **Policy implications and prospects**

The business cycles of EMEs are expected to become increasingly synchronised as high growth rates are sustained, domestic markets expand, financial markets become more sophisticated, and trade and finance linkages increase. Additionally, sound macroeconomic policies over the longer term and the linkages among the EMEs could usher them into an era similar to the Great Moderation experienced in advanced economies. As the EMEs maintain macroeconomic stability, they would substantially dampen the effect of domestic shocks, and become more resilient to the shocks emanating from advanced economies. Nevertheless, the moderation in EMEs coupled with greater sophistication in financial markets might also deliver the same outcomes seen in advanced economies, namely the build-up of financial risks, and increase in asset price volatility fuelled by highly leveraged households and firms. This calls for the central banks to have the necessary macroprudential tools in their policy packages to mitigate financial risks, and hence maintain financial stability



### **3. Where does Turkey stand? Crisis management, price and financial stability**

Turkey's economy performed strongly in the years leading up to the global financial crisis, with its GDP growing at an annual average of 6.75% between 2002 and 2007. This was the result of sound macroeconomic policies, including a credible monetary policy, fiscal discipline and structural reforms in the banking sector after the 2001 crisis. The country's high growth prospects and increased global liquidity helped to attract a large influx of capital consisting of both foreign direct investment (FDI) and portfolio flows. The capital inflows were accompanied by real exchange rate appreciation and widening current account deficits. On the other hand, sound macroeconomic policies brought the inflation rate down from a fairly high to a moderate level. That said, Turkey had a higher inflation and policy rate than most EME economies when the global financial crisis started. As noted in IMF (2010b), Turkey's overall economic fundamentals were less strong than those of EMEs in Latin America and Asia as it went into the global crisis, although it had a stronger position than emerging Europe.

As in many other EMEs, the first-round effect of the crisis was felt via the financial markets. Capital started to flow out of the country, the exchange rate sagged, asset prices fell, and the risk premium increased. Partly due to the sudden reversal in net capital flows, liquidity conditions tightened and bank lending seized up. The second-round effect was through the collapse of external and domestic demand. Mainly due to the loss of business and household confidence, external shocks, and uncertainties in the international environment, domestic consumption and investment dropped, and exports slumped. All these factors contributed to a massive output contraction, particularly in the last quarter of 2008 and the first quarter of 2009.

#### **Policy measures to cope with the crisis: monetary policy**

During the global financial crisis, the measures taken by the Central Bank of the Republic of Turkey (CBRT) included a substantial loosening of monetary policy. As mentioned above, Turkey entered the global financial crisis with moderately high inflation and policy rates. As domestic and external demand fell and the crisis began to deepen, expectations for a substantial decline in the inflation rate took hold. Thus, the CBRT cut the main policy rate by a total of 1,025 basis points, from 16.75%, over the year starting from November 2008 (Figure 11). These cuts were the highest among the OECD countries and the EMEs. The lower policy rate brought market rates down for both deposits and credit. In fact, short- and long-term real interest rates approached zero, and remain at record low levels.

To sustain the recovery, the CBRT also took swift action in the foreign exchange, money and credit markets. First, as the crisis hit the EMEs from October 2008, the CBRT terminated foreign exchange (FX) market intervention and provided FX liquidity in the market as necessary. Before the end of October 2008, the bank provided additional FX liquidity to alleviate possible price fluctuations as market liquidity tightened. At the onset of the crisis the central bank also resumed its intermediary functions related to foreign exchange deposits and gradually increased the transaction limits for banks in the FX deposit market. The required reserve ratio for the FX liabilities of banks and other finance houses was lowered by 2% before the end of 2008.

The CBRT took several measures in the Turkish lira market. First, the Bank tightened the gap between borrowing and lending rates in the money market by 1% to reduce the potential volatility in overnight rates. Second, after October 2008, with a view to stabilising the money markets and eliminating volatility in overnight interest rates, the Bank started to inject more liquidity. The smooth functioning of the credit market was another important component of crisis prevention measures. As the probability of a permanent liquidity shortage started to

increase, the CBRT started three-month repo auctions, and reduced the required reserve ratio for Turkish lira by 1% from 6%.

### **Recovery and post-crisis measures**

The economy started to recover swiftly in the second quarter of 2010. Largely due to tax incentives, private consumption was the driving force of the recovery process. By contrast, investment demand was relatively weak in the early stages of the recovery. The global economic outlook – particularly for the main trading partners in the euro area – also delayed the recovery in external demand. However, an increase in product market diversification and relocation later led to a gradual increase in total exports.

As the economic recovery became more evident, central banks in some advanced economies and EMEs started to prepare the markets for normalisation. A common belief was that, over a long period, loose monetary policies combined with expansionary fiscal policies should be creating further fragilities in the economy and might lead to inflation, which would entail additional welfare costs in the future. For that reason, the CBRT took the following measures related to the foreign exchange markets, liquidity management, and maturity mismatches.

As FX liquidity improved and international capital flows revived, the Turkish lira started to appreciate. The central bank therefore started to intervene in the FX market to build up reserves in August 2009. However, as capital inflows increased in mid-2010, the CBRT altered its method for foreign exchange buying auctions with effect from 4 October 2010. This policy aimed to benefit from capital inflows more effectively with a view to strengthening foreign exchange reserves and to enhancing resilience against any sudden reversal in flows (see Figure 13). Thanks to the improvement in the FX market and accelerated private credit growth, the FX required reserve ratio was also gradually increased in 2010, and was brought back to pre-crisis level of 11%.

Several other measures have targeted the Turkish lira market. First, a technical interest rate adjustment and corridor system are being implemented for efficient liquidity management (see Figure 12). With this policy, overnight market rates are allowed to deviate from the policy rate to a certain extent. However, with borrowing rates approaching the zero limit, the gap between the borrowing and lending rate was widened drastically. This policy is also intended to lengthen the maturity of Turkish lira transactions. Second, the Bank started to use the one-week repo auction interest rate rather than the overnight borrowing rate as its policy rate while maintaining its monetary policy stance.

As credit growth accelerated and capital flows increased, the required reserve ratio was gradually increased until it stood above its pre-crisis level. Additionally, the remuneration of reserves was terminated to increase the effectiveness of this policy tool and withdraw further liquidity from the market.<sup>6</sup> This required reserve policy is expected to increase the effectiveness of the lower policy rate (as discussed below) and the wider interest corridor. Meanwhile, the required reserve ratio for Turkish lira liabilities has been adjusted to favour deposits with longer maturities. This policy aims both to slow the acceleration in credit growth and to reduce maturity mismatches and related risk by lengthening the maturity of liabilities.

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<sup>6</sup> For further details, see CBRT, “Monetary policy exit strategy”, 2010.

## Post-crisis outlook: a further need for macroprudential policies

Output started to exceed its pre-crisis level in the second quarter of 2010. With the debt crisis continuing to evolve in some European economies and with growth slowing in the third quarter, domestic and external demand started to diverge more markedly. In particular, the import of goods and services has rallied in recent periods, but total exports have been steady, mainly due to the export of services (Figure 7).

Among the subcomponents of GDP, private consumption has increased significantly in recent quarters, driven partially, it is believed, by credit supply. Expansionary monetary policy in the advanced economies has prompted further capital flows into EMEs, which amplify the acceleration in domestic demand and credit growth. Under the current economic conditions of a low policy rate and the absence of an inflationary threat, credit demand is also increasing as loan rates show a declining trend. Low interest rates and loose credit conditions are expected to spur economic growth over the medium term (Figure 8).

Although the CBRT has taken additional measures in the context of monetary policy exit strategies, several features of the current economic outlook are particularly important for EMEs including Turkey. Given the EMEs' sound macroeconomic foundations, the surge in capital inflows may well be sustained over the next few years. As discussed in the literature, such episodes of capital inflows are generally followed by acceleration in output growth, increasing household and corporate indebtedness, asset price bubbles and a deterioration of the current account balance. Furthermore, the recent wave of capital flows is mainly in the form of portfolio investment, as the uncertain international economic outlook has choked off the flow of FDI to the EMEs.

The current economic outlook thus raises important concerns over financial stability, which has become a major policy objective for the monetary and other financial authorities. Whereas price and financial stability were the main concerns as the economy slipped into crisis, financial stability has gained importance as the recovery accelerates. The difficulty here is that the policy rate required for price stability and the one that would be ideal for financial stability are expected to diverge as growth accelerates and international capital flows surge. In this case, a policy rate that targets inflation could be less than optimal for keeping financial risks in check. This implies that the central bank, as in many other EMEs, will need to use policy instruments other than short-term interest rates if it is to contain the attendant risks (see Figure 1, and Scenario I in Figure 16).

In these circumstances, the use of other policy instruments is warranted if financial stability is to be maintained. These could include required reserves and liquidity management facilities, and other measures targeting credit growth, such as loan-to-value caps, or measures that address the size and composition of bank balance sheets, such as measures to limit procyclicality and specific financial risks, liquidity requirement ratios, additional taxes and fiscal controls. To pave the way for the use of such macroprudential measures, the CBRT has used various communications tools. For instance, the summary of its October 2010 Monetary Policy Committee meeting states that "Should the capital inflows continue, the divergence in the growth rates between domestic and external demand is likely to intensify in the forthcoming period. Additional policy instruments, other than the short-term policy rates, would be needed to curb risks emanating from this channel. In this respect, the Committee stated that, should the disparity between domestic demand and external demand continue, it would be necessary to utilize other policy instruments such as reserve requirement ratios and liquidity management facilities more effectively, to address financial stability concerns including rapid credit expansion and a deterioration in the current account balance." (CBRT (2010d) p 4).

In this context, it is necessary to clarify the context of policies for financial stability, as well as the principal indicators that are being considered for monitoring by the CBRT. These indicators are the indebtedness ratio and debt maturity for households and firms. As found in previous studies, eg Berkmen et al (2009), it was the countries with more leveraged domestic

financial systems that suffered a greater loss of output during the crisis. In addition, maturity and currency mismatches have been the triggering factors behind banking crises particularly in Latin American countries. As measured against the scale of economy, a lower level of bank loans and lower household liabilities with less FX risk exposure have bolstered the resilience of the Turkish economy during the global financial crisis. Keeping household debt and bank leverage at moderate levels should therefore contribute to the country's financial stability. However, maturity mismatches have widened as the maturities of firms' external debt and government debt securities have lengthened while deposit maturities have contracted. The other policy elements for financial stability include the FX positions of the public and private sectors, and FX risk management using futures and options markets instruments.

A major vulnerability at the current economic conjuncture is the widening current account deficit, with the associated implications for financial stability. Two main factors stand behind this development: first, that the extensive borrowing opportunities due to excessive liquidity and low interest rates have increased demand for both domestically produced and imported goods. Second, the appreciation of the real exchange rate has boosted demand for imports even further, undermining export performance. In addition, the type of capital transaction that finances the current account deficit is also an important source of vulnerability. Turkey's extensive FDI inflows in recent years helped to finance the current account deficit, but these have now dried up, as in other EMEs, in the face of the uncertain international economic outlook. The recent wave of capital inflows is mainly in the form of portfolio investment and, to some extent, of bank loans. FDI flows are considered to be the more stable form of capital flow during both turbulent and settled times, while portfolio flows are likely to be more transitory as they are susceptible to sudden reversals, informational problems and herding behaviour (see, for example, Calvo and Mendoza (2000), and Sarno and Taylor (1999) for further discussion). Hence, the optimal policy mix for financial stability must take into account the financing of the current account deficit by potentially transitory capital inflows, and the implied linkage with financial stability (Figures 9 and 10).

In this context, an increase in policy rates should suppress credit demand and hence could reduce the current account deficit via the credit channel. However, such a policy would increase the differential between domestic and foreign interest rates, and thus feed further capital inflows and appreciation of the domestic currency. This, in turn, would lead to a further deterioration of the current account deficit via the exchange rate channel. Although the net effect of these two channels remains ambiguous, and requires an empirical examination, a further increase in the policy rate does not seem to be a plausible option as a means of curbing the current account deficit. Instead, the optimal policy mix might consist in using macroprudential instruments to restrain credit growth while gradually reducing the policy rate with the aim of limiting exchange rate appreciation.

### **Financial stability outcomes: an evaluation**

The divergence of domestic and external balances, a surge in capital inflows and credit growth, a widening current account deficit, and a real and nominal appreciation of the Turkish lira became apparent in the last quarter of 2010. These domestic and external conditions confronted policymakers with a difficult dilemma, now that the maintenance of financial stability had become the prerequisite for continued price stability. To solve this dilemma, the CBRT applied a new policy mix that consisted of a lower policy rate, a wider interest rate corridor and higher reserve requirements. Within this framework, which took shape mainly after mid-November 2010, the CBRT implemented a series of measures that aimed to bolster financial stability by circumventing short-term capital flows, slowing down the acceleration of credit growth, tightening market liquidity, steepening the yield curve, and increasing the volatility of market rates for short-term lira and swap transactions. These policies are designed to strengthen the perception that the central bank's financial stability mandate has gained in importance.

The new policy mix has price, quantity and volatility aspects that establish a new equilibrium for monetary policy. While lowering the policy rate could be construed as easing in terms of price stability, the significant increase in the required reserve rate and other instruments that regulate lira liquidity is perceived as a quantitative tightening in the credit market. In addition, asset prices, including overnight lira rates, swap rates and exchange rates, have displayed greater volatility as the interest rate corridor between borrowing and lending rate was widened.

The policy mix after mid-December was implemented by raising required reserves on Turkish lira liabilities to 9.5% on average with a significant differential between the rates on short-term and long-term liabilities.<sup>7</sup> In addition, the policy rate was reduced by 75 basis points, the interest rate corridor was widened by 50 basis points, and daily FX purchases were reduced to US\$50 million for 2011.

The widening of the interest rate corridor led to a substantial deviation of overnight interest rates from the policy rate as well as increased volatility in overnight rates. The policy also affected short-term rates on swap transactions and their volatility, which has spiked markedly upwards over the past two months (Figures 14 and 15). Besides the increase in volatilities, the initial impact of interest rate and required reserve policy changes could also be observed in a marginal increase in the maturities of swap transactions and Turkish lira repo transactions, the maturity composition of deposits, and a steepening yield curve (without any significant change in inflation expectations).

Daily FX purchases with a further increase in required reserves, a lower policy rate and the interest rate corridor have affected both nominal and real exchange rates. The effect of these policies is seen in Figure 14, which shows how the Turkish lira/US dollar exchange rate has started to depreciate and to diverge from other emerging market currencies. In contrast to an FX intervention sterilised through open market operations, FX interventions paired with an increase in reserve requirements and other market liquidity measures are expected to have an immediate impact on the real exchange rate. This argument was supported by Reinhart and Reinhart (1999) in a framework that extends the seminal overshooting model of Dornbusch (1976). The theoretical findings in Reinhart and Reinhart (1999) are supported by evidence from Latin American and Asian countries during the 1990s when these economies experienced substantial and volatile international capital flows.

The initial impact of the new policy mix on the maturity of debt instruments, credit growth, the exchange rate and yield curve is in line with the CBRT's projections. However, we still do not have enough evidence to make an overall assessment of the full impact of monetary policy measures on financial stability, and to disentangle these effects from other macroprudential and fiscal policy measures taken by other authorities.<sup>8</sup> Therefore, the evolution of financial stability indicators, including debt ratios and maturities, FX positions, and other financial risks, in upcoming periods will depend on the domestic and external economic environment which will also shape the monetary policy stance. Still, the use of fiscal and macroprudential measures will have a vital part to play in reducing policymakers' reliance on monetary policy, and to reinforcing the coherence of price and financial stability.

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<sup>7</sup> The required reserve ratios were first adjusted with respect to maturity in mid-December with a lower rate for liabilities with longer maturities. In late April 2011, the required reserve ratio was raised to 16% for both demand deposits and one-month deposits; 13% for deposits with a maturity of 1–3 months and other lira liabilities, including repo transactions; 9% for 3–6 months deposits; 6% for 6–12 months deposits; and 5% for one-year and longer deposits. FX required reserve rates were also raised above the pre-crisis level of 12% for liabilities with maturities of less than a year.

<sup>8</sup> Measures taken by the Banking Regulation and Supervision Agency and Ministry of Finance include a loan-to-value cap, minimum payments on credit card balances, a tax cut on interest from foreign bonds, a reduction in the transaction tax on sales of domestically issued corporate bonds, and tax hikes on consumer loans.

## 4. Concluding remarks

The recent global financial crisis that hit advanced economies and some of the emerging market countries led to a major slump in output, an increase in deflation risk, and a rise in asset price volatilities. As the crisis deepened and expectations deteriorated, the central banks in advanced economies launched unconventional monetary policies to restore confidence and revive their economies. The crisis in advanced economies was quickly transmitted to the EMEs, which faced the additional challenges of currency fluctuations, asset price volatility, and a sudden reversal in capital flows. EMEs coupled their conventional monetary policy tools with macroprudential policies in order to mitigate financial risks and avert a deep recession.

This paper provided a perspective on the Great Moderation as it was experienced in advanced economies and on the growing financial integration of EMEs, and the implications of these phenomena for monetary policy and financial stability. While sound monetary policy and structural changes during the Great Moderation have dampened cyclical fluctuations and improved the ability of the economy to absorb shocks, these factors did not mitigate the financial risks accumulated in the advanced economies. EMEs, on the other hand, experienced boom-bust cycles, sudden stops and structural changes while the advanced economies were enjoying their age of moderation. However, in the past decade, EMEs have become more integrated with the global economy, and have shown increased resilience thanks to strong fundamentals including low inflation, external and fiscal surpluses, sound banking systems, a large stock of international reserves, and flexible exchange rate regimes. With their sound macroeconomic fundamentals, EMEs are expected to generate sustained high growth over the long term and to become the motor of the world economy (Table 1, Figures 2 and 3).

