Survey of central banks' views on effects of intervention

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Introduction

This paper addresses two main issues. First, how do central banks in the emerging market economies assess the effects of their foreign exchange interventions on the exchange rate? Second, how do they view other external effects of intervention, such as the relationship between intervention, reserve accumulation and external vulnerabilities, and the usefulness of additional rules on foreign exchange transactions? The analysis in the paper is based on central bank responses to a BIS questionnaire prepared for this meeting, interviews with central bank staff, and studies of intervention prepared by central banks from emerging market economies.

To date, there have been only a few empirical studies of foreign exchange intervention covering a broad cross section of emerging market economies. The most extensive study is Canales-Kriljenko (2003), based on the IMF's 2001 Survey on Foreign Exchange Market Organisation. One of the main hypotheses advanced in this paper is that central banks in many emerging markets may be able to conduct foreign exchange intervention more effectively than the central banks of countries issuing the major international currencies. This hypothesis is supported by evidence indicating the large size of intervention by emerging economy central banks relative to their foreign exchange market turnover. Moreover, evidence is presented that central banks in emerging markets issue a large volume of regulations and conduct their foreign exchange operations in a way that increases the central bank's information advantage over private sector participants. However, the study does not demonstrate decisively that official intervention in the emerging market economies is indeed more effective because of these characteristics of their foreign exchange markets.

Another useful empirical study is by Neely (2001), who examined the practice of foreign exchange intervention in a sample of 22 countries, of which nine are emerging market economies.[2] This study addressed directly to central banks several questions on the effectiveness of foreign exchange intervention. It will therefore be used to compare some responses to the BIS questionnaire.

Central banks from the emerging market economies have conducted a number of own studies on the effectiveness of intervention. The recently published studies, many of which are surveyed in the accompanying review of the efficacy of foreign exchange intervention, include Tapia and Tokman (2004) for Chile; Holub (2004) for the Czech Republic; Pattanaik and Sahoo (2003) for India; Ryoo (2003) for Korea; Flores Bahamonde (2003) and Azañero Saona (2003) for Peru; Abenoja (2003) and Boge et al (2001) for the Philippines; Guimarães and Karacadağ (2004) for Mexico and Turkey; and Domaç and Mendoza (2004) for Turkey. In addition, the central banks of China, Colombia, Indonesia, Malaysia, Mexico, Peru and Turkey have conducted internal studies on the effectiveness of official intervention.[3]

The rest of this paper is divided into two parts. Section 2 analyses central banks' own views on the effectiveness of intervention, looking at the frequency and size of interventions, effectiveness by goals and channels of influence, central banks' information advantage in foreign exchange markets, and secret interventions. Section 3 considers other external effects of intervention: the relationship between reserve accumulation, credit ratings and external vulnerabilities; the use of capital controls

[1] The author thanks David Archer, Andy Filardo, Camilo Tovar, Philip Turner and Bill White for valuable comments, and Paola Gallardo, Marc Klau, Philippe Mesny, Marjorie Santos and Gert Schnabel for help with the data.

[2] These are: Brazil, Chile, the Czech Republic, Hong Kong SAR, Indonesia, Mexico, Poland, Korea and Taiwan (China).

[3] A study on Iceland by Isberg and Pétursson (2003) is useful for comparison with the recent experience of a small industrial country.

and rules on foreign exchange transactions in conjunction with official intervention; and the impact of financial dollarisation on the effectiveness of intervention.

1. Central banks' views on effectiveness of intervention

Frequency and size of interventions

Of the 19 central banks that responded to the BIS questionnaire, about one third have intervened regularly (ie on more than 50% of business days), one third relatively infrequently (every 10 days or less), and one third have not conducted any interventions at all over the past three years (Table 1). At first sight, this pattern of responses would seem to imply a bias *against* interventions in the emerging market economies, contrary to the claims in much of the literature. However, four central banks reported that they intervened on every business day; in addition, all of the three central banks that did not respond to this question are known to intervene, two of them frequently. Data in Table 1 also indicate that the frequency of interventions has declined marginally since 2002.

Table 1

Frequency of interventions

Percentage of business days on which central banks conducted foreign exchange intervention	Number of central banks which conducted foreign exchange intervention		
	2002	2003	2004
Regularly (>50% of business days)	5	6	6
11-50% of business days	4	3	2
0-10% of business days	5	5	5
Never	5	5	6
No response	4	4	4
Total number of observations	23	23	23

Source: Central bank responses to the BIS questionnaire.

