INTERNATIONAL MONETARY FUND

From Fixed to Float: Operational Aspects of Moving Toward Exchange Rate Flexibility

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EXECUTIVE SUMMARY AND ISSUES FOR DISCUSSION

In recent years, a number of countries have moved towards more flexible exchange rate regimes. Most of these exits from fixed to float have occurred under disorderly conditions, but some transitions have been relatively gradual and smooth. Independent of whether it is an orderly or disorderly exit, these moves are complex from an institutional and operational perspective. This paper provides guidance to countries that have decided to move towards a more market-determined exchange rate. Country examples, supporting the guidance, include those that have: (i) successfully made the transition in a relatively gradual and orderly way; (ii) exited in a crisis; (iii) floated but subsequently reversed back to fixed arrangements; and (iv) first introduced crawling bands.

Directors may wish to comment on a number of issues identified in the paper relating to the guidance to those countries that elect to move towards a more flexible exchange rate regime.

For a successful transition to a float, the following four ingredients are generally needed: (i) a deep and liquid foreign exchange market; (ii) a coherent intervention policy; (iii) an appropriate alternative nominal anchor; and (iv) adequate systems to review and manage public and private sector exchange rate risk.

Do Directors agree with the identified ingredients for floating?

Creating a deep and liquid foreign exchange market

There are four key aspects of developing a deep and liquid foreign exchange market (Section II): (i) reducing the central bank's market-making role; (ii) increasing the information flows in the market; (iii) eliminating (or phasing out) regulations that stifle market activity; and (iv) improving the market microstructure. In addition, what is also generally needed is the emergence of two-way risk in the exchange market: Market perceptions that the exchange rate can both appreciate or depreciate help foster better risk management expertise and minimize destabilizing trading strategies.

Devising an intervention policy

Formulating an intervention policy requires resolving difficult trade-offs, which are examined in some detail in the paper (Section III). On the one hand, there are several legitimate reasons for intervention, notably to: (i) correct misalignment; (ii) calm disorderly markets; and (iii) accumulate reserves or supply foreign exchange to the market. On the other hand, misalignment is hard to detect and intervention is often hard to time. In addition, smoothing short-term fluctuations may stifle a nascent market and the useful signals generated in the market. Intervention can send confusing signals about policy intentions; recent empirical studies indicate some skepticism about the success of intervention and "smoothing short-term fluctuations."

Do Directors consider that the arguments presented here cover the key considerations for devising an intervention strategy; how do they rank the importance of these considerations?

Developing an alternative nominal anchor

Moving away from a fixed exchange rate requires a new and credible nominal anchor (Section IV). Nowadays, the recommended alternative nominal anchor is often inflation targeting. Such an alternative is not established overnight, but requires extensive preparation. There are considerable benefits to developing the critical elements of a reliable monetary policy framework. These include: (i) priority to price stability over competing objectives; (ii) operational independence of the central bank; (iii) transparency and accountability in the conduct of monetary policy; and (iv) a capacity to forecast inflation and undertake policy actions consistent with maintaining price stability. Until the conditions for inflation targeting are met, many countries have followed other forms of monetary targeting when moving to a floating regime.

Do Directors agree that inflation targeting can be a useful framework in such circumstances, especially over the medium term?

Managing and supervising private exchange rate risks

The move to a floating rate transfers exchange rate risk from the public sector to the private sector (Section V), but also places stress on public sector entities with foreign exchange liabilities. To support an orderly exit (or help prevent a disorderly one), it is beneficial to start improving systems to manage foreign exchange risk early. Risk management systems have three components: (i) information systems for monitoring risks; (ii) formulas and analytical techniques to measure exchange rate risk; and (iii) internal risk policies and procedures, such as limits on concentration in foreign currency loans.

In conjunction with private risk management, regulatory and supervisory structures often need to be overhauled. It is important for such structures to focus not only on direct exposure of banks to foreign currency risk (open foreign currency positions), but also liquidity-related risk (maturity mismatches in the foreign currency book), indirect risks (foreign currency exposure in the lending book) and interest rate exposure of banks.

Do Directors see a need for further guidance on prudential controls?

Pace of exit and sequencing of exchange rate flexibility and capital account liberalization

In practice, the pace at which relevant institutions can be built is a main determinant of how early preparations for an orderly exit need to commence (Section VI). Early preparations for an exchange rate float (especially in the time consuming areas of building an alternative nominal anchor and better risk management systems) can be useful in their own right and bolster the ability to exploit what may turn out to be narrow windows of tranquility.

A fast pace of exit in general has benefits in that it signals purpose and determination, thereby enhancing the credibility of monetary policy.

On sequencing, experience, especially in emerging market economies, has highlighted the risks of opening capital accounts before floating the exchange rate, and especially the risk of sudden outflows. The order of liberalization, notably the use of asymmetric liberalization (such as liberalizing longer-term capital flows first), can help ensure a smooth transition to a float, and help avoid large exchange rate swings and overshoots.

Do Directors agree with the thrust of the recommendations on the pace and sequencing of exits? Do Directors see a need to provide more systematic help to countries that make an orderly transition or who wish to do so?

I. INTRODUCTION

1. **This paper describes the institutional, operational, and technical aspects of moving toward exchange rate flexibility.**[1] Its primary goal is to provide hands-on guidance to countries that have decided to move toward a more market-determined exchange rate, drawing on the experience of countries that have managed the transition.

2. **Although floating the exchange rate affords countries greater external flexibility, the Executive Board has not asserted the superiority of one exchange rate regime over another, but has acknowledged the factors behind countries' decisions to float.**[2] It has noted that exchange rate flexibility may be desirable in countries more closely integrated into international financial markets,[3] and that the benefits of exchange rate flexibility increase with economic and institutional development.[4] The Board has also emphasized that sound macroeconomic and structural policies—including fiscal discipline, monetary policy credibility, and a sound financial sector—are essential to maintaining any type of regime, fixed or floating.[5] It has exhorted staff to review closely the consistency of choice of exchange rate regime with macro policies. In light of the importance of managing the exit

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[1] The paper draws heavily on the main conclusions from the working paper *From Fixed to Float: Operational Aspects of Moving Toward Exchange Rate Flexibility* (WP/04/126) by Rupa Duttagupta, Gilda Fernandez, and Cem Karacadag. This working paper contains further references and country examples.

[2] Most recently at an informal Board seminar on the *Evolution and Performance of Exchange Rate Regimes* (SM/03/353, 10/16/03). Previous Board Papers on the subject include: *Exchange Rate Regimes in an Increasingly Integrated World Economy* (SM/99/216, 8/27/99); *Exit Strategies-Policy Options for Countries Seeking Greater Exchange Rate Flexibility* (SM/97/285, 12/12/97); and *Currency Board Arrangements-Issues, Experiences, and Implications for Fund-Supported Programs* (SM/96/302, 12/20/96).

[3] Summing Up by the Acting Chairman, *Exchange Rate Regimes in an Increasingly Integrated World Economy* (BUFF/99/125, 9/24/99). E.g., "no single exchange rate regime is appropriate for all countries or in all circumstances....," "It is nevertheless true that increased capital mobility and widespread liberalization of financial transactions are making it more difficult to sustain adjustable pegs.

[4] *Report of the Acting Managing Director to the International Monetary and Financial Committee on the IMF's Policy Agenda* (IMFC/Doc/9/04/3, 4/20/04).

[5] *Exit Strategies-Policy Options for Countries Seeking Greater Exchange Rate Flexibility* (SM/97/285, 12/12/97) and Summing Up (BUFF/98/11).

from pegs well, the Board has encouraged Fund staff to assist countries in their transitions, preferably at an early stage.[6]

3. **Recent country experience and research have provided new insights on the institutional and operational issues involved in moving toward exchange rate flexibility.** Emerging market economies such as Chile, Israel, and Poland have, in the main, completed their gradual transitions to flexible regimes, while others, among them Brazil and Turkey, transitioned more abruptly and under market stress to a more flexible exchange rate regime. At the same time, inflation targeting has emerged as a credible and alternative nominal anchor and has been adopted by a growing number of countries. Moreover, new research on exchange rate behavior has highlighted that countries are often reluctant to allow the exchange rate to fluctuate to avoid the adverse effects and stress on unhedged balance sheets and inflationary expectations. These concerns, in turn, have generated strong interest in policies to minimize exchange rate volatility and ensure orderly transitions toward exchange rate flexibility.

4. **Drawing on cross-country experiences, this paper identifies four key operational areas that are critical to exiting from pegs, including:**

(i) developing a *deep and liquid foreign exchange market*;
(ii) formulating *intervention policies* consistent with the new exchange rate regime;
(iii) establishing an *alternative nominal anchor* in the context of a new monetary policy framework; and
(iv) reviewing exchange rate exposures and building the capacity of market participants including the public sector to *manage exchange rate risks* and of the supervisory authorities to regulate and monitor them.

The timing and priority accorded to each of these areas may vary from country to country, depending on initial conditions and economic structure. In addition, this paper reviews the trade-offs involved in the pace of exit from pegs and the sequencing of exchange rate flexibility and capital account liberalization. Lessons from disorderly exits are, where relevant, separately drawn at the end of each section (see Box 1 for the distinction between orderly and disorderly exits).

[6] The Chairman's Summing Up: *Biennial Review of the Implementation of the Fund's Surveillance and of the 1977 Surveillance Decision* (SUR/04/80, 8/24/04).

Box 1. Orderly versus Disorderly Exits to Flexible Exchange Rate Regimes

Exits to flexible regimes are defined here to include three categories of transitions: First, exits from all hard pegs and fixed and crawling pegs to bands and floats; second, exits from bands to floats; and third, exits from managed floats to independent floats. Exits are considered only when the regime exited lasts for at least one year or if the country continues to increase its exchange rate flexibility during the same year (e.g., an exit from a fixed peg to a crawling band followed by an exit to a float). A total of 139 exits to flexible regimes are identified (Figures 1 and 2).

A crisis is defined as when the depreciation of the nominal exchange rate at the time of exit exceeds the average nominal exchange rate depreciation over six months before the exit by more than two standard deviations.

Figure 1. Number and Type of Exits, 1990–2002

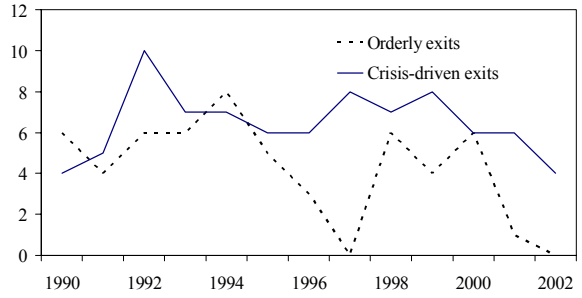
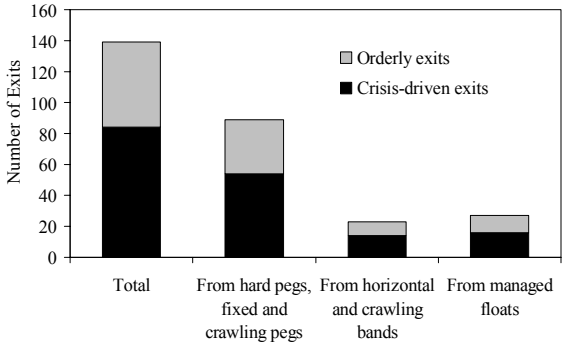


Figure 2. Exits by Exchange Rate Regime, 1990–2002



The two main conclusions about exits (using the IMF's de facto exchange rate classification to measure exits) are: (i) regardless of the methodology used, a large share of exits to flexible exchange rate regimes during 1990–2002 has been disorderly; and (ii) the pace of exit for orderly exits has been gradual.