We conclude that policy frameworks for stable output growth and inflation may still be the main focus of central banks. That said, the recent financial crisis has shown that these institutions also need to adopt macroprudential policies for financial stability. As EMEs go through a phase of moderation similar to that experienced by advanced economies, they will need to establish more credible macroprudential policies if they are to set their financial systems on sound foundations.

Table 1  
**Macroeconomic indicators**

	GDP growth		Investment/GDP		Savings/GDP		Fiscal balance/GDP	
	AE	EME	AE	EME	AE	EME	AE	EME
1980–89	3.07	3.48	23.11	24.06	21.72	22.62	–	–
1990–99	2.73	3.61	22.15	25.76	21.50	22.81	–	–
2000–09	1.78	6.09	20.71	26.95	19.68	29.62	–3.22	–1.55
2010–15*	2.50	6.65	19.64	31.51	19.07	33.36	–5.31	–2.28

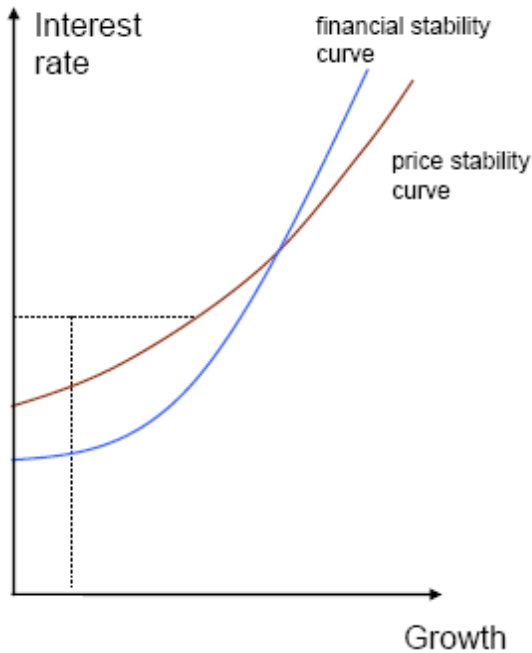
Note: AE = advanced economies; EME = emerging markets and developing countries (both IMF World Economic Outlook definitions). All variables are in percentage terms and indicate average over decades.  
 \* IMF forecast.

Sources: IMF World Economic Outlook Database.

Figure 1

**Changing monetary policy priority – price vs financial stability**

(a) Average Growth Era



(b) High Growth Era

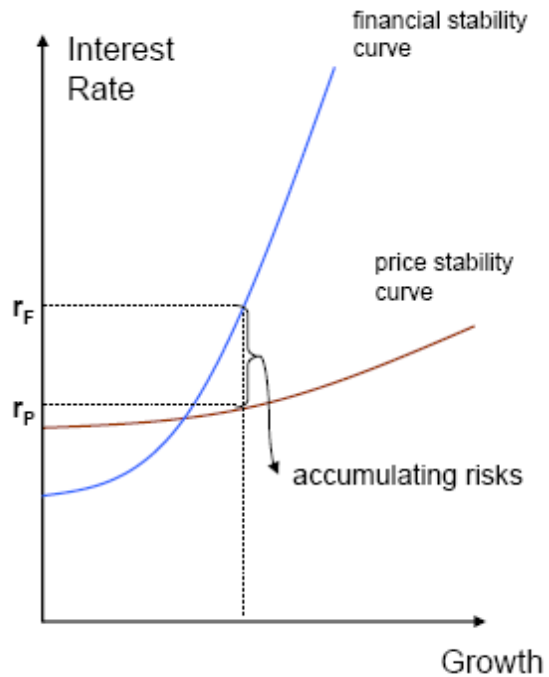
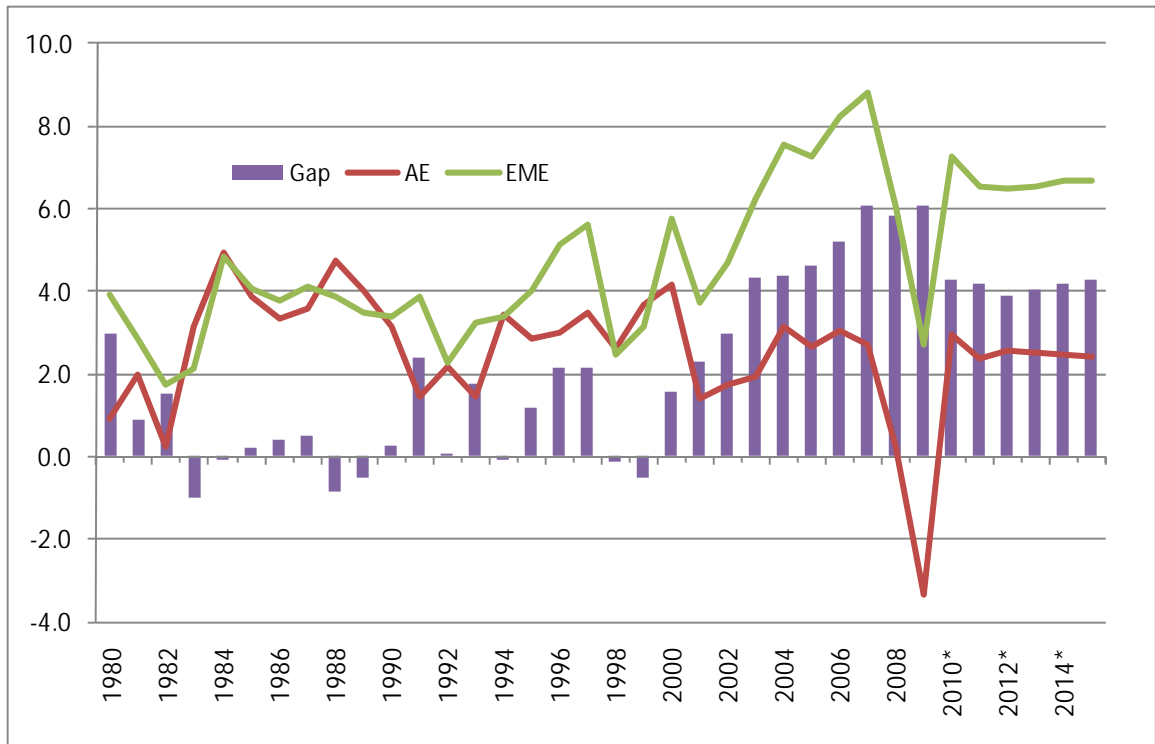


Figure 2  
**Growth performance – advanced economies and EMEs**

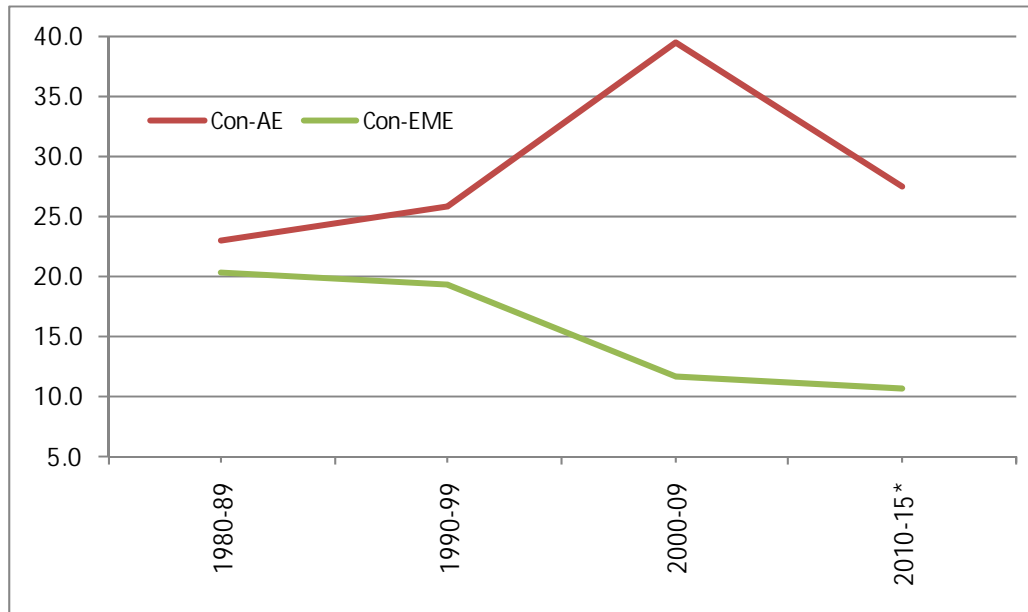


Figures for 2010 and after are forecasts. AE = advanced economies; EME = emerging markets and developing countries (both IMF World Economic Outlook definitions).

Source: IMF WEO database.



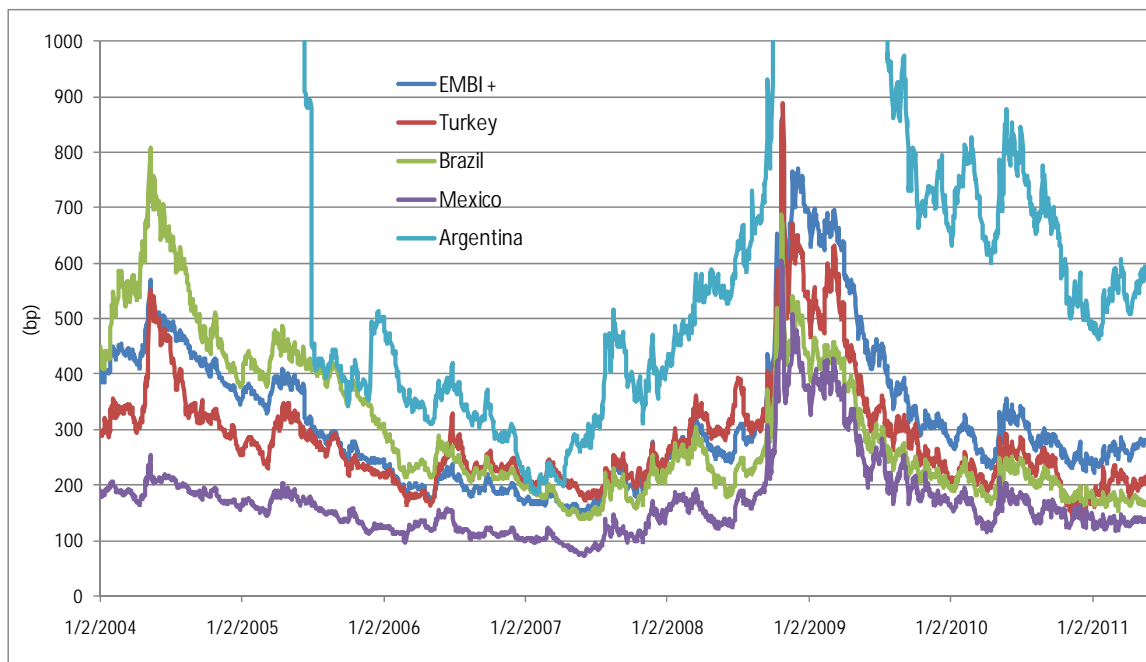
Figure 3  
**Convergence – advanced economies and EMEs**



AE = advanced economies; EME = emerging markets and developing countries (both IMF World Economic Outlook definitions).

Source: IMF WEO database and authors' calculation based on the Rule of 70, which gives the number of years for the real GDP to double.

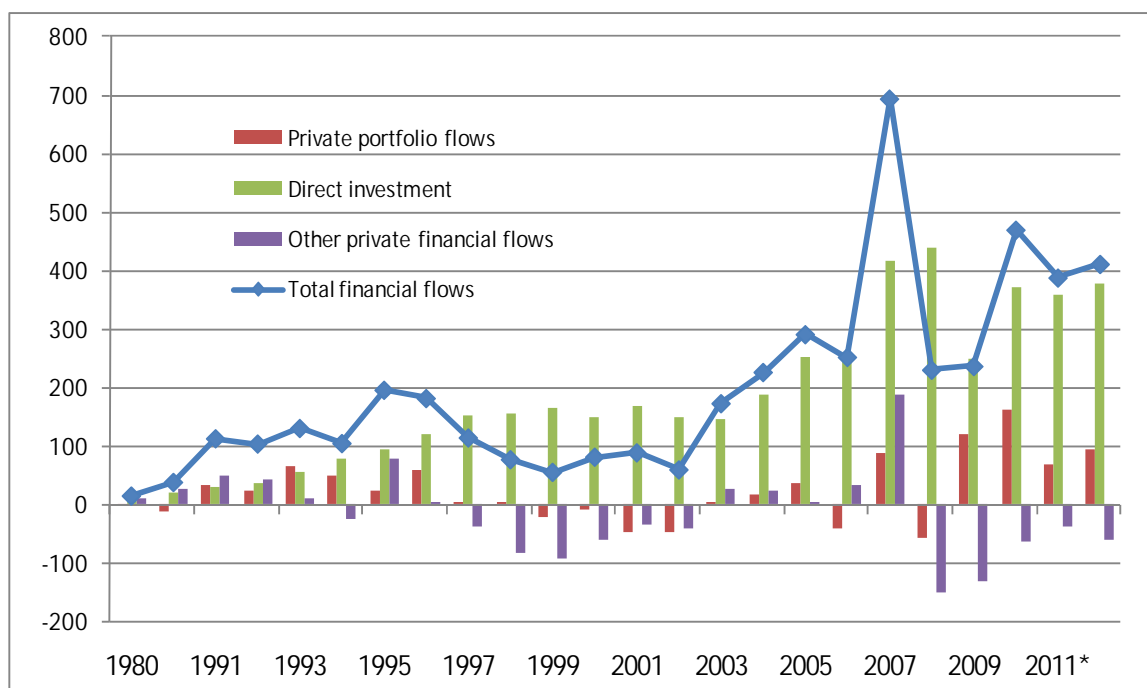
Figure 4  
**Secondary market bond spread – Turkey and Latin American economies**



Spread is difference between selected countries' bond return and US Treasury return.

Source: JP Morgan Emerging Market Bond Index (EMBI+).

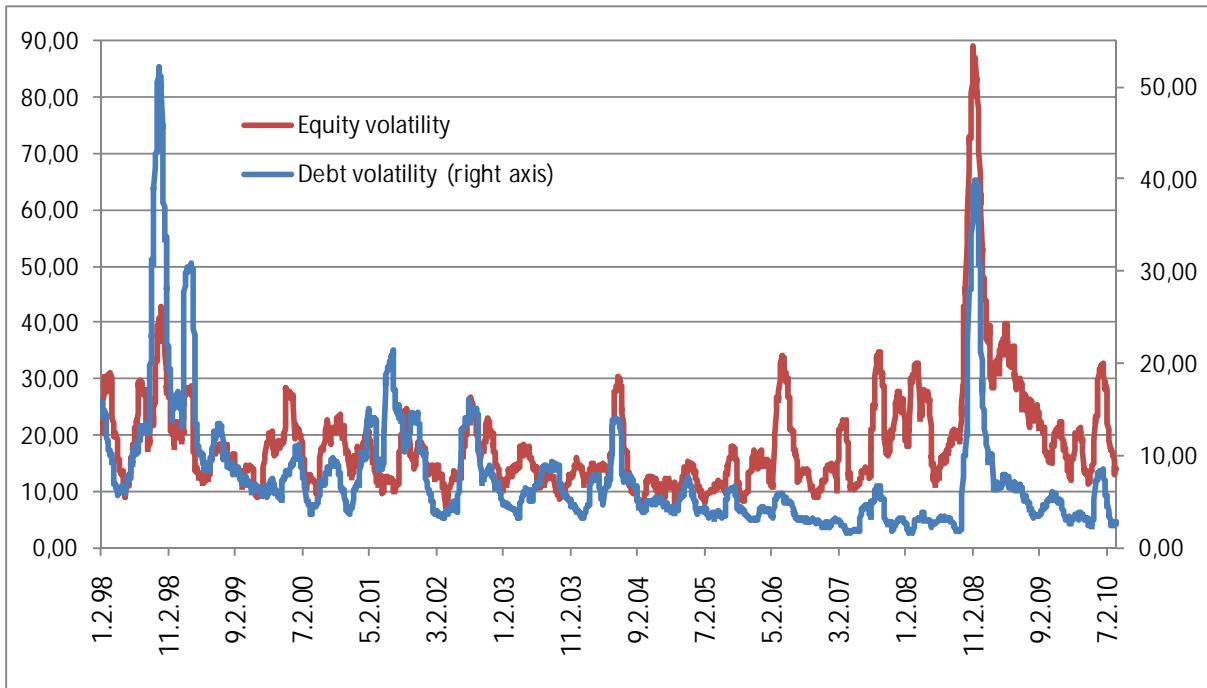
Figure 5  
**Net private financial flows to EMEs**  
 US dollar billions



Figures for 2010 and after are forecasts.

Source: IMF WEO database.