All of the central banks in the sample that do not intervene have adopted inflation targeting frameworks and floating exchange rate regimes. It is interesting that one central bank that operates a fixed exchange rate regime intervenes seldom, relying most of the time on interest rates and other instruments affecting interbank liquidity, while one that operates what is nominally a floating exchange rate regime intervenes regularly. Countries in the sample where central banks do not intervene (as well as those that seldom intervene) are generally small open economies, while those that intervene regularly are much larger and, with one exception, are equally open.[4]

Data in Table 2 indicate that, in the sample of economies studied in this paper, central bank interventions are small relative to the size of their foreign exchange markets. The average size of interventions declined from 12% of average daily turnover in 2002 to 5% in 2004, or about USD 50 million in absolute terms. The most frequent daily intervention volume (the mode) has declined by almost 50% over the past three years, and at USD 29 million in 2004 was fairly small. The largest daily intervention volume in the sample amounted to USD 5 billion or 780% of the average daily turnover in that country's foreign exchange market, boosting official reserves by 38%. The smallest interventions amounted to just USD 0.5 million. In sum, relative to the size of foreign reserves, the size of interventions (with the exception of the largest one) has been negligible.

[4] Openness is here measured as the share of exports and imports of goods and services in GDP.

Against this background, it is interesting to note the evidence from Canales-Kriljenko (2003), who used a sample of 17 out of 90 central banks surveyed to argue that central banks had a dominant position in developing countries' foreign exchange markets. Moreover, he obtained high market shares for central bank intervention measured only against trading in the interbank market. In many developing countries, interbank trading accounts for just a fraction of turnover in the bank-customer segment of the market.[5] At the level of bank-customer trading, Canales-Kriljenko (2003) finds lower shares of central bank intervention in total trading volumes, although these shares are still high compared to the ones reported in Table 2. This suggests perhaps that the countries reporting these data to Canales-Kriljenko were less developed than the ones studied in this paper.

Table 2

Size of interventions

Size of foreign exchange interventions	In millions of USD			As a percentage of average daily FX market turnover			As a percentage of average monthly FX reserves		
	2002	2003	2004	2002	2003	2004	2002	2003	2004
Average	42	54	50	12	8	5	0.45	0.28	0.14
Mode	52	41	29	3.6	7.1	0.7	0.14	0.22	0.06
Maximum	450	4,936	465	71	780	52	1.7	38.3	3.7
Minimum	1.0	0.5	0.5	0.12	0.02	0.03	0.010	0.010	0.004

Number of observations: 13 out of 23. Three central banks in the sample did not intervene during 2002-2004 Q3.

Source: Central bank responses to the BIS questionnaire.

It is also instructive to juxtapose the size of interventions to the development of foreign exchange markets. Data from the latest *BIS Triennial Central Bank Survey of Foreign Exchange and Derivatives Market Activity* (BIS (2005)) indicate that average daily turnover of most emerging market currencies has increased strongly since 1998 (Table A1 in Appendix). The share traded in the derivatives market (forwards and swaps) relative to the spot market has also increased in many countries, as has the share of trading activity undertaken outside the home market. Yet compared to currencies of smaller industrial countries, the turnover in emerging market currencies remains miniscule. Table A1 shows, for instance, that the average daily turnover of most actively traded emerging market currencies – the Hong Kong dollar, the Korean won and the Mexican peso - represents only a fraction of the turnover in the Australian dollar, the Swedish krona or the Swiss franc markets. The small size of interventions relative to average daily turnover noted above is therefore not a result of increased turnover in foreign exchange markets but of small size of interventions.

The second point to note in this context is that central banks in emerging markets have indeed an overwhelming potential "firepower". The ratio of official reserves to average daily turnover is vastly higher in emerging markets than in industrial countries - on average, official reserves were 15 times the size of daily turnover in emerging market currencies, compared with less than half in smaller industrial countries. It is therefore not surprising that the threat of intervention - and hence its potential effectiveness - is much greater in emerging markets than industrial countries.

The sample size is clearly far too small to draw firm conclusions about the relationship between the size of intervention and different monetary and exchange rate regimes. Only two economies operating under a fixed exchange rate regime reported data for Table 2. One of them did report higher mean and mode sizes of intervention than central banks operating under managed or floating regimes. Interventions by managed floaters were also larger on average than those by free floaters.

[5] Interbank trading accounts for most of the foreign exchange market turnover among the major international currencies.

What is the evidence on the impact of size and frequency of interventions on their effectiveness? As discussed in Archer's paper in this volume on the techniques and tactics of intervention, Japan, for instance, has in recent years shifted from regular and small foreign exchange interventions to large and less frequent interventions. Some argue that this has made Japanese interventions more effective than before - but at the price of a truly massive scale (7% of GDP in FY 2003).

From the small sample at hand, it is difficult to draw conclusions about this issue for the emerging market economies. Out of 18 central banks, 14 characterised their interventions as effective most of the time (Table 3). Eight of these 14 central banks also reported the size and frequency of their interventions. Most of these central banks intervened less frequently on average (ie on less than 10% of business days, with three exceptions), and in relatively small amounts (3% of market turnover on average).

Five central banks that viewed their interventions as "sometimes effective" intervened in large amounts (6-22% of average daily turnover) on a small number of occasions, though one of them was present in the market on 30% of business days in one particular year. The sixth central bank that viewed its intervention as sometimes effective intervened every business day in small amounts (of about 0.6% of average daily turnover). The seventh last intervened in 2002, in small amounts, on about 10% of business days.

