Market volatility and foreign exchange intervention in EMEs: what has changed?

An overview

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Over the past five years, huge swings in capital flows to and from emerging market economies (EMEs) have led many countries to re-examine their foreign exchange market intervention strategies. Quite unlike their experiences in the early 2000s, several countries that had at different times resisted appreciation pressures suddenly found themselves having to intervene against strong depreciation pressures. The sharp rise in the US long-term interest rate from May to August 2013 led to heavy pressures in currency markets. Several EMEs sold large amounts of forex reserves, raised interest rates and – equally important – provided the private sector with insurance against exchange rate risks.

This volume, summarising the discussion and papers presented at the meeting of Deputy Governors of major EMEs in Basel on 21–22 February 2013, focuses on three main questions concerning foreign exchange intervention.[2] First, what is the role of a flexible exchange rate in stabilising the economy and promoting financial stability and development? Second, how have the motives and strategy behind the interventions changed since the 2008 global financial crisis? Finally, is intervention effective and, if so, how can its efficacy be measured?

The main conclusion emerging from the discussion is that a flexible exchange rate plays a crucial role in smoothing output volatility in EMEs. However, as highlighted by several papers in this volume, a highly volatile exchange rate can increase output volatility and itself become a source of vulnerability. Second, over the past five years, most official forex interventions in EMEs were intended to stem volatility rather than to achieve a particular exchange rate. Finally, the majority view was that exchange rate intervention needs to be consistent with the monetary policy stance. Persistent, one-sided intervention, associated with sharp expansion of central bank balance sheets, creates risks for the economy.

Yet there was no consensus about the effectiveness of forex intervention. Whereas intervention was viewed as an instrument that could potentially curb forex volatility and support market functioning, many participants were sceptical about its effectiveness in the face of a shift in the equilibrium exchange rate. A review of replies from central banks to a survey questionnaire suggested that, while intervention may work mainly through the signalling channel, some of its effectiveness may be due to the fact that it was combined with other measures to moderate capital flows or prevent the build-up of certain positions in the foreign exchange market. In several cases, intervention had no persistent effects on the

[1] I am grateful to Torsten Ehlers, Blaise Gadanecz, Aaron Mehrotra, Ken Miyajima, Carlos Montoro, Elod Takats and Philip Turner for comments and contributions.

[2] Many of these issues were first examined by Deputy Governors in 2004: see BIS (2005).

exchange rate and might have helped to exacerbate exchange rate volatility in the wrong direction.

This overview is organised around the three main themes of the meeting. Section I looks at the role of a flexible exchange rate. Section II discusses the motives and objectives behind intervention. Section III reviews lessons learned about the effectiveness of intervention.

I. The exchange rate, macroeconomy and monetary policy

Exchange rate movements raise issues for EMEs for at least three reasons: (a) their impact on the real economy; (b) implications for financial development and stability; and (c) consequences for monetary policy. The first session of the meeting was devoted to these three issues.

The exchange rate and real economy

During the 1980s and 1990s, a lack of sufficient flexibility in the exchange rate exposed EMEs to the risk of currency misalignment and financial instability. But this started to change in the 2000s, with many EMEs adopting a flexible exchange rate regime, often accompanied by inflation targeting. How has a flexible exchange rate worked in reducing EMEs' vulnerabilities? In particular, what has been the effect on the real economy?

It was generally agreed that increased exchange rate flexibility has helped to smooth output volatility in the past decade. In particular, the inflation targeting EMEs (eg Chile) looked to the exchange rate as a shock absorber and emphasised the importance of conveying to the public the central bank's commitment to a flexible exchange rate. Combined with a reduced tolerance for currency mismatches, more flexible exchange rates have also allowed for a more markedly countercyclical monetary policy, which is especially relevant during a crisis.

Yet many central banks have noted that excessive exchange rate volatility can be counterproductive for the real economy. The threshold above which exchange rate volatility starts to hurt the real economy may be lower in small economies than in large countries. The choice of the exchange rate regime is influenced by the structure of the economy, economic fundamentals and the prevailing institutions. While, in the past, the level of the exchange rate was important for some EMEs due to their export-led growth strategies, it is now increasingly the volatility of the exchange rate that matters for the tradable goods sector.