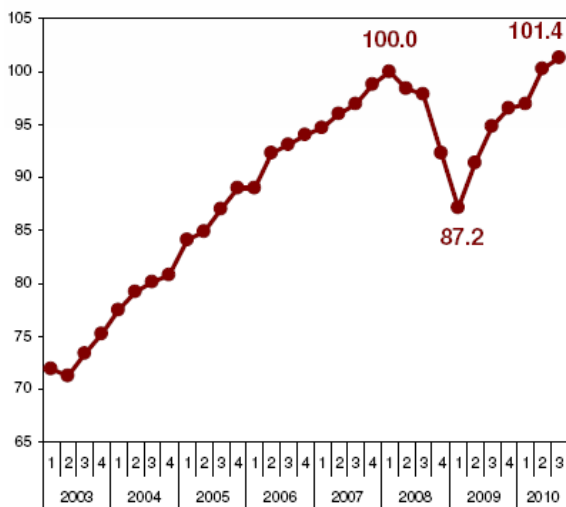
Figure 6  
Emerging market volatility measures



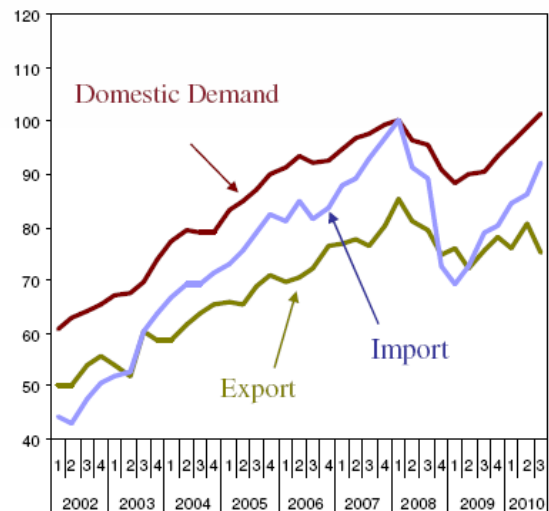
Source: IMF GSR Database.

Figure 7  
Turkey – economic outlook and risks

(a) Seasonally adjusted GDP  
2008 Q1=100



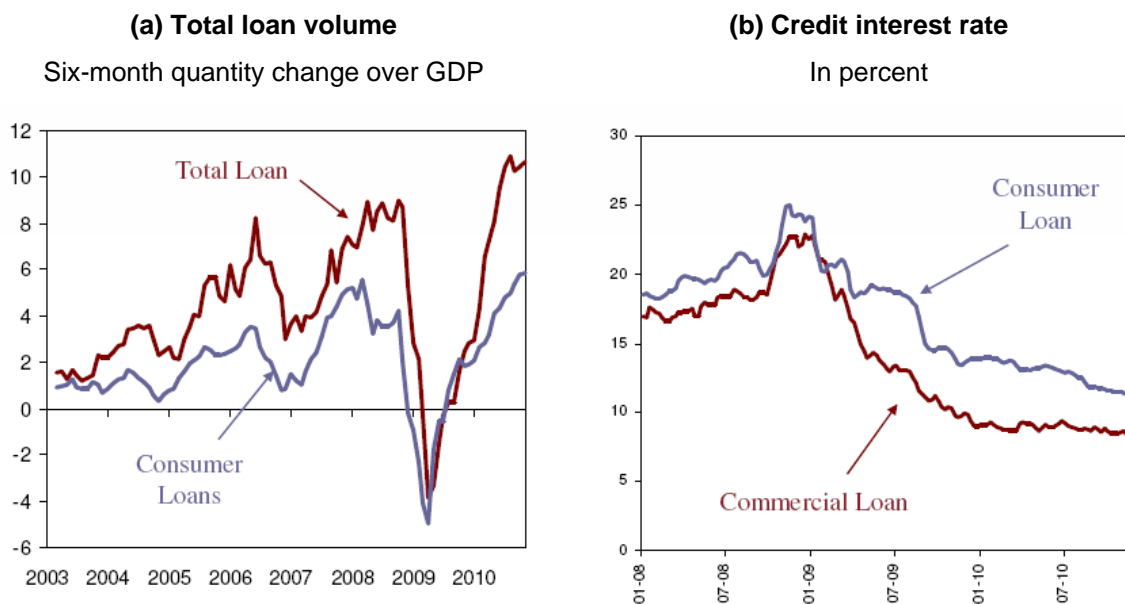
(b) Aggregate demand components  
Seasonally adjusted, 2008 Q1=100



Sources: TurkStat and CBRT.

Figure 8

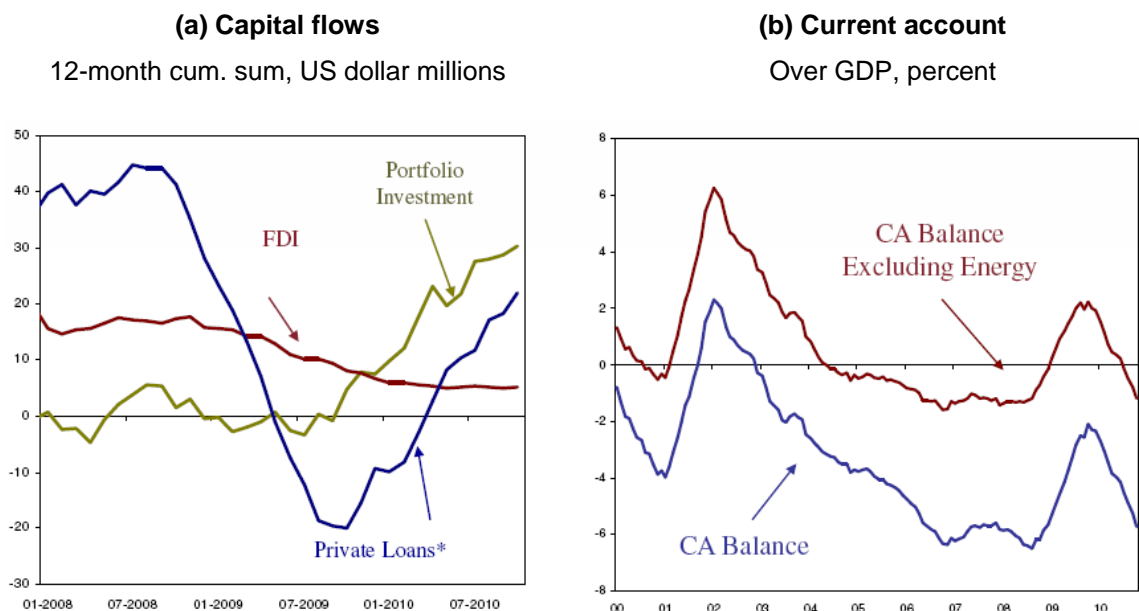
**Expanding credit volume**



Total loans are adjusted for exchange rate effect, and annualised. Loan rates are two-week moving average. Sources: TurkStat and CBRT.

Figure 9

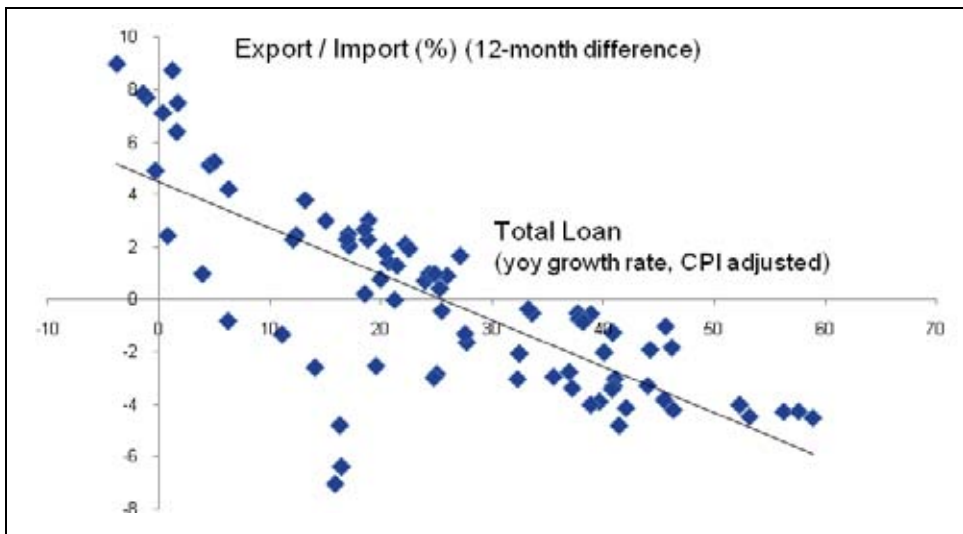
**Balance of payments**



\* Private loans are adjusted for the amendment made in Decree no 32.

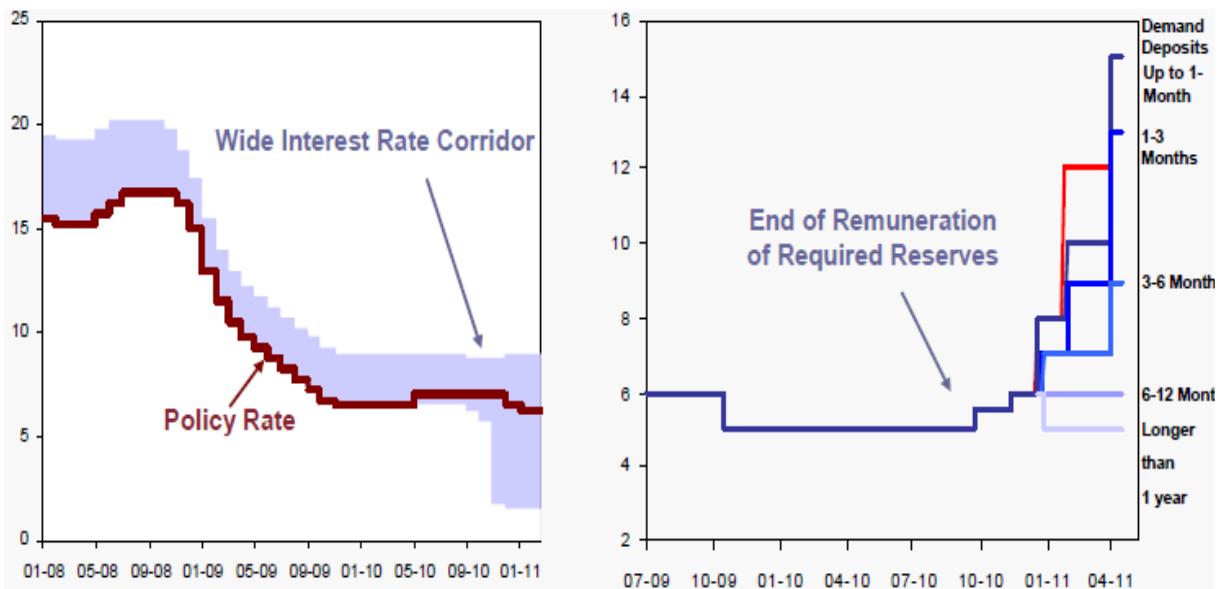
Sources: CBRT and BRSA.

Figure 10  
**Credit growth and current account balance**



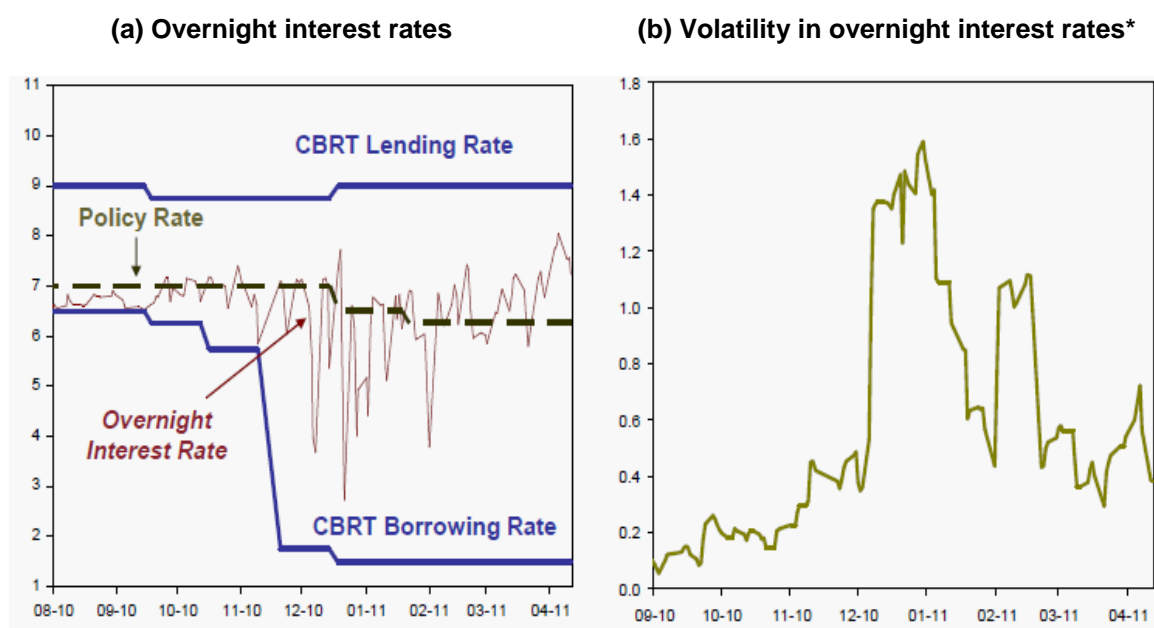
Sources: CBRT and BRSA.

Figure 11  
**Policy rate and required reserve ratio**  
 In percent



Source: CBRT.

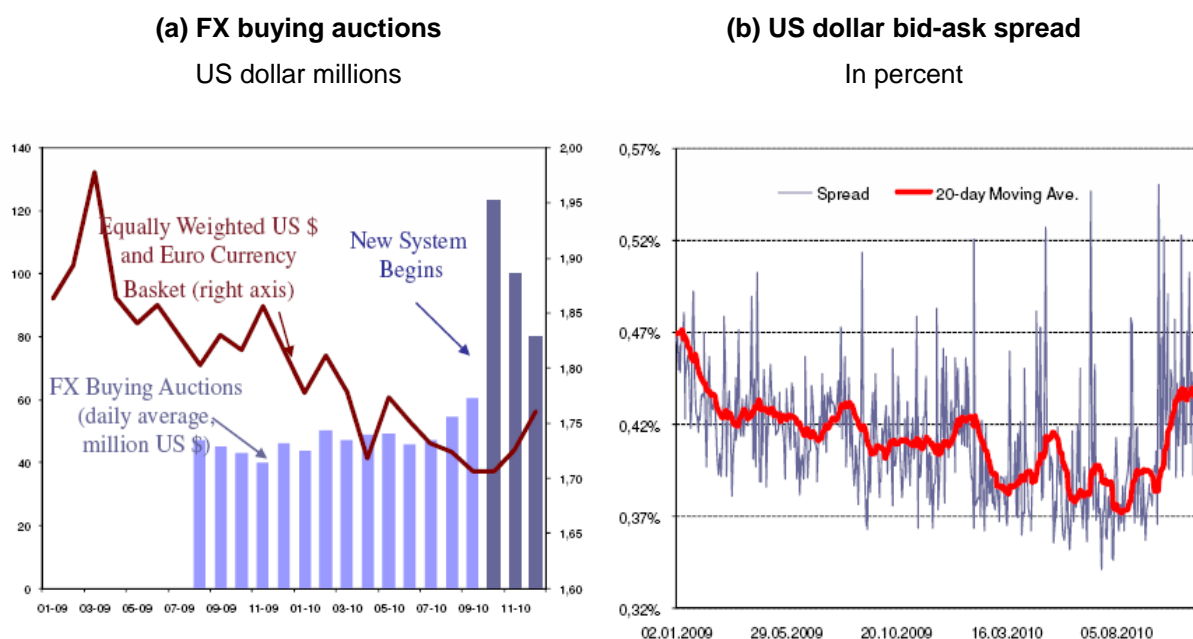
Figure 12  
**Corridor system and O/N rate**  
 In percent



\* Two-week standard deviation.

Sources: CBRT and Istanbul Stock Exchange.

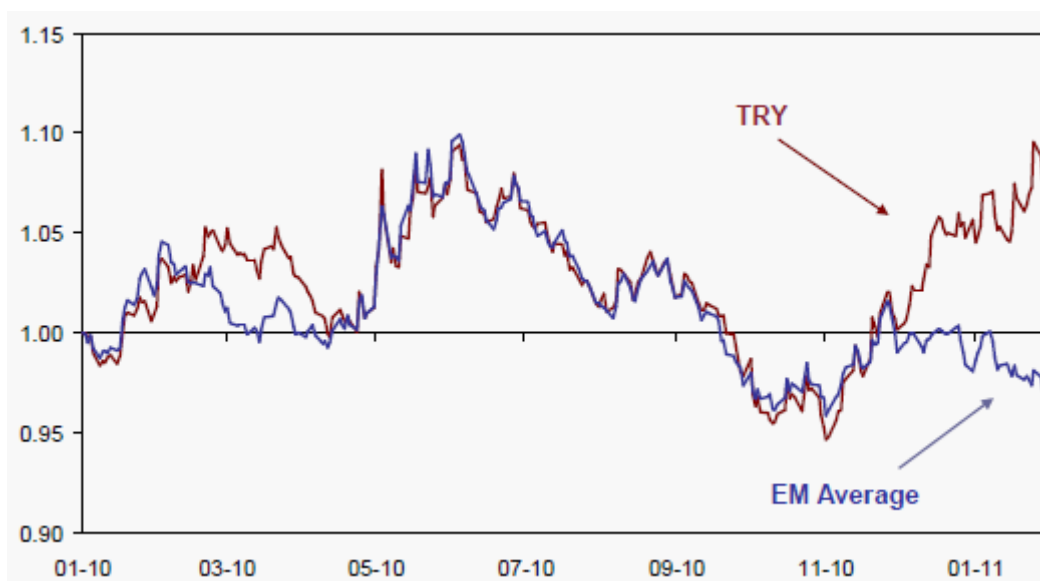
Figure 13  
**Foreign exchange purchases**



Sources: CBRT and Istanbul Stock Exchange.