In sum, survey results seem to indicate that the emerging market central banks that intervene *less* frequently in *smaller* amounts tend to view their interventions as more effective on average than those that intervene less frequently in *large* amounts. The interpretation of this finding is not straightforward because of the simultaneity problem - those central banks with large interventions may have faced the greatest pressure. Finally, one should note that many central banks that operate under a floating exchange rate regime intervene only to address exceptional circumstances, rather than to affect the exchange rate per se. The size and frequency of their interventions are therefore determined on a case by case basis.

Table 3

Effectiveness of interventions by major goals

	Correct misalignment or stabilise exchange rate at desired level or rate of change	**Calm disorderly markets (excessive exchange rate volatility)**
Effective most of the time	Argentina, Chile, Hong Kong SAR, Malaysia, Singapore, Thailand	Argentina, Chile, Colombia, Hungary, India, Indonesia, Korea, Peru, Philippines, Singapore, Thailand, Turkey
Sometimes effective	Czech Republic, Hungary, Indonesia, Korea, Venezuela	Brazil, Czech Republic, Mexico, Venezuela
Never (or rarely) effective		

Number of observations: 18 out of 23. Three central banks in the sample did not intervene during 2002-2004 Q3.

Source: Central bank responses to the BIS questionnaire.

Assessments of effectiveness by goals of intervention

Regarding the effectiveness of interventions in meeting different objectives, 12 out of 16 central banks that intervened to calm disorderly markets viewed their intervention as mostly effective, while four viewed it as sometimes effective (Table 3, last column). In contrast, only half of the central banks that intervened to correct misalignment or to stabilise the exchange rate at a desired level (or rate of change) indicated that this type of intervention was effective most of the time. Among those that viewed this type of intervention as effective, two out of six (Hong Kong SAR and Malaysia) operate - not surprisingly - a fixed exchange rate regime.

Regarding intervention to calm disorderly markets, several central banks felt that their intervention was effective primarily because it helped relieve liquidity shortages that accompanied episodes of

excessive exchange rate volatility due to shallow foreign exchange markets. One central bank managed on one occasion to calm the market with a sale of as little as USD 9 million (compared to its reserves of USD 33 billion) at a time when concerns about liquidity were beginning to emerge.[6]

Views differed on whether intervention to calm disorderly markets is more effective in influencing the exchange rate at shorter time horizons than at longer horizons. Several studies in the context of industrial countries have found evidence that foreign exchange intervention might be more effective in influencing the exchange rate at shorter time horizons (eg over two to three days or over one week) than at longer horizons (eg moving the path of the exchange rate over three months or longer).[7] Neely (2001) found, in a sample of 13 industrial countries and nine emerging economies, that in 39% of cases it took just a few minutes to observe the effect of intervention on exchange rates; in 22% of cases it took a few hours; and in 49% a few days or more.

The majority of central banks in this survey confirmed that the short-term effects of intervention were larger, partly because continuous intervention to attain long-term effects was costly. However, one central bank noted that repeated intervention was necessary at times of heightened volatility because the effects of an initial intervention were not lasting.

Several central banks commented that the main burden in stabilising the exchange rate was always on monetary policy - and often on fiscal policy as well. For instance, if the exchange rate was depreciating because of weak fundamentals, intervention would not help stabilise it for very long unless the central bank raised interest rates. Likewise, trying to reverse depreciation by intervening in the forex market was ineffective in the face of large budget deficits.

Due to relatively favourable conditions in global capital markets over the past three years, most central banks in the sample intervened to correct misalignment or stabilise the exchange rate during periods of appreciating exchange rates. Currency appreciation was easier to resist than depreciation, but even here market scepticism could be an obstacle. For instance, if a central bank had already accumulated large official reserves, markets knew in some cases that the central bank would be reluctant to acquire additional reserves because of the negative impact of sterilisation on its balance sheet. Although they did not feel constrained by the size of their foreign currency reserves, most central banks judged this type of intervention as only partly successful in stemming appreciation.

Three central banks (of which one adopted a fixed exchange rate regime) found no difference in intervention effectiveness between periods of appreciation and depreciation.

Assessments by channels of influence of intervention

The recent academic literature surveyed in the accompanying paper by Disyatat and Galati in this volume suggests that interventions in industrial countries are more likely to influence the exchange rate through the expectations channel than through the portfolio balance channel. For the expectations channel to work, however, interventions would need to signal future monetary policy. On the other hand, in the emerging market economies the portfolio balance channel should also be effective, given that the official reserves, as noted above, are much larger relative to the local foreign exchange market, and debt instruments denominated in domestic and foreign currencies are less substitutable than in industrial countries.