Many countries adopted a gradual approach toward exchange rate flexibility. Only 39 percent of orderly exits to flexible regimes were one-step moves from hard, fixed or crawling pegs to floats and 61 percent involved intermediate steps. For example, Chile and Poland shifted from crawling pegs to crawling bands and gradually widened their crawling band regimes over 14 years and 5 years respectively prior to adopting a floating regime. In fact, a few countries even opted to increase exchange rate flexibility within the same regime—e.g., Israel has gradually widened its crawling band to a bandwidth of 55 percent at end-2003.

II. THE FOREIGN EXCHANGE MARKET

5. **It is increasingly recognized that operating a flexible exchange rate regime only works well when there is a sufficiently liquid and efficient foreign exchange market for price discovery.**[7] A well-functioning foreign exchange market allows the exchange rate to respond to market forces and helps to minimize instances and durations of disruptive day-to-day fluctuations in the exchange rate and longer-term deviations from equilibrium. However, several conditions hamper the emergence of such a deep and efficient market.

6. **Fixing the exchange rate itself is often a key factor in foreign exchange market illiquidity.** A central bank operating a fixed exchange rate regime is usually active in the market by necessity, which reduces the need for market participants to trade and which keeps them from gaining experience in price formation or exchange rate risk management. Taken to its extreme, the central bank may dominate the interbank foreign exchange market and act as the primary foreign exchange intermediary.

7. **Allowing some exchange rate flexibility is a key step that can help improve the depth and efficiency of the foreign exchange market and limit what is to some extent an unavoidable chicken-egg problem: the problem that flexibility requires a deep market, but that a deep market requires flexibility.** Fluctuations in the exchange rate, even if small, quickly create incentives for market participants to gather information, form views, price foreign exchange and manage exchange rate risks.

8. **In addition, to make flexibility work, it is essential to create a sense of two-way risk in the exchange rate**; that is the exchange rate may appreciate or depreciate. This is to avoid situations where the market thinks that the exchange rate will move in one direction only, and will immediately move to either the upper or lower bound of the newly established trading range.

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[7] The foreign exchange market in general consists of a wholesale interbank market, where authorized dealers (usually banks and other financial institutions) trade among themselves, and a retail market where authorized dealers transact with final customers (usually households and firms). The interbank market, in particular, is where price discovery occurs through a decentralized allocation of foreign exchange by market participants on their own behalf as well as on behalf of their customers. Sarr and Lybek (2002) characterize a liquid market as one with (i) relatively narrow bid-offer spreads to lower transaction costs (tightness), (ii) high turnover in volume as well as an abundance of orders to minimize the price impact of individual trades (depth and breadth); (iii) efficient trading, clearing, and settlement systems to facilitate the swift execution of orders (immediacy); and (iv) a wide range of active market participants to ensure that new orders flow quickly to correct order imbalances and misalignments (resiliency).

9. Other steps that can be taken to deepen the market and enhance price discovery include:

- **Reducing the central bank's market-making role**, including its quotation of buying and selling rates, which undercut other market makers. The central bank can foster market development by reducing its trades with banks (and generally not trade with non-financial customers at all), limiting the frequency of its interventions to daily or weekly interventions. By requiring market makers to provide two-way price quotations and acting as a price-taker (within boundaries) when it enters the market, it can further limit its role.

- **Increasing market information** on the sources and uses of foreign exchange and detailed balance of payments data. It is also essential to develop and divulge information on a coherent policy framework as a basis for market participants to develop accurate views on monetary and exchange rate policy, and efficiently price foreign exchange. Information systems and trading platforms that are capable of providing real-time bid and offer quotations in the interbank market can also help market transparency.

- **Eliminating (or phasing out) regulations that stifle market activity.** Some important measures would be: (i) abolishing requirements to surrender foreign exchange receipts to the central bank; (ii) taxes and surcharges on foreign exchange transactions; (iii) restrictions on interbank trading;[8] (iv) limits on price ranges quoted by dealers; (v) unifying segmented foreign exchange markets (that is linking the official, interbank, and parallel markets); and (vi) relaxing current and, to some extent, capital account restrictions to bolster the sources and uses of foreign exchange in the market.[9]

- **Improving the market's microstructure,** including by reducing market segmentation, improving the effectiveness of market intermediaries, and securing reliable and efficient settlement systems (Appendix I).

Disorderly exits

10. **The stabilization and development of the foreign exchange market becomes an especially challenging task when the exchange rate is floated under market pressure.** Under such circumstances, the authorities are often faced with conflicting objectives with regard to their presence in the market: on the one hand, there is a desire to intervene to

[8] Such restrictions may include outright bans on interbank trading or a requirement that all spot and forward market trades with customers have an underlying commercial transaction.

[9] See Section VI on sequencing.

Box 2. Disorderly Exits and Foreign Exchange Market Development: Country Examples

Country experiences highlight various steps that may be necessary during disorderly exits: (i) the institution of reporting requirements; (ii) the promotion of market making by banks (e.g., by requiring dealers to provide two-way bids); (iii) the institution of tight limits on open positions and even surrender requirements to curtail speculation (especially in the immediate aftermath of the exit); and (iv) the set up of clear communication strategy especially about policy objectives and strategies such as intervention policies and the precedence of exchange rate over other objectives (monetary, interest, or inflation targets).

The Argentinean authorities faced the challenge of operating a floating exchange rate regime with minimal experience in intervention and no market information at the time of its crisis-driven exit from its currency board in January 2002. During the currency board era, the authorities did not collect data on market turnover and net open positions, and the central bank rarely intervened in the market, which lacked experienced dealers. Thus, upon floating, the authorities established reporting requirements. The authorities, furthermore, imposed net open position limits and required banks to submit two-way bids three times a day. At the same time, the scarcity of foreign exchange, speculative activity, and unstable market conditions compelled the authorities to institute surrender requirements—first to the market, then to the central bank—and allow interbank trading only when it was supported by underlying customer orders.

When **Sri Lanka** was forced off its crawling band to a floating regime in January 2001, the authorities temporarily adopted exchange controls to limit an overshooting of the exchange rate. These included: constraints on corporates' forward transactions with banks and on prepayment of bills, a reduction in banks' net open position limits, and very close scrutiny of the banks' activities to monitor speculative activity. However, while these measures helped to contain depreciation at the peak of market pressures, they were not conducive to the development of the foreign exchange market. Hence, over time, the central bank phased out the controls, eased prudential limits on net open positions of banks, and revised its intervention guidelines to signal that intervention would take place only to smooth extreme short-term exchange rate volatility and build international reserves, and not to target the exchange rate level.

In **Turkey**, up until the disorderly exit from the crawling peg regime to a float in early 2001, the Central Bank of Turkey (CBT) historically had a dominant role in the foreign exchange market, being virtually the only market maker, quoting on all transactions and acting as counterparty in every transaction. Under an IMF-supported stabilization program, the CBT gradually withdrew from the market, forcing market participants to trade among themselves. Particular measures were taken to signal the authorities' commitment towards the floating regime and encourage foreign exchange market activity. First, in mid-August 2001, the CBT issued a press release to emphasize that it would not target a particular exchange rate level. Second, the CBT became more tolerant to large fluctuations in the exchange rate without intervening. In fact, there have been long periods without any CBT intervention in the market and recent data suggests that the interbank foreign exchange market turnover is growing rapidly (Guimarães and Karacadag, 2004). Finally, the CBT stepped up its surveillance activity to gather detailed market information that would provide better knowledge about volatile market developments or speculative behavior.

prevent exchange rate overshooting; on the other hand, they have a strong interest in signaling that official intervention will not be geared to defend a particular exchange rate level and preserve foreign exchange to maintain credibility. Country experiences with crisis-driven exits to floats underscore the need to signal the official commitment toward exchange rate flexibility, but also a readiness to resist disruptive exchange rate movements (Box 2). Some common practices have been to: (i) gradually renounce the market-making role of the central bank; (ii) remove various impediments to foreign exchange market operations; (iii) tolerate a higher exchange rate volatility whilst at the same time allowing interest rates to rise to counter market pressure; and (iv) develop comprehensive surveillance of market transactions in order to ascertain the underlying sources and direction of order flow.

III. Official Intervention in the Foreign Exchange Market

11. **The transition to a market-determined exchange rate creates the need to develop policies on the objectives, timing, and amounts of intervention.** Under a flexible regime, intervention becomes discretionary. Central banks still can and do intervene for several reasons, including to: (i) correct misalignment from the long run equilibrium; (ii) calm disorderly markets;[10] and (iii) accumulate reserves or supply foreign exchange to the market.

Misalignments

12. **The potential disconnect between exchange rate levels and macroeconomic fundamentals can create a role for intervention under floating exchange rates.** Market-determined exchange rates may deviate substantially from their "equilibrium values" implied by fundamentals in the short term, even in well-functioning foreign exchange markets. Like all other financial markets, foreign exchange markets are sometimes subject to failures. These include herding[11] and feedback trading[12] which are based on price movements rather than fundamentals and can reinforce price trends. These can subject the exchange rate to unwarranted and serially correlated changes over time. Moreover, when capital accounts are not fully liberalized or capital markets are not fully efficient, transitory shocks may lead to a high degree of volatility of the exchange rate due to the thinness of the market.

13. **Correcting such exchange rate misalignments is one of the most common rationales for central bank intervention under flexible exchange rate regimes.** Real exchange rate overvaluation can undermine export competitiveness and weaken the external position, while an undervalued exchange rate may create inflationary pressures. Moreover,

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[10] Characterized by illiquidity and sometimes market panic.

[11] That is to say, situations when market participants are heavily influenced by actions of others, especially large or well-informed players, rather than by market fundamentals.

[12] This is trading based on price movements. The momentum of the price change can create pressure for further price changes in the same direction.

erratic exchange rate movements and long-lasting misalignments can subject cost and income projections in the real sector to wide margins of error, inhibiting long-term planning and investment. Even without misalignment, sharp exchange rate movements and volatility may be costly from a political perspective. The exchange rate is often considered a symbolic and visible measure of the government's success in macroeconomic management, and may serve as a de facto nominal anchor for inflationary expectations for some time even after moving to a float. Intervention can also signal a shift in underlying government policies such as the fiscal stance in support of the exchange rate.

14. **Exchange rate misalignments, however, are difficult to detect.** There is no consensus on a methodology to estimate the equilibrium exchange rate (Hinkel and Montiel, 1999; Isard and others, 2001). Frequently used indicators include the nominal and real effective exchange rates, productivity and other competitiveness measures, the terms of trade, the current external account and balance of payments outlook, interest rate differentials, and parallel market exchange rates. A problem is that these indicators may not always allow policymakers to identify the degree of misalignment precisely enough to pinpoint the appropriate timing and amount of intervention.

15. **Similarly, short-term exchange rate volatility may not always warrant intervention, especially when it occurs in an orderly (liquid) market.** Volatility often reflects the market process of price discovery, and modest volatility provides useful signals to both policy makers and market participants. Efforts to smooth such volatility often end up suppressing useful market signals, sometimes leading to especially strong surprises. Indeed, several empirical studies have failed to detect measurable economic costs attributable to it.[13] Moreover, volatility—within limits—induces market participants to learn to cope with and manage exchange rate risks.