Figure 14

**Turkish lira and other emerging market currencies against US dollar**



Note: Average of emerging market currencies, including Brazil, Chile, Czech Republic, Hungary, Mexico, Poland, South Africa, Indonesia, South Korea and Colombia.

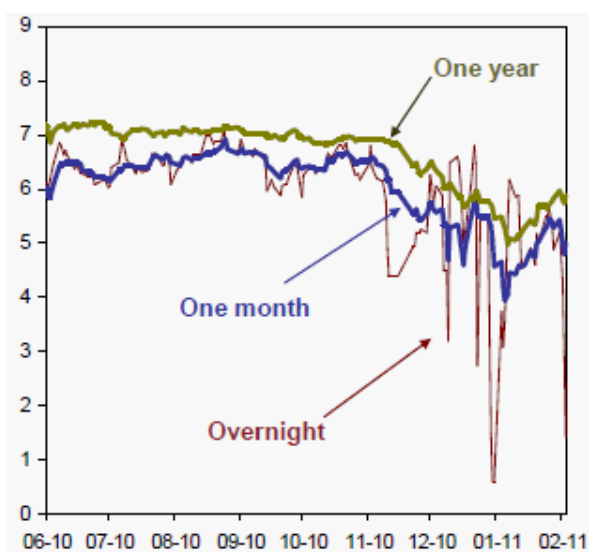
Sources: Bloomberg, CBRT.

Figure 15

**Swap rates and volatility**

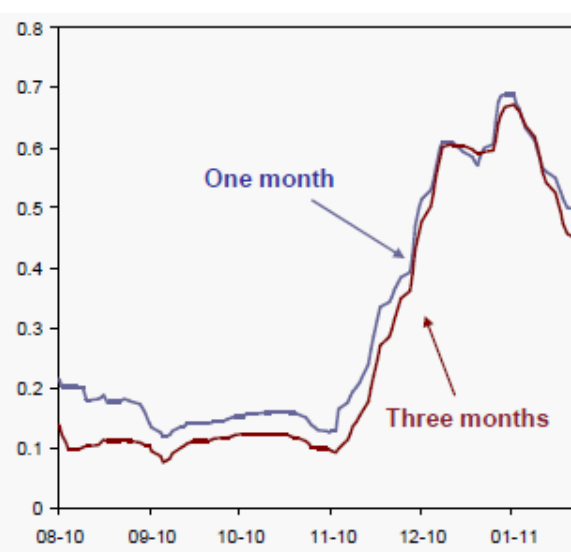
**(a) Swap rates**

(In percent)



**(b) Volatility of swap rates**

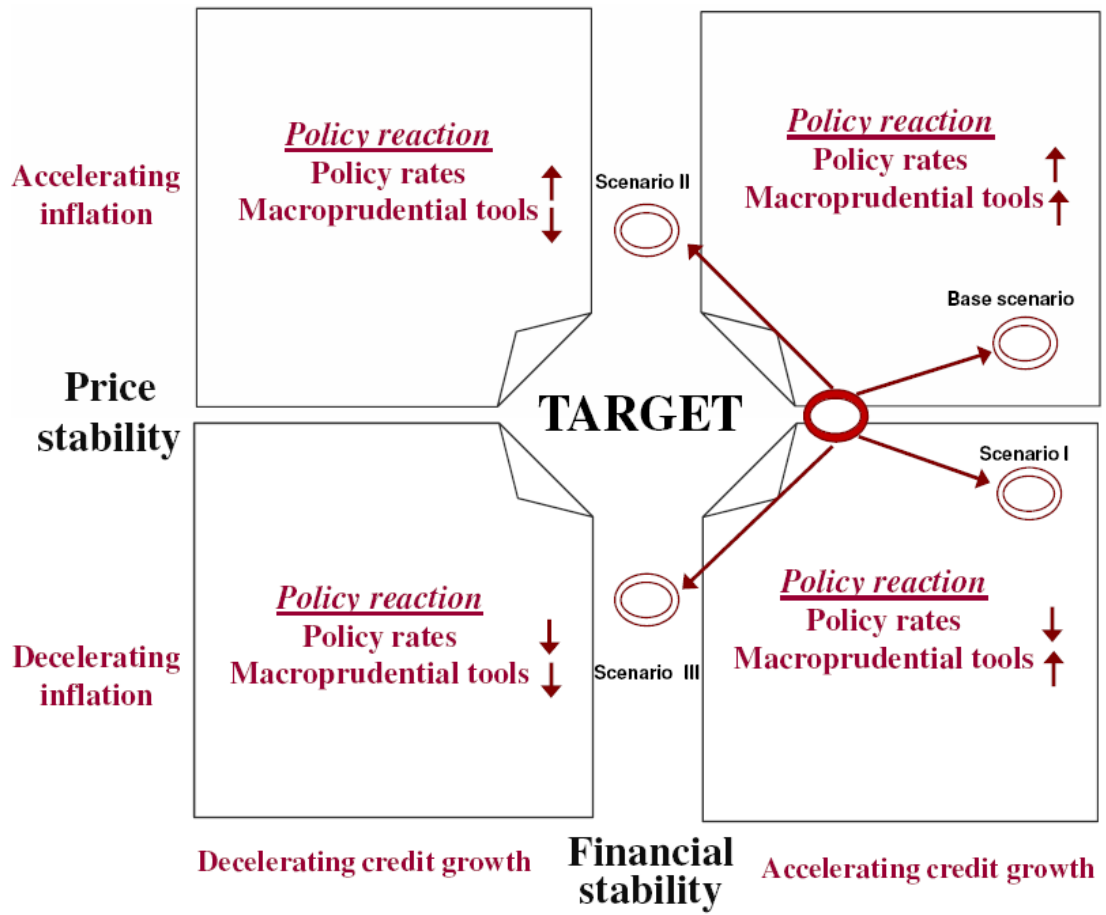
(2-week standard deviation)



Sources: CBRT and Istanbul Stock Exchange.

Figure 16

Current economic policy – price and financial stability



Source: CBRT Financial Stability Report.



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IFC Satellite meeting at the ISI World Statistics Congress on *"Assessing international capital flows after the crisis"*  
Rio de Janeiro, Brazil, 24 July 2015

# Capital flows in the post-global financial crisis area: implications for financial stability and monetary policy<sup>1</sup>

Mahir Binici, Central Bank of the Republic of Turkey

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<sup>1</sup> This presentation was prepared for the meeting. The views expressed are those of the author and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

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**TÜRKİYE CUMHURİYET  
MERKEZ BANKASI**

**Capital flows in the post-global financial crisis era:  
implications for financial stability and monetary policy**

**Mahir Binici  
Central Bank of Turkey**

**July 24, 2015  
Rio, Brazil**

# Outline

1. Introduction
2. Capital Flows to EMEs
3. Stylized Facts
4. Perspective from Turkey
5. Monitoring
6. Measurement and Data Issues
7. Conclusions

# Main Question: Why do we care about flows?

## **Macroeconomic Stability:**

1. Is it the business cycle concern about the procyclicality of flows that may tighten the external constraint?
2. Is it the growth concern about excessive overvaluation, its impact on exports and import substitution, and hence on employment and economic activity?

## **Price Stability & MP:**

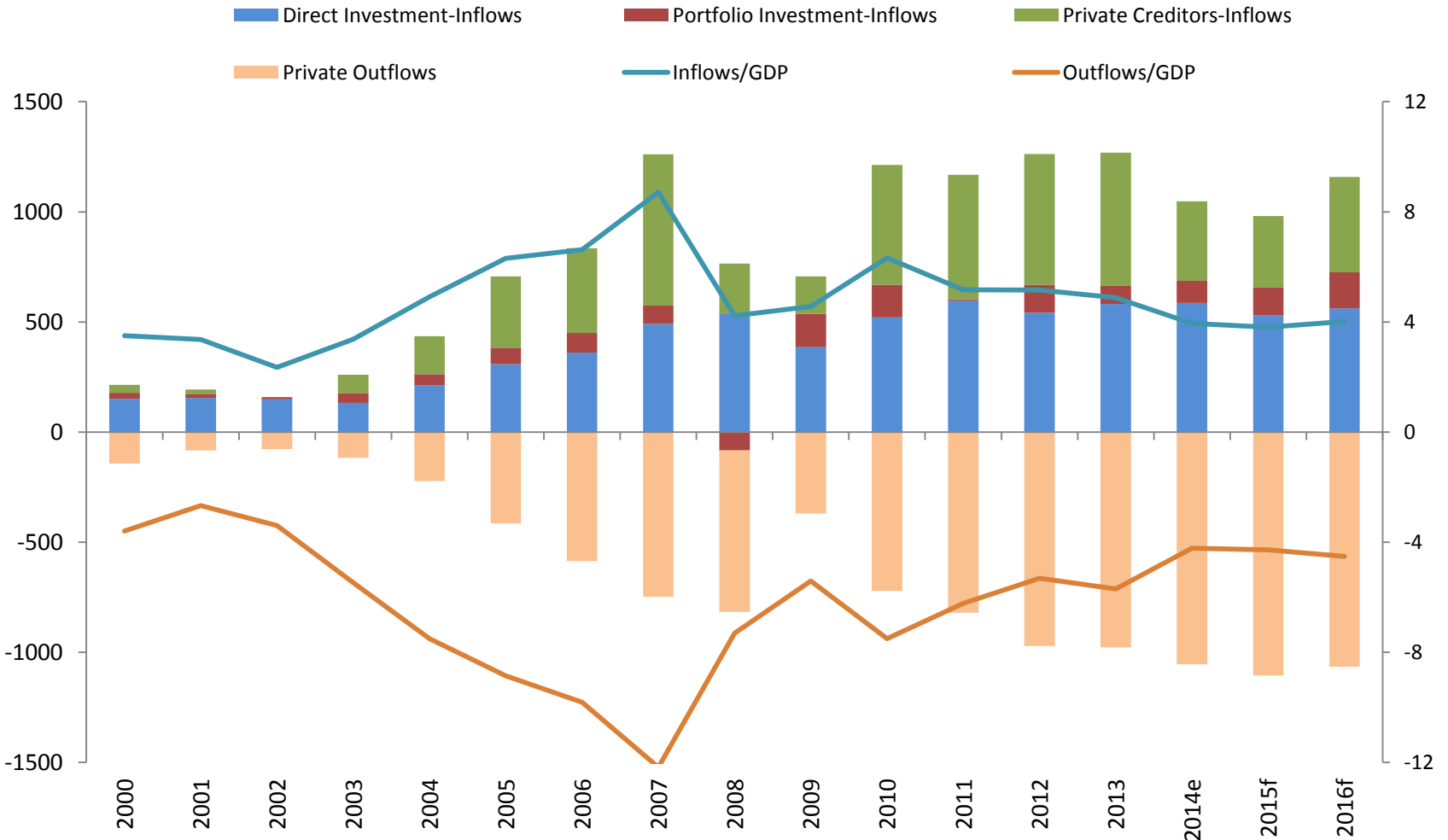
3. Is it challenge facing monetary policy independence – transforming the trilemma into a “dilemma” or an “irreconcilable duo”?
4. Is it the monetary concern of a destabilizing pass through to prices?

## **Financial Stability:**

4. Is it the precautionary concern about a sudden flow reversal and its impact on the financial capacity of dollarized debtors?
5. Is it the risk of asset overvaluation and bubbles that may end in financial stress?

# Capital Flows to EMEs

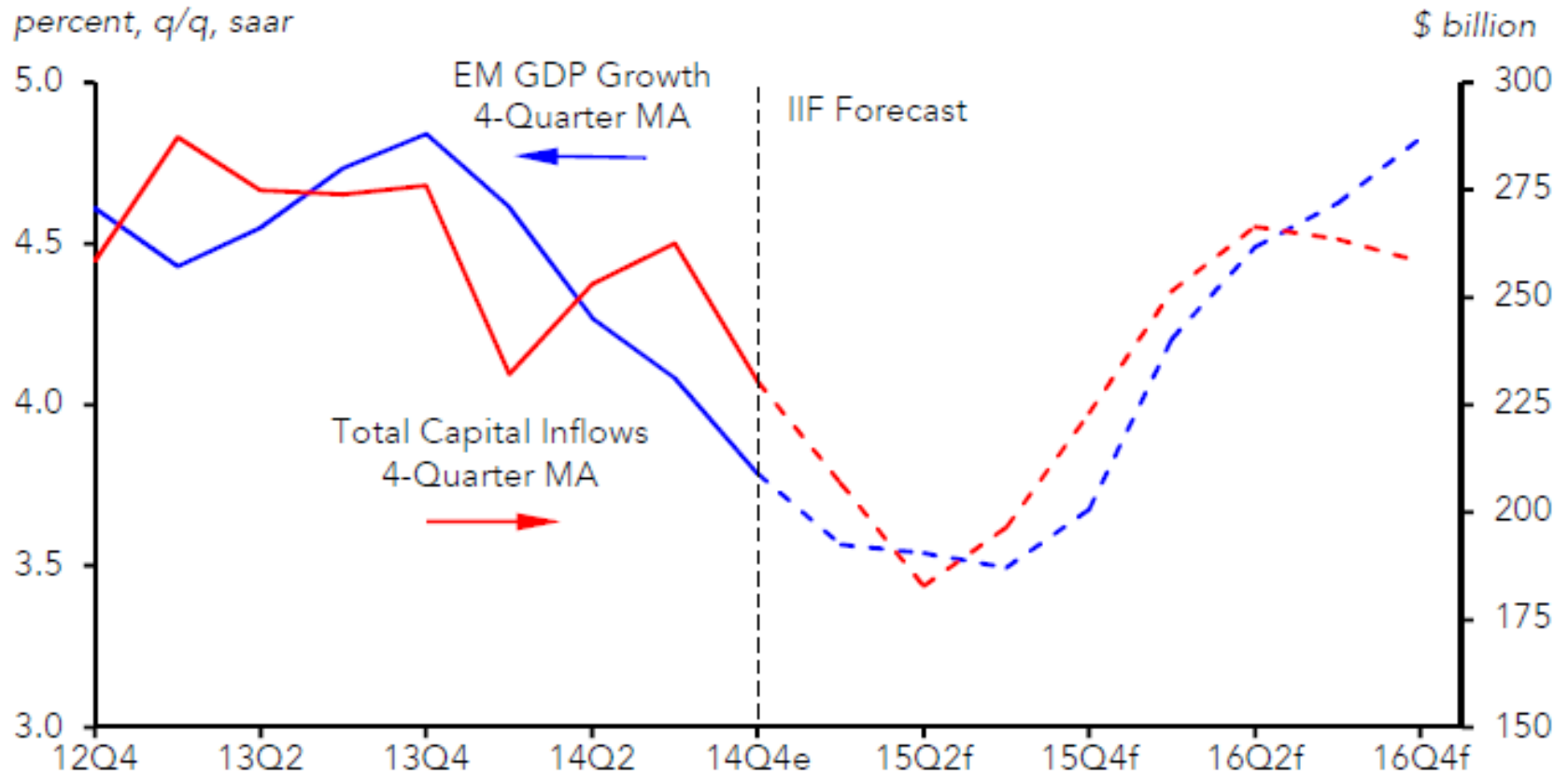
(Billion USD)



Source: IIF.

# EMEs: Business Cycle and Capital Flows

## EMEs GDP Growth and Total Capital Inflows



Source: IIF.



# Capital Flows: Stylized Facts -1

- Capital flows "uphill" - from the EMEs to the advanced economies because outflows through official channels – “Lucas paradox”
- Pre- and Post-Crisis Composition:
  - Volatility: FDI is relatively stable, volatility is concentrated in portfolio flows and banking and other flows.
  - Flows: The pre-crisis run up in flows was especially concentrated in banking and other investments, but the following collapse during the crisis occurred in both portfolio flows and banking flows.
  - Post-crisis recovery was dominated by portfolio flows.
- From growth point of view, composition also matters.
  - Kose et al. (2009): Portfolio inflows and FDI are more growth promoting than cross-border banking.
- All capital flows are not equally risky: Ostry et al. (2010) - order of riskiness for capital flows is related with maturity - with short-term instruments riskier than long-term ones within each category

# Capital Flows: Stylized Facts -2

- Bank flows are unique:
  - The bulk of global capital flows are intermediated through cross-border banking channels, and it has become central spillover/crisis transmission.
  - BIS (2008): Transmission of monetary policy through conventional channels of interest rate and exchange rate may have declined with capital flows including the bank intermediation of flows.

# Capital Flows: Stylized Facts -3

- Both pull and push factors play role in surges of capital inflows.
  - Pull factors - developments in the domestic economy: productivity growth, new investment opportunities, and the like.
  - Push factors – developments outside the country: surge in global liquidity, higher savings, in the rest of the world, low foreign interest rates, and others.
  - De Gregorio (2013): Third factor that should be treated separately despite is a special pull factor called ‘reserve factor’.
- Pull-factors in post-crisis and after tapering have been challenged.