The BIS background paper by Gadanecz and Mehrotra sheds some empirical light on these issues. The authors report that, over a cross section of 52 advanced and emerging economies, exchange rate volatility does not have a statistically significant effect on long-term growth (as represented by growth in labour productivity). Neither does the result depend on an economy's degree of development (eg its particular income level). However, the short-term relationship between the exchange rate and output volatility in EMEs is U-shaped – that is, up to a point, a higher exchange rate volatility reduces output volatility, but extreme exchange rate volatility can itself become a source of real volatility (see Graph 2 in the Gadanecz and Mehrotra paper).

These findings resonate with several country papers in this volume. For instance, Adam, Kozinski and Zielinski note that in Poland a floating exchange rate has generally helped to reduce economic uncertainty in the face of adverse external shocks. But, sharp exchange rate volatility caused, at times, by the use of zloty by investors as a proxy hedge currency, has created negative consequences for the economy. The paper by Guinigundo points out that in the Philippines the exchange rate is a key determinant of the price of local currency sovereign paper, and therefore serves as a barometer for foreign investors' confidence in the economy. The negative feedback loop between exchange rate and financial inflows therefore requires careful attention, particularly in view of increased participation by foreign investors in EME financial markets. In Turkey, Alper, Kara and Yorukoglu, refer to similar feedback effects arising from exchange rate appreciation, balance sheet improvements and the lending appetite of banks during periods of strong capital flows. These effects can mask the vulnerability of EMEs to a reversal in capital inflows. In India, the main objective of intervention has been to maintain orderly conditions and curb speculation in the foreign exchange market (see the paper from the Reserve Bank of India).

The exchange rate, financial stability and market development

The role of the exchange rate in financial crises has been well emphasised in the literature.[3] Past EM crises were typically preceded by large currency mismatches and overvalued exchange rates, underlining the critical importance of the exchange rate in the private sector's decision to borrow in foreign currency. Another aspect of the exchange rate regime is its interaction with financial development: while a flexible exchange rate helps the development of hedging and local currency debt markets, the degree of market development also influences the choice of exchange rate flexibility.

The Deputy Governors broadly agreed that increased exchange rate flexibility can help to reduce currency mismatches, particularly the extent of foreign currency borrowing. It was suggested that wrong incentives can be created by too stable an exchange rate and, in some cases, by FX intervention. Claro and Soto in this volume provide two main reasons for this observation: first, intervention to restrict exchange rate flexibility can give a false sense of security for the private sector regarding financial risks. Second, lower exchange rate volatility leads to higher speculation about the future value of the currency, encouraging investors to exploit the interest rate differential more aggressively (the so called "carry trade"). Both factors create risks for the financial system.

As regards financial development, the role of the exchange rate is less clear-cut. As financial markets in EMEs continue to develop, international investors are more likely to become significant players. Cross-border asset positions continue to build up rapidly and small shifts in investor portfolios can result in large capital flows and hence exchange rate volatility. In several countries, higher exchange rate volatility has been associated with more developed financial markets and the greater use of hedging instruments. However, most participants agreed that increased exchange rate volatility cannot guarantee financial market development. Financial markets take time to develop. Fixed exchange rates can deliver microeconomic benefits, as

[3] See, for instance, Kaminsky and Reinhart (1999).

seen in the case of the international financial centres of Hong Kong SAR and Singapore. If a peg is credible, it can reduce exchange rate risks, at least in the short run.

In addition, some participants argued that the private sector's expectations about the exchange rate influence decisions to hedge. When the exchange rate is volatile in both directions there is an incentive for the private sector to hedge its exchange rate risk. For instance, in Thailand greater exchange rate flexibility has been associated with increased demand for hedging instruments by banks and non-financial corporations, leading to a steady rise in the ratio of hedged liabilities to total forex liabilities (see the paper from the Bank of Thailand). However, several participants felt that one-sided exchange rate movements can reduce the incentive to hedge forex risks, leading to speculative capital flows, with adverse consequences for market volatility and financial development in general.