Disorderly markets

16. **The central bank may have reason to act when volatility reflects market illiquidity.** Acceleration in exchange rate changes, widening bid-offer spreads, and a sharp increase in interbank trades relative to customer-bank turnover may indicate market illiquidity, when predominantly one-way customer orders are difficult to match. Market illiquidity can have serious adverse effects on the real economy, if it persists, as it stifles trading. Under these circumstances, central bank intervention has the potential for jump-starting the market or tipping a perverse price trend in the reverse direction.

Intervention principles/constraints

17. **Even when the authorities detect exchange rate misalignment or judge volatility to be destabilizing, official intervention may not always be effective in containing them.** The empirical evidence on the effectiveness of intervention in influencing the exchange rate

[13] For example, Dominguez and Frankel (1993a), references therein and Rogoff (1999).

is mixed, and even where favorable evidence is found, evidence suggests that the impact of intervention on the exchange rate level may be short-lived. Some empirical studies even find that intervention tends to increase, rather than decrease, exchange rate volatility, though this may be the desired effect to achieve a certain exchange rate level objective.[14] Empirical analyses on intervention, however, need to be interpreted cautiously given the methodological problems in assessing the effectiveness of intervention.

18. **Exercising restraint in intervention during the transition to a flexible regime can help signal the official commitment to a market-determined exchange rate.** In particular, interventions that target a predetermined exchange rate level or path can undermine the credibility of the new, more flexible exchange rate regime. Where a band is introduced as part of a gradual transition, making full use of the bandwidth can help minimize intervention episodes. By entering the market infrequently, central banks can maximize the element of surprise and the likelihood of intervention's effectiveness, and build market confidence in the official commitment to flexibility. As investor confidence grows, policy pronouncements and the capacity to intervene (i.e., an adequate level of reserves) may suffice in most instances to achieve the desired change in the price trend, without an actual intervention operation.

19. **Another reason for selectivity in interventions is** that decisions on the timing and amount of intervention are highly subjective and subject to wide margins of error, given the challenge of detecting exchange rate misalignments and disorderly markets. Partly reflecting this, central banks in many advanced economies (e.g., Canada since 1998, Israel since 1997, New Zealand since 1985, and the United Kingdom since 1992) and in some emerging market economies (e.g., South Africa since 2000) have stopped intervening or greatly reduced the frequency of their interventions. The ECB too has only intervened under exceptional circumstances. Instead, verbal interventions seem to have been used more often (e.g., in the 2003 euro run-up).

20. **Transparency in intervention policies can help build confidence in the new exchange rate regime, especially in the aftermath of forced exits.** Many countries, among them the Philippines and Turkey, issued statements and published policy reports affirming their commitment to a market-determined exchange rate and that intervention would not be conducted to target a certain exchange rate level. Moreover, a public commitment to both the objectives of intervention and the criteria applied in its conduct enables market scrutiny of and accountability for the central bank's foreign exchange operations. The published intervention policies of Australia and Sweden are examples of the type of policies that can be

[14] In developing economies, Guimarães and Karacadag (2004) find that intervention increases short-term volatility in Mexico, but decreases it in Turkey. For empirical studies on advanced economies, see references cited in Guimarães and Karacadag (2004), including Hung (1997), Dominguez (1998), Cheung and Chinn (1999), and Beine and others (2002).

developed and articulated to the market to enhance the effectiveness of official foreign exchange operations.[15]

21. **Disclosing information on intervention with a time lag can also help market transparency and improve central bank accountability.** For example, the United Kingdom has a policy of disclosing information on intervention (e.g., amount, date of, and reasons behind the intervention, and data on official foreign currency holdings) in a monthly press release. The European Central Bank (ECB) reports intervention episodes in a monthly bulletin, although the amounts are not disclosed. The U.S. Treasury typically confirms interventions on the same day of intervention, and provides more detailed information, e.g., amounts of intervention, in a quarterly report. In Japan, the Ministry of Finance too reports on the amounts and timing of interventions.

Rules-based intervention

22. **Even in fully flexible exchange rate regimes, central banks cannot completely avoid regular interventions.** First, central banks often have a regular supply of foreign currency, e.g., because of income on foreign reserves and their role as banker to a government that borrows or receives grants in foreign currency. Sometimes central banks buy the foreign currency revenue of public sector (e.g., oil) companies or export boards. Second, central banks normally target an appropriate level of reserves requiring the regular purchase of foreign currency to maintain core reserve coverage ratios. In either case, interventions can be regular, preannounced, and rule-based to support the information flow to the market, reduce noise, and enhance the signaling of surprise interventions.[16]

23. **Indeed, international reserve management policies may need to be reevaluated upon the transition to a more flexible exchange rate regime.** On the one hand, the level of required reserves to maintain a flexible exchange rate may be less than the level needed to fix the exchange rate. Similarly, accompanying supervisory improvements for private sector foreign currency exposure may reduce reserves needed, while removal of capital controls may increase reserves needs. On the other hand, a higher level of reserves may increase market confidence, reduce the likelihood of crises, increase the effectiveness of intervention and hence lower exchange rate volatility, while allowing reserves to be invested in longer-term assets with higher returns.[17]

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[15] See Rankin (2001) and Sveriges Riksbank (2002).

[16] Auctions are a useful mechanism for transparently selling regular sizable supplies of foreign currency to the market (as e.g., done in Venezuela).

[17] *Issues in Reserve Adequacy and Management*, (SM/01/311, 10/15/01), Bussière and Mulder 1999, Hviding and others, 2004.

24. **Some central banks intervene also for exchange rate management purposes on a rules basis.** Establishing a track record in operating a flexible exchange rate regime with a rules-based intervention policy may help central banks gain the experience and credibility to intervene on a more discretionary basis over time. Brazil, Mexico, and Turkey all implemented rules-based policies to signal their commitment to a market-determined exchange rate while achieving various other intervention objectives.

25. **In practice, however, central banks do, over time, need the policy option of some flexibility in the conduct of foreign exchange operations to respond to potentially volatile market conditions.** Thus, the few countries that have implemented only rules-based policies ultimately have abandoned or modified the rules to allow for a greater degree of discretion (e.g., Canada and Brazil). Experience has shown that such rules based intervention is, in most cases, a transitory policy designed to restore credibility.

Disorderly exits

26. **Under a disorderly exit the unique challenge is to manage the overshooting of the exchange rate.** When the exchange rate is floated under stress, for the situation to stabilize relatively rapidly, the creation of two-way risk has often been essential. Some of the rapidly stabilizing cases of disorderly exits have sometimes involved acceptance by the authorities of significant overshooting on the downside, followed by some reining in of the overshooting exchange rate. This can highlight two-way risk, break through one-way expectations and signal that the "worst is over" (Croatia, Korea). The reining in can take place through actual market interventions, interest measures, verbal intervention, or reversal of some capital controls that squeeze market parties.

IV. Monetary Policy Framework and Nominal Anchor

27. **Monetary control is the most important function of monetary policy, but particularly so in the immediate aftermath of exits from pegs and when the exit is disorderly.** Uncertainty over the level and volatility of the exchange rate and underlying economic policies under the new flexible regime inherently destabilizes expectations. Rising inflation following depreciation can destabilize expectations, and uncertainty about fiscal revenue and GDP growth can all contribute to doubts about monetary policy and the new "equilibrium" exchange rate. In this light, effective control of systemic liquidity is critical to avoid the prospect of "too many local currencies chasing dollars," which in turn, can create a depreciation-inflation spiral.

28. **Under exchange rate flexibility, the burden of liquidity management shifts to instruments other than foreign exchange intervention, which often serves as de facto liquidity management operations under exchange rate.** Hence, while monetary policy instruments—including standing facilities, open market operations, and repurchase agreements—and liquid money markets are important for managing systemic liquidity under

any type of exchange rate regime, they are vital to sustaining monetary control under a flexible exchange rate regime.

29. **Exiting a peg thus creates the need to replace the exchange rate with another nominal anchor and to redesign the monetary policy framework around the new anchor.** The two tasks, in turn, require a substantial amount of capacity and credibility building, and thus planning ahead for the transition is critical to achieving an orderly exit. While a few central banks can maintain flexible regimes without having a formal nominal anchor (e.g., in the Eurozone, Switzerland, and the United States under independent floats, and Singapore under a managed float)[18], the viability of this approach depends on the authorities' high level of credibility, needed to maintain price stability without a formal anchor. This high level of credibility is difficult to build quickly, especially if a country had relied on a rigid exchange rate anchor until the exit. To preserve confidence in the monetary policy framework, an alternative nominal anchor would be desirable, particularly in countries with histories of high inflation. The Board has emphasized the importance of instituting an alternative nominal anchor such as inflation targeting in these circumstances.[19]

30. **The difficulty of developing a credible alternative nominal anchor to the exchange rate has caused many countries to relinquish its anchor role—and therefore fixity—only gradually.** The prime example of this has been the use of a crawling band as an intermediate regime for transitioning to another nominal anchor, potentially over a long period. The band usually has been set symmetrically around a crawling central parity and gradually widened over time as the tension between the exchange rate and the inflation rate objectives was eventually resolved in favor of the latter. Chile, Hungary, Israel, and Poland successfully made the transition using crawling bands that were gradually widened in response to increases in capital inflows (Box 3). Lessons from their experiences include:

- **The narrow scope for exchange rate flexibility in the early stages of the transition can constrain monetary policy independence.** This will place the burden of aggregate demand management on fiscal and incomes policies. Hence, fiscal restraint and wage flexibility are essential to the credibility of the intermediate regime and to the successful transition to the new nominal anchor.

- **Restricting exchange rate movements within a narrower intervention band relative to the publicly announced bandwidth can create the perception of an implicit exchange rate guarantee and reduce the sensitivity of market**

[18] These central banks, of course, pay close attention to inflation, and successfully so, but they also take into account other factors than solely the price level in setting monetary policy, including monetary and real sector developments.

[19] Summing Up by the Acting Chairman. *Exchange Rate Regimes in an Increasingly Integrated World Economy-Further Considerations (BUFF/99/145, 11/19/99).*

participants to exchange rate risks. Two-way exchange rate movements are necessary to give participants an incentive to develop hedging instruments and manage exchange rate risks.

- **In the context of maintaining two nominal anchors—i.e., the exchange rate and the inflation target—public confidence in the commitment towards the latter can be bolstered by conveying clearly the priority of price stability in the event of a conflict between the two objectives.** In fact, all four countries were able to subordinate the exchange rate objective to the inflation target—either explicitly or implicitly—while maintaining crawling band regimes.[20]

31. **Many countries moving to flexible exchange rate regimes have favored an inflation targeting framework over money targeting.** Indeed, as early as 1999, the Executive Board noted that inflation targeting could be appropriate for developing countries with a flexible exchange rate and sufficient institutional capacity.[21] In more recent years, a broad consensus seems to be emerging on an inflation target being a more reliable and effective nominal anchor (Khan, 2003). While money targeting can serve as an alternative nominal anchor after exiting a peg, the weak relationship between monetary aggregates and inflation limits the effectiveness of money targets.[22] The ready observability of inflation also allows the rapid build-up of credibility as the experience of Brazil in 1998 underscored.