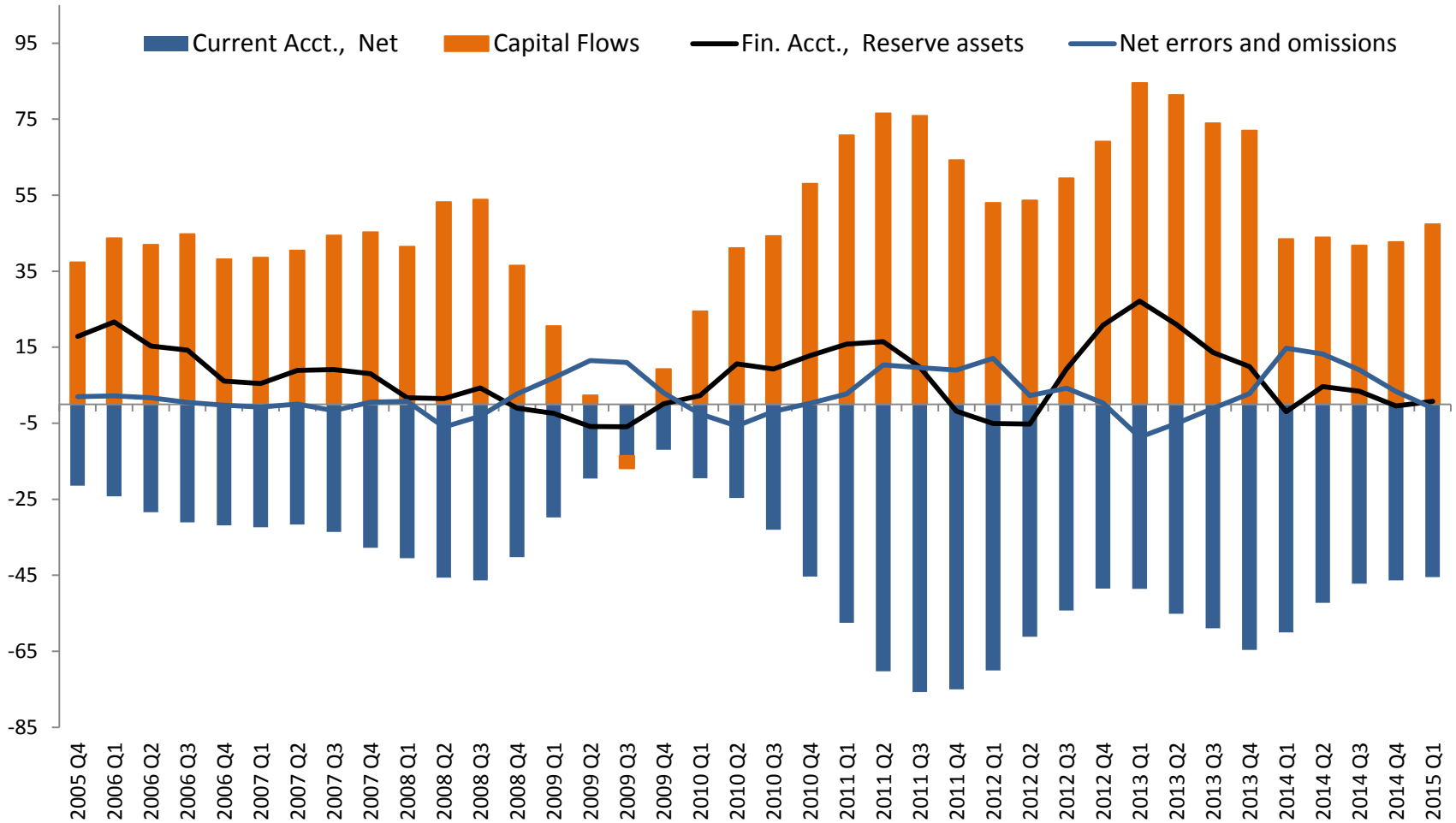
# Capital Flows: Stylized Facts -3

- With heightened financial stability concerns, gross-flows have been at the core of policy discussions:
  - The concern with gross capital inflows is that they are highly procyclical, exacerbating business cycle fluctuations, overshooting in the upturn and reverting rapidly in the downturn. This suggests common push factors that could magnify the business cycle.
  - The concern for financial stability requires looking beyond net flows, at gross flows, their volume and composition.

# Perspective from Turkey

# External (Im) Balance

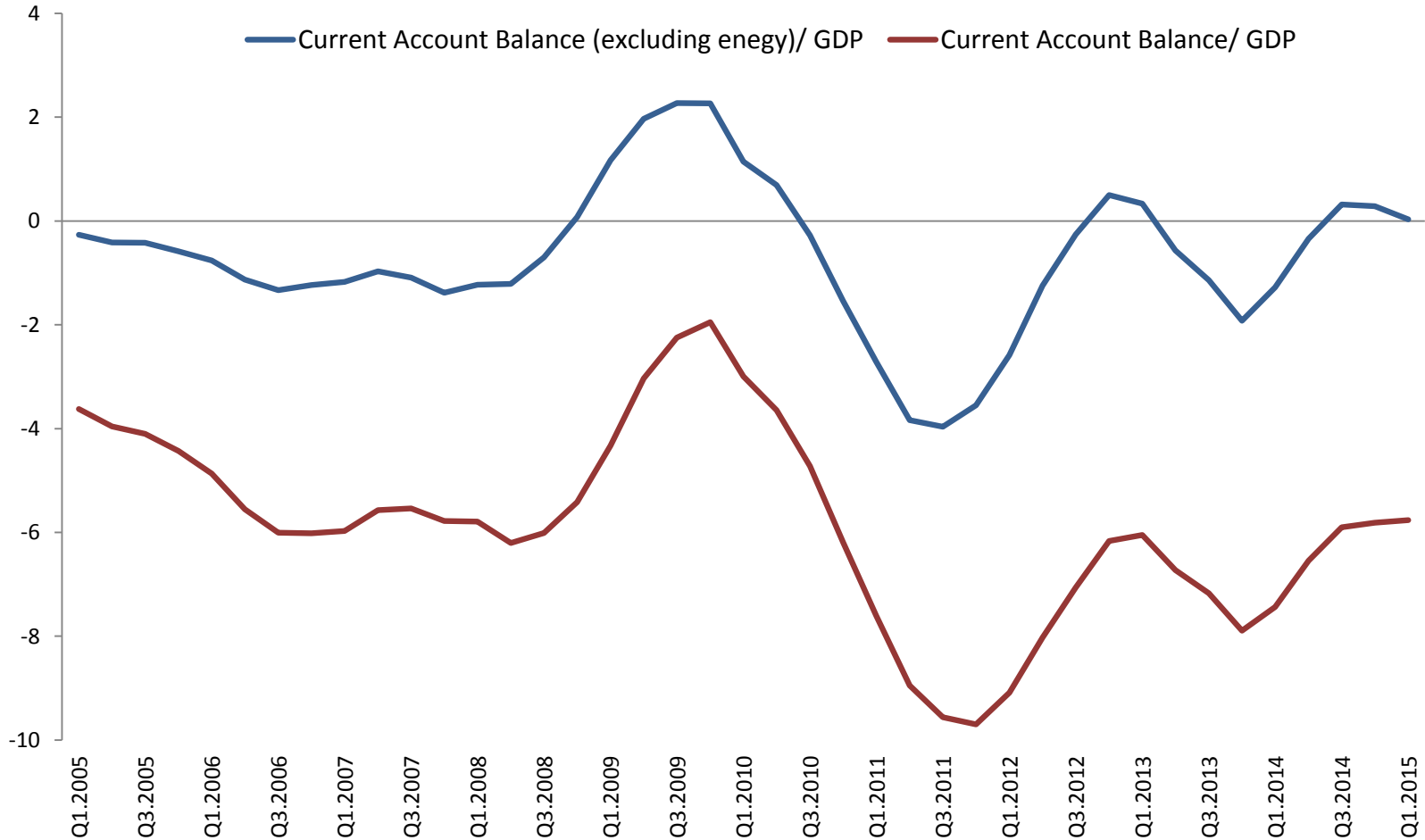
(4-quarter cumulative, Billion USD)



Source: CBRT, BOP.

# Current Account Balance

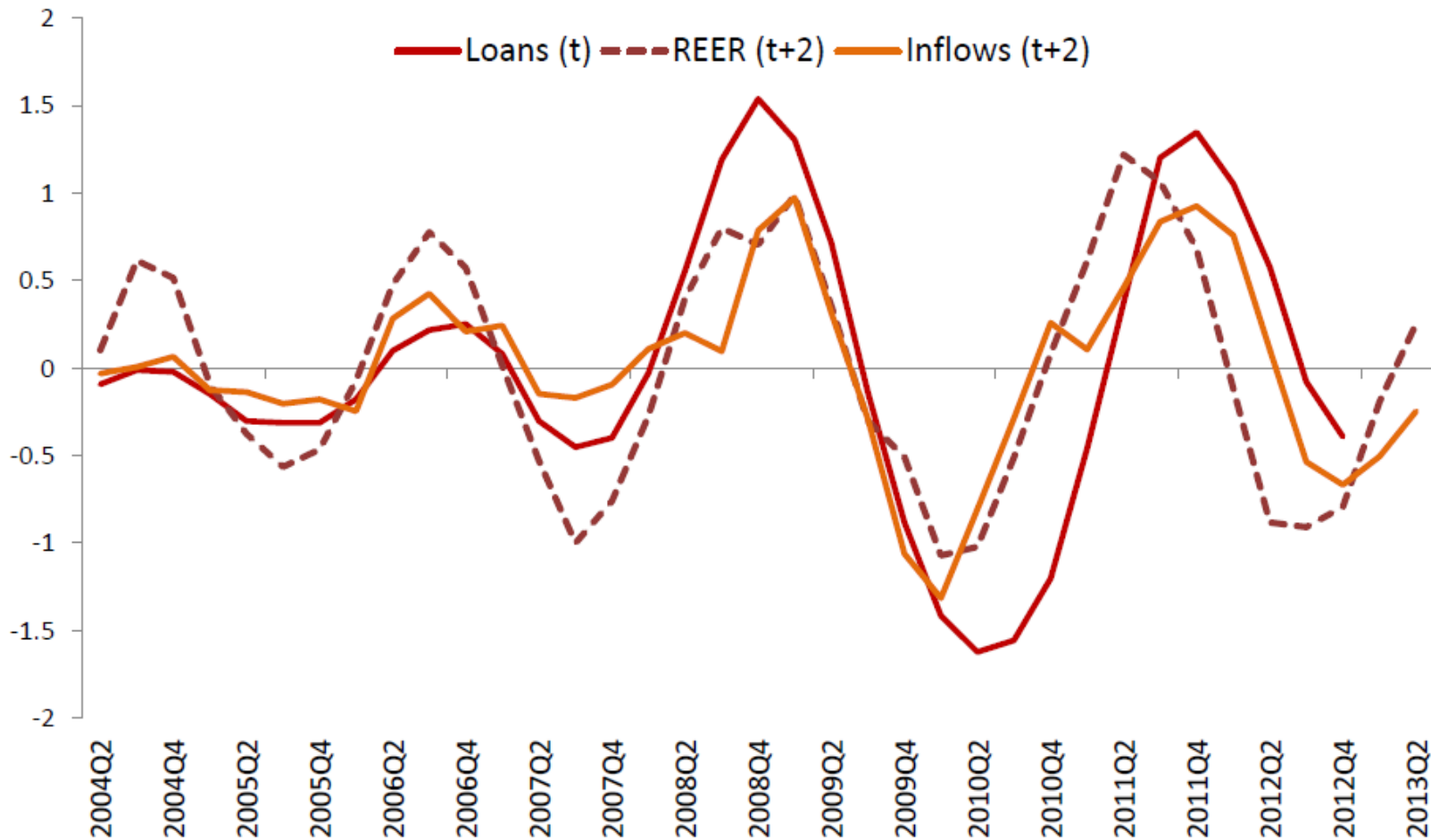
(12-month cumulative, Billion USD)



Source: CBRT, BOP.

# Capital Flows, Credit, and Exchange Rate Cycles

(HP filtered, standardized)

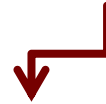


Source: CBRT, BOP.



# 'Old' and 'New' Policy Approach

	Old Approach	New Approach
Objectives	Price Stability	Price Stability Financial Stability
Policy Tools	Policy Rate	Structural Tools Cyclical Tools



## Structural Tools

- Maturity- and Leverage-based Reserve Requirements
- **Reserve Option Mechanism**

## Cyclical Tools

- Policy Rate
- **Interest Rate Corridor**
- TL and FX Liquidity Management

# Communication of MP Framework

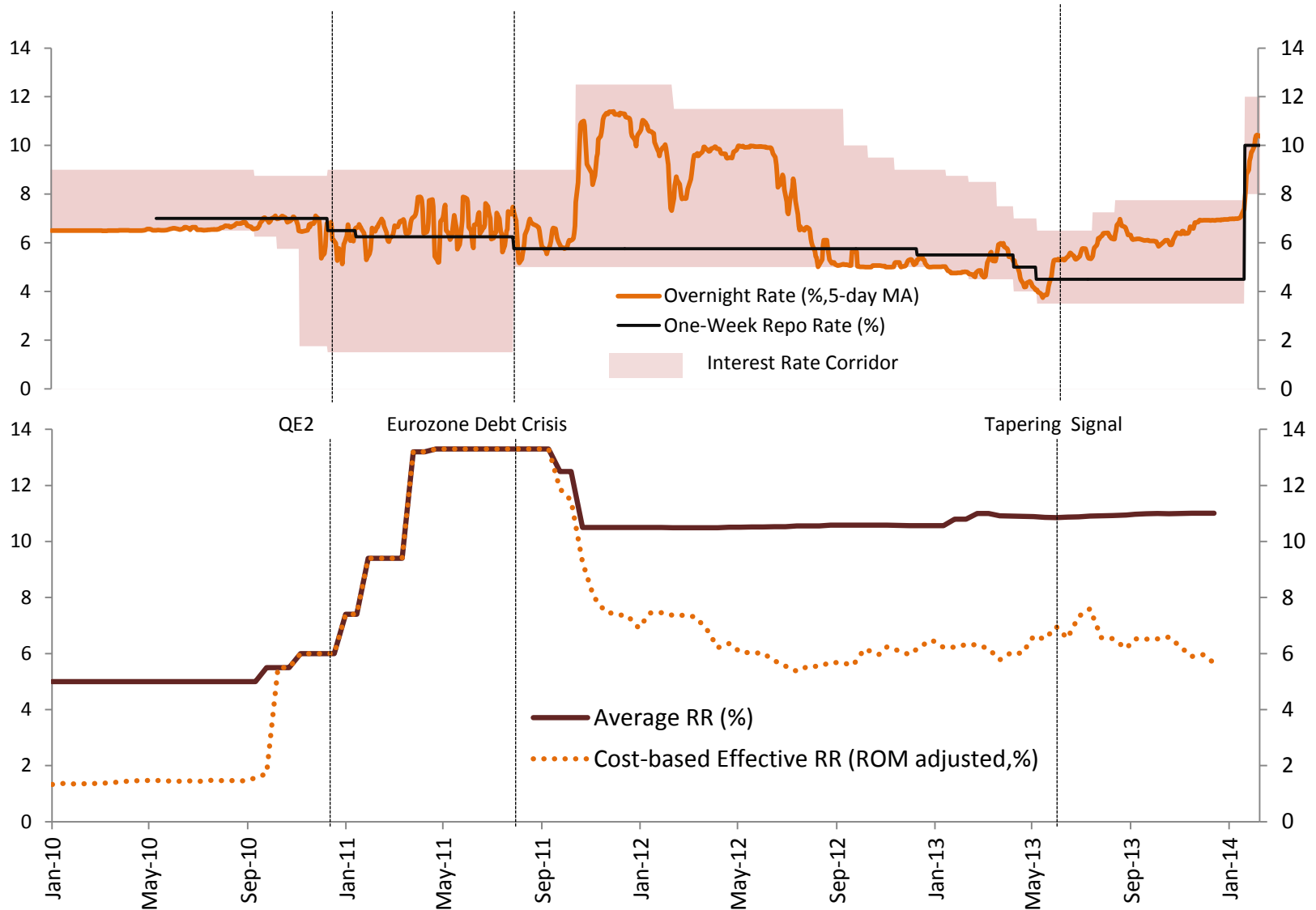
## Minutes of Monetary Policy Committee Meeting, October 2010

*“Should the capital inflows continue, the divergence in the growth rates between domestic and external demand is likely to intensify in the forthcoming period.*

*Additional policy instruments, other than the short-term policy rates, would be needed to curb risks emanating from this channel.*

*In this respect, the Committee stated that, should the disparity between domestic demand and external demand continue, it would be necessary to utilize other policy instruments such as reserve requirement ratios and liquidity management facilities more effectively, to address financial stability concerns including rapid credit expansion and a deterioration in the current account balance.”*

