Policy Reform, June 2004, Vol. 7(2), pp. 83–108

Routledge
Taylor & Francis Group

Orderly Exits from Adjustable Pegs and Exchange Rate Bands

PIERRE-RICHARD AGÉNOR*

The World Bank

(Received November 2003; In final form May 2004)

This paper examines the exit process from adjustable pegs and exchange rate bands, and the role of capital flows in these exits. It dwells on the experience of various countries, including Chile, Colombia, Egypt, Israel, India, Poland, and Yemen. It begins by identifying conditions under which exits are sought. Next, it discusses the prerequisites for a successful exit, factors affecting the pace of exit, and the nature of the post-exit regime. It then examines the behavior of private capital flows, interest rates, and official reserves before and after three successful exits (Chile, India, and Poland), and draws broad policy lessons.

Key words: Exchange rate regimes, Monetary policy, Capital flows

JEL codes: F31, F32, E52

1 INTRODUCTION

Much of the current debate on the choice of an exchange rate regime has focused on the so-called 'bipolar' view, according to which hard pegs and free floats are the only viable alternatives with highly integrated international financial markets. Various studies focusing on the evolution of exchange rate regimes during the past decade have indeed provided some support for this view. Figure 1 is based on the regime classification introduced by the IMF in 1999 and countries' *de facto* policies, as compiled by Bubula and Otker-Robe (2002). It illustrates the shift toward both greater fixity and flexibility between 1990 and 2001, and the concomitant reduction in the proportion of "soft" or intermediate regimes (such as conventional pegged exchange rate systems or narrow band regimes). For the IMF membership as a whole, the share of hard pegs (which include formal dollarization, currency unions, and currency boards) increased from 15.7 to 25.8 percent, whereas the share of floating regimes rose from 15.1 to 35.5 percent. In addition, as documented by Bubula and Otker-Robe (2002), exits from intermediate regimes in developing countries took the form mostly of a switch to a floating rate regime or another type of intermediate regime, rather than a move to a hard peg. Indeed, for the sole group of developing countries, the share of hard pegs rose from 18.4 percent to 21.6 percent, whereas the share of floating regimes increased from 13.2 to 34.6 percent.

While some exits from intermediate regimes to more flexible arrangements in the developing world proceeded in an orderly manner – in the sense of being characterized in the

*Corresponding author. The World Bank, 1818 H Street, NW, Washington, DC 20433, USA. E-mail: pagenor@worldbank.org

ISSN 1384-1289 print; ISSN 1477-2736 online
DOI: 10.1080/1384128042000242388

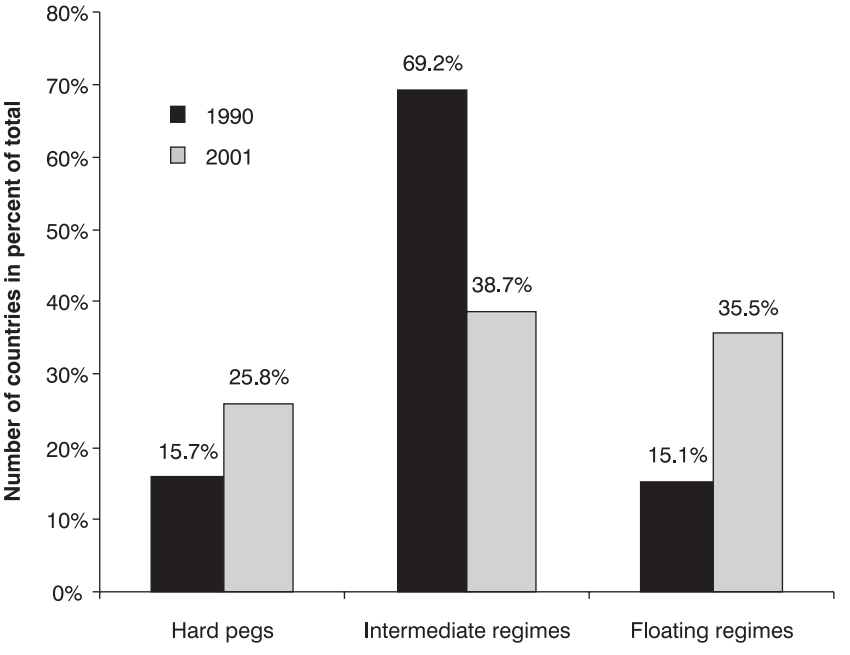

FIGURE 1 All countries: exchange rate regimes, 1990 and 2001.
Source: Bubula and Otker-Robe (2002, Table 1).
Note: "Hard pegs" consist of arrangements with another currency as legal tender (that is, dollarization), currency unions, and currency boards. "Intermediate regimes" consist of soft pegs plus tightly managed floating regimes. "Floating regimes" consist of independently floating regimes and managed floating with no predetermined exchange rate path, excluding tightly managed floats.

immediate aftermath of the regime switch by a relatively smooth depreciation of the market-determined exchange rate – in several others it took the form of spectacular crashes. Figure 2, based on Asici and Wyplosz (2003), shows the evolution of orderly and "disorderly" exits between 1975 and 2001. An orderly exit is defined as a transition during which the rate of depreciation of the nominal exchange rate between six months before and six months after the exit date does not exceed 25 percent.[1] The data suggest that, overall, disorderly exits represented almost 50 percent of all exchange rate regime transitions during the entire period (27 of 55), and slightly more than that during the 1990s only (13 of 25). Thus, switches from intermediate regimes to a floating rate arrangement have often occurred in the context of a currency crisis. Evidence by Bubula and Otker-Robe (2003) suggests indeed that intermediate exchange rate regimes tend to be more crisis-prone than hard pegs or floating exchange rate arrangements.[2] As the data also indicate, however, exits have often proceeded in an orderly fashion. From a policy perspective, and given the large economic and social costs associated with financial crises, a key issue is, therefore, to understand the conditions that are conducive to an orderly transition. This is the purpose of this paper.

[1]As discussed later, this criterion is somewhat restrictive, to the extent that it does not account for the behavior of official reserves and domestic interest rates, and does not account for the fact that an exit may eventually prove successful (in the sense of avoiding costly increases in interest rates) two or three years after the transition.

[2]Duttagupta and Otker-Robe (2003) found, in a study of 32 developed and developing countries during the period 1985–2002, that the median duration of an intermediate peg was only about a year.

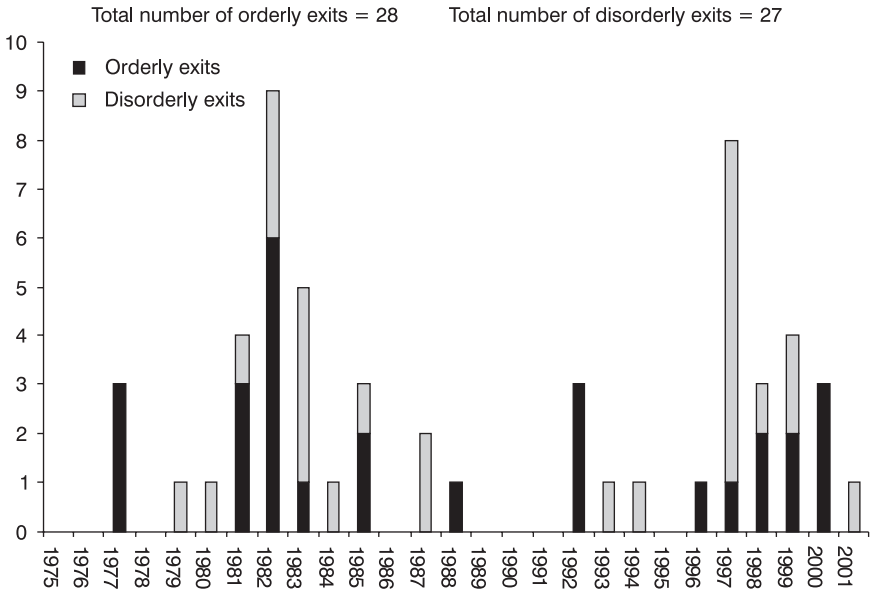

FIGURE 2 Orderly and disorderly exits from intermediate exchange rate regimes, 1975–2001.
Source: Asici and Wylplosz (2003, Table 2).
Note: Orderly exits are defined as regime switches characterized by a depreciation of the market-determined exchange rate over the period comprised between six months before and six months after the exit date that does not exceed 25 percent.