32. **Countries that have managed orderly exits from pegs have generally adopted inflation targeting over long time horizons.** The lengthy transition periods have reflected in part the time required to fulfill the necessary institutional requirements and macroeconomic conditions including: (i) a central bank mandate to pursue an explicit, publicly announced inflation target as the overriding objective of monetary policy; (ii) central bank operational independence and accountability; (iii) transparency in the conduct and evaluation of monetary policy actions that promotes accountability; (iv) a reliable methodology for forecasting and measuring inflation and its relationship with other macroeconomic

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[20] Many countries, while initially targeting both the exchange rate and the inflation, did announce the intention to move to a full-fledged inflation targeting framework at a specified future date; this has to some extent allowed them to bring forward the benefits of the more rigid nominal anchor.

[21] *Seminar on Inflation Targeting—Policy Considerations and Implications for IMF Conditionality* (SM/99/298, 12/17/99)

[22] The instability of demand for money has caused many countries to use short-term interest rates as operating targets. Short-term interest rates have the advantage of signaling and transmitting monetary policies more effectively given the higher frequency and greater ease with which they can be monitored. Notwithstanding this, inflation targets have emerged as the most viable alternative nominal anchor to the exchange rate.

Box 3. Experiences with Crawling Bands

Chile, when it abandoned its fixed peg in 1982, adopted a crawling peg mainly to preserve external competitiveness rather than anchor inflationary expectations, i.e., the central parity was set to depreciate according to past inflation (Morande, 2001a and 2001b). During the 1980s, a band was introduced around the central parity, which was gradually widened to ±5 percent by 1989. Strong capital inflows in the 1990s, however, created tensions between the exchange rate and inflation objectives, which prompted the authorities to prioritize the latter. Thus, with the announcement of an explicit inflation target in 1990, achieving price stability became a priority. In particular, whenever there was a conflict between the inflation target and the exchange rate objective, the central bank acted in favor of the former (Schmidt-Hebbel and Werner, 2002; Morande, 2001a and 2001b; and Debelle, 2001). The prioritization of the inflation target helped to bolster public confidence in the authorities' proposed inflation objective. Furthermore, starting from September 1998, the rate of crawl was revised to follow the expected future inflation rather than past inflation, which reflected a shift in the monetary policy approach to anchor inflationary expectations. To allow greater independence of monetary policy, the crawling band was gradually widened—to ±10 in 1992 and ±12.5 percent in 1997. This greater exchange flexibility created strong incentives for developing forward and futures markets in foreign exchange. The availability of hedging instruments, diminished inflation pass-through and reduced inflation, in turn, supporting the abandonment of the band in 1999 and the adoption of full-fledged inflation targeting in 2000. Analyses of Chile are unanimous in their emphasis on fiscal prudence as a key ingredient in the country's success in disinflation and transition to a new nominal anchor (Williamson, 1996, and Morande, 2001a and 2001b).

Hungary moved from a fixed regime to crawling peg (with ±2.25 percent band) in 1995 with the dual purpose of establishing a nominal anchor and maintaining external competitiveness (Varhegyi, 2001). The rate of crawl was forward-looking and based on the targeted (rather than realized) inflation rate. The risk of an overvaluation from inflation exceeding its target was minimized by a large initial devaluation. As in Poland, the authorities responded to upward exchange rate pressure generated by capital inflows with sterilized intervention, widening the band to ±15 percent, and adopting an inflation target in 2001. Restraint in fiscal and incomes policies to temper aggregate demand were critical to the sustainability of the crawling peg, the success in disinflation, and the transition to inflation targeting pre 2001. Following the move to inflation targeting, monetary policy has faced conflicting objectives, with a high fiscal deficit and capital inflows pressuring the exchange rate and leading to interventions, suggesting that the band was not sufficiently wide to deter speculative flows or provide the necessary degree of monetary policy independence to effectively pursue price stability.

Israel adopted a crawling band regime and began announcing inflation targets at the same time in late 1991 (Williamson, 1996). The band was first set at ±5 percent around the crawling parity and subsequently raised to ±7 percent in 1995 in response to strong capital inflows. The rate of crawl was set on a forward-looking basis to anchor inflationary expectations. From 1991 until 1996, the central bank maintained an inner, intramarginal, intervention band aimed at keeping the exchange rate close to central parity (Bufman and Leiderman, 2001). The inner band, however, led market participants to perceive minimal exchange rate risk and to shift to foreign currency borrowing. The abandonment of the inner band in 1996, with an asymmetric widening of the band to 28 percent in 1997 (21 percent in the upper limit and 7 percent in the lower limit), and the central bank's willingness to allow the shekel to depreciate markedly in 1998 heightened the perception of exchange rate risk and lowered the demand for foreign currency loans (Leiderman and Bufman, 1999).

Poland made the transition from a fixed exchange rate to inflation targeting during the 1990s (Kokoszczynski, 2001). In 1990, the exchange rate was fixed to the U.S. dollar as part of an exchange rate-based stabilization program. Concerns over real exchange rate overvaluation prompted the switch to a fixed peg against a basket of currencies in May 1991, followed soon after by a shift to a forward-looking crawling peg in October 1991 through mid-1995. Heavy capital inflows created tension between external and domestic price stability objectives however, leading the authorities to introduce a ±7 percent band around the crawling parity to give monetary policy greater independence. The width of the band was gradually widened until it was abandoned in 2000, but even before then the inflation target had become the nominal anchor under the inflation-targeting framework adopted in 1998.

aggregates; (v) a forward-looking operating procedure which systematically incorporates forecasts into policy actions and responds to deviations from targets; (vi) a supportive fiscal policy; and (vii) a well regulated, supervised, and managed financial sector [23] (Eichengreen and others, 1999; Mishkin, 2000; Carare and others, 2002; and Fraga and others, 2003).

33. **In the interim, until these preconditions are established, many countries have followed various versions of the monetary targeting approach (viz. either targeting base money, broad monetary aggregates, or bank reserves).** This is especially so for disorderly exits. For instance, during the Asian crisis, in the immediate aftermath of the forced exits, several of the crisis-hit countries adopted monetary targets to quickly establish a new nominal anchor and restore policy credibility. In Korea, Thailand, and the Philippines, the monetary targeting approach laid the ground work for the fairly rapid move toward the inflation targeting approach. Brazil has also shown a similar pattern. Conversely, in Indonesia, the transition from the newly-adopted monetary targeting to inflation targeting has been slower as many of the preconditions have been less easy to implement, owing to the greater severity of the crisis.

34. Regardless of whether preconditions for full-fledged inflation targeting are met, many of its elements are critical to building a reliable monetary policy framework. Thus, whatever type of monetary policy regime that is adopted, it should accord: (i) uncontested priority to price stability over competing objectives; (ii) provide operational independence to the central bank; (iii) establish transparency and accountability for the conduct of monetary policy; and (iv) demonstrate a capacity to forecast inflation and produce policy actions consistent with maintaining price stability. Where one or more of these elements are absent, monetary authorities would stand to benefit from developing them. In this regard, the popularity of inflation targeting reflects a general consensus on the desirability of a nominal anchor and its embodiment of best practices in monetary policy formulation and implementation.

V. Prudential Regulation and Management of Exchange Rate Risk

35. **Floating an exchange rate moves exchange rate exposure from the public to private sector balance sheets, as central banks no longer stand ready to intervene at fixed rates.** [24] Indeed, disorderly exits often come about because of unmanageable imbalances in the public sector balance sheet including the contingent liability involved in fixing the exchange rate. Conversely, to bring about an orderly exit requires careful

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[23] Summing Up by the Acting Chairman, *Inflation Targeting—Implications for IMF Conditionality* (BUFF/00/11, 1/5/00) and *Practical Issues in the Adoption of Inflation Targeting by Emerging market Countries* (SM/00/199, 9/1/00),

[24] *The Balance Sheet Approach and Its Applications at the Fund* (SM/03/222, 7/1/03)

management of the transfer of exchange rate risk back to the private sector and close scrutiny of existing private sector exposures and systems to manage exchange rate risk.[25]

36. **Determining the scale and scope of exchange rate risk exposures in the financial and nonfinancial sectors is therefore another key area for countries planning an orderly exit from pegs.** Exchange rate risk exposures of the private sector can have an important bearing on the pace of exit,[26] the type of flexible exchange rate regime adopted (e.g., band versus float), and official intervention policies. Early analysis of and improvements in the management of exchange rate risk are particularly important in economies where dollarization and currency mismatches are high. Even when these risks are modest early on, market participants need to develop the capacity to measure and monitor them to avoid a build-up of exposures over time.

37. **Evaluating exchange rate risk exposures, in turn, involves detailed balance sheet analysis—focusing on currency composition of balance sheets, and also on the maturity, liquidity, and credit quality of foreign currency assets and liabilities.** The East Asian crisis, for example, showed how unhedged foreign exchange borrowing by the corporate sector can translate into massive losses for creditor banks and a surge in demand for foreign currency. Banks often closely control foreign currency liabilities and assets, but even when these are matched, the use of short-term foreign currency funds to finance long-term foreign currency loans to unhedged corporations or households causes exchange rate risk of borrowers to translate into sizable credit and liquidity risks for banks.

38. **Two related risks also require close attention:** (i) banks can have maturity mismatches in their foreign currency books that expose them to foreign currency liquidity risks, and (ii) corporate and banking sector exposure to interest rate risk can limit the extent to which the central bank can use interest rates instead of interventions in the foreign exchange market. Corporations in developing and emerging market countries have particular difficulty in off-loading interest rate risk: their assets are not interest bearing, while they may not be able to obtain long-term fixed rates for their liabilities.

39. **Recognizing these risks, the Board has highlighted the need to disclose information on and regulate the combination of maturity and currency mismatches in the banking system, as well as currency risk indirectly borne by banks as the result of**

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[25] The public sector remains exposed to risks relating to its foreign currency-denominated public debt.

[26] Large foreign debt stocks of the public sector are sometimes a factor in delaying the exit as the authorities are concerned at the debt servicing implications of a depreciation. However, delaying a downward adjustment in the exchange rate usually worsens the long-run debt dynamics (by leading to lower growth, and higher costs related to the support of the exchange rate).

credit risks in their portfolios.[27] The Board has also stressed that interest rate risk in the corporate sector is a key source of vulnerability that warrants close monitoring.

40. **For developing better systems to manage public and private sector exchange rate risk, it is useful to** distinguish **three key elements—similar elements are relevant for interest rate risk management:**

a. *Information systems required to monitor various sources of exchange rate risk*, including the sources and uses of foreign currency funds (Delgado and others, 2002). This requires formal reporting requirements that specify the reporting format and frequency, and in some instances, the definition and methodology for measuring foreign exchange risk. Data reflecting indirect exchange rate risk exposures of banks to borrowers should also be closely monitored through regular surveys of corporate sector exposures or by requiring the borrowers to provide information on their foreign currency incomes, other foreign debts, and hedging operations. The government from its side could undertake a risk audit of the wider public sector, including the central bank and parastatals, that could identify and quantify foreign exchange risks, and be transparent in reporting its risk including foreign exchange guarantees to public and private enterprises and its debt stock that is indexed to foreign exchange movements.

b. *Formulas and analytical techniques to measure exchange rate risk.* Measures of exchange rate risk include accounting based measures[28] and more forward-looking risk management techniques such as value-at-risk models (e.g., using historical simulation or a Monte Carlo approach) notably for cross currency risks[29] and stress testing (Blaschke and others, 2001) for more difficult-to-assess currency risks. The

[27] The Acting Chair's Concluding Remarks: *Liquidity Management* (BUFF/04/93, 5/24/04).