The survey results provide qualified support for this view. Most notable is the consensus view that interventions which create expectations about future intervention are effective (Table 4, penultimate column). Consistent with the recent literature, seven central banks consider as partly or mostly effective those interventions that change private agents' exchange rate expectations by giving signals about the future stance of monetary policy. But 10 central banks also view the portfolio balance channel as partly or mostly effective.[8] In addition, some central banks reported other channels of

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[6] Experience from some industrial countries indicates that, when markets are under pressure and bid-offer spreads start to widen, the mere offer by the central bank to sell foreign exchange at the prevailing bid rate might be sufficient to calm the market, without any transactions actually taking place at that rate.

[7] See, for instance, Dominguez and Frankel (1993) and Truman (2002, 2003).

[8] The monetary policy channel is examined in the paper by Mohanty and Turner in this volume.

influence as being of relevance; for instance, the microstructure channel (which was probably effective in the Czech Republic during July-September 2002; see Holub (2004)); the liquidity effect in the foreign exchange market; and signalling the central bank's view about the rate of change of the exchange rate. Some central banks felt that intervention operated through all the channels identified in Table 4 because they intervened for different reasons at different times.

Central banks put forward some interesting arguments supporting these assessments. On the portfolio balance channel, one central bank noted that it was able to influence the exchange rate to a certain extent because it was a major player in both foreign exchange and securities markets. Two other central banks considered this type of intervention as effective only on those specific occasions when movements in foreign and domestic currency assets were anticipated, and were considered to be of a one-off nature (eg asset reallocations associated with large privatisation inflows). However, when such inflows were expected to continue, central bank intervention tended to have only a short-lived effect on asset allocations and hence the exchange rate.

Some central banks have found the expectations about future intervention an effective way to influence market behaviour. One central bank considered this channel to be the most effective means to dissipate appreciation or depreciation pressures in the short run. Two others noted that, once they started to intervene, market participants in general expected interventions to continue, and tried to establish a pattern for interventions. Still another central bank argued that intervention provided an indication of the views of the monetary authorities as to whether the exchange rate was in line with fundamentals. Since this central bank was considered to be a credible institution, an intervention was generally seen as a signal of continued intervention in the future to prevent the exchange rate from deviating too much from macroeconomic fundamentals. This, in turn, influenced the exchange rate in the desired direction.

Table 4

Channels of influence of intervention on exchange rate

	Monetary policy channel[1]	**Portfolio balance channel**[2]	**Expectations channel**		**Other channels**[4]
			Expectations about future stance of monetary policy[3]	**Expectations about future intervention**	
Effective most of the time	Brazil, Czech Republic, Hong Kong SAR	Argentina, Brazil, Philippines, Turkey	Argentina, Brazil, Czech Republic, Hungary, Philippines, Singapore	Argentina, Brazil, Hungary, India, Indonesia, Peru, Philippines, Turkey	Czech Republic
Sometimes effective	Argentina, Colombia, Hungary, Indonesia, Korea, Turkey, Venezuela	Czech Republic, Hungary, Korea, Peru	Indonesia, Korea, Thailand	Colombia, Czech Republic, Korea, Thailand, Venezuela	Korea, Mexico
Never (or rarely) effective	Philippines	Singapore			

Number of observations: 15 out of 23. Three central banks in the sample did not intervene during 2002-2004 Q3.

[1] Effect on domestic interest rates, when intervention is not fully sterilised. [2] Composition of domestic and foreign assets held by the main market participants changes as a result of sterilised intervention. [3] Sterilised intervention changes private agents' exchange rate expectations by giving signals about the future stance of monetary policy. [4] For example, microstructure channel - impact of intervention on buy or sell orders of traders who follow past market trends.

Source: Central bank responses to the BIS questionnaire.

Interventions that influence the exchange rate by affecting expectations about the future stance of monetary policy are seen to operate mainly through the differentials between domestic and foreign

market rates. Several central banks observed that the narrowing and widening of these differentials has led to shifts in expectations about future movements in relative money supplies, which could steer the exchange rate in the desired direction. One central bank observed, however, that interventions affected the relevant domestic interest rate with a lag.

According to one central bank, intervention affected the exchange rate through the expectations channel because of the role the exchange rate plays in the dynamics of domestic inflation. When the pass-through from exchange rate changes to inflation was high, changes in exchange rates were transmitted through the economy faster than changes in interest rates, so there was room for intervention to support monetary policy. However, this effect seemed to work only if central banks openly said that they intervened to support the disinflation process; otherwise they could confuse the market.

Central banks' information advantage

One condition for the expectations channel to function is that the central bank taking action either has or is believed to have an information advantage over market participants. Sterilised interventions can then affect market expectations of the exchange rate by "signalling" future monetary policy. A central bank can, for instance, signal a more restrictive future monetary policy by purchasing domestic currency.

Against this background, central banks were asked to what extent they had an information advantage relative to the large number of uncoordinated, competing individual participants in the more "atomistic" structure of the foreign exchange market. They were also asked what impact this advantage had on the effectiveness of their intervention. Most central banks (15 out of 21) responded that they had "considerable" or "some" information advantage; three felt they worked with basically the same information set as market participants, while three thought they were at a disadvantage compared with market participants (Table 5). One central bank remarked that any information advantage it might have had in the past had disappeared with the spread of the internet.