There was a view that developing financial markets goes beyond the choice of exchange rate regimes, requiring deeper reforms in the financial systems. For instance, hedging markets are typically deeper in countries with more sophisticated long-term institutional investors (eg Chile) than in those with less developed financial institutions. And, the lack of a well developed domestic financial system could mean that some sophisticated financial activities, including hedging markets, may move offshore.

The exchange rate and monetary policy

Several country papers in this volume note that FX intervention should be consistent with the stance of monetary policy. There are, at least, two aspects of this issue. First, any inconsistency between the exchange rate and the monetary policy stance can impair the transmission mechanisms for monetary policy and militate against the success of the intervention. Second, persistent intervention can create risks for the economy through the high costs of intervention and the expansion of central banks' balance sheets. Several studies suggest that large-scale interventions to resist appreciation, financed by the issuance of short-term debt by the central bank, will inflate commercial bank balance sheets with expansionary implications for the economy.[4]

In principle, interventions in the foreign exchange market can be designed to complement the stance of monetary policy. In practice, however, the challenges for the monetary authorities vary depending on the state of the economy. For instance, Flug and Shpitzer note that in Israel sharp interest rate cuts, combined with an intervention to resist appreciation were reasonably successful in reducing the risk of recession during the 2008 global crisis. But, during the recovery, when the central bank raised interest rates in the face of rising inflation expectations, strong capital flows complicated the management of the exchange rate. Intervention to resist appreciation weakened the monetary policy transmission channel and shifted the burden of adjustment to the external sector.

In the context of Korea, Ryoo and Kwon note that strong capital inflows and high inflation can put the central bank in a "double bind". On the one hand, raising

[4] These issues have been examined in detail by Deputy Governors in 2004 and 2012 (*BIS Papers*, nos 24 and 67). See also Mohanty and Turner (2006), Filardo, Moreno and Mohanty (2012) and Vargas, Gonzalez and Rodriguez (in this volume).

interest rates to fight inflation will attract further inflows and accentuate currency appreciation pressures. On the other hand, reducing interest rates to limit capital inflows will stoke inflation. Under these circumstances, these authors argue that forex intervention helps to stem inflows attracted by self-fulfilling expectations of currency appreciation.

Several central banks insisted on the need for appropriate communication so as to avoid any market perception that foreign exchange intervention is inconsistent with monetary policy. Some central banks have been announcing a fixed amount of foreign exchange purchases with a view to sending a signal to this effect. The discussion also pointed to a moral hazard issue with respect to intervening in a period of outflows. In such episodes, the central bank should be careful to avoid giving foreigners the impression that it is financing their way out. This argues in favour of a rule-based, market-friendly approach.

As regards the risks posed by intervention, one perspective was that the financial costs of FX intervention (determined by domestic and foreign interest rates) arising from reserve accumulation can be relatively large as a percentage of GDP in EMEs, with adverse implications for fiscal and monetary policy. Some participants argued that the high costs of intervention could erode a central bank's credibility and independence, impairing its ability to deliver on the price stability objective. Another perspective was that the financial costs of FX reserves are less important when inflation is low and stable. In addition, the economic benefits of holding FX reserves (eg insurance against adverse external shocks) can be large even though these are not easy to quantify and communicate to the public.

Many participants felt that the balance sheet effects of intervention deserve careful attention. One reason is that the average maturity of central bank securities (respectively, the substitutability of long-term government bonds and deposits) is an important determinant of banking system liquidity and thus has implications for the transmission of sterilised intervention via the bank lending channel. Second, as discussed by Vargas, Gonzalez and Rodriguez, the macroeconomic effects of intervention depend on the composition of banks' portfolios. When banks hold more government bonds than is optimal from a long-term portfolio perspective they will try to reduce the lending rate to achieve the desired loan-to-investment ratio. This results in an expansion of bank credit.