In addition, to examining the overall process of exiting from adjustable pegs or narrow currency bands to more flexible arrangements, particular attention is paid to the behavior of private capital flows during these exits. The potential benefits that these flows may provide are well recognized by economists and policy makers alike. In particular, by expanding investors' opportunities for international risk sharing and portfolio diversification, and thus providing a potential for achieving higher risk-adjusted rates of return, they may generate large welfare gains (Obstfeld, 1994). At the same time, however, the risk of abrupt reversals in these flows has raised some serious concerns (see Agénor, 2003). These concerns were heightened by several recent financial crises, during which private capital flows dropped sharply. For instance, in the wake of the crisis triggered by the collapse of the Thai baht in July 1997, net private capital inflows turned from $43.5 billion to –$85 billion for developing countries as a whole, and from $0.8 billion in 1997 to –$68 billion in 1998 for the East Asia region. For the five Asian countries that were most affected – Indonesia, Malaysia, the Philippines, South Korea, and Thailand – net private capital flows turned from an inflow of about $93 billion in 1996 to an outflow of $12 billion in 1997 (most of it in the second half of the year). This turnaround of $105 billion was equivalent to about 10 percent of their combined GDP.

More formal studies have also found evidence supporting the view that a high share of short-term capital flows raises the likelihood of a currency crisis. For instance, in a study of 31 financial crises in emerging market countries during 1980–2001, Komulainen and Lukkarila (2003), found that capital flows in the form of foreign direct investment (FDI) tend to reduce the probability of a financial crisis, whereas a high share of short-term capital flows (essentially portfolio investment) as a proportion of GDP tends to increase it. Moreover, the economic costs of these crises have been found to be large. Hutchison and Nueberger (2002), in a study covering 24 emerging-market economies over the period 1975–1997, found that

"sudden stops" – defined by Calvo (1998) as sizable and abrupt reversals in capital flows – that are accompanied by currency crises tend to have larger adverse effects on output than reversals in capital flows only. Thus, the paper can be viewed as a contribution to the literature on both orderly exits and the behavior of capital movements.

The remainder of the paper is organized as follows. Section II discusses analytical issues associated with orderly exits involving a transition from either a pegged rate regime to a band regime, or a move from a (narrow) band regime to a flexible exchange rate. It dwells on the existing research on orderly exits, which has been surprisingly limited.[3] In part, this may be due to the unfortunate fact, alluded to earlier, that in many cases the exit from a pegged rate has been anything but orderly. In addition, countries have shown repeatedly great reluctance to move away from a peg while it is perceived to be working adequately, and have often considered exiting only after facing severe bouts of speculative attacks – at which point a crisis is often inevitable, with an exit that is anything but smooth. The section begins by examining the need for exit, and then turns to conditions (or prerequisites) for a successful exit: the role of the initial level of official reserves and intervention rules during the transition; the structure of the foreign exchange market; the ability to implement in a timely manner a credible alternative anchor (should a floating rate regime be adopted); the availability of adequate instruments to manage liquidity in the post-exit regime; and the role of transparency in the exit process. It then examines the factors that determine the pace of exit (that is, whether the exit should be overnight or gradual) and the extent to which the choice depends on the speed of the pass-through from the exchange rate to prices. Section III examines the role of private capital flows during and after orderly exits. It focuses on the experience of three countries: Chile, India, and Poland. The behavior of total flows, as well as the composition of these flows, is examined. Looking at disaggregated data is important because several studies focusing on the volatility of capital flows – such as Claessens, Dooley, and Warner (1995), Chuhan, Perez-Quiros, and Popper (1996), and Sarno and Taylor (1999) – have found that longer-term flows tend to be less volatile and more persistent than short-term flows, and thus, less subject to abrupt changes when markets perceive a need for exit. For instance, despite the large reversal in total capital flows to East Asia that occurred between 1996 and 1997 (as noted earlier), FDI flows remained essentially unchanged. The last section provides some concluding remarks and draws together the policy lessons of the analysis.

2 ANALYTICAL ISSUES

Although there are important differences between disorderly exits (generally associated with abrupt changes in the exchange rate and a sharp recession) and orderly transitions (which typically involve a gradual shift to a more flexible exchange rate regime, with relatively limited economic disruptions), the fundamental reasons for seeking greater exchange rate flexibility are often the same. This section begins by identifying these reasons. It then examines the conditions for an orderly exit, the pace of exit, and the nature of the post-exit regime.

2.1 The Need for Exit

Countries that choose to exit from an exchange rate peg or a currency band regime have typically faced one (or several) of three types of problems: an unsustainable real exchange rate

[3]The few studies available include Eichengreen and Masson (1998), Eichengreen (1999), Asici and Wyplosz (2003), Bubula and Otker-Robe (2003), Calderón and Schmidt-Hebbel (2003), and Duttagupta and Otker-Robe (2003). All these papers are referred to later, where appropriate.

misalignment coupled with growing external imbalances and persistent losses in foreign-currency reserves; an inability to use interest rates or to maintain them at sufficiently high levels to defend the currency, despite continuous market pressures; and highly volatile capital flows that tend to affect domestic liquidity and create macroeconomic instability.[4] These factors may also be at play under a band regime, if the band's width is not large enough to allow a sufficient depreciation of the nominal exchange rate.

2.1.1 Exchange Rate Overvaluation and Reserve Losses

In a country where inflation displays a persistent tendency to exceed levels in trading partners, maintaining a currency peg (or relatively narrow bands) may lead to a large real appreciation, thereby hurting exports and putting pressure on official reserves, eventually undermining the ability of the Central Bank to intervene. In a band regime, of course, the upper ceiling of the band can be increased to prevent this appreciation. However, as long as markets are not convinced that the currency is depreciating fast enough to maintain competitiveness and contain external imbalances, anticipations of a discrete adjustment in the exchange rate may persist, and reserve losses will continue, forcing eventually an exit – possibly through a crisis. Goldfajn and Valdes (1999) have argued that a currency collapse is very likely to occur in countries experiencing an over-valuation in excess of a threshold of about 30 percent.

During episodes of large capital inflows, (a common occurrence in the aftermath of successful exchange rate based stabilizations) the ability of a country to engage in sterilized intervention determines the extent to which the real exchange rate will appreciate. A limited scope for sterilized intervention implies that these inflows will translate into larger increases in domestic liquidity, greater pressures on non-tradable prices, and thus a greater risk of sustained overvaluation. The inability to sterilize on a grand scale may itself result from the absence of sufficiently developed domestic financial markets and the lack of availability of indirect monetary instruments – both of which are important considerations from the point of view of choosing a post-exit regime and the pace of transition, as discussed later.

As documented by Eichengreen and Masson (1998) and Eichengreen (1998), exits (both orderly and disorderly) have often been preceded by a significant real appreciation. Specific examples of countries choosing to engage in an exit process aimed at preventing a sustained real appreciation include Chile in the late 1980s, Colombia, Israel, and Egypt. In Chile, following the adoption of an exchange rate-based stabilization in the late 1970s/early 1980s, residual inflation in the non-tradable sector led to a significant real appreciation. In response, in August 1984 the country adopted a crawling peg with very narrow bands of ±0.5 percent. The width of the band was widened subsequently to ±2 percent in June 1985, ±3 percent in January 1988, and ±5 percent in July 1989. This regime allowed a real depreciation of 33 percent between 1985 and 1988, consistent with the goal of restoring competitiveness.