[28] Traditional accounting measures of the overall foreign currency position include the gross aggregate position (the sum of all net short and all net long positions), the net aggregate position (the absolute value of all short positions *less* all long positions) and the short-hand position (the greater of the sum of short positions and the sum of long positions). Accounting measures of exchange rate risk, however, have important drawbacks—they do not fully account for the correlation in currency movements or the relative size of variations (e.g., stable versus volatile) between currencies which result in open positions, and they treat currency risk as being independent from other risks, which is usually not the case (Abrams and Beato, 1998).

[29] Under fixed exchange rate regimes (such as regional currency arrangements), cross-currency risks require careful management as well.

measurement of exchange rate risks may either be based on institutions' internal models or on standard systems prescribed by the supervisory authorities.[30]

c. *Internal risk policies and procedures.* These include, among other things, setting internal limits on concentration in foreign currency loans, allocating specific provisions for the additional credit risks associated with foreign currency lending, requirements for foreign earnings or collateral for borrowers in foreign currency and analyzing the potential impact of exchange rate movements on foreign currency borrowers. (Delgado and others, 2002). Establishing strong internal controls—including a written policy on foreign exchange operations, exposure limits, risk management procedures, and a system of monitoring compliance where front and back offices are fully separated—is also critical (Abrams and Beato, 1998). In addition, banks could also encourage their clients to hedge against exchange rate risks.[31] Similarly, the government should be more proactive in developing systems to manage foreign exchange risks in public enterprises. This is especially relevant as expectations that such enterprises will be bailed out is likely to erode their incentives to manage foreign currency risks appropriately and expectations of the fiscal costs of these bailouts can create further uncertainty in the foreign exchange markets.

41. **Internal risk management systems need to be complemented by the prudential regulation and supervision of foreign exchange risk.** Prudential measures may include: (i) limits on net open positions (as a percent of capital); (ii) foreign currency lending (as a percent of foreign currency liabilities); and (iii) overseas borrowing and bond issuance (as a percent of capital).[32] Other forms of prudential measures include limits on the range of foreign exchange operations banks are allowed to perform through licensing requirements, capital requirements against foreign exchange lending or risk, and the issuance of regulations

[30] For instance, the United States requires banks to use internal models; banks in diverse countries such as Australia, Bahrain, Canada, Czech Republic, Malta, Netherlands, Slovenia, and Switzerland, have the option of using internal models with the central bank's approval or the standardized approach.

[31] In Hungary, banks have encouraged their clients through promotion campaigns to hedge exchange rate risks. As a result, the practice of hedging has slowly increased. However, dynamic hedges on a yearly basis only cover a limited part of balance sheet risks and are no substitute for natural hedges (*Liquidity Management,* SM/04/159, 4/23/04).

[32] The Basel Committee recommends a capital charge of 8 percent on the open position based on the short-hand method and recommends that the net open position does not exceed 2 percent of capital, although countries with greater risk exposures may need to adopt more conservative limits (Basel Committee of Banking Supervision, 1996). All open position calculations should include net spot and forward positions, guarantees, and net future income/expenses not yet accrued, but already fully hedged.

or guidelines on the design of banks' internal control systems. Prudential measures vary widely across countries.[33]

42. Foreign currency lending to sectors that do not generate foreign currency revenues or are exposed to volatile returns (e.g., the property sector) warrants particular vigilance. Supervisors in some countries adopt prudential controls such as minimum credit-ratings requirements for external borrowing by domestic corporations (e.g., Chile in the 1990s), and measures that impose different limits on long and short positions in foreign currency (e.g., Malaysia in 1994). Furthermore, some have imposed tighter reserve requirements on banks for foreign currency deposits relative to domestic currency deposits (e.g., Israel, Russia). In light of the potential cost to the public sector and the difficulties in monitoring the extent of currency exposure of borrowers, staff has suggested the imposition of strict limits on foreign currency lending to borrowers without foreign currency cash flow, especially in the absence of data for adequate monitoring.[34] In general, improving the capacity to enforce regulations can help ensure that regulations are complied with and effective. In the same vein, developing a risk-based supervisory system with a more proactive approach can help ensure that the supervisee's internal control systems are adequate and properly enforced.

Derivatives

43. **Facilitating the development of risk-hedging instruments by lifting controls on forward market activity can be a double-edged sword.** In addition to improving risk management capacities, it can support foreign exchange market development. However, in the early stages of the exit it is often feared that such instruments are misused and disturb the ability to engineer an orderly exit. After all, such instruments have been used to take highly leveraged bets on unsustainable exchange rates (e.g., Thailand 1997). Several considerations can help to guide the fruitful use of such instruments. First, such instruments require financial institutions (and corporations) that have achieved a certain level of sophistication in risk management and the supervisory authorities that are capable of conducting risk-based supervision.[35] Second, close monitoring of the use of the instruments to prevent their use to

[33] Many countries impose limits on overall foreign exchange positions. For example, in a sample of 41 countries (from the IMF's Banking Supervision Database), 23 impose limits on overall positions and 13 on single currency positions, 14 have capital requirements, and 13 have other types of measures. In this sample, overall open position limits range from 10 to 60 percent of bank capital. Typical limits amount to 15 percent.

[34] *Liquidity Management* (SM/04/159, 4/23/04). For highly dollarized economies, this venue is not practical and using capital charges is more appropriate.

[35] In the mid-1980s, Chile authorized the operation of a forward market in conjunction with widening its crawling band regime, allowing commercial banks to trade foreign exchange options with maturities between 15 to 180 days with market-determined forward rates, which helped deepen the forward foreign exchange market.

(continued)

push a normally sustainable situation over the edge by sizable leveraged bets ("big elephants upsetting small ponds") is important. Third, also critical are the standardization of derivative products traded among banks, and the presence of accounting standards for fair valuation and a reliable legal system for contract enforcement. Fourthly, the central bank should promote market transparency and, with other regulators, promote high reporting standards.

Disorderly exits

44. **Improving risk management under market pressures is a challenge, as is the case with other recommended prerequisites for floating.** Country experience suggests that it is especially important to establish information systems rapidly under such conditions, to gauge the susceptibility to (further) interest and exchange rate movements on outstanding stocks of obligations and to changes in flows (e.g., interbank credit terms).

VI. Pace and Sequencing of Exit to Exchange Rate Flexibility

45. **In previous discussions, the Board has stressed that countries with pegged arrangements are well advised to develop an exit strategy and prepare early on.**[36] The Board has noted that "the best time to move to greater exchange rate flexibility would be at a time of relative calm in the exchange markets or when there are pressures for appreciation of the currency."[37] This still leaves important choices on the pace and sequencing of exiting pegs.

46. **The degree of institutional and market development is a key determinant of the appropriate pace of exit from pegs.** In the absence of the supporting institutions and markets, a *gradual* exit strategy may be more appropriate to build these institutions.[38] A gradual approach reduces the risk of excessive exchange rate volatility and its potentially adverse effects on inflationary expectations. It also allows the foreign exchange market to

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[36] Summing Up by the Acting Chairman, *Exchange Rate Regimes in an Increasingly Integrated World Economy–Further Considerations (BUFF/99/145, 11/19/99).*

[37] Concluding Remarks by the Acting Chairman, *Exit Strategies-Policy Options for Countries Seeking Greater Exchange Rate Flexibility (BUFF/98/11, 2/6/98).*

[38] However, some countries exited in one step from fixed pegs to floats, taking advantage of foreign exchange inflows over a sustained period and relying on increased market liquidity to augment foreign exchange operations and deepen the market. For example, Bangladesh and Sudan in mid-2003 exited from fixed pegs to managed floats against a background of sustained current and capital account inflows that boosted foreign exchange liquidity.

deepen through the mutually reinforcing relationship between exchange rate flexibility and foreign exchange activity.

47. **A rapid exit strategy offers important advantages, provided that the institutional underpinnings for operating a floating exchange rate are in place.** *A rapid* approach—if undertaken from a position of macroeconomic strength—can signal the commitment towards greater exchange rate flexibility more credibly compared to a gradual approach. It also provides greater discretion on foreign exchange intervention: the absence of a commitment to a predetermined exchange rate path or bandwidth allows the central bank to limit its interventions and conserve its foreign exchange reserves.

Gradualism: options

48. **Gradualism involves moving towards a free float in measured steps, whereas a rapid approach involves fewer intermediate steps, if any.** Options for a *gradual* transition toward flexibility include:

- *Moving from a single currency to a basket currency peg (e.g., based on trade weights),* which can reduce the transmission of external shocks to the domestic economy and tempers the effective exchange rate's exposure to potentially erratic movements of a single currency anchor.

- *Shifting to a crawling peg regime against a basket of currencies,* which can help preserve external competitiveness in the presence of a persistent inflation differential between domestic inflation and that of the trading partners.

49. **Using variants of pegged regimes rather than moving to a float in one step has the advantage of being easier to operate than wide exchange rate bands and floats.** However, they continue to constrain monetary policy and can be difficult to sustain under capital mobility.

50. **Moving to an exchange rate band—horizontal or crawling—can provide greater exchange rate flexibility and monetary policy independence.** This can be achieved by introducing a sufficiently wide band around the existing (central) parity or by adjusting the exchange rate level and then introducing a band around the new parity. To the extent that the exchange rate is under continuous upward or downward pressure, adjusting the level first may be necessary to ensure that the flexibility provided by the bandwidth is not quickly exhausted by a potential misalignment. The width of the band will reflect the trade-off between the costs of exchange rate volatility and the benefits of monetary policy independence.

Pace: key considerations

51. **The market's exposure to foreign exchange risk and capacity to monitor and manage exchange rate risk are important inputs into determining the pace of exit.** Risk identification and management systems, and prudential regulation of these risks, help minimize market vulnerability to potentially large exchange rate movements. Information on these risks and their controls can help stabilize expectations of exchange rate movements. However, if foreign exchange exposures are low, or the exchange rate is not fundamentally misaligned, capacity building need not delay a gradual increase in exchange rate flexibility. A flexible exchange rate itself can help increase market awareness of exchange rate risks and better prepare for further exchange rate flexibility.[39]

52. **The pace of exit also needs to take into account the openness of the capital account (see further below).** For example, it may be difficult to pursue a gradual exit strategy under conditions characterized by large and volatile capital flows. By contrast, a less open capital account would make it easier to operate variants of pegs or manage the exchange rate within a band.

53. **There may be only a limited window of opportunity, a period of tranquility where the peg can be exited without sharp movements in the exchange rate, and when experience with and institutions to support floating can be built.** [40] An example of sudden changes in the environment are disorderly exits in neighboring countries, especially close trading partners. Indeed, both during the Asian crisis and more recently in Latin America, disorderly exits have rippled through the regions, highlighting the importance of making use of tranquil periods and careful evaluation of the risk in delaying.[41]

54. **Whatever the exit strategy, it is essential that each step forward aims to create two-way risk in exchange rate movements.** For example, when a band is used, the band should be wide enough to ensure that the exchange rate moves in both directions around the central parity and creates the perception of exchange rate risk. A move to a narrow band

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[39] Flexibility can be increased asymmetrically to enhance risk awareness. For example, Israel increased the bandwidth of its crawling band regime in an asymmetric fashion in mid-1997, which increased the market's perception of downward exchange rate risk and contained their foreign exchange exposures (Bufman and Leiderman, 2001).

[40] Given the costs of a disorderly exits, there are strong advantages to exiting in a period of relative calm even if this is not perhaps the optimal time.

[41] For example, those Latin American economies that have continued to maintain relatively fixed arrangements have been impacted by the move to floating first by Brazil and then Argentina (itself pressured by Brazil's move) in recent years. This has led to further disorderly exits, for instance in Uruguay in 2002.