The survey results reported by Mohanty and Berger illustrate the magnitude of balance sheet changes following large-scale interventions over the past decade. One effect is that, with central banks issuing large amounts of short-term securities to sterilise their FX reserve purchases, the average maturity of their securities has shrunk to less than one year since 2000, although the EM governments have increased the average maturity of their debt. The second effect is that as the size and the frequency of sterilised intervention increased, so did banks' holding of government and central bank securities, which peaked at 55.8% of the total outstanding securities in Asia in 2000 (40% in 2012) and 36.3% in Latin America in 2010 (35.8% in 2012).

II. Motives and tactic of intervention

Central banks intervene in the foreign exchange market for various reasons, and with a variety of techniques, depending on the objectives. One purpose of the

meeting was to explore whether the motives for intervention and the tactics of its implementation have changed post-crisis and in the light of increasingly large and volatile capital flows.

Motives and objectives of intervention

The summary of responses to the survey questionnaire points to two interesting findings. First, although the broad motives of intervention in EMEs (eg maintaining monetary and financial stability) have not changed much over the past decade, almost 80% of respondents said that curbing speculative pressures on the exchange rate was the most important priority. In addition, many central banks stepped up intervention to discourage sharp volatility in capital inflows and correct the dysfunctional foreign exchange market by supplying liquidity from their own reserves. Surprisingly, stabilising inflation continues to be a major objective of foreign exchange intervention, despite the recent decline in the exchange rate's pass-through into consumer prices. Second, to achieve these goals, most central banks seek to limit volatility and smooth the trend path of exchange rate rather than to influence the level of the exchange rate.

Many participants emphasised that the intervention motives should be seen in a wider macroeconomic context – that of their appropriateness for monetary and financial stability goals. In the fixed exchange rate regimes, preserving monetary stability depended critically on the monetary authorities' strong commitment to the exchange rate peg in the face of large shocks. In Hong Kong SAR, precisely this has been the objective behind the credible and transparent operation of the currency board (see the paper from the Hong Kong Monetary Authority). Al-Hamidy and Banafe convey a similar message for Saudi Arabia, where the Monetary Agency intervenes in the forward market to dampen speculation about the fixed exchange rate. In the UAE, Al-Shamsi notes that the central bank's readiness to provide unlimited dollars to the market ensured the successful operation of the fixed exchange rate regime.

For the flexible exchange rate regimes, a key challenge was determining the point beyond which exchange rate volatility posed risks to monetary and financial stability. In a number of EMEs, the impact of volatile capital flows on the exchange rate was often exacerbated by the speculative positioning of market participants. As cross-border asset positions are rapidly increasing, these effects could potentially become even more pronounced in the future.

The meeting highlighted three main issues regarding international investor behaviour and intervention strategy. First, many Deputy Governors agreed with the conclusion of the BIS background paper by Ehlers and Takats that FX intervention can help to break the momentum effect on the exchange rate. However, breaking the momentum is only possible if the flows are speculative or cyclical (as opposed to fundamental or structural).

A second related point was that the decision to intervene depends on the type of capital inflow. Most participants agreed that if capital inflows are primarily in the form of foreign direct investment, the exchange rate should be allowed to find its new equilibrium level. While portfolio inflows were seen as a potential source of volatility, the challenges vary depending on whether they were attracted by the improved fundamentals of the economy or by cyclical and speculative motives. In the latter case, allowing the exchange rate to move freely would encourage future volatility. That said, it is difficult for the central bank to know ex ante the precise

motives of international investors, or to identify the short-term component of capital flows.

Finally, some participants mentioned the need to consider the externalities of intervention. To the extent that FX interventions divert flows from one EME to another, such actions could result in a costly zero sum game. This raises questions about the wisdom of unilateral intervention and how to share the adjustment burden across EMEs.

Several central banks were of the view that reserve accumulation should be differentiated from intervention with the aim of achieving a certain exchange rate objective. The main purpose behind reserve accumulation is to protect the economy from adverse future shocks. If reserves are perceived as adequate, market participants may require a lower risk premium for holding local currency assets. This also means that reserve accumulation can affect the exchange rate level and volatility up to a certain point, until a level perceived as adequate is attained. Other participants, however, noted that the "adequate" level of reserves can vary considerably over time, particularly in crisis periods. Hence, the accumulation of reserves is desirable during periods of large inflows, despite the sizeable costs.