From 1967 to 1991, Colombia maintained a crawling peg system aimed at stabilizing the real exchange rate. In the early 1990s, the country began to receive large capital inflows, which it sterilized at a substantial cost in an attempt to prevent the development of inflationary

[4]Another possible reason to seek an orderly exit from a pegged exchange rate is greater exposure to adverse fiscal shocks, as argued by Rebelo and Végh (2002). In practice, however, few (if any) episodes of orderly exits have been motivated by this factor. In addition, Asici and Wyplosz (2003) found that fiscal variables have no significant effect on the probability of a successful exit. Yet another reason for seeking greater exchange rate flexibility is the undervaluation of the currency and the country facing large current account surpluses and sustained capital inflows, resulting in a rapid build-up of foreign exchange reserves and pressures on domestic liquidity. At the time of writing, this is the situation in China, where greater flexibility is being called to allow the nominal exchange rate to appreciate.

pressures and maintain competitiveness (see Corbo and Hernández, 1996). To reduce the cost of sterilization, a system under which sellers of foreign exchange received foreign exchange certificates (called *certificados de cambio*) instead of domestic currency was introduced in June 1991. These certificates could be redeemed at the central bank at the then prevailing official exchange rate minus a discount of 12.5 percent, held to maturity (originally three months, but extended to one year in November of 1991), or sold for domestic currency in a free market. The central bank redemption options essentially introduced a *de facto* band for the exchange rate (defined as the peso value of 1 US dollar worth of *certificados*). A formal crawling band was introduced in January 1994. The band was set relative to the US dollar and implemented with a crawling central parity. The central parity was initially set equal to the exchange rate prevailing on the date the band was implemented (24 January 1994); because that rate was near the lower margin of the implicit *certificados* band, this implied a revaluation of about five percent. The initial rate of crawl was set at 11 percent, designed to slightly less than offset the difference between domestic and foreign inflation, and thus allow for a gradual real appreciation in response to capital inflows. In the face of continuing pressures from such inflows, the central parity was revalued by seven percent in December 1994, again set at the rate prevailing on the relevant date, when the exchange rate was at the lower margin of the band. Its rate of depreciation was increased to 13.5 percent, to prevent any additional real appreciation. Nevertheless, the real exchange rate appreciated sharply between 1990 and 1997 (by about 40 percent), which led to growing external deficits in the second half of the 1990s. These deficits, compounded by growing fiscal imbalances and large external shocks (in the form of a seven percent terms-of-trade deterioration in 1998 and greater volatility in international financial markets, in the wake of the Asia crisis in 1997 and the Russian default in 1998), led to recurrent speculative attacks in 1998 and 1999. The authorities responded initially by depreciating the intervention band (by nine percent in June 1999) and widening it from 14 to 20 percentage points, and by tightening monetary policy. The band was further widened in early September 1999, but the currency was floated later that month, following heavy reserve losses by the central bank.

In Israel, the exchange rate was fixed in July 1985 in the context of a program aimed at reducing inflation (see Agénor and Montiel, 1999). Although the program was successful, domestic inflation remained above foreign rates, and the real exchange rate appreciated significantly. Following two discrete devaluations in 1987 and 1988, a formal band with fluctuation margins of ±3 percent was introduced in January 1989. The band was subsequently widened to prevent the build-up of inflationary pressures and losses in competitiveness, which was exacerbated by large capital inflows. Devaluations took place in the context of this "horizontal" (that is, non-crawling) band in June 1989, March and September 1990, and March 1991. In December 1991, the horizontal band was abandoned and the central parity was allowed to crawl. In turn, the rate of crawl was set at an annual rate determined by the difference between the government's inflation target over the coming year and a forecast of foreign inflation.

Yet another example of a country opting for greater exchange rate flexibility in the face of real appreciation and reserve losses is Egypt, which pegged its currency to the US dollar in 1991 in the context of an exchange-rate based stabilization program (see Subramanian, 1997). However, despite the overall success of the program, domestic inflation fell only slightly initially (from approximately 17 percent during 1981–1990 to 13.9 percent during 1991–1995, compared to 4.4 percent during 1996–2000) and remained above inflation rates in trade partners. As a result, the real exchange rate appreciated significantly. Pressure on the currency increased after 1998 (in part because of large capital outflows following the Asian crisis, and in part because of a sharp drop in tourism following domestic terrorist attacks). Moreover, the appreciation of the US dollar against the euro and the yen exacerbated the loss

of competitiveness. The authorities initially responded to these pressures by intervening in the foreign exchange market and by tightening credit policies, but official reserves continued to decline. Exchange rate pressures abated only temporarily after an initial depreciation in mid-2000 and, in January 2001, the country adopted an adjustable band with fluctuation margins of ±1 percent initially. The width of the band was widened to ±1.5 percent in July 2001 and to ±3 percent in August of the same year. However, pressures on the currency intensified later that year, leading to a depreciation of more than 35 percent against the US dollar from mid-2000 to early 2003. Lack of foreign exchange in the official market at the prevailing exchange rate led to the emergence of a parallel market. On 28 January 2003, the authorities adopted a floating exchange rate regime, but the lack of preparation on the post-exit monetary framework has forced them to retain a variety of capital controls.

An important feature of Egypt's experience is that the reserve losses that eventually forced the authorities to abandon the band regime may have been exacerbated by distortions between the official and the parallel markets for foreign exchange, as observed in many other countries during the 1980s (see Agénor, 1992). As the parallel exchange rate depreciated relative to the official rate, incentives to divert foreign exchange inflows from the official to the parallel market grew, accelerating the depletion of reserves. In such conditions, the primary goal of an orderly exit, at least in the first stage, should be the unification of foreign exchange markets. This is indeed what characterizes the experience of Yemen during the mid-1990s. The exit process followed a two-stage strategy of unification and liberalization of the foreign exchange market, which was initiated in January 1996 and involved a sharp devaluation of the official exchange rate (from 50 rials to 100 rials per US dollar) and the elimination of all other official rates. Full exchange market unification occurred in July 1996 and this was followed by the adoption of a floating exchange rate.

2.1.2 Lack of Interest Rate Defense

A common line of defense for central banks during episodes of large capital outflows, exchange market pressures, and losses in official reserves, is to increase interest rates, in an attempt to make domestic-currency denominated assets more attractive and possibly impose losses on speculators (that is, short sellers of the domestic currency). However, increases in interest rates aimed at defending an exchange rate target may entail various costs. They may raise the cost of borrowing not only for speculators but also for other financial intermediaries (for instance, those involved in securities markets), which often finance their positions through short-term lines of credit. This creates a potential constraint on how high the central bank can let interest rates rise without creating financial stress. Such considerations would be particularly important if commercial banks are already suffering from heavy losses on their loan portfolios; the rise in interest rates may exacerbate these problems. It could also increase prospective fiscal deficits if these banks are insolvent and benefit from explicit or implicit government insurance of their liabilities. This, in turn, may reinforce exchange market pressures.

If total debt and debt service ratios of the non-financial private sector are already high, a rise in interest rates may bring these ratios to unsustainably high levels and lead to insolvencies or outright default—thereby weakening an already fragile banking system. The reduction in aggregate demand and output that high interest rates may entail could exacerbate the position of firms and other debtors as well. Maintaining interest rates to persistently high levels to defend the peg may have adverse effects on output; possibly, because bank credit plays an important role in financing firms' working capital needs, as is often the case in developing countries (see Agénor and Montiel, 1999). The perceived lack of sustainability of

the policy may weaken the credibility of the central bank, heighten fears of devaluation, and therefore, hamper the ability of the peg to anchor inflation expectations.

In addition, in countries where fiscal imbalances are large and public debt is to a significant extent short term in nature and/or contracted at floating rates, a large increase in interest rates can translate quickly into higher interest payments and an increase in the government's fiscal deficit. Increases in interest rates may have a perverse effect and actually weaken the attractiveness of the domestic currency if markets believe that the increase in debt service may be monetized, or if interest rate volatility rises beyond what is considered an acceptable level of risk. Finally, a high interest rate defense against speculative attacks may be viewed as having a high opportunity cost in terms of domestic economic activity, particularly if the economy is slowing down, the unemployment rate is high or increasing, and inflation is low or falling. In such a situation, even a highly independent central bank may be reluctant to maintain a tight policy stance for a long time.

Several empirical studies have found indeed that high interest rates have not been successful in preventing speculative attacks or sustaining the value of a currency, either before or in the immediate aftermath of a financial crisis. Kraay (2003), for instance, used a sample of monthly data for 75 countries over the period 1960–1999. He identified 105 "successful" attacks in his sample (defined as episodes during which a nominal depreciation of at least 10 percent was preceded by a period of relatively stable exchange rates) and 117 failed attacks (episodes during which official reserves declined by a large amount, interest rate spreads rose above a given threshold or both). He found that high interest rates were essentially unrelated with the probability that an attack is successful.[5]

In sum, central banks may have good reasons to refrain from maintaining interest rates to persistently high levels to defend a peg or a narrow band regime, and to opt instead to move to a more flexible arrangement.