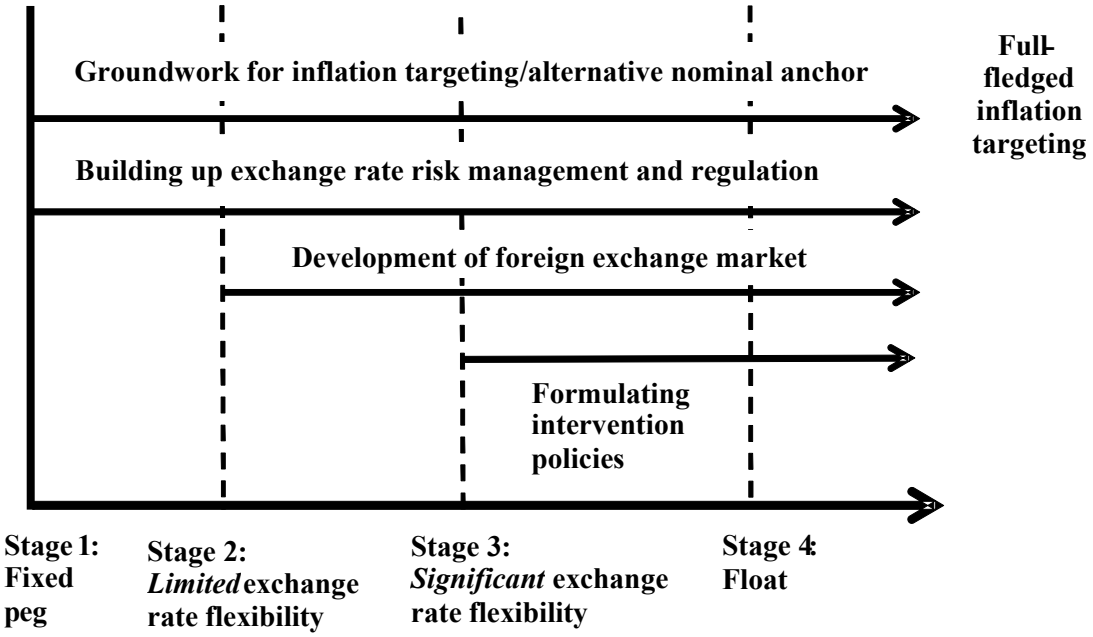
under persistent upward pressures can result in the exchange rate hitting the upper limit of the band, forcing the monetary authorities to either defend the band or widen the bandwidth further. Frequent revisions in bandwidth, in turn, can impair market credibility and induce speculative pressures to test the band limits. These issues become more pressing with greater capital account openness. [42]

55. **The absence of full-fledged inflation targeting framework as an alternative nominal anchor should not preclude a rapid exit strategy, provided that there is a robust commitment towards price stability.** The building blocks of inflation targeting—such as fiscal discipline, operational independence of the monetary authorities to pursue low inflation, credible steps to contain inflationary pressures, and transparency and accountability—are fundamental to the success of any monetary policy regime regardless of whether inflation targeting is formally adopted. Indeed, some countries floated their currencies relatively quickly and maintained sound monetary policies, while fulfilling the preconditions for inflation targeting. For example, Mexico and Turkey, which were forced to float in one step, used monetary targeting as an interim strategy prior to adopting inflation targeting. Moreover, if monetary policy independence is the underlying motivation behind the exit, a quick pace toward exchange rate flexibility would support this objective. Some countries, faced with heavy capital inflows under pegs, accelerated the pace of exit to enhance monetary policy flexibility against inflationary pressures (Box 3).

56. **Early preparation for an exchange rate float can bolster the chances of success of the exit strategy—gradual or rapid.** Many of the operational areas require substantial information on and management of foreign exchange risk, and increasing data on balance of payments developments. These steps too can be undertaken early on, and are useful even when not considering immediate moves to a float. The second stage may involve allowing some exchange rate flexibility to stimulate foreign exchange market activity, and continuing to develop other operational areas. Intervention policies can be addressed at a relatively later stage, when greater exchange rate flexibility is embraced (Figure 3).

[42] To address the disadvantages associated with gradualism, the Bank of Israel broke away from the previous trend of restrained increases in the bandwidth of the crawling band (about 2–3 percent increase in every step during 1989–1995) by widening the band from ±7 percent to a total of 28 percent in June 1997 (Frenkel, 1997).

Figure 3. Preparing for an Orderly Exit from a Peg



Sequencing capital account liberalization and exchange rate flexibility

57. **There are also clear tradeoffs involved in the sequencing of exchange rate flexibility and capital account liberalization.**[43] Introducing exchange rate flexibility before capital account liberalization has the advantage of enabling the economy to absorb capital account shocks at a lower cost to the real economy than would be possible under exchange rate fixity. By contrast, liberalizing the capital account can help offset transitory current account shocks, expand the instruments available for risk management, and deepen the foreign exchange market, which is important for operating a flexible exchange rate. Accordingly, when an exchange rate is floated before the capital account is liberalized,

[43] The successful liberalization of the capital account itself depends on a wide range of issues related to the economy, financial sector stability and reform, and sequencing issues, which are explored in detail in Ishii and others (2002). The Board among other has highlighted the trade-off between capital controls and prudential requirements. In discussing capital controls, the Board noted that such controls, particularly on short-term inflows, may temporarily and partially substitute for full-fledged prudential arrangements as building effective regulatory and supervisory institutions for financial markets may take a long time. In terms of sequencing with financial sector reforms, the Board agreed that capital account opening and financial sector reforms are ongoing and interrelated processes. Summing Up by the Acting Chairman, *Country Experiences with the Use and Liberalization of Capital Controls* (BUFF/99/ 124, 9/23/99).

intervention policies may need to help offset temporary current account shocks to limit excessive real exchange rate volatility, while extra care is needed to promote risk management and a functioning exchange market.

58. **The emerging market experiences over the last decade highlight the risks of opening the capital account before adopting a flexible exchange rate.** Many countries were forced off pegs after sudden reversals of capital flows under open capital accounts (e.g., Mexico in end-1994, Thailand in July 1997, and Brazil in early-1999). Others faced heavy inflows and upward pressure on pegged rates and had to allow exchange rate flexibility to avoid overheating the economy (e.g., Chile and Poland during the 1990s). Thus, even under favorable economic conditions, opening the capital account before introducing exchange rate flexibility can destabilize domestic liquidity conditions, create macroeconomic imbalances, and precipitate speculative attacks.[44] An example of a country that commenced with liberalizing the exchange rate regime is Uganda which waited with capital account measures till after the floatation (Box 4). New Zealand is an example of a country that successfully moved on both fronts simultaneously. Chile's capital account liberalization also moved in parallel with the exchange rate liberalization, but in a very gradual fashion (and not always exactly in the same direction), and using market based controls (Le Fort 2004).

59. **Even when exchange rate flexibility takes precedence, the direction and composition of capital account liberalization has macroeconomic risk implications and is the subject of important policy decisions.** Fundamentally, a substantial asymmetry in the openness of the capital account can introduce an upward (or downward) bias in the value of the exchange rate relative to its long-term equilibrium value. Thus, the transition towards exchange rate flexibility can be aided by removing or strengthening existing asymmetries in the openness of the capital account to facilitate an orderly correction of any potential misalignment in the exchange rate upon flotation. Following successful flotation remaining controls can be gradually removed.

60. **Planned exits are nevertheless not necessarily the most durable exits.** Of the 68 countries that exited under pressure (of the sample described in Box 1) only 16 reversed course during the observation period and after a median period of 33 months. In contrast, of the 53 countries that made an orderly exit, nearly half (25) reversed their exit and did so after a relatively short median delay of 10 months. This may reflect that a reversal is more easy under orderly conditions as well. Appendix II details experiences of selected countries that experienced a reversal. Both macroeconomic conditions and a lack of institutions can

[44] More recent empirical evidence confirms the risks associated with premature capital account liberalization. For example, Bubula and Otker-Robe (2003) find that pegged regimes are more prone to crises than floats, especially for countries that are exposed to capital flows.

Box 4. Sequencing the Reforms: Country Examples

New Zealand: In the mid 1980s, New Zealand successfully used a "big bang" approach and moved, in the span of a couple of years, from a highly regulated system with a pegged exchange rate to a very liberal environment with an open capital account and a floating exchange rate. In particular, in 1985 (after pressures on the exchange rate in the previous year), New Zealand moved from pegging the exchange rate to a trade-weighted basket of currencies to floating the New Zealand dollar. In 1984, an extensive process of financial liberalization and deregulation had begun that included the elimination of basically all exchange controls, including some remaining current account controls; a move to indirect monetary policy instruments; several measures giving the central bank the independence to achieve its main goal, price stability; and steps to open entry into the banking system. At the time of flotation, the central bank retained the right to intervene in the foreign exchange market, but has used this right only very infrequently. Following the move to floating, the volatility of the capital flows and to some extent the exchange rate increased, but with the help of indirect monetary policy instruments, the authorities have been able to manage the effects of this volatility on inflation.

Chile: In Chile, the very gradual change to a floating regime (Box 3) was completed successfully in 1999: e.g., in 2001–02 the exchange rate system withstood well the contagion pressures from Argentina and Brazil. The change to a floating exchange rate regime was followed by the introduction of a full-fledged inflation targeting framework in 2001. Throughout the period, the authorities maintained capital controls, but gradually easing them in 1992 after an initial intensification. The controls in place in the 1990s were primarily market based, taking the form of unremunerated reserve requirements for capital inflows. The market based controls were effectively eliminated in 1998, but it was not until 2001, that all controls were abandoned, well after the change in exchange regime. Controls on the use of derivatives were loosened earlier to facilitate handling of exchange rate risks. A tightening of bank prudential rules, in response also to an earlier banking crisis, but before moving to a floating exchange rate further supported risk management.

Uganda: Uganda's move from a pegged to a floating exchange rate system has been successful too. The sequencing of the liberalization steps, however, was different from the other two examples in this Box. While the economy was liberalized gradually but comprehensively, the opening up of the capital account and banking system reforms only followed the change in the exchange rate regime, and inflation targeting was not used. More specifically, in November 1993, the authorities floated the Ugandan shilling together with unifying the foreign exchange market and hence the exchange rates. The authorities did not pledge to refrain from interventions on the foreign exchange market, but they did pursue appropriately tight monetary and fiscal policy and sterilized inflows (consisting mainly of donor money) by using indirect monetary policy instruments. The change in the exchange rate system followed the liberalization of interest rates in 1992 and continued with current account convertibility, the adoption of indirect monetary policy instruments, and the recapitalization of the central bank (1992–1993). The capital account, however, remained closed until 1997. The authorities issued regulations in these years to create the framework for bank supervision and initial steps were taken to reform the weak banking system. However, major changes in these areas occurred only after another five-six years, in 1998–99.

contribute to a failure of attempts to float. Fiscal dominance played a major role in both Russia's (1993–95) and Venezuela's (2002–03) reversals. Concerns over excessive depreciation dominated Egypt's experience (2003). In addition, the lack of a sound alternative monetary framework and the absence of monetary instruments were contributing factors in Venezuela and Russia, respectively.

61. **Exits of developing countries can be especially difficult.** In addition to the small sizes of the economies that have led quite a few countries to join regional arrangements, specific problems include the often limited number of market players hampering price discovery, the presence of pervasive exchange controls, weak technological infrastructure and underdeveloped money markets (Appendix III).