# Interest Rate Corridor and Reserve Requirements

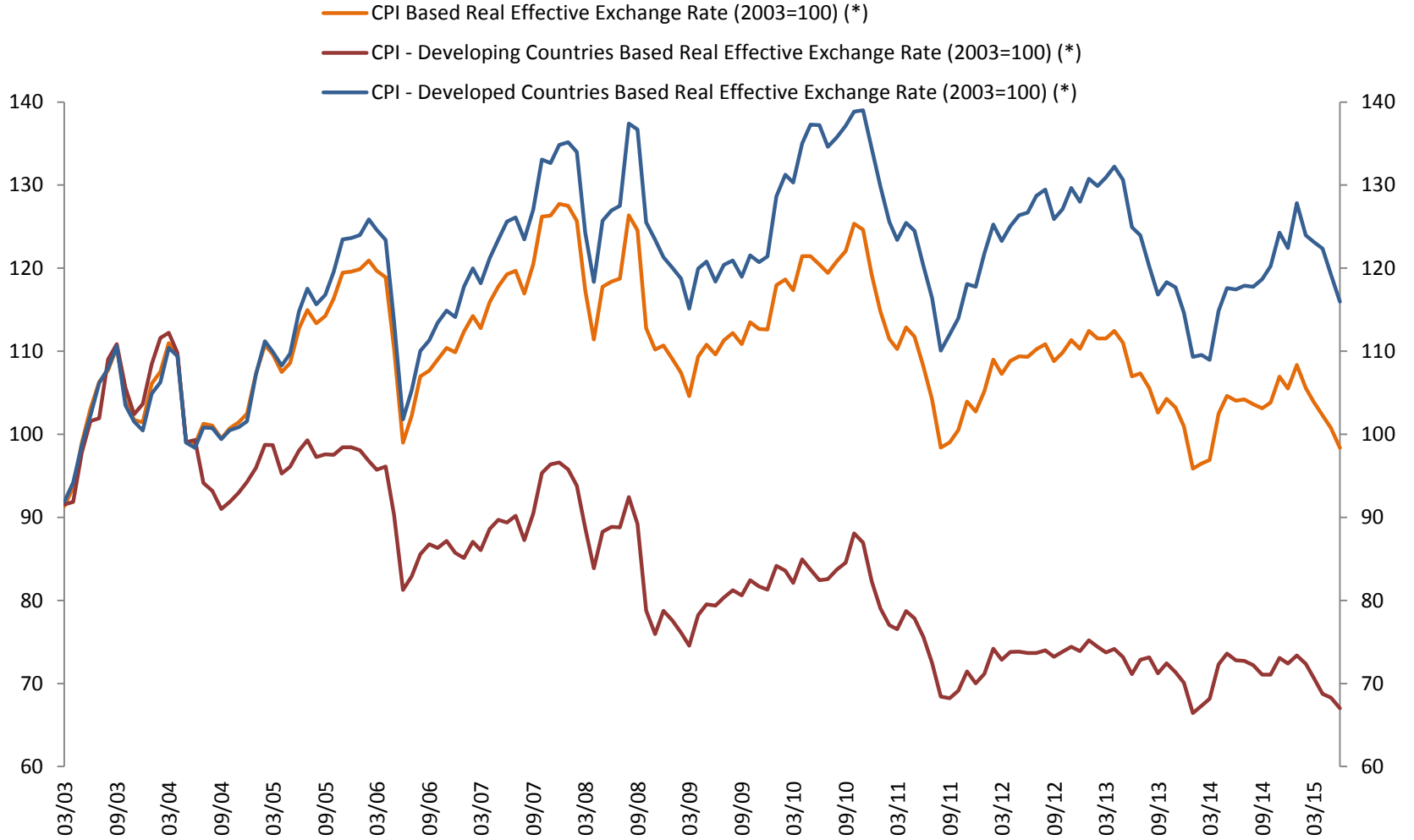


Source: CBRT, BOP.

# Framing the Policy: Data Monitor

# REER

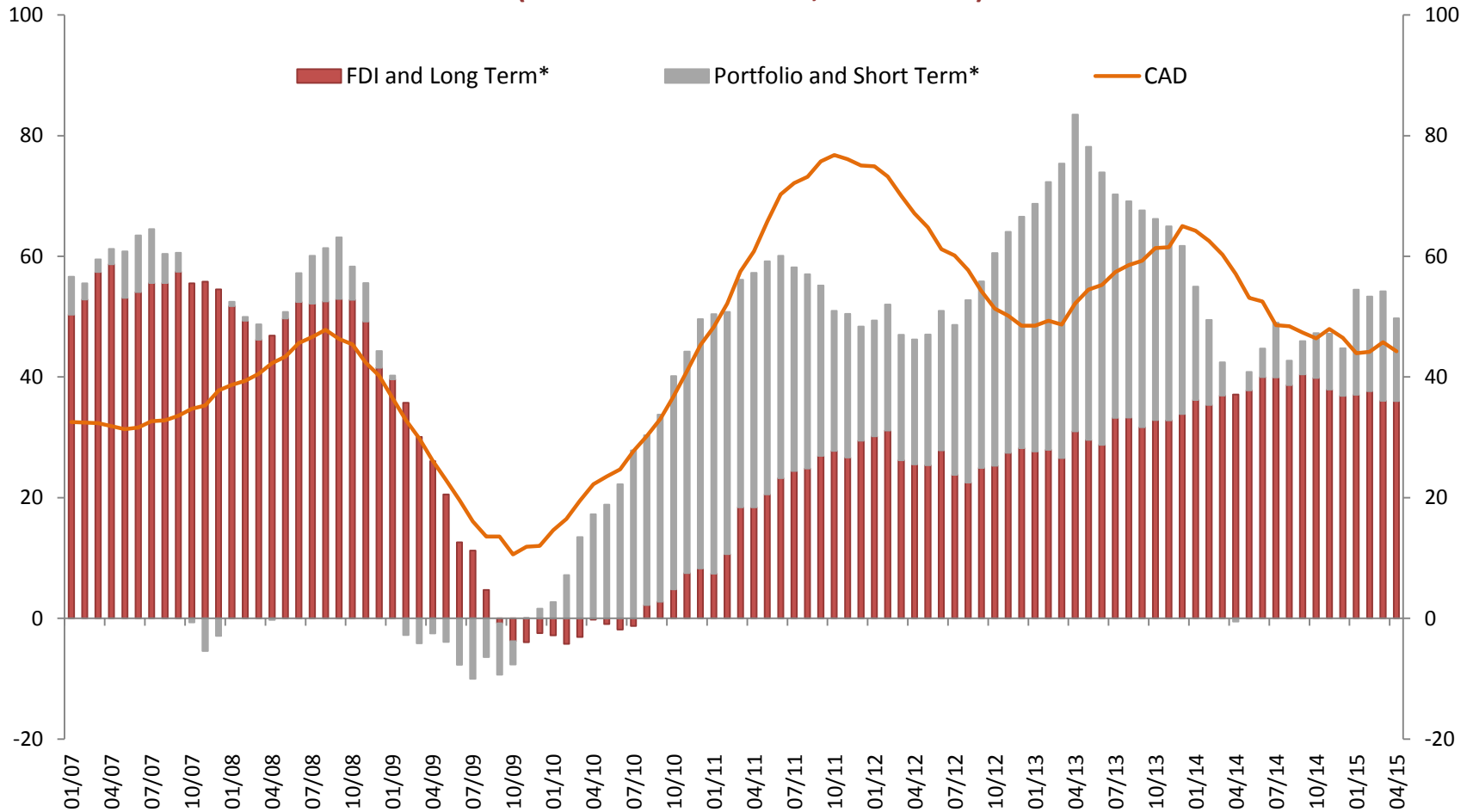
(CPI Based, 2003=1000)



Source: CBRT.

# Sources of External Finance\*

(12-month cumulative, Billion USD)

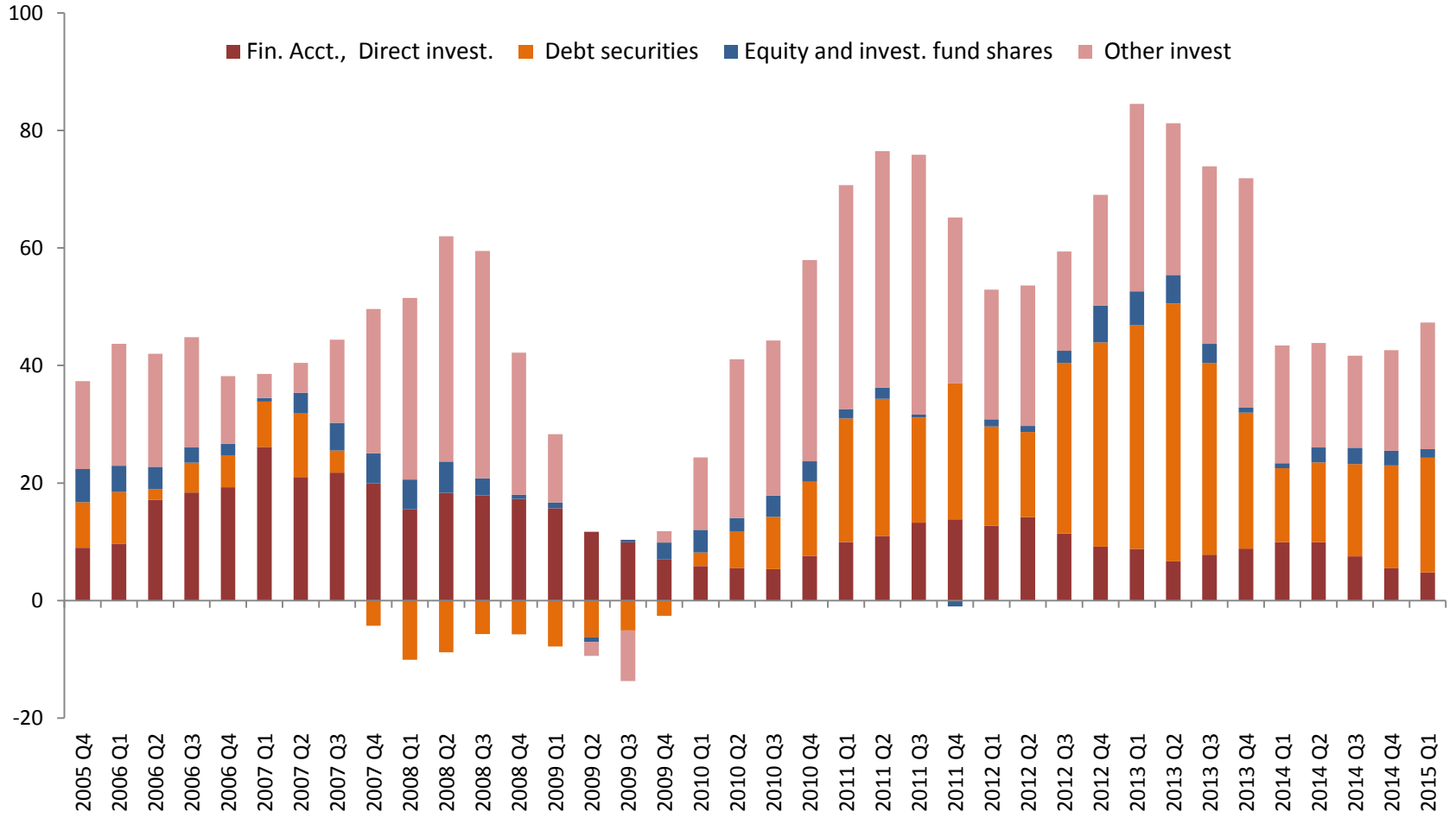


Source: CBRT, BOP.

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

# Net Flows

(4-quarter cumulative, Billion USD)



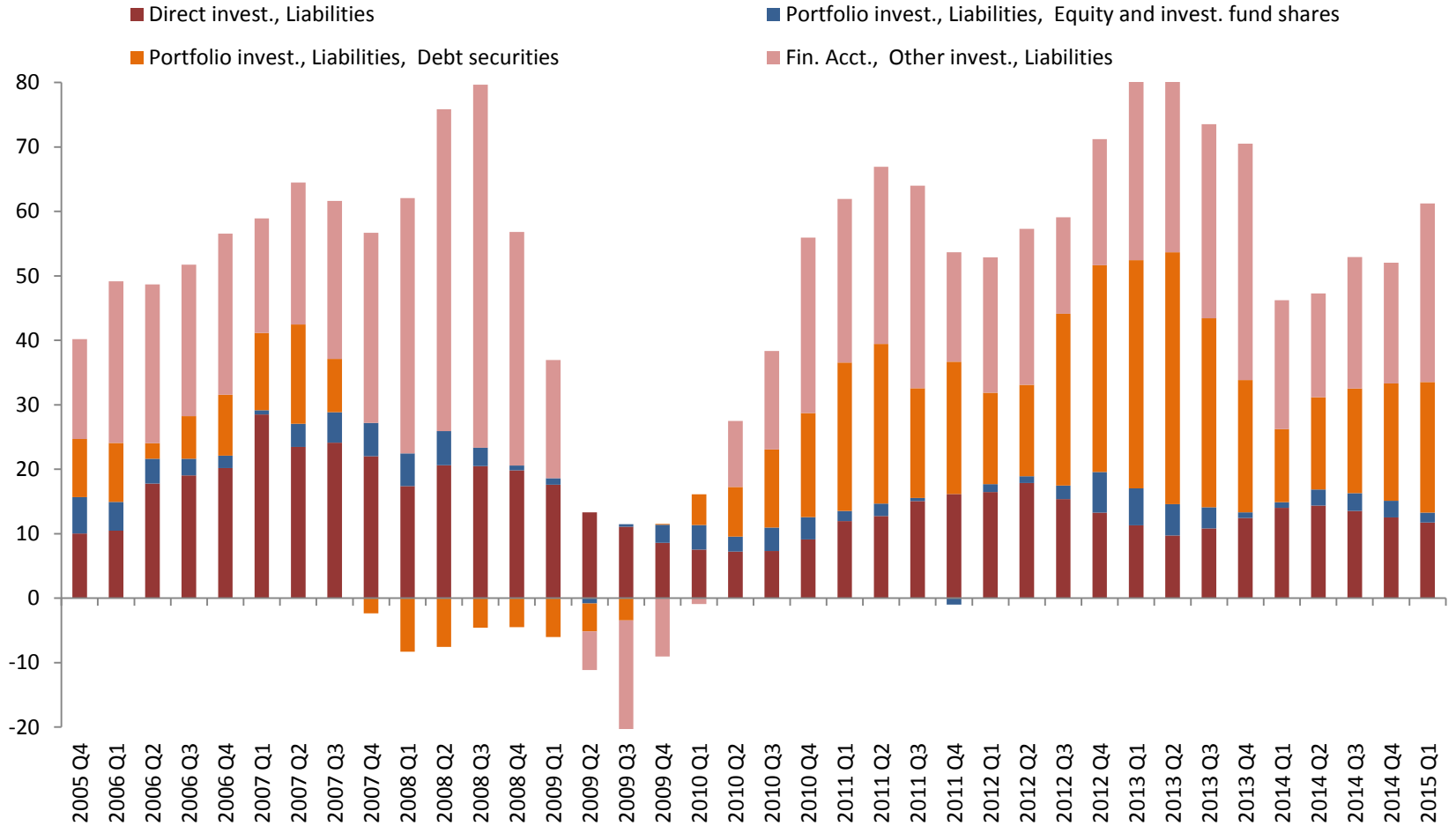
Source: CBRT, BOP.

# Financial Stability Concerns: Gross Flows



# Gross Flows - Inflows

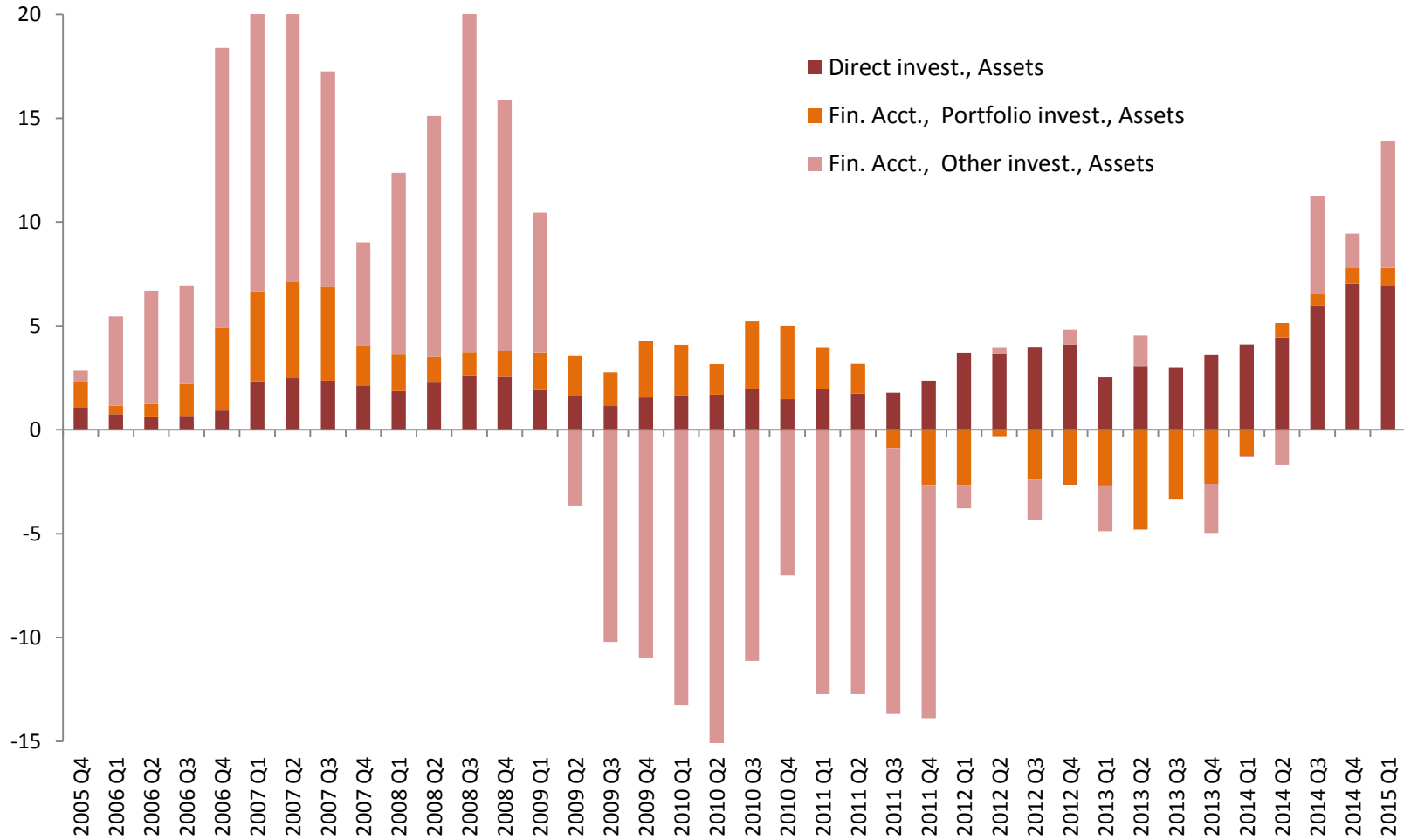
(4-quarter cumulative, Billion USD)



Source: CBRT, BOP.