Discussion also focused on the alternative ways that a country can insure itself against external shocks. One view was that regional trade in local currencies should be strengthened to mitigate risks. It is also possible to address some of the vulnerabilities of EMEs through targeted macroprudential and capital flow management measures. In particular, macroprudential measures can be directed at specific sectors, such as housing or credit markets, to prevent the build-up of financial stability risks without adversely affecting long-term capital flows or the exchange rate.

Tactics of intervention

Regarding the tactics of intervention, as reported by the results of the survey questionnaire (see Mohanty and Berger), there has been little change over the past decade: most central banks intervened in the spot market and often favoured transparent over secret intervention and a reactive over a pre-emptive intervention strategy. But the typical scale of intervention by emerging market central banks has increased following the recent financial crisis. In line with the increased importance of international financial inflows, most central banks have increased their market monitoring activity, particularly as it relates to cross-border portfolio flows.

Many participants thought that the methods and tactic of intervention should evolve with the growing interconnectedness of financial markets. The ability of central banks to influence market liquidity and the exchange rate depends on the degree of development of the spot and derivative markets (forwards and swaps). To the extent that central banks can act as the lender of last resort in foreign currency, they can moderate the effects of cross-border financial shocks on the exchange rate.

In some countries, governments can also play a useful stabilising role, since they are large players in the FX markets, either directly or indirectly through intermediating banks. In the case of commodity exporters, governments often sell large amounts of foreign currency income in short periods of time, which can strongly affect FX markets. In countries with large external financing needs, the size,

maturity and timing of foreign currency borrowing by the government all have consequences for the exchange rate.

Turkey provides an interesting example of how intervention techniques have changed with capital flows. As discussed in the paper by Alper, Kara and Yorukoglu, the central bank has introduced two new instruments to respond to capital flows and mitigate financial stability concerns: (i) an asymmetric interest rate corridor and (ii) a reserve option mechanism for commercial banks. The main objective behind the interest rate corridor was to allow higher volatility in the short-term interest rate with an objective to influence the composition of capital flows (deter short-term flows). The reserve option mechanism gives the commercial banks the possibility of fulfilling reserve requirements (RRs) by depositing foreign currency with the central bank. Since the incentive for holding reserves in domestic and foreign currencies varies with the degree of capital flows and the associated opportunity costs, the mechanism can help dampen the impact of volatile capital flows on the exchange rate and bank credit.

III. Effectiveness of intervention

Views varied about the effectiveness of central bank foreign exchange intervention. One line of thought was that the effectiveness of an intervention can be judged by looking at market liquidity – that is, how far intervention ensured "orderly market conditions". Another view was that the success of an intervention depended on whether it helped to relieve depreciation pressure during episodes of panic. In these cases, the effectiveness of an intervention could be measured by the differential between the actual domestic interest rates and those implied by exchange rates. Unsurprisingly, as reported by Mohanty and Berger, over 80% of the respondent central banks surveyed by the BIS considered that their interventions were either partly or wholly successful.

Some central banks argued that their interventions have had long-lasting effects on exchange rate volatility. For instance, as discussed by Rossin, Quispe and Serrano, in Peru the central bank has been able to cap exchange rate volatility in the context of its highly dollarised economy. As a result, Peru's currency volatility has fallen below that of other regional currencies. Another successful case is Poland, where intervention was generally seen to be effective in moving the exchange rate in the desired direction and in reducing uncertainty about the future exchange rate (see Adam, Kozinski and Zielinski).

That said, the majority view was that intervention can influence the exchange rate only temporarily at best. This opinion is echoed by a number of papers in this volume. Based on intraday data for Chile, Colombia, Mexico and Peru, Gracia-Verdu and Ramos-Francia demonstrate that intervention had a small but short-lived effect on the exchange rate during 2009–13. In a separate study, Claro and Soto reach a similar conclusion for Chile. The BIS paper by Miyajima and Montoro approaches the same issue using the three-month-ahead expected exchange rate rather than the spot exchange rate for selected EMEs in Asia and Latin America. Their main conclusion is that intervention did not have the intended effect on the expected exchange rate and might have actually contributed to accentuating exchange rate movement in the wrong direction.