In conclusion

62. This paper is a contribution to on-going work of the Fund on the establishment of better financial markets, especially relevant for those countries integrating into the world capital markets. The finding that countries are well served by deep foreign exchange markets is in line with other research within the Fund that suggests similar market development for money operations.[45] The question of appropriate sequencing of capital account liberalization is also being reviewed in the context of shallow markets and specifically as part of ongoing work on capital market development. There is further work ahead, for example, in (i) understanding the cost of large reserve accumulation versus the risk of overshooting at the time of floating the currency for countries in different stages of economic development, and for different economic structures; and (ii) in assessing further which steps during a disorderly exit are most effective in limiting the cost.

[45] Monetary Policy Implication at Different Stages of Market Development, (2004) Forthcoming Executive Board Paper, prepared by the Monetary and Financial Systems Department.

Market Microstructure and Other Foreign Exchange Market Issues

1. The microstructure of the foreign exchange market can play an important role in effective price discovery, in smooth payments and transfers, and in increased efficiency of possible market interventions (Canales-Kriljenko et al, 2003). This Appendix discusses key elements of the market microstructure, including market segmentation, nature of market makers, settlement systems, and the external trading of domestic currency.

Unified market structure

2. In both developed and developing countries the foreign exchange market is usually unified, i.e., there is a single market, with a single price with the possible exception in some countries where a parallel market exist in which transactions do not (need to) meet all conditions of the official market (Canales-Kriljenko, 2003a). Market segmentation can reduce liquidity, implies allocative inefficiencies and is not conducive to financial sector development. Hence, one of the important steps that countries should make on their road to greater exchange rate flexibility is to unify the hitherto multiple markets (e.g., Uganda in 1993). In practice this step can only be taken effectively when the underlying problems leading to the existence of a parallel market have been addressed (liberalizing exchange controls, addressing the rigid market conditions, etc.). Without solving the underlying problems, administrative measures might only drive the parallel market even more underground or off-shore.

Dealer markets, auction markets, dealers, and trading systems

3. Some of the emerging and developing countries operate mixed (dealer/auction) or pure auction markets, while industrial countries tend to have dealer markets. Dealers are intermediaries that aggregate the supply and demand of their clients, but could also make transactions on their account. They could be banks, foreign exchange bureaus[46] or brokerage firms (more typical in industrial countries). Most of the dealers are also market-makers, i.e., they provide two-way exchange rate quotations and stand ready to buy or sell foreign exchange up to a certain amount. The role of the dealers is to facilitate price discovery and to absorb any excess demand or supply in the market. Brokerage firms that are not allowed to conduct transactions on their own account can also be used to facilitate deals. Electronic trading systems are relatively widespread even in emerging and developing countries and are useful in brokering and settling bilateral deals without the disclosure of the counterparties at the time orders are placed.

[46] In developing and emerging countries there could be a need to allow foreign exchange bureaus to enter trading directly. Such bureaus are normally only allowed to keep their accounts with banks.

Settlement systems

4. Eliminating or limiting risks from the settlement of foreign exchange deals is one of the preconditions of smoothly functioning markets. This can be achieved by simultaneously: (i) introducing prudential rules for market makers (typically banks), primarily by imposing limits on their net open position; (ii) introducing a code of conduct for market participants; (iii) requiring that participants set credit limits for each other; (iv) promoting payment-versus-payment settlements (i.e., allowing for simultaneous payment of the foreign exchange and domestic currency legs of the transaction); and (v) setting up a properly functioning (preferably Real Time Gross Settlement) payment system. In addition, industrial countries also limit the risks by having their biggest banks voluntarily trade within the framework of CLS (Continuous Limited Settlement) Bank International that settles foreign exchange transactions for the world's largest banks. Curtailing settlement risks is of crucial importance for central bank interventions too. It is advisable that central banks in their interventions deal with market-makers, preferably banks, because banks maintain their accounts in the central bank and hence the risks for the central bank in its bilateral intervention deals on the domestic market can then be properly managed. In addition, it is important to limit interventions to those market participants that are subject to tight prudential regulations.

Trading the domestic currency abroad

5. Experience suggests that countries cannot prevent the trading of their currencies abroad. This trading, is however undeliverable (at least legally) until the domestic authorities liberalize the capital account. In the critical stages of the development of the foreign currency markets, countries could usefully try to concentrate trading domestically, so as to facilitate the development of the home market. Even if the market reaches depth and liquidity, and after full capital account liberalization, central bank interventions are often geared to the domestic market, primarily because the central bank has more information and leverage in the home market.

Country Experiences with Reversals Towards Less Flexible Exchange Rate Regimes.

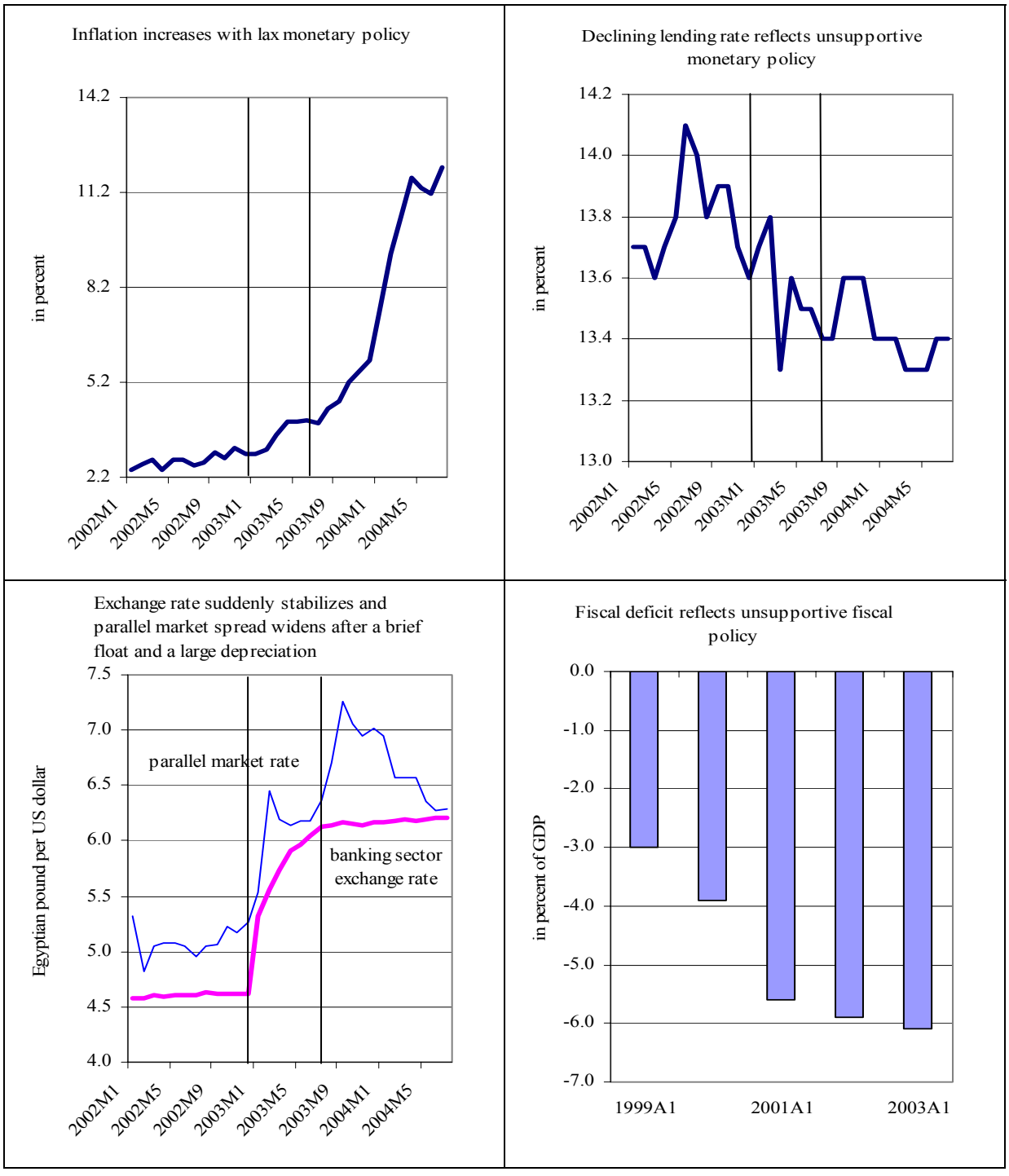
1. **Egypt.** In January 2003, the authorities moved from a currency band to a floating exchange rate regime in an attempt to address overvaluation concerns and unify the foreign exchange market. This resulted in a 30 percent depreciation in the initial months and a narrower premium in the parallel market. However, within a few months of the transition, the daily movements of the banking exchange rate became very small. Banks adopted a narrow range for foreign exchange rate quotes and foreign exchange shortages reemerged. The rigidity of quoted rates, including by state-owned banks, would seem to suggest that there were concerns about speculators forcing an even larger depreciation. Similar concerns seem to have led the authorities to introduce surrender requirements in mid-2003. Starting in July 2003, excess demand for foreign exchange was partially cleared in the parallel market, leading to a widening of the gap between the parallel market and banking exchange rates. The reversion to a system with limited nominal exchange rate flexibility and widening in the parallel market spread could be attributed to the absence of certain prerequisites. After an initial period of greater exchange rate flexibility, banks, in practice, were not able or allowed to freely trade within their net open position limits. Moreover, monetary policy was not fully supportive of the float. By mid-2003, interest rates had fallen significantly compared to their levels at the beginning of the float. Finally, lax fiscal policy and large domestic borrowing needs of the government complicated monetary policy operations. Conditions in the foreign exchange market improved considerably during 2004. Interest rates were raised in the first quarter of the year and the bulk of foreign exchange proceeds were once again channeled through the banking system. As a result, the parallel market spread began to decline and, by August, had virtually disapperead.

2. **Venezuela.** In February 2002, Venezuela moved from a currency band to a floating exchange rate regime. After the float, the size of the central bank's foreign exchange intervention was small and infrequent, but intervention increased after about five months in response to intense downward pressure on the currency. This excludes the fixed amounts of foreign exchange supplied in the newly-established auction system to channel the public sector's oil revenues back to the market. Initially, the central bank had no clear alternative nominal anchor when the currency was floated, instead pursuing mixed objectives, closely monitoring a set of indicators including monetary aggregates, interest rates, and the exchange rate. In July 2002, the central bank announced a program targeting monetary aggregates, but failed to meet the goals and to control inflationary pressures mainly due to fiscal dominance and political instability. The central bank was insufficiently independent, and was financing the fiscal deficit inter alia through transfers of valuation gains on foreign exchange operations. The situation came to a climax during the 2 ½ –month work stoppage in the oil sector that started from December 2, 2002 which drastically weakened exports and government revenues, and led to additional capital flight. As inflation reached 39 percent in January 2003, the authorities introduced a fixed exchange rate regime and tight capital controls to rein in inflation and stabilize the exchange rate.