2.1.3 Mitigating the Effects of Volatile Capital Flows

A third consideration for exiting a pegged exchange rate regime relates to the need to limit short-term capital flows, which (as noted earlier) may precipitate or exacerbate crises. Kalasopatan (2003), for instance, examined the behavior of international bank lending flows to two Latin American countries (Argentina and Brazil) and three Asian countries (Korea, Thailand, and Indonesia). She found that international bank lending flows have strong temporary components – a result consistent with the view that these flows tend to be unstable during financial crises.

In the presence of large, erratic movements in short-term capital flows, greater exchange rate flexibility can act as a deterrent, by introducing exchange rate risk and eliminating the "one-sided bet" that pegged rates or narrow band regimes often provide. Moreover, greater exchange rate flexibility allows the authorities to insulate domestic monetary conditions from these flows, thereby allowing a greater degree of independence in the conduct of monetary policy and more control over the behavior of monetary aggregates. This is important if the ability to engage in sterilized intervention is limited under the peg, either because of a lack of adequate sterilization instruments (as noted earlier), or because the policy is costly. Under a completely flexible exchange rate, capital inflows (outflows) would lead to a nominal appreciation (depreciation), with no change in official reserves or domestic liquidity.

[5]However, in a comprehensive review of the empirical literature, much of which focuses on the immediate aftermath of currency crises, Montiel (2003) concluded that on balance the evidence on the links between interest rates and the exchange rate is weak.

In recent years, the need to mitigate the impact of abrupt movements in capital flows on the domestic economy has indeed been one of the main reasons for countries to seek (in addition to extensive recourse to sterilized intervention and the imposition of capital controls) greater exchange rate flexibility, either in the form of a widening of an existing band regime, or an outright float of the currency. In the presence of large inflows (outflows), countries have allowed their nominal exchange rate to appreciate (depreciate). In Chile, for instance, a series of revaluations and changes in the width of the exchange rate band occurred during the period of large *inflows*; 1991–1994 (see Corbo and Hernández, 1996). The reference rate within the band was revalued by 0.7 percent in both April 1991 and May 1991, 2 percent in June 1991, 5 percent on 23 January 1992, and 9.5 percent on 30 November 1994. The band itself was widened from ±5 to ±10 percent in January 1992 and to ±12.5 percent in February 1997. In June 1998, in the face of large capital *outflows*, Chile narrowed the width of its band from ±12.5 percent to ±2.25 percent, in order to reduce exchange rate uncertainty. The band was widened again in September 1998 to ±3.5 percent. A floating exchange rate was effectively introduced in September 1999, when the trading bands around the peso were suspended (see Morandé and Tapia, 2002).

It is also possible that countries will seek greater exchange rate flexibility to mitigate the impact of external shocks in general, not only the volatility of short-term capital inflows. Duttagupta and Otker-Robe (2003), in a study of exits during the period 1985–2002, found that while currency crises tended to be preceded by a deterioration of economic fundamentals (reserve losses, a slowdown in export growth, and a real appreciation), orderly transitions to more flexible exchange rate regimes took place in the context of an increase in trade openness. To the extent that trade openness implies greater exposure to external shocks (deterioration in the terms of trade, or a recession in partner countries), the shift to a more flexible exchange rate regime may be viewed as an attempt to better insulate the economy from these shocks. Indeed, the main justification offered by the Chilean authorities for abandoning the country's sliding exchange rate system in September 1999 in favor of a free float was that the new regime would enhance the country's ability to deal with external shocks (both real and financial) in the future. The evidence provided by Broda (2001, 2004) and Perry and Servén (2003) suggests also that the costs of adjustment to terms-of-trade shocks are significantly higher under a pegged exchange rate than under a floating rate. In the former case, such shocks typically lead to a gradual and modest real depreciation and a sizable contraction in output in the short run; in the latter, by contrast, the real depreciation is immediate and sustained, and the output loss tends to be small. In another study, based on panel data regressions for 157 countries covering the period 1970–2001, Edwards (2004) found that countries with more flexible exchange rate regimes were able to accommodate better shocks stemming from a current account reversal (defined as a reduction in the current account deficit of at least 4 percent of GDP in one year) than countries with more rigid exchange rate regimes. Thus, greater openness and exposure to current account shocks may induce countries to choose a more flexible exchange rate regime.

2.2 Conditions for an Orderly Exit

Both analytical and practical considerations suggest that conditions for a successful exit depend importantly on the initial level of official reserves and intervention rules during the transition; the ability to adopt in a timely manner an alternative anchor to expectations; the capacity to implement an independent monetary policy under a more flexible exchange rate regime; and the degree to which transparency is maintained during the exit process. These factors also affect the choice of the pace of exit from a pegged exchange rate, that is, whether

it is optimal to move overnight to a float or on the contrary use an interim band regime whose width is gradually increased before adopting a free float.

2.2.1 Level of Reserves and Intervention Rules

In principle, exiting from an adjustable peg or an exchange rate band regime that functions as a "quasi-peg" (because of relatively narrow bands) should occur well before a "critical" lower bound on reserves is reached. As predicted by first-generation models of currency crises (see Agénor and Flood, 1994), the mere anticipation that reserves are approaching their lower bound may lead to a massive speculative attack that brings the regime down in a disorderly fashion. In practice, of course, it is difficult to determine what this lower bound is. In trying to stick to a peg for too long, central banks often incur accelerated reserve losses and are often tempted to engage in forward transactions to increase their ability to intervene. Like Thailand did in June 1997, when the central bank not only lost about $4 billion defending the baht through spot intervention, but also incurred a $23 billion forward position.

Holding a sufficient level of reserves is important to manage properly the exit from a peg because in the initial phases of the transition the central bank may need to intervene to smooth exchange rate fluctuations.[6] In addition, as discussed further later, regardless of whether an exit is orderly or disorderly, "clean" floats are rare in developing countries. The exchange rate is an important economic variable, and its behavior is often viewed as providing critical signals regarding the government's current policies and future intentions. Thus, if the nominal anchor adopted after the exit is an inflation target (an increasingly common strategy), pursuing a *de facto* exchange rate target will immediately undermine the credibility of the policy regime. Thus, maintaining a transparent intervention mechanism to manage the exchange rate after moving to a band regime, or to cope with excessive exchange rate fluctuations after switching to a float, is essential for the new anchor to play its role.

The need for intervention depends also on the impact of exchange rates on prices. In general, depreciation has both direct effects on domestic inflation (through the cost of imported final and intermediate goods) but also indirect effects through aggregate demand and supply, balance sheets, wage formation mechanisms, and capital flows. The speed and magnitude of the pass-through effect is a particularly important consideration in deciding whether to intervene during the early phases of the transition to a more flexible arrangement. In countries where the pass-through is large and rapid (an outcome that depends on the state of the business cycle, as shown in various empirical studies), the central bank may need to intervene more heavily to dampen fluctuations in the nominal exchange rate.

2.2.2 Structure of the Foreign Exchange Market

To the extent that a transition to a more flexible exchange rate regime entails giving market forces a greater role in the determination of the value of the domestic currency, having well-functioning (spot and forward) foreign exchange markets is necessary for an exit strategy to be successful. Greater exchange rate flexibility means greater exchange rate risks; market operators must have the ability to protect themselves from such risks, to avoid "real" transactions associated with foreign trade from being adversely affected. Thus, selective liberalization of exchange restrictions and capital account controls that hinder the development of the

[6]The need to intervene in the post-exit regime is, thus, an argument in favor of an early exit, before reserves have been exhausted in the defense of a "doomed" regime.

foreign exchange market and the ability of market participants to manage risks under greater exchange rate flexibility may be necessary before an exit.[7]

Moreover, if the foreign exchange market is small, greater exchange rate flexibility, to the extent that it leads to an increase in exchange rate volatility may contribute to illiquid or "disorderly" market conditions, often characterized by large bid-ask spreads on currencies. Consequently, if the size of the market cannot be increased overnight, the ability to smooth exchange rate movements through intervention takes on added importance during the transition.

2.2.3 Availability of an Alternative Nominal Anchor

A well-performing peg is normally an effective nominal anchor, in the sense that it acts as a "reference point" for inflation expectations. This role may be preserved if the exit strategy consists of a gradual move to flexibility, involving for instance the adoption of a band regime in a first stage. Eventually, however, as the margins of the bands are gradually widened, the issue of an alternative nominal anchor will need to be addressed. Maintaining an exchange rate "target range" during a transitory period is not incompatible with the adoption of a new anchor (as argued for instance by Amato and Gerlach, 2002), but establishing early on in the transition process what the new nominal anchor will eventually be is important. Put differently, whatever the reason for seeking greater flexibility, by itself flexibility will not enhance credibility – despite increasing the ability to respond to adverse domestic and external shocks – if the economy is left without a "reference point" to guide expectations.