# Gross Flows - Outflows

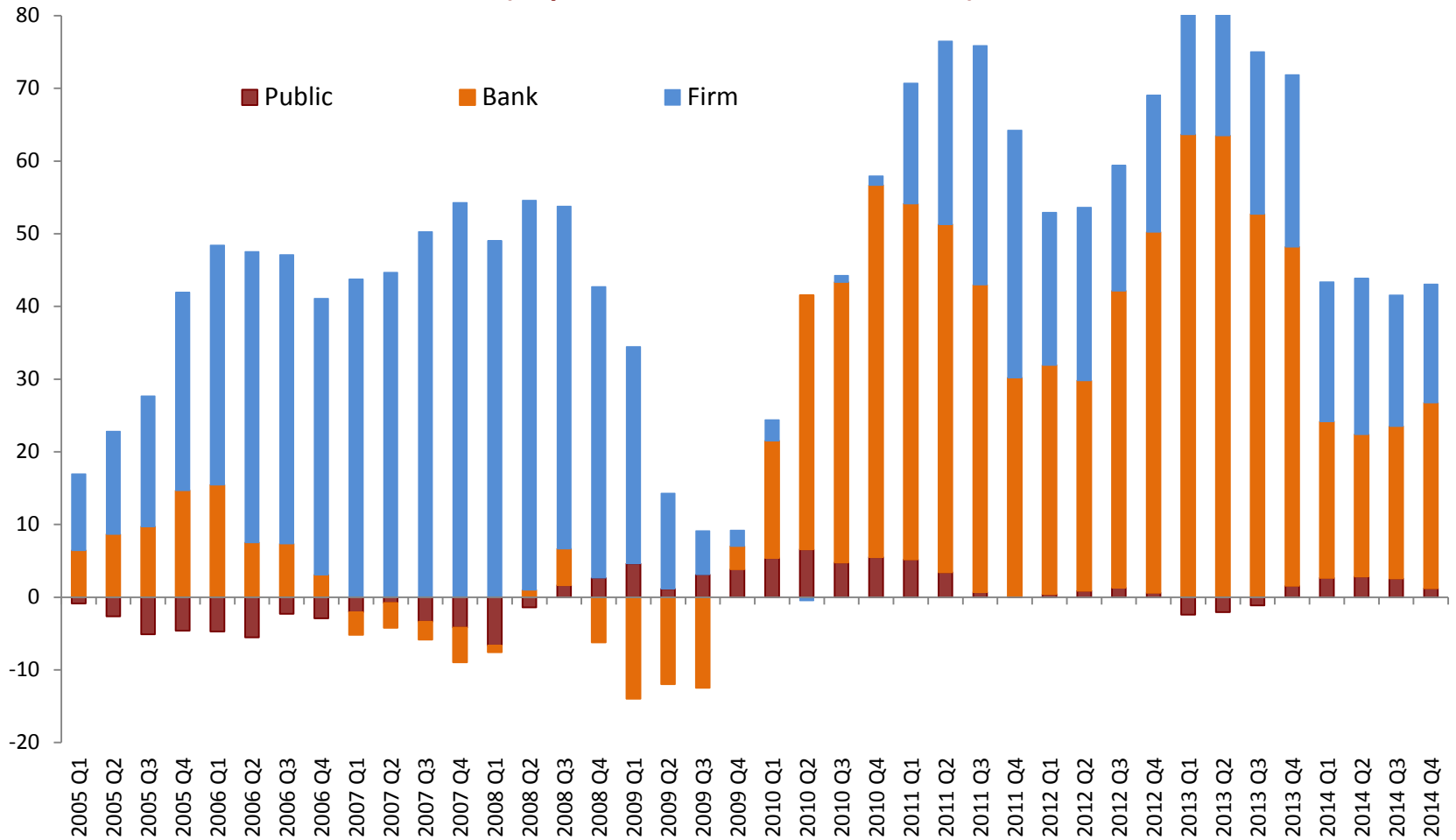
(4-quarter cumulative, Billion USD)



Source: CBRT, BOP.

# Institutional Breakdown – Net Flows

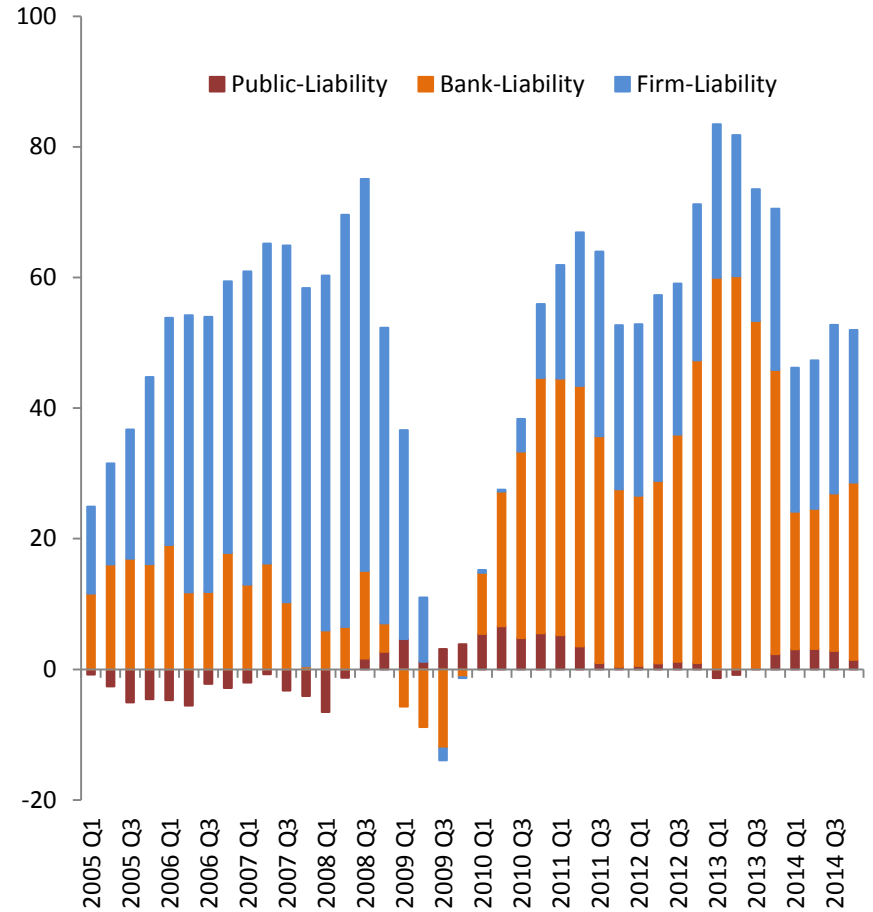
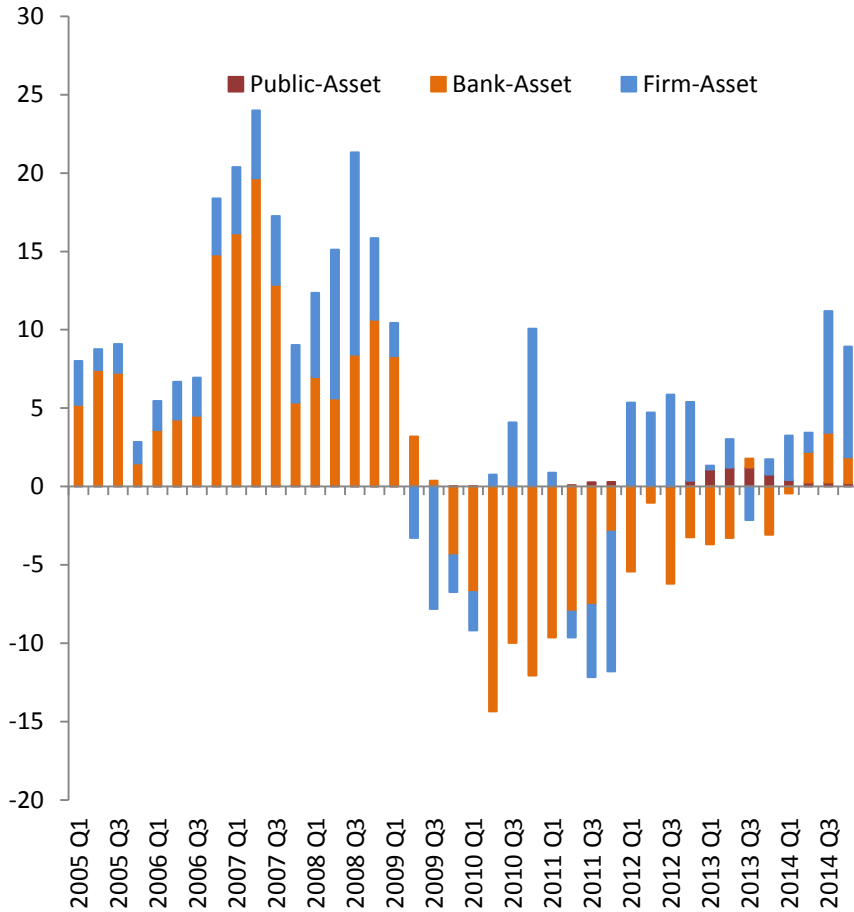
(4-quarter cumulative, Billion USD)



Source: CBRT, BOP.

# Institutional Breakdown –In(Out)flows

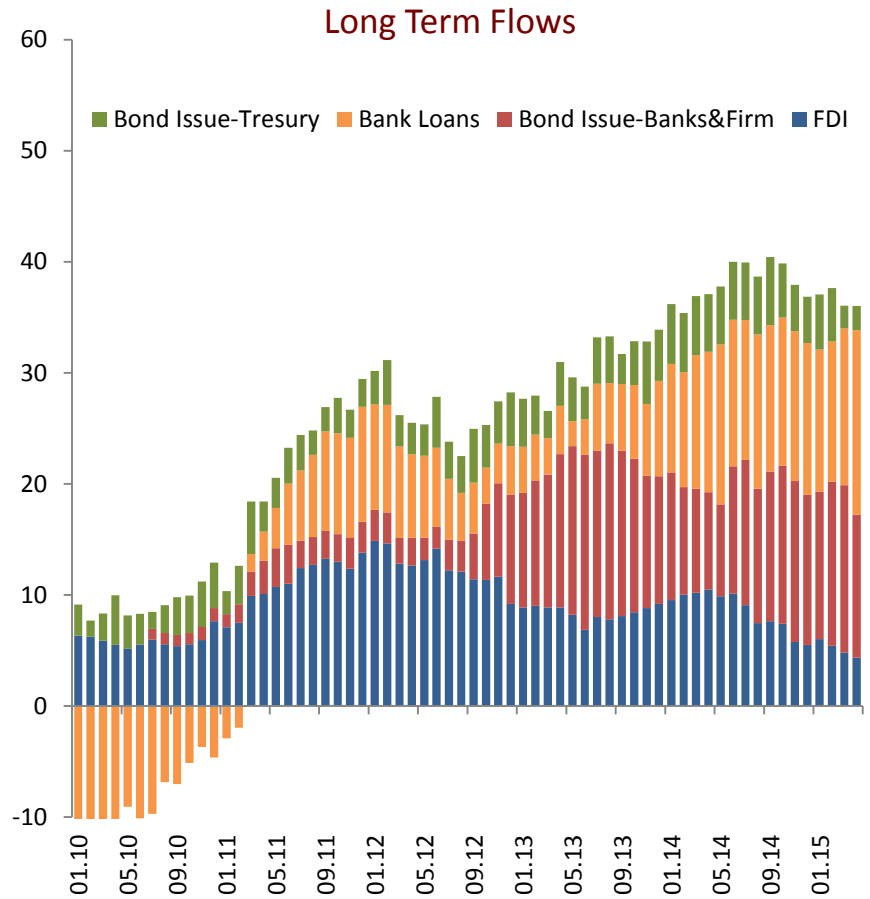
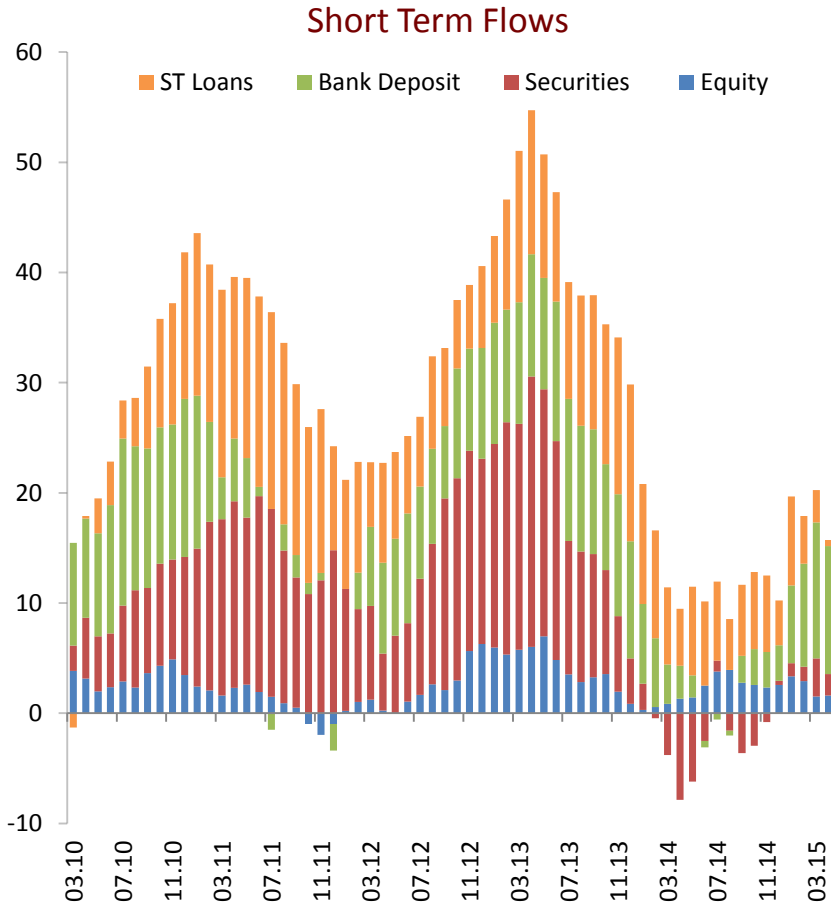
(4-quarter cumulative, Billion USD)



Source: CBRT, BOP.

# Term Structure of Flows

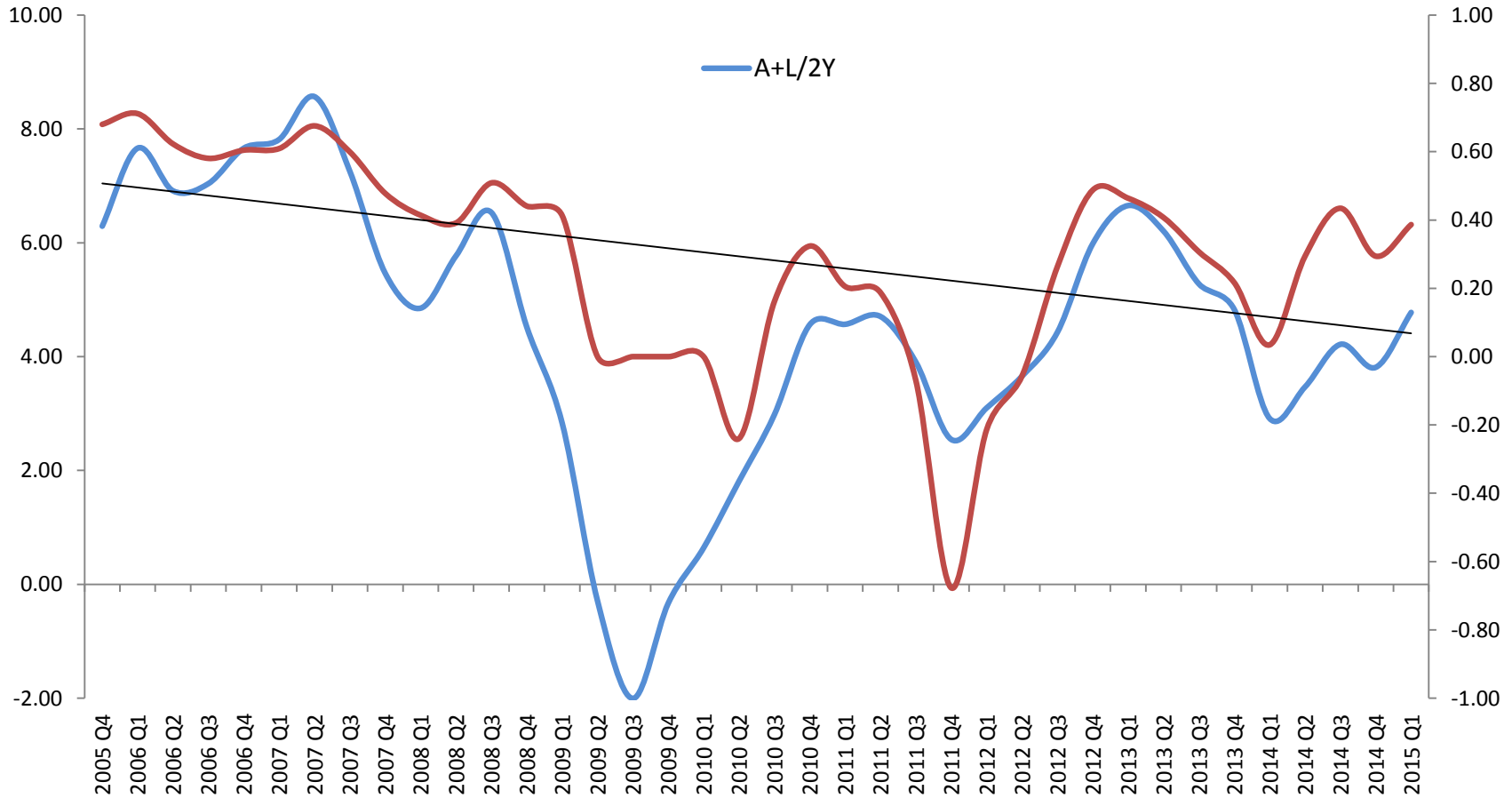
(4-quarter cumulative, Billion USD)



Source: CBRT, BOP.