Several factors could account for the weakness of any effect that intervention has on the exchange rate. First, intervention may work essentially through the signalling channel: after controlling for monetary policy changes, intervention may exert no independent effect on the exchange rate. Second, the effectiveness of the portfolio balance channel may have weakened over the years. Although evidence is far from conclusive, some participants argued that the risk premium on EM assets has fallen, making such assets more attractive to investors as a substitute for assets from advanced economies. Finally, as pointed out by Vargas, Gonzalez and Rodriguez, to the extent that sterilised interventions affect bank credit, they tend to weaken the effectiveness of the portfolio balance channel.

In addition, the effectiveness of intervention is difficult to measure, which can lead to an incorrect assessment about its effects. Inferring the success of intervention from observed exchange rate changes is problematic because several other factors affect currency performance, such as fiscal policy, interest rates, capital account openness and prudential measures that are imperfectly controlled for in the empirical models. Some participants thought that the lack of counterfactual evidence – that is, the level of exchange rate that would have prevailed without intervention – makes it difficult to precisely measure the impact of intervention. In some countries, a long prior period without interventions has allowed the central bank to carry out an econometric exercise to evaluate the effectiveness of a recent intervention. As measured against the estimated counterfactual levels, the recent interventions did not seem to have any strong influence on the exchange rate.

Another point complicating the assessment of intervention effectiveness relates to the intended benefits of intervention. Intervention can be considered effective if it promotes external price competitiveness and allows countries to better insure themselves against external shocks, thereby reducing external funding costs and promoting long-term economic growth. But these benefits, and thus the associated effectiveness of intervention, are extremely difficult to measure.

Several participants argued that communication and institutional arrangements matter for the effectiveness of intervention. Interventions may be perceived very differently by market participants than intended by the central bank. For instance, market participants may believe that the central bank is targeting the exchange rate, even though it is actually addressing volatility. In one recent case communication about the current account balance helped narrow the gap between the pricing of onshore and offshore FX forwards.

In this respect, a few participants shared their successful experience in influencing exchange rates using complementary measures. In Turkey, the new monetary operating framework has played a key role in reducing currency volatility over the past two years. In Peru, the success of intervention is partly due to the restrictions on the transfer of sterilisation bonds by commercial banks to the non-financial sector. The high reserve requirements on local currency deposits held by non-residents have also helped. In Brazil, a mix of macroprudential and capital account management measures played a similar role. In Indonesia, foreign exchange intervention was often complemented by other measures (macroprudential polices and central bank bond purchases) to manage the volatility of capital flows and the exchange rate.

To sum up, many EMEs have had to confront exceptional global monetary and financial situations during the past five years. In several cases, interventions by EM central banks aimed at dampening exchange rate volatility has helped to ensure orderly market conditions in the face of disruptive changes in capital flows and, on

occasion, to counter strong speculative currency pressures. The evidence is generally supportive of the findings in the literature that sterilised interventions by EMEs have had small but short-lived effects on the exchange rate. Persistent interventions in the context of major shifts in the equilibrium exchange rate can lead to unintended effects on the exchange rate and on the balance sheets of the central bank and commercial banks, with adverse macroeconomic and monetary consequences.

References

Bank for International Settlements (2005): "Foreign exchange intervention in emerging markets: motives, techniques and implications", *BIS Papers*, no 24.

——— (2012): "Fiscal policy, public debt and monetary policy in emerging market economies", *BIS Papers*, no 67.

Filardo A, M Mohanty and R Moreno (2012): "Central bank and government debt management: issues for monetary policy", *BIS Papers*, no 67.

Kaminsky G and C Reinhart (1999): "The twin crises: the causes of banking and balance-of-payment problems", *American Economic Review*, vol 89, no 3.

Mohanty, M and P Turner (2006): "Foreign exchange reserve accumulation in emerging markets: what are the domestic implications?", *BIS Quarterly Review,* September.