For instance, if the nominal anchor in the post-exit regime is an inflation target, markets must be convinced that the basic requirements for adopting such a policy framework are in place. Namely, the absence of fiscal dominance, a relatively healthy financial system, a sufficient degree of independence of the central bank in choosing targets, the ability to implement monetary policy, and the absence of an implicit exchange rate target (see, for instance, Agénor, 2002). In particular, consistency of the overall mix between fiscal and monetary policies is necessary both before the exit (to prevent speculative pressures and reserve losses) as well as after the exit (to avoid excessive volatility of the flexible exchange rate). Moreover, if the post-exit framework for monetary policy calls for an inflation target as the new nominal anchor, the central bank must have adequate technical capacity to analyze and report on macro developments, well-developed statistical systems to monitor market activity and exchange rates, the ability to forecast inflation, and sufficient knowledge of the transmission mechanism of monetary policy. In addition, the central bank needs *operational* independence, that is, the ability to set its policy instruments as it deems appropriate to attain the inflation target. Establishing these prerequisites takes time and militates in favor of a gradual exit process, as discussed later. A perceived lack of preparation could weaken the credibility of the new monetary policy regime at the outset, making the task of anchoring inflation expectations more difficult and possibly leading to exchange rate instability.

In cases where a sustained real appreciation has led to severe losses in competitiveness, policymakers have often opted to abandon the nominal anchor role of the exchange rate. In Poland for instance, the exchange rate in the early 1990s was perceived to play a dual role: an anchor to inflation expectations and a policy instrument to prevent losses in international competitiveness (see Eichengreen and Masson, 1998). The zloty was initially fixed against the US dollar to contain inflationary pressures, while the parity was set at a sufficiently depreciated

[7]At the same time, of course, the liberalization process should take into account the degree of fragility of the financial system and the need to maintain adequate prudential regulations to avoid excessive risk taking and overborrowing on world capital markets.

level to avoid losses in competitiveness. The currency was then pegged to a basket in May 1991, to allow some real depreciation. A pre-announced crawling peg was adopted in October 1991, as competitiveness continued to deteriorate. The anchoring role of the exchange rate was maintained by choosing an active crawl, with a rate of nominal depreciation that was smaller than projected inflation differentials. A formal crawling band of ±7 percent around a central parity was introduced in May 1995, in an attempt to maintain partially the anchoring role of the exchange rate, while at the same time providing greater flexibility in responding to external shocks. These shocks included episodes of large capital inflows, induced by rising domestic interest rates and liberalization of the capital account. As sterilization of these inflows became increasingly difficult, the rate of crawl was reduced and controls on capital outflows were relaxed. On 12 April 2000, Poland exited from its crawling band and adopted a floating exchange rate regime, with an inflation target as the new nominal anchor.

2.2.4 Instruments for Liquidity Management in the Post-Exit Regime

Under a less rigid exchange rate regime, the availability of flexible (indirect) monetary instruments to manage liquidity is essential. Largely, this depends on the level of development of domestic financial markets (particularly markets for government securities) and institutional capacity. In countries like Morocco and Tunisia, for instance, the process of exiting toward a more flexible exchange rate is hampered now by the lack of depth of the financial system, and the limited role of interest rates in managing liquidity.

2.2.5 Transparency in the Exit Process

To avoid unnecessary volatility, the authorities must clearly define and explain to the public the context in which the change in regime is taking place, and the rules of the post-exit regime (namely, what the intervention rule is going to be, and what the new nominal anchor will consist of). Transparency of the foreign exchange intervention mechanism is particularly important if the transition is to a flexible exchange rate regime with inflation itself as the direct target of monetary policy, because the perception that the central bank maintains an implicit exchange rate objective could undermine the credibility of the new framework. Of course, greater transparency, by itself, is no guarantee that the exit process will occur in an orderly fashion. Concerns about inconsistencies between fiscal and monetary policies, for instance, or the ability of the authorities to achieve the inflation target (because of a perceived lack of independence), may not be allayed by mere announcements. Words must be backed by credible reforms, particularly in countries where the central bank is initially perceived as being weak. Thus, an orderly exit may need to be preceded by a series of institutional reforms, aimed at providing greater operational independence to the central bank, and strengthening its ability to monitor, analyze, and explain economic developments. Determining when these reforms have been sufficiently deep to initiate the exit process remains obviously a matter of judgment.

What does the evidence relative to these different criteria suggest? Unfortunately, the formal evidence on the determinants of orderly exits is almost inexistent. One of the few studies available is that of Asici and Wyplosz (2003), which focused on 55 cases of exits during the period 1975–2001, 27 of which consisting of orderly exits, and 28 "disorderly" exits. They used the *de facto* classification of regimes proposed by Rogoff and Reinhart (2002) and Rogoff *et al.*, (2003), which is based on the behavior of actual (market-determined) exchange rates, instead of officially declared ones.[8] As noted earlier, they define an

[8]See, however, Bubula and Otker-Robe (2002) for a discussion of the limitations of this approach.

orderly exit as a regime switch characterized by a depreciation of the market-determined exchange rate over the period comprised between six months before and six months after the exit date that does not exceed 25 percent.[9] They estimated profit models with monthly and annual data, and found that a high rate of exchange rate depreciation, reserve losses, and higher interest rates prior to the regime switch tended to be associated with disorderly exits. Thus, periods during which the currency is defended through foreign exchange market intervention or higher interest rates often end up in a crisis. In addition, foreign direct investment in proportion of GDP tends to be higher in orderly exits, compared to disorderly exits.

However, given the limitations of their dataset, these results should be viewed with caution and would need to be corroborated by further evidence before firm conclusions can be drawn. In particular, the role of the structure of the foreign exchange market and institutional features of the financial system (which are likely to affect whether the transition is smooth or not, as noted earlier) needs to be explored in greater depth. In addition, defining an orderly exit solely based on the observed rate of depreciation of the exchange rate is questionable, because central banks may have continued to intervene heavily or they may have been forced to increase interest rates to very high levels to keep the exchange rate from depreciating during the initial phase of the transition. In turn, keeping interest rates high may have had a severe impact on the domestic economy. Thus, a more general criterion would be preferable to determine whether exits are deemed "successful" or not.

2.3 The Pace of Exit: Gradual or Overnight?

In general, the pace of exit from an adjustable peg or narrow exchange rate bands depends on the reason for seeking the exit in the first place, the nature of the post-exit regime (an issue discussed further later), and whether the prerequisites for a more flexible exchange rate arrangement, as identified earlier, are deemed to be in place. This section examines the pros and cons of overnight and gradual exits.

For an overnight exit, the pros are that it prevents additional reserve losses – an important consideration, of course, if official reserves have already fallen to a level close to what is deemed critical, because of persistent speculative pressures, and the ability to borrow is limited. It may also provide a "clean" break with the past and therefore have a strong impact on expectations, thereby bolstering the credibility of the new regime. The cons are that if it is undertaken in a context of persistent speculative pressures and a dwindling capacity to intervene, an overnight shift may be perceived as being "forced" upon the central bank and may destabilize expectations. It may also lead to exchange rate instability if progress made in establishing prerequisites for an orderly exit, as discussed earlier, is not perceived to be sufficiently broad and deep. In turn, lack of credibility may force the central bank to keep interest rates high to prevent a rapid depreciation – possibly defeating the purpose of the regime switch, if high interest rates were indeed an important consideration to begin with.

Conversely, a gradual exit may provides more time for putting in place the required institutional and technical changes associated with a new policy regime (such as inflation targeting) and strengthen the financial sector, notably through enhanced regulation and prudential supervision. This may be particularly important in countries where banks have weak balance

[9]Asici and Wyplosz (2003) also experimented with two alternative threshold levels, 15 percent (which led to a sample of 16 successful, and 39 unsuccessful exits) and 40 percent (which led to 30 orderly, and 25 disorderly exits). They argued that the results remain very similar.

sheets and possess large open positions in foreign exchange, which makes them vulnerable to large hikes in interest rates, a sharp depreciation, or an increase in exchange rate volatility. To the extent that bank customers have borrowed in foreign currency and they are not properly hedged, banks will also be vulnerable to exchange rate volatility, this time on the asset side of their balance sheets. In such conditions, a gradual exit would provide the opportunity to put in place adequate markets and instruments to allow these customers to manage better exchange rate risk.