Table 5

Central bank's information advantage and its impact

Extent of central bank's information advantage in the foreign exchange market[1]

Considerable information advantage	Some information advantage	Equal information as other market participants	Information disadvantage relative to other market participants
Brazil, Hungary, Korea, Malaysia, Peru, South Africa, Turkey	Argentina, Colombia, India, Mexico, Philippines, Poland, Singapore, Thailand	Chile, Czech Republic, Hong Kong SAR	Indonesia, New Zealand, Poland

Impact of information advantage on effectiveness of intervention[2]

Major positive impact	Some positive impact	No impact on effectiveness of intervention
Brazil, Korea, Philippines, Singapore, Turkey	Argentina, Hungary, India, Peru, South Africa, Thailand	Colombia, Malaysia, Mexico

[1] A total of 21 central banks (out of 23) responded. [2] A total of 15 central banks (out of 23) responded (three central banks do not intervene).

Source: Central bank responses to the BIS questionnaire.

Examples of the information advantage that central banks enjoy relative to other market participants include: receiving on a daily basis positions and transactions similar to the BIS triennial foreign exchange survey, including access to data on all spot transactions, aggregated and disaggregated

data on foreign exchange swap positions and turnover (albeit with a lag in some cases), and on forward transactions (including non-deliverable forwards); detailed statistical data on transactions of all banks, brokerage companies and other participants in foreign exchange markets; and information on the movement of government funds and large inflows and outflows of funds in the system due to debt servicing, foreign portfolio investment and trade flows. In addition, in their role as regulators of commercial banks, central banks in many countries can request information regarding flows they see in the foreign exchange market. Most central banks also felt they had very good market intelligence networks and received ongoing feedback from market participants. As one central banker put it: "We can observe every aspect of market participants' behaviour - except their intentions."

With one exception (Hong Kong SAR), central banks that felt they had an information *disadvantage* relative to other market participants were those that did not intervene. One of them noted that it had no access to the trading quotations (either transaction prices or volumes) and no precise information about corporate flows and portfolio flows in general, given that it was not an active market participant.

The extent of information advantage generally corresponds to central banks' assessments of the impact this advantage has on the effectiveness of intervention. For instance, central banks that have considerable or some information advantage also find that this advantage has a major or some positive impact on the effectiveness of their intervention. But in Colombia, Malaysia and Mexico, this advantage apparently had no impact on the effectiveness of intervention. In the case of Colombia, the reason was that the option holders decided when to exercise the options the central bank used for intervention purposes.

Secret interventions

A major puzzle in the literature on the effectiveness of intervention is why most actual intervention operations in the foreign exchange market have been - and still are - largely secret. That is, they are not publicly announced by monetary authorities, despite the relatively robust finding that policy announcements affect expectations through the signalling channel. Central banks were asked which of the four types of arguments in favour of the secrecy that have been identified in the literature most closely corresponded to their practice.[9]

There is a significant range of views in the survey about the purpose of secrecy (Table 6). Ten central banks conducted secret interventions. Six of them reported that secret interventions helped them maximise market impact and were always or sometimes effective, ie helped them calm a highly volatile market. Two central banks considered that interventions conducted to minimise market impact were always effective. One cited portfolio adjustment as a reason for secret intervention, and two cited other reasons (for instance, the desire to prevent the expectation that the exchange rate could move in only one direction).[10]

In addition to the 10 central banks that conducted secret interventions and three that never intervene, seven other central banks, of which five are from Latin America, stated that they did not practise secret interventions (although one of them has the authority to do so). Only three central banks out of a total of 23 provided no response to this question.

As noted in Moser-Boehm's paper in this volume, most central banks believe that secret interventions are not against the principle of transparency if followed up by ex post reporting. Several noted that secret interventions could be useful as part of tactics - some ambiguity with respect to actions of the central bank on a daily basis could help the central bank (see the paper by Archer in this volume).

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[9] See Sarno and Taylor (2001). The four arguments are: (i) those based on the central bank's desire to minimise the effects of an unwanted intervention - for instance, because the decision to intervene has been taken outside the central bank (eg by the treasury); (ii) those based on the central bank's desire to maximise the impact of intervention by calming a highly volatile market (an announcement of intervention might exacerbate the perceived risk of sharp depreciation in such circumstances); (iii) portfolio adjustment arguments (eg the monetary authority wishes to adjust the currency holdings of its portfolio without affecting the exchange rate); and (iv) arguments based on second-generation currency crisis models - the central bank may have an incentive to conceal its intervention operations because it has poor credibility for sending trustworthy signals.

[10] Neely (2001) found similar proportions of central banks intervening secretly to maximise vs minimise market impact, but in his sample no central bank cited portfolio adjustment or avoiding one-sided bets as reasons for secret interventions.

However, most central banks advised against massive secret interventions or an overall strategy of secrecy.