3. **Russia.** Russia moved from a de facto currency band arrangement to a floating exchange rate regime in December 1993.[47] However, at the time of the transition, financial markets were not yet developed, hampering monetary policy transmission. The treasury bill market had not yet been launched and interbank markets were very thin and segmented. Liquidity management instruments were also very limited, and the central bank lacked an officially-determined interest rate to effectively signal its monetary policy stance. There were no clear targets for monetary policy. Commercial banks relied heavily on central bank credit to finance their loans. The central bank, in turn, directed credit to priority sectors which could have affected the objective of price stability. The expansion of credit was usually prompted by pressures from the government, contributing to inflation and pressures on the ruble. Expansionary fiscal policy resulted in a further widening of the deficit to 10.4 percent of GDP in 1994. Moreover, there was a lack of coordination between the central bank's monetary policy operations and foreign exchange activities. Despite its shift to a floating regime, the central bank intervened daily with the objective of clearing the foreign exchange market, leading to a depletion of official reserves. The lack of sufficient monetary and fiscal policy restraint and the uncertainty of future economic policies led to a further deterioration in the authorities' credibility. To help restore macroeconomic stability, the authorities shifted to a de facto crawling peg in mid-1995.

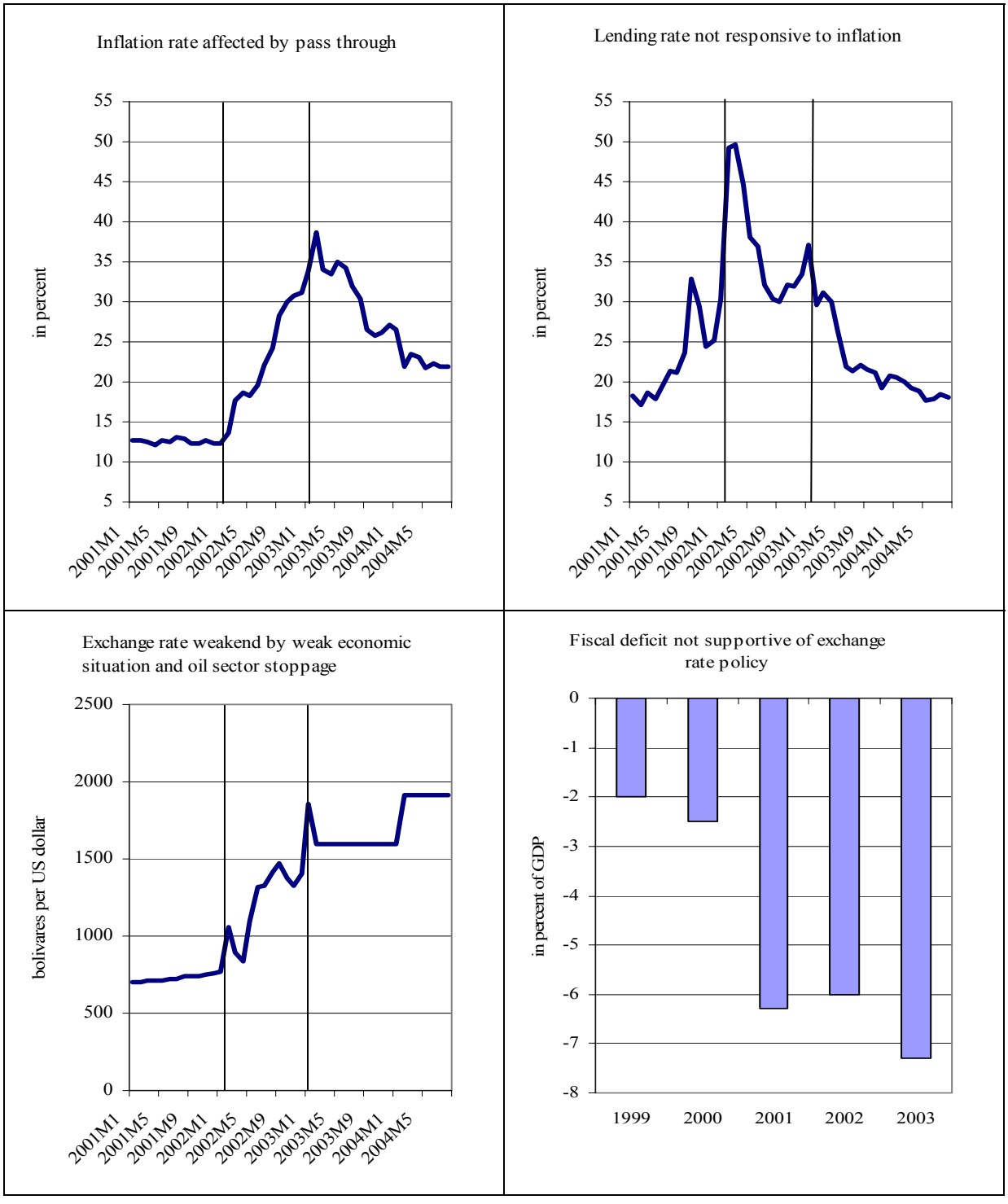
[47] There was no formal announcement of an official currency band, but the IMF's de facto exchange rate regime classified Russia under the horizontal band category.

Figure 1. Egypt: Selected Indicators



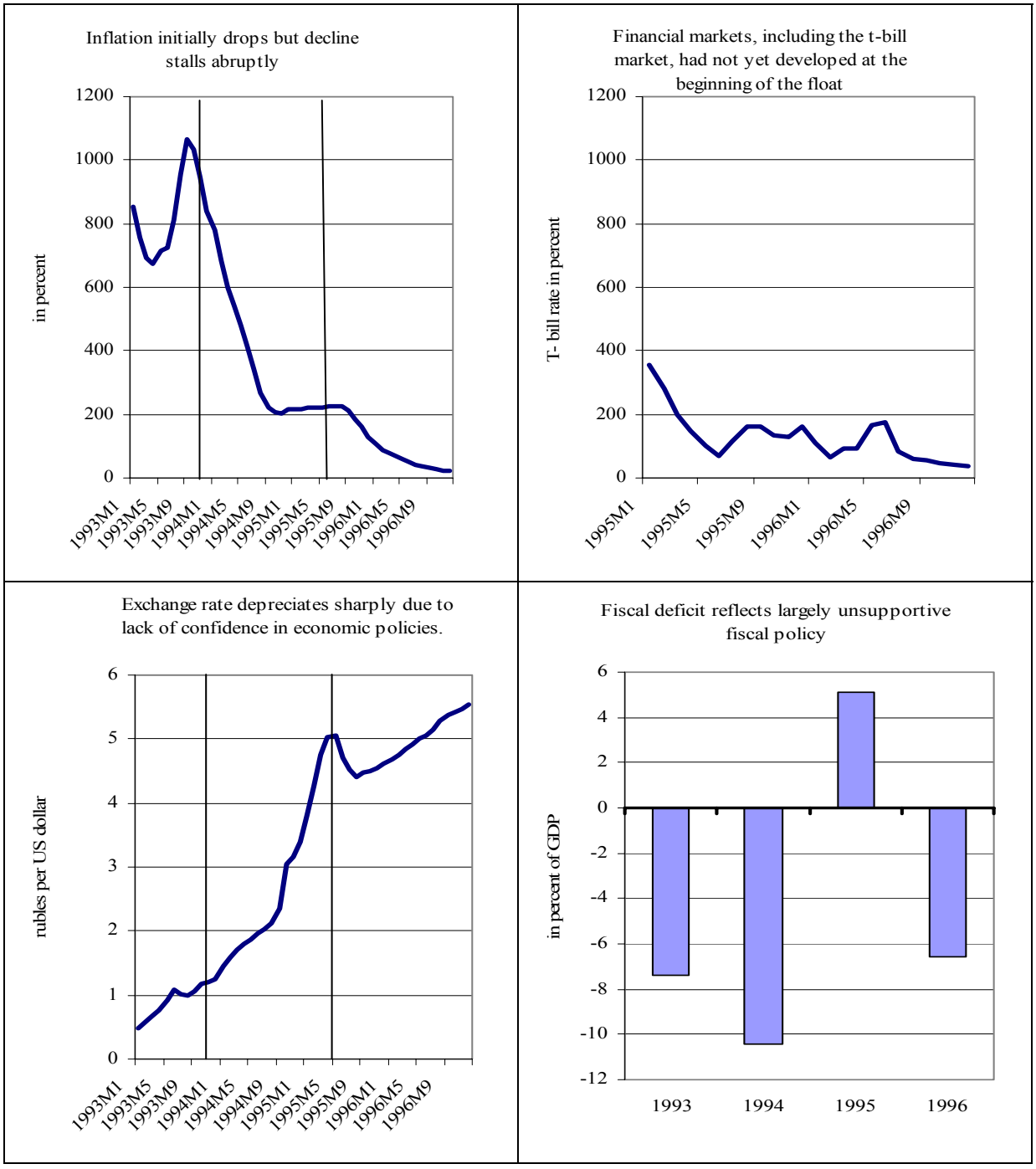
Sources: IFS Data and IMF Country Reports.

Figure 2. Venezuela: Selected Indicators



Sources: IFS Data and IMF Country Reports.

Figure 3. Russian Federation: Selected Indicators



Sources: IFS and INS Data, and IMF Country Reports.

Issues Relating to Floating in Developing Countries

1. Many developing countries still maintain fixed exchange rate arrangements,[48] reflecting in part the existence of regional arrangements, and issues of size, although a number of developing countries also float.[49] Typical problems that developing countries encounter regarding a floating exchange rate regime and possible solutions are discussed below.

2. **Price discovery can be hampered by a limited number of market participants.** On the supply side, the authorities can be the main source of foreign exchange (either through a high dependency on commodity related foreign exchange revenue streams e.g., oil taxes, or foreign exchange flows from donors as in many African countries). On the demand side, a relatively limited number of banks (typically state controlled) often dominates the financial system. These high concentration ratios lead to markets characterized by high volatility and exchange rate overshooting due to "lumpy" order flows. Apart from the more extensive measures to break up mono banks, promote foreign bank entry, and generally liberalize the banking system (that need to be pursued in their own right), countries can build on the existing informal markets by legalizing and encouraging small scale foreign exchange bureaus[50] and dealers, and improving their infrastructure. Depending on country circumstances, bureaus can either participate directly in the interbank market or indirectly via maintaining clearing accounts with the commercial banks. On the supply side, the authorities can aim to provide a steady and transparent flow of foreign exchange to the markets.

3. **Controls are often pervasive**. A number of countries have not accepted Article VIII obligations regarding current account controls. Reducing restrictions, unifying exchange markets and eliminating multiple currency practices would have significant allocative benefits apart from deepening the foreign exchange market and support a move to float.

4. **Weak infrastructure including technology and know-how.** Poor technology such as the absence of electronic trading platforms does not need to hold back market development, e.g., open outcry markets can perform well and are still used in advanced countries. It is important to leverage existing know-how, working with technology that is appropriate with the market development, and focus on concrete solutions that bring down transactions costs, support turnover, and provide basic transparency in the market.

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[48] For instance: multilateral arrangements such as the Eastern Caribbean Currency Union or the CFA franc zone; bilateral currency boards; and other arrangements.

[49] The 2004 Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER) classifies 14 de facto exchange rate regimes in developing countries, excluding emerging market economies, as independently floating. A further 39 countries are classified as managed floating.

[50] Bureaus can be important sources of foreign exchange e.g., from tourism and remittances.

5. **Missing and underdeveloped money markets mean that liquidity management is conducted via foreign exchange intervention.** Such official activity in the foreign exchange market can confuse the signals related to intervention policies, underscoring the importance of creating even a rudimentary money market. If the establishment of a money market is not feasible, and floating is still desired, besides an alternative nominal anchor (see Section IV), a clear benchmark for intervention policy is needed, such as an international reserves objective, so that temporary deviations for liquidity management purposes can be easily identified.

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