In countries where the pass-through of nominal exchange rate changes to domestic inflation is large and rapid, and the ability of the central bank to intervene is limited, a gradual exit may prevent destabilizing effects on the post-exit target for monetary policy and obviate the need for a rise in interest rates. Moreover, a gradual exit may have a stronger effect on expectations and credibility if the overall process (or timetable) is perceived to be well sequenced and sustainable. To the extent that greater credibility translates into lower interest rates, a gradual approach may also help to cope with unsustainable public debt dynamics – a possible reason for avoiding sharp rises in interest rates and seek an exit, as discussed earlier – and reduce exposure of financial intermediaries to default risk. It may also prevent significant reserve losses during the transition.

At the same time, however, a gradual approach entails risks. The timetable for the transition may not be credible, possibly because the sequencing of measures is perceived to lack consistency. For instance, institutional reforms aimed at granting the central bank greater autonomy may not affect significantly public perceptions, either because they take time to be implemented, or because of a perceived gap between *de jure* and *de facto* independence. The switch to a band regime with narrow margins may lack credibility because the public may anticipate that the depreciation that will occur upon exiting the peg may not be sufficient to restore competitiveness and reduce pressures on official reserves. Similarly, the announced timing of a switch to inflation targeting may not be credible, because the central bank may be perceived as lacking the technical skills needed to operate the new policy framework. These concerns may translate into persistent expectations of depreciation, capital outflows, and reserve losses, which may force a change in regime sooner than desirable – perhaps leading to exchange rate instability upon exit or forcing a costly rise in interest rates. Finally, if after the exit the exchange rate comes immediately under pressure to appreciate, a gradual widening of the band may not be sufficient, because expectations of further appreciation will continue to fuel strong capital inflows, unless domestic interest rates are lowered. An overnight float, leading to a large, discrete nominal appreciation (with limited impact on inflation if prices are sticky downward) would be more appropriate.

The implication of the foregoing discussion is, thus, that there are no general rules for choosing the pace of exit. A general point, however, is that exits are successful when they are undertaken in "favorable" economic conditions, that is, when reserves are high, and foreign exchange markets are calm. The results of Asici and Wyplosz (2003), reviewed earlier, support this view. At the same time, however, the timing of a successful exit depends crucially on progress in establishing a viable post-transition framework for monetary policy. Determining when progress is sufficient to warrant a switch in regime is a decision that involves, again, a great deal of judgment.

2.4 An Exit to What?

In practice, gradual exits from an adjustable peg have often taken the form of a shift to a band regime, where the exchange rate is allowed to float within certain limits. The band itself can be either horizontal or diagonal, with widening margins over time, and may be characterized by a progressive reduction in the frequency of central bank intervention to limit exchange

rate fluctuations.[10] During the transition, as noted earlier, there may be a need to intervene to prevent destabilizing movements in the exchange rate within the band, and thus, a need for clearly defined intervention rules.

Band regimes with sufficiently wide margins have proved successful in a variety of cases, in the sense of providing some anchor for inflationary expectations, as well as some scope for the real exchange rate to depreciate and sufficient nominal flexibility to restore a two-way bet for speculators. As discussed earlier, the last two considerations are important reasons for seeking an orderly exit to begin with. In other cases, however, the switch to a band regime proved to be no more than a palliative solution, and it was eventually followed by a disorderly exit to a float. In some of these cases, the inability to maintain the bands even as a transitional device often resulted from sustained fiscal imbalances, which led at first to high domestic interest rates and short-term capital inflows. Owing to a sudden change in market sentiment, these inflows eventually turned into unsustainable outflows, forcing the central bank to abandon the upper intervention rate and let the exchange rate float (or, more accurately in some cases, sink).

Mexico in December 1994, Indonesia in August 1997, and Brazil in January 1999 are some examples of failed attempts to exit from an adjustable peg through a band regime. Indonesia, for instance, introduced exchange rate bands in January 1994, with an initial width of about one percent on both sides of the central rate. The central rate itself was set with regard to an unannounced currency basket, and was depreciated in accordance with inflation differentials, to prevent a sustained real appreciation.[11] The intervention band was widened progressively over time. After the collapse of Thailand's currency on 2 July 1997, the central bank widened further the trading band on 11 July 1997, but by 21 July, the currency had depreciated to near the new ceiling. Continued exchange market pressures forced the authorities to abandon the band altogether in August 1997.

An alternative strategy to exit from an adjustable peg (or from a narrow band regime) is a direct switch to a floating rate regime (or a full float), as was done for instance by Egypt, Chile, Colombia, and Poland. However, whether the many countries that have officially adopted such a regime (following orderly and disorderly exits alike) are "truly" floating remains a matter of controversy. Among orderly exits, India is a case in point. Following the 1991 balance-of-payments crisis (see Cerra and Saxena, 2000), foreign exchange markets were unified and the rupee was officially floated in 1993. The switch was accompanied by an easing of restrictions on current transactions and full current account convertibility in August 1994. However, some observers have argued that the "float" was extensively managed between 1993 and 1999 to achieve nominal and real exchange rate stability, despite a policy ostensibly meant to allow the rupee to float (see, for instance, Kohli, 2003). More generally, Calvo and Reinhart (2002) have documented the fact that officially floating countries (both developing and transition economies) tend at times to heavily manage their exchange rate – more frequently through changes in domestic interest rates, rather than intervention in foreign exchange markets. Other evidence suggests also that the tendency to adopt managed floats has characterized the immediate aftermath of many episodes of disorderly exits. Hernández and Montiel (2003), for instance, found that except for Malaysia (which adopted an official peg supplemented with capital controls), the exchange rate regimes adopted by

[10]In principle, the choice of the bandwidth should be dictated by the need to balance credibility and flexibility. See Cukierman, Spiegel, and Leiderman (2004) for a formal analysis.

[11]Between 1988 and 1994, Indonesia operated a crawling peg regime, whose main objective was also to depreciate the nominal exchange rate in order to offset the inflation differential with the country's major trading partners and maintain a competitive real exchange rate.

crisis countries in East Asia after 1997–1998 did evolve toward greater flexibility but have not been "clean" floats. On the contrary, they have been actively managed.

Whether countries should "float without fear" or instead exit to a managed float is an issue that goes beyond the scope of this paper.[12] Nevertheless, it is worth noting that various second-best arguments can be used to justify the adoption of a floating exchange rate regime that involves active central bank intervention. One argument is that, in the absence of an explicit commitment to defend a particular parity and in the presence of uncertainty about the "equilibrium" values of the nominal and real exchange rates, intervention aimed at smoothing excessive currency fluctuations may have a stabilizing effect on agents' expectations, thereby preventing overshooting and distortions in price signals (see Hernández and Montiel, 2003). Another important consideration is the magnitude and speed of the pass-through from exchange rates to domestic prices, as discussed earlier. This effect tends to be larger in developing and transition economies, compared to developed ones, because of the greater dependence of the former group on external trade. For instance, Choudhri and Hakura (2001) found that the proportion of a year's change in the consumer price index that can be explained by fluctuations in the exchange rate is 41 percent in Indonesia and 48 percent in Hungary, but only 13 percent for Germany and 2 percent in the UK and the US.[13] In another study by Soto and Selaive (2003, p. 7), the short-run pass-through coefficient was estimated to vary from 0.17 in the US to 0.28 in Colombia, 0.53 in Chile, and 0.78 in Israel. The authors also found that the size of this coefficient tends to increase with the degree of openness, as intuition would suggest. In a context where monetary policy is geared toward achieving an inflation target, the speed of the pass-through takes on special importance. As argued by Ho and McCauley (2003), in countries when exchange rate fluctuations have a large impact on inflation, intervention (to the extent that it is sterilized) may help the central bank to achieve its inflation objectives.[14] Recent evidence by Domac and Mendoza (2004) suggests indeed that foreign exchange intervention has helped to reduce currency volatility in Mexico and Turkey since the adoption of a flexible exchange rate regime.