Table 6

Effectiveness of secret interventions[1]

Interventions conducted secretly (for reasons specified in columns) are …	To maximise market impact	To minimise market impact	For portfolio adjustment	Other reasons
Effective most of the time	5	2	1	0
Sometimes effective	3	0	0	1
Never (or rarely) effective	0	0	0	0

Total number of responses: 20 out of 23: three central banks do not intervene; 10 confirmed secret interventions; seven do not conduct secret interventions (but one of them has the authority to do so); three empty responses.

[1] Number of central banks responding to the question.

Source: Central bank responses to the BIS questionnaire.

2. Other external effects of intervention

Reserve accumulation, credit ratings and external vulnerabilities

Unlike in most industrial countries, many central banks in the emerging market economies consider reserve accumulation a legitimate and important goal of official intervention. Following recent currency crises - including those in Asia, Argentina, Brazil, Mexico, Russia and Turkey - many central banks have come to regard high foreign exchange reserves as a key buffer against external vulnerabilities and debt sustainability problems. Moreover, many central banks have come to realise that attempts to prevent the exchange rate from depreciating when other macroeconomic policies are not tightened may in the end increase the probability of a crisis.

Table 7

External implications of reserve accumulation

	Major positive impact	Some positive impact	No impact
Effect of reserve accumulation on sovereign credit ratings	Indonesia, Venezuela	Argentina, Brazil, India, Korea, Malaysia, Mexico, Peru, Philippines, Poland, South Africa, Thailand, Turkey	Colombia
Effect of reserve accumulation on external sustainability	Argentina, Brazil, Colombia, Indonesia, Korea, Malaysia, Peru, Turkey, South Africa	Mexico, Philippines, Poland, Venezuela	

A total of 16 central banks (out of 23) responded (three central banks do not intervene).

Source: Central bank responses to the BIS questionnaire.

Findings on the impact of reserve accumulation on credit ratings and external vulnerability from this survey confirm the "buffer" view. Indeed, all 16 central banks that provided the answers reported in Table 7 believe that reserve accumulation has at least some positive impact on either sovereign credit ratings or external sustainability (or both). The impact on credit ratings is judged to be more moderate than the impact on external sustainability, but nevertheless sufficiently important to be taken into account. Only in Colombia have credit ratings not improved in the period of reserve accumulation.

Only one central bank stated explicitly that its intervention had never been guided by the objective of accumulating official reserves. In contrast, three central banks noted that building foreign exchange reserves was the only reason why they have conducted interventions over the past year or so - the impact of such interventions on the exchange rate was virtually nil.

Several central banks, including some that operate under floating exchange rate regimes, commented that higher reserves gave them greater confidence and credibility in foreign exchange markets ("large reserves are respected by financial markets"). This helped improve the sustainability of their external positions - and hence their credit ratings - through several channels. A higher reserves level implied greater capacity to redeem external debt (in particular short-term debt), and reduced the risk of speculative attacks on the currency, given that markets regard reserves as a contingent stock for intervention purposes. It also reduced international funding costs in a number of emerging economies. Several central banks felt that reserve accumulation acted as insurance against the negative effects of debt and financial sector crises. In EU accession countries, the higher level of official reserves helped mitigate an increase in external vulnerability stemming from liberalisation of capital flows - in particular short-term flows. Most central banks have also noted that rating agencies generally view the steady trend of reserve accumulation as a result of the underlying strength of the economy.

Despite a general perception that reserve accumulation can improve credit ratings and reduce external vulnerabilities, several central banks noted that macroeconomic fundamentals seem to play the key role. In particular, it is very difficult to assess the role of reserve accumulation in this process against the background of a better macroeconomic environment as a whole, including solid global growth, stronger external positions and the pursuit of sound fiscal and monetary policies by many emerging economies in recent years.

Two central banks were not convinced by the argument that reserve accumulation provided a cushion against contingencies or could impress rating agencies. One of them argued that reserves mattered for sovereign credit ratings only during the period when countries were passing from the speculative to the investment grade rating. Another noted that running down central bank liabilities was a more sensible approach than accumulating assets, which inevitably raised questions about the optimal level of reserves.

Intervention and rules affecting foreign exchange transactions

The insurance motive is also visible in the widespread use of rules affecting foreign exchange transactions to supplement official intervention. Some Asian emerging economies often combine foreign exchange intervention with capital controls, prudential regulations and other rules such as foreign currency surrender requirements (Table 8). Countries that do not use foreign exchange rules in conjunction with official intervention nevertheless often use capital controls and prudential regulations to monitor or "influence" external exposures, in particular open foreign exchange positions of financial institutions.

Central banks were also asked to assess the impact of foreign exchange rules on the effectiveness of intervention. A number of Asian central banks found that capital controls and foreign exchange regulations enhanced the effectiveness of intervention. In several countries, the use of temporary or new rules during certain episodes of turbulence in foreign exchange markets was judged to improve the effectiveness of intervention.