# Gross Assets and Liabilities/GDP and GL Index

(4-quarter cumulative, % and unit)

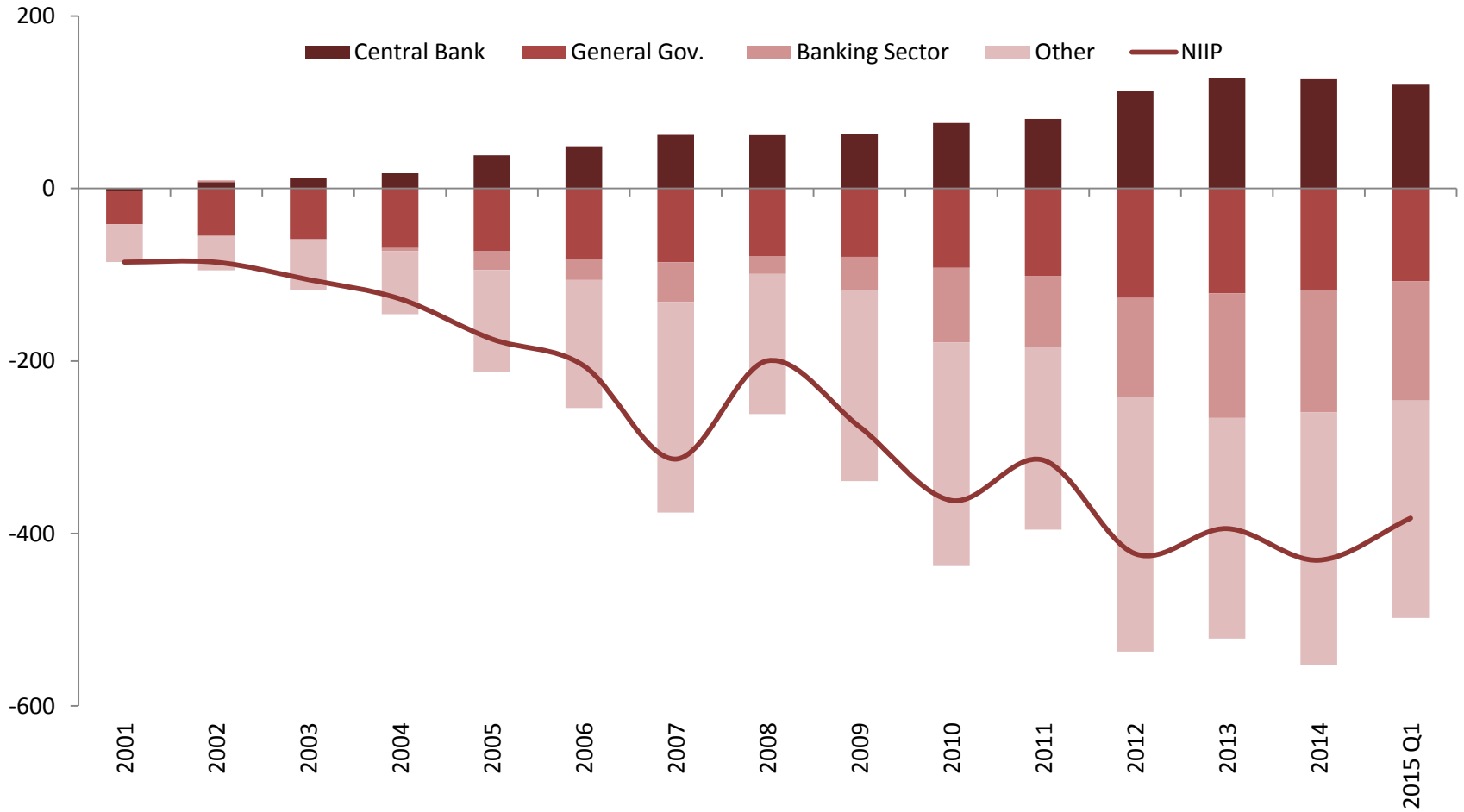


Source: CBRT, BOP.

\*Grubel-Lloyd index of two-way asset trade for a country with gross foreign assets A and liabilities L is constructed as:  $GL=1 - \frac{|A-L|}{A+L}$

# International Investment Position

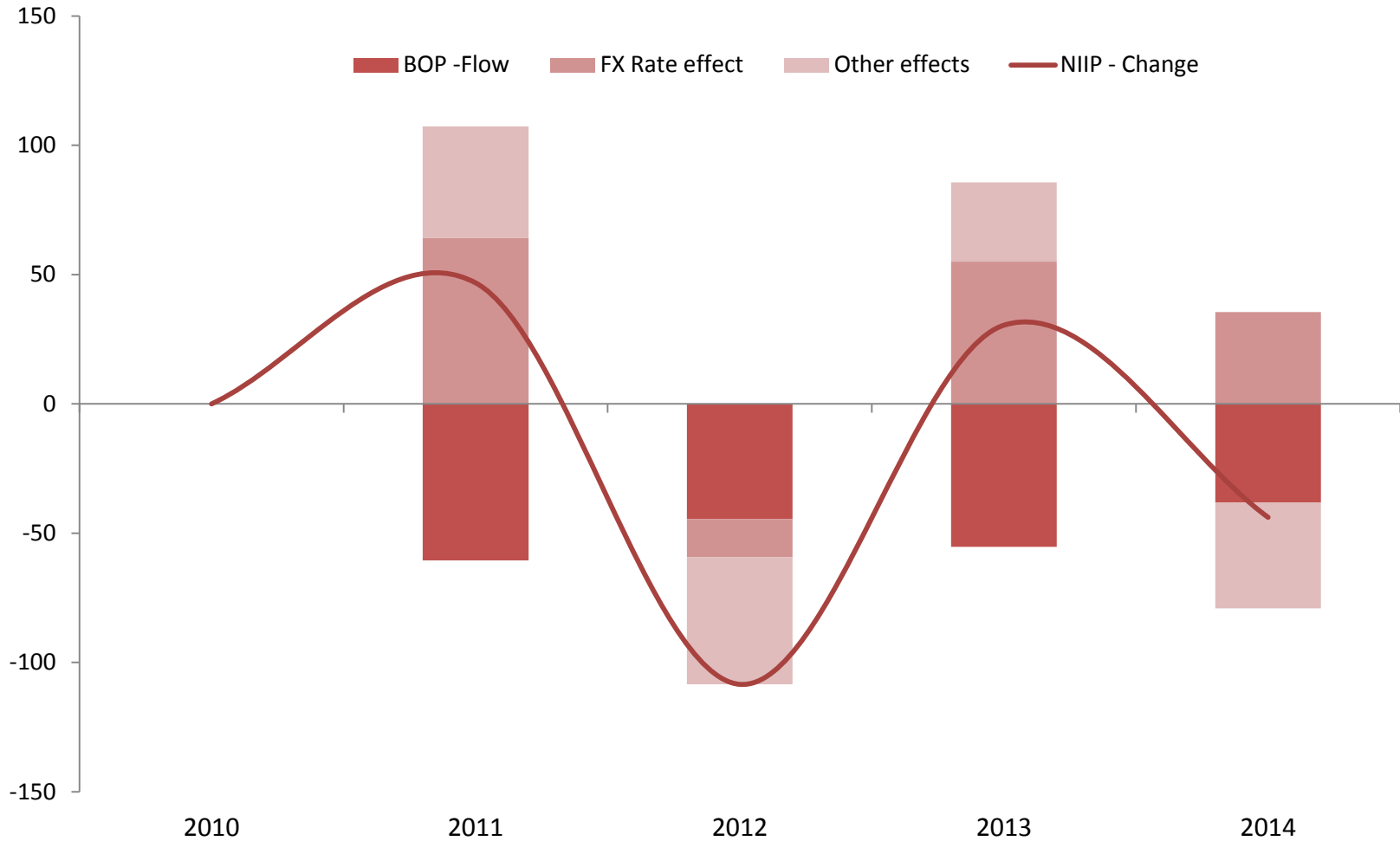
(Billion USD)



Source: CBRT, BOP.

# Integrated IIP – Main Components

(Billion USD)



Source: CBRT, BOP.



# Measurement

# Data Dissemination

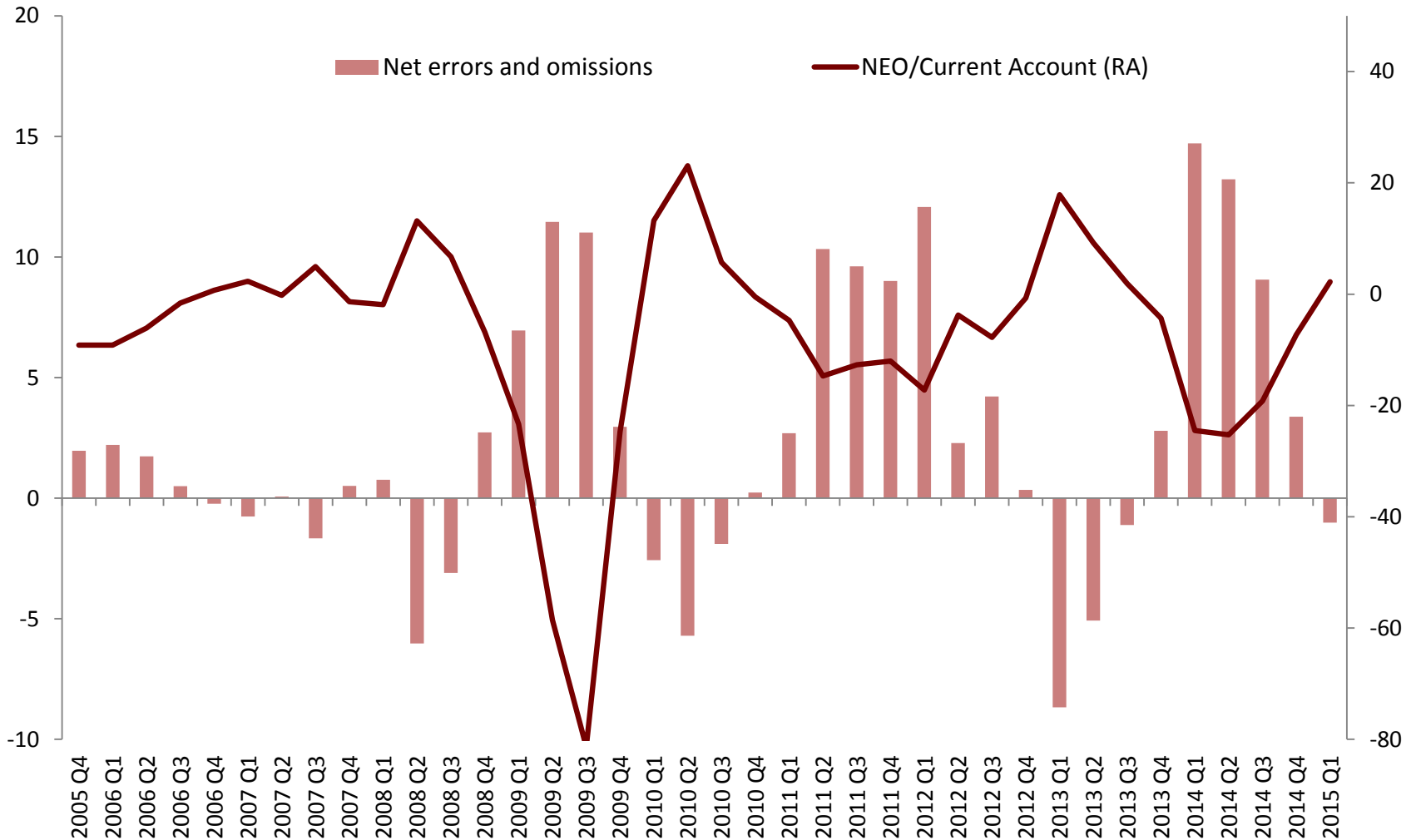
- **BOP data are compiled monthly (as encouraged by SDDS)**
  - Disseminated after 6 weeks following the reference period.
  - Main items are available for 1975-1983.
  - Published annually for 1984-1991.
  - Published monthly since 1992.
  
- **IIP data are published quarterly and ‘monthly as an indicator’**
  - Disseminated after 7 weeks following the reference period.
  - Published annually for 1996-2005.
  - Published quarterly since 2006Q1.

# Transition to BPM6

- BOP data in BPM6 format have been published in November 2014, starting with September data (IIP in BPM6 starts with October 2014 data).
  - Existing BPM5 data were mapped to BPM6 format.
- Consistent with the timetable that the ECB and the Eurostat set for their members (2014).
- The data have been revised backwards.
  - “Analytical Presentation” from 1975
  - “Detailed Presentation” from 1984.
- Methodological improvements will be reflected gradually.

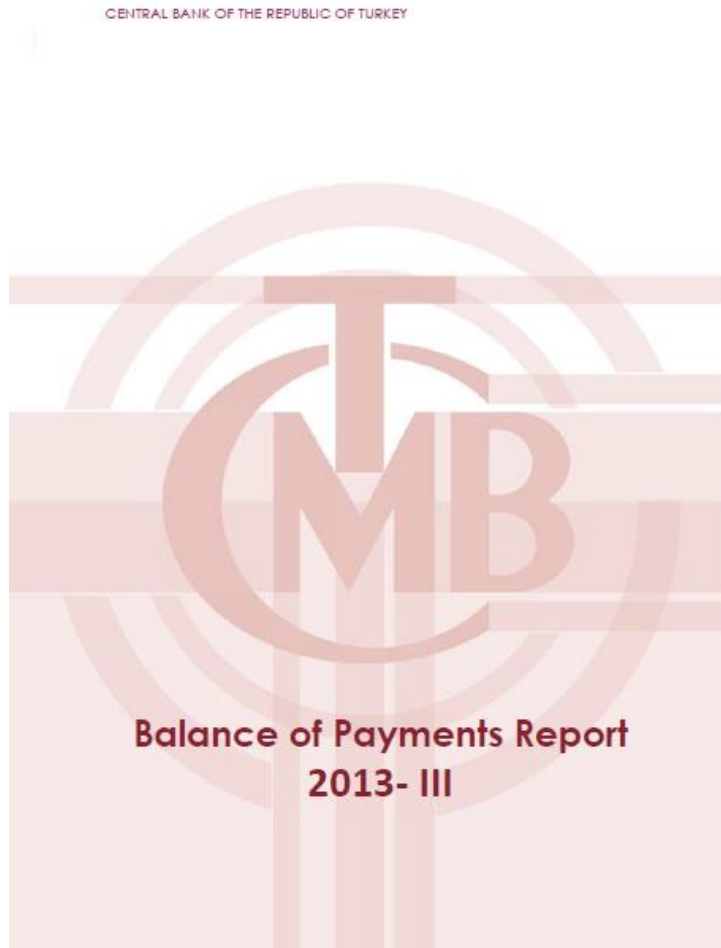
# Challenge: Net Errors and Omissions

(4-quarter cumulative, Billion USD and %)



Source: CBRT, BOP.

# Communication – BOP and IIP Report



# Conclusions

- “If you can't measure it, you can't manage it.”
- Central banks in EMEs and rest started monitoring capital flows in a more detailed way:
  - A process of gathering information at higher degree of granularity and developing more specific analyses of the determinants and sensitivities of different types of flows.
- Data are also critical to evaluate the convenience and merit of alternative responses to capital flows.
  - Policy tools - such as the interest rates or foreign exchange intervention- are not free from adverse collateral costs.
- “The structure of international balance sheets is an important determinant of international transmission of shocks and needs to be monitored perhaps even more carefully than net flows or net asset positions.”
- All these concerns requires international coordination and collaboration of various institutions.