Concerns about exchange rate volatility may also stem from other considerations, such as adverse effects on foreign trade or the vulnerability of the financial system in the presence of currency mismatches and dollarized balance sheets. Recent microeconomic evidence for Latin America suggests indeed that exchange rate depreciations can have sizable balance sheet effects at the firm level, because firms that borrow in foreign currency are often not perfectly hedged.[15] When net foreign-currency liabilities are large and capital flows are subject to potentially abrupt reversals, highly flexible exchange rate regimes can suffer from instability. For all these reasons, an exit from an adjustable peg to an "informal" exchange rate band, with possibly heavy (sterilized) intervention at times to keep the exchange rate stable, may well be the most sensible strategy to achieve greater flexibility.

---

[12]Calvo and Mishkin (2003) argued that the choice of an exchange rate regime might be of second-order importance from the point of view of macroeconomic management, compared to the more fundamental problem of developing strong and credible institutions to conduct monetary and fiscal policies. Although the argument may have some appeal, it does not negate the need to reflect on the role of the exchange rate regime during the interim phase, when these institutions are being built–a process that may be indeed very gradual.

[13]The pass-through tends also to be pro-cyclical and to be higher in countries with a history of high inflation; see Choudhri and Hakura (2001); and Ho and McCauley (2003). In addition, on industrial countries, it is positively related to the volatility of inflation (see Gagnon and Ihrig, 2002).

[14]Rather than intervention, of course, the choice of an appropriate width of the inflation target range may provide some scope for policymakers to allow the exchange rate to fluctuate, particularly when such fluctuations are deemed transitory in nature. At the same time, too wide a target range would tend to undermine credibility.

[15]See Galindo, Panizza and Schiantarelli (2003) for an overview of the evidence, as well as Benavente, Johnson, and Morandé (2003) for Chile and Bonomo, Martins, and Pinto (2003) for Brazil.

Finally, it is worth noting that the decision to switch regimes depends also on the expected behavior of key macroeconomic variables in the aftermath of the switch. There is, unfortunately, limited evidence to dwell on. Calderón and Schmidt-Hebbbel (2003) examined a sample of 23 cases of countries switching from hard pegs to intermediate regimes (including narrow bands), and 28 cases of countries switching from intermediate to floating regimes. They examined the behavior of growth and inflation in the three years following the switch in both groups using panel regression techniques. They found that, in the first group of countries, the switch had no contemporaneous effect on inflation, but that inflation rose significantly in years two and three following the switch, relative to the period preceding the transition. At the same time, growth declined significantly (by almost 3 percent) in the year of the switch, with no discernible effects in the subsequent years. In the second group of countries, there was no significant contemporaneous effect on inflation, but prices fell significantly in the year following the switch, whereas output increased (by about 2 percent) in the second year after the switch. Although the authors offer no analytical framework for interpreting these patterns, regime transition does appear to matter for short-run economic performance. Inflation is higher, and growth lower, in exits from hard pegs to intermediate regimes, whereas the opposite holds when exiting from an intermediate regime to a float.

3 THE BEHAVIOR OF CAPITAL FLOWS DURING EXITS

In examining the behavior of capital flows during orderly exits, a key issue is whether there are discernible differences in the behavior of these flows during either "disorderly" exits or "normal" conditions (that is, periods that do not involve a switch in the exchange rate regime). This section begins by discussing the potential determinants of private capital flows during exits, with a particular focus on the role of interest rates and expectations. It then studies the behavior of these flows in three recent exit cases: Chile, India, and Poland.

3.1 What Drives Capital Flows during Exits?

Capitals flows, whether they are short or long term in nature, tend to respond to perceived changes in rate-of-return differentials and risk (see for instance Calderón, Loayza, and Servén, 2003). Expectations of future inflation and movements in the exchange rate, as well as variables deemed to affect domestic interest rates (such as the stance of fiscal policy) and country risk play therefore an important role in the behavior of these flows in the short run. For example, in a study focusing on Argentina, Brazil, Mexico, and Venezuela, Fiess (2003) found evidence suggesting that country risk and global factors have a strong impact on capital flows, with country risk being correlated with domestic variables like the primary balance-to-GDP ratio and the public debt-to-GDP ratio.

In the particular context of orderly exits, to the extent that the transition process is deemed credible, both interest rates and expectations of future depreciation are likely to fall. As a result, capital outflows should diminish, thereby reducing pressure on the central bank to intervene and keep interest rates high. By contrast, if the exit is due to competitiveness considerations, and the switch to a band lacks credibility (perhaps because the margins of the band are perceived to be too narrow), foreign exchange pressures and capital outflows may persist. Thus, in contrast to episodes of disorderly exits, one should observe in the aftermath of successful exits a downward movement in domestic interest rates, stable (or higher) capital inflows, and a rise in official reserves. As noted earlier, the decision itself to exit may also depend on the behavior of capital flows. For instance, to the extent that greater exchange rate flexibility is sought to allow the currency to appreciate in response to capital inflows, the

period *preceding* the regime switch will also be characterized by a capital account surplus and an accumulation of reserves by the central bank.

The initial composition of capital flows also matters. Short-term arbitrage considerations may matter less for longer-term flows like FDI, compared to portfolio investment (equities, bonds, and short-term instruments such as certificates of deposits and commercial paper), as found for instance by Larraín, Labán, and Chumacero (1997) in a study of private capital inflows to Chile during the period 1985–1994. FDI flows are, therefore, typically less subject to sudden shifts in market sentiment.[16] Moreover, as documented by Asici and Wyplosz (2003), FDI flows (in proportion of GDP) tend to be higher in orderly exits, compared to disorderly exits. Thus, it is important to examine flows by categories as well. If longer-term flows represent a large component of total inflows, such inflows (and, thus, official reserves) may not display much movement following a successful exit – they may actually increase, if the regime switch enhances the economy's growth prospects.

3.2 Evidence from a Sample of Exit Cases

In order to get a better sense of how capital flows evolve during periods surrounding orderly exits, annual data was examined for three countries whose experience was discussed earlier: Chile, India, and Poland. Using the World Bank's *Global Development Finance* (GDF) database, I compare movements in net private capital flows and their composition three years prior to the exit year, and three years after. The categories considered, which are described in the annual GDF report, are FDI, portfolio equity flows, and debt flows (bonds and bank flows). Although no formal test of a change in the behavior of the series is performed, this is a useful and instructive "first look" at the data. The exit date is taken to be September 1999 for Chile, February 1993 for India, and May 1995 for Poland. For Poland, due to data limitations, the focus is on the exit from the peg to the band regime, as opposed to the switch from the band regime to a floating exchange rate (which occurred in April 2000, as noted earlier).

A crude measure of whether or not the exit was successful consists of assessing whether volatility of the nominal exchange rate increased after the exit. To do so I calculate (as for instance in Hernández and Montiel (2003)) the standard deviation of monthly percentage changes in the average nominal exchange rate, three years prior to the exit and three years after. The results are 1.45 and 2.97 for Chile, 3.57 and 3.32 for India, and 1.65 and 1.48 for Poland. Thus, exchange rate volatility increased significantly in Chile, but fell slightly in the other two countries. These numbers should, however be taken with caution, given that they are not *conditional* measures of volatility. An increase in exchange rate volatility may be the result of greater instability of fundamentals or a greater incidence of shocks to the economy after the transition. In the case of Chile, for instance, most observers regard the switch to the float as being highly successful, given the country's strong fundamentals. It actually occurred initially without a noticeable increase in exchange rate volatility. The sharp depreciation of the peso in 2001 (which is responsible for the large increase in volatility mentioned earlier) resulted to a significant extent from contagion effects due to the unfolding crisis in Argentina, rather than to inadequacies inherent to the exit process.

3.2.1 Net Private Inflows and their Composition

For Chile, total private capital inflows, which averaged almost $10 billion per annum during the three years (1996–1998) prior to the exit from the band regime to a floating exchange

[16]See Albuquerque (2003) for a framework (based on imperfect enforcement of financial contracts) that may help to explain why FDI is less volatile than other types of capital flows.