Central banks provided a number of arguments supporting the use of additional rules on foreign exchange transactions. One central bank noted that capital controls were used to increase the effectiveness of intervention when the inflows or outflows threatened to be very large. For instance, limits on net foreign cash positions of financial institutions, as a percentage of their net worth, were

designed by some central banks to limit the capacity of the financial intermediaries to convert significant debt or forward positions into spot cash flows, which could have a large and sudden effect on the exchange rate.[11] Another central bank observed that, in periods of downward pressure on the currency, tightening of prudential regulations tended to dampen the demand for foreign currency. As a result, the depreciation pressure on the domestic currency generally eased. Moreover, the size of intervention needed to bridge the supply gap became smaller, given that the speculative demand fell.

Table 8

Intervention and other rules on foreign exchange transactions

Foreign exchange intervention is used in conjunction with … (see columns)	Capital controls			Prudential regulations	FX surrender requirements or other FX controls
	Controls on outflows	Controls on inflows	Restrictions on non-residents' access to domestic currency/assets		
Often used together	Indonesia, Malaysia	Indonesia, Malaysia	Indonesia, Malaysia	Indonesia, Korea, Malaysia	
Sometimes used together	Argentina, India	India	India	Brazil, Colombia, India, Philippines, Thailand, Venezuela	India, Thailand
Never used together	Czech Republic, Hong Kong SAR, Hungary, Korea	Czech Republic, Hong Kong SAR, Hungary, Korea, Venezuela	Czech Republic, Hong Kong SAR, Hungary, Korea	Chile, Czech Republic, Hong Kong SAR, Mexico, Philippines, South Africa	Czech Republic, Hong Kong SAR, Korea, Peru, Mexico

Number of observations: 15 out of 23. Three central banks in the sample did not intervene during 2002-2004 Q3.

Source: Central bank responses to the BIS questionnaire.

Some central banks also felt that the adoption of complementary measures could affect expectations by underlining official resolve to bring stability to the foreign exchange market. Such actions also signalled to market participants that unwelcome exchange rate movements would not be allowed to threaten the fulfilment of key central bank objectives, such as the inflation target.

Some central banks that officially operate a free or a managed floating system noted that specific capital controls helped them make smaller the capital flows that might otherwise have caused a shock to thin foreign exchange markets. In particular, some official guidance was deemed helpful in the case of flows originating from large public sector firms. In one case, the central bank introduced temporary quantitative restrictions on short-term deposits in order to alleviate pressure for currency appreciation. As the pressure subsided, the restrictions were lifted.

However, several central banks were sceptical about the usefulness of foreign exchange regulations in enhancing the effectiveness of intervention. In one country, attempts to support interventions in the foreign exchange market with capital controls eventually led to the collapse of the float and reintroduction of comprehensive administrative controls. Several other central banks argued that capital controls and foreign exchange regulations impeded the development of domestic financial markets. For instance, the authorities in several countries realised that repatriation of offshore

[11] Similar measures were used for instance by France, Portugal and Spain during the ERM crisis in 1992–93; see BIS (1993).

business could help develop the domestic financial market and decided to lift most restrictions. Domestic firms and pension funds became better hedged as a result and investors less confused about the authorities' policy intentions. Particularly helpful was the policy of allowing domestic institutional investors access to foreign assets - it helped reduce pressures from capital inflows much more effectively than restrictions on inward capital flows. The removal of capital controls in one country improved liquidity not just in the foreign exchange market, but also in the government bond and equity markets.

Intervention and dollarisation

Many developing countries had a long history of macroeconomic instability during the 1970s and 1980s, which has led to the emergence of widespread dollarisation. While many of them have since turned the corner, achieving stable single-digit rates of inflation in recent years, some still have to cope with a high level of dollarisation. This creates various complications for monetary policy, including official intervention. If there are no major exchange controls, the high degree of substitutability between domestic and foreign currency should prevent the market exchange rate from deviating from fundamentals, making the signalling channel of intervention much more important. Under these circumstances, it has been observed that greater credibility of monetary policy can set in motion a virtuous circle that leads to gradual de-dollarisation.

In Turkey, for instance, rapid disinflation in recent years has had a favourable impact on inflation expectations. As the Turkish lira stopped depreciating and started to strengthen against the dollar after the 2001 crisis, households and firms have started to sell some of their foreign exchange holdings, making it easier for the central bank to purchase the foreign exchange it needs to repay external debt and replenish reserves (see Özatay in this volume). Conversely, whenever markets were in a vulnerable position due to political instability, dollarisation would resume and there was little the central bank could do to stop the process, as a high volume of the assets was beyond its control.

On the hand, dollarisation can sometimes facilitate intervention by reducing the risk that agents will shift out of local currency. This effect was observed on some occasions in Indonesia, Peru and the Philippines. As individuals and businesses were already able to keep part of their assets in foreign currencies, there was less need in the economy as a whole to buy foreign currencies from the market for hedging purposes or for servicing external debt liabilities.

Some central banks recognised, however, that a marked degree of financial dollarisation heightened the risk of balance sheet effects stemming from exchange rate fluctuations, as some agents in the economy (including the public sector) are likely to have currency mismatches between their assets and liabilities. In such circumstances, official intervention may be an important channel for providing liquidity to the economy and minimising the disruptive effect of large depreciations on private balance sheets. For instance, during the market turbulence in 2001-02, the Central Bank of Brazil intervened in the foreign exchange market by both directly selling foreign currency in the spot market, and providing foreign currency indexed instruments in the futures markets. Such interventions proved effective. However, they were temporary and were part of a broader strategy that involved other policies, whose objective was not to target the exchange rate level but to provide liquidity to the economy.

Conclusion

Does the central bank survey presented in this paper support the widespread view that intervention is more effective in emerging market economies? Unfortunately, no definitive answer can be given.

The survey does show that many central banks in emerging markets view intervention as an effective tool within their monetary policy framework. However, to be effective intervention needs to be aligned with macroeconomic and financial market conditions, central banks believe. If the exchange rate is depreciating because of weak fundamentals, intervention will not help stabilise it for very long. Currency appreciation is perhaps easier to resist, but even in this case some central banks point to limits to intervention where markets are aware of the costs of intervention for central banks. In general, it seems that intervention cannot affect the exchange rate on its own; the main burden in stabilising the exchange rate is primarily on monetary policy and often on fiscal policy as well.

Central banks report that intervention used to accumulate official reserves can be effective in improving sovereign credit ratings and reducing external vulnerabilities. However, the positive effect on credit ratings seems to work only for countries that do not already have an investment grade rating. Views on the usefulness of various restrictions on foreign exchange transactions to supplement official intervention are mixed. Those central banks that had removed capital controls feel that this move had spurred the development of domestic foreign exchange and capital markets. Markets have become more liquid and domestic agents better hedged against foreign currency risks. But many central banks that have kept some foreign exchange and capital controls feel that these controls are useful, in particular when the foreign exchange market is under stress. Most feel that such controls have to be simple and of limited duration to be effective.

Annex

Table A1 Foreign exchange turnover[1]

	Reported by dealers in the country of issue			Total[2]		Official reserves / daily turnover	
	1998	2001	2004	2001	2004	2001	2004
Latin America							
Argentine peso	2,131	n.a.	684	n.a.	684	n.a.	20.7
Brazilian real	3,418	4,612	3,127	5,239	4,344	6.6	11.5
Chilean peso	1,212	2,282	2,314	2,282	2,314	6.3	6.7
Colombian peso	n.a	371	669	371	669	24.5	16.0
Mexican peso	6,961	5,888	10,059	10,086	20,312	4.0	2.9
Peruvian sol	n.a	203	251	203	251	40.5	40.1
Asia							
Hong Kong dollar	14,833	19,016	19,967	27,381	33,181	4.2	3.7
Indian rupee	1,337	2,762	5,313	2,840	6,066	14.0	18.6
Korean won	2,288	7,916	15,815	9,757	21,151	9.5	7.7
Taiwan dollar	1,658	2,609	3,869	3,167	7,261	35.3	31.4
Indonesian rupiah	850	535	1,419	552	2,051	50.4	17.3
Malaysian ringgit	579	923	987	923	987	27.3	52.8
Philippine peso	408	455	523	502	765	24.6	17.3
Singapore dollar	16,819	9,841	8,751	12,886	17,010	5.9	5.8
Thai baht	2,123	1,274	2,088	1,859	3,492	16.9	11.9
Central and eastern Europe							
Czech koruna	4,169	1,135	965	2,234	2,813	5.9	9.3
Hungarian forint	528	173	1,380	197	3,625	55.7	3.2
Polish zloty	910	3,376	3,400	6,325	7,031	4.4	5.1
Russian rouble	4,519	4,158	10,631	4,282	12,208	6.5	6.5
Other emerging markets							
Israeli shekel	n.a	506	1,969	506	1,969	46.3	13.5
Turkish lira	n.a	231	1,439	433	1,991	41.8	17.0
Saudi Arabian riyal	1,235	840	689	840	689	17.7	26.1
South African rand	6,087	6,846	5,682	11,327	13,656	0.5	0.6
Total above currencies	72,065	75,952	101,991	104,192	164,520	21.6[3]	14.6[3]
Memorandum							
Australian dollar	19,638	20,076	27,046	49,653	97,123	0.3	0.3
Swedish krona	4,847	11,466	13,811	30,146	40,639	0.4	0.4
Swiss franc	21,748	17,767	21,143	71,053	107,705	0.4	0.4
Total (all currencies)	1,429,284	634,650	943,542	1,173,066	1,773,275	…	…

n.a.= not available

[1] Daily averages during April, in millions of dollars. Figures are the sum of spot, forwards and foreign exchange swaps in local and cross-border transactions, adjusted for local and cross-border double counting. [2] Reported by dealers both inside and outside of country of issue. [3] Simple average.

Source: BIS, *Triennial central bank survey of foreign exchange and derivatives market activity in 2004*.

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