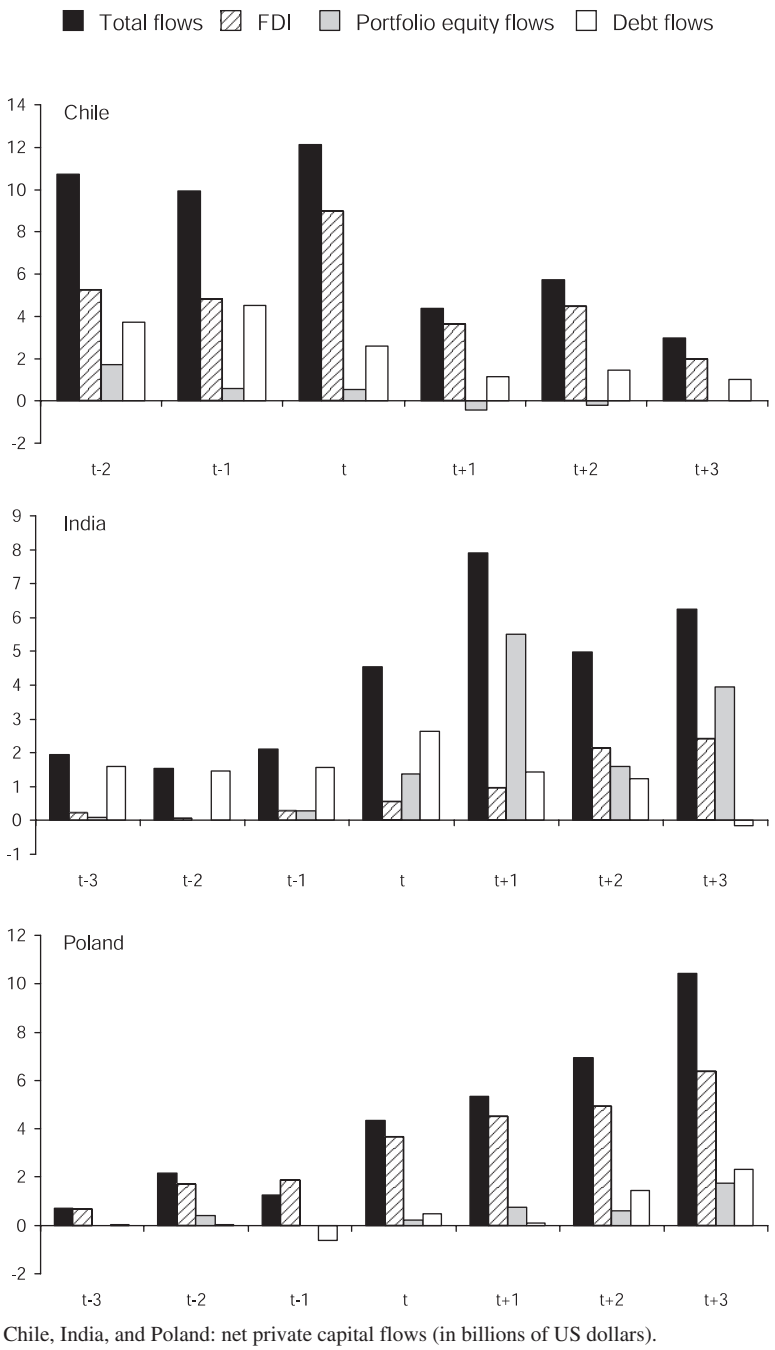

FIGURE 3 Chile, India, and Poland: net private capital flows (in billions of US dollars).
Source: World Bank, *Global Development Finance Database*.
Note: Period t corresponds to the year of exit (1999 for Chile, 1993 for India, and 1995 for Poland).

rate, and about $12 billion the year of the exit (1999), dropped to an average of $4.3 billion per annum in the three years following the exit (Figure 3). All components of private flows dropped significantly, with FDI flows falling from about $9 billion in 1999 to $3.6 billion in 2000, $4.5 billion in 2001, and $1.6 billion in 2002. In India, net total private capital flows

increased significantly after the exit, from an average of about $2 billion a year during 1990–1992 to $4.5 billion during the exit year (1993) and an average of almost $6.4 billion during 1994–1996. This increase was the result of a surge in FDI and portfolio equity flows only; debt flows (both bonds and bank loans) actually fell significantly. In Poland, the years following the exit also saw a large increase in capital inflows. Total net inflows increased from about $1.4 billion per annum in the three years preceding the float to $4.4 billion during the year the exit took place (1995) and an average of $7.6 billion per annum in the three subsequent years. Most of this increase resulted initially from stronger FDI flows (as in India) and, subsequently, higher portfolio and debt flows.

3.2.2 Capital Flows, Interest Rates, and Official Reserves

The foregoing discussion indicates that in the three years following the exit net private capital inflows fell in Chile, and increased in India and Poland. As noted earlier, the behavior of capital flows (particularly portfolio and debt flows) are related to movements in rates of return; it is thus important to examine also the behavior of interest rates before, during, and immediately after the exit occurred. As shown in Figure 4, in all three countries interest rates showed a tendency to decline. These results are consistent with the view that the regime switch, by alleviating the need to defend the currency, gave the authorities some scope for easing domestic monetary conditions. The drop in interest rates in Chile is also consistent with a post-exit reduction in capital inflows (at least for flows other than FDI) induced by lower expected rates of return on domestic assets, relative to foreign assets. In addition, for Chile, contagion effects (as discussed earlier) may have played a significant role in explaining the across-the-board reduction in capital movements. Of course, it is important to keep in mind that the behavior of domestic interest rates depends in general on both internal and external factors. Without a formal econometric analysis, it is difficult to control for changes in these factors, and thus determine the extent to which the decision to exit *per se* allowed a decline in interest rates.

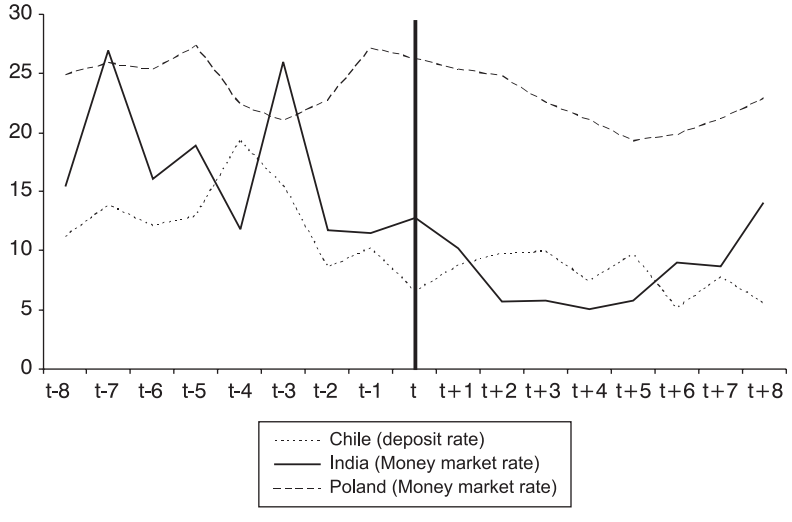

FIGURE 4 Interest rates (quarterly data, in percent).
Source: IMF, *International Financial Statistics*.
Note: Period t corresponds to the quarter of exit (1999 – Q3 for Chile, 1993 – Q1 for India, and 1995 – Q2 for Poland).

Independently of the *level* effect, to the extent that countries try to stabilize their exchange rates by intervening in securities markets rather than buying or selling reserves, greater exchange rate flexibility should be accompanied by reduced *volatility* of domestic interest rates. To assess whether this conjecture is correct, interest rate volatility was measured by the standard deviation of monthly changes in average interest rates (the bank deposit rate for Chile, and the money market rate for India and Poland), again three years prior to the exit, and three years after. The results are 3.79 and 1.77 for Chile, 6.58 and 4.99 for India, and 3.66 and 1.84 for Poland. Thus, interest rate volatility diminished in all three cases – dramatically so for Chile and Poland.

Of course, reduced interest rate volatility might also arise if there is greater use of sterilized (as opposed to non-sterilized) intervention in the foreign exchange market. Thus, it is important to examine also the behavior of official reserves before and after the exit. As noted by Hernández and Montiel (2003), if foreign exchange market intervention in the post-exit regime is aimed mostly at smoothing out large fluctuations in the exchange rate, the stock of reserves should fluctuate randomly around the level that the central bank deems sufficient to allow it to intervene discretionarily. Official reserves should not exhibit, therefore, any particular tendency to increase or fall over time. Moreover, to the extent that the post-exit regime is characterized by greater exchange rate flexibility, intervention in the foreign exchange market should be less pronounced, and the volatility of official reserves should decline. As shown in Figure 5, reserves showed no tendency to fall following the exit in none of the three countries. On the contrary, Poland and India recorded large increases in official holdings of foreign exchange, continuing the trend observed before the exit. Information on the depth of central bank intervention at very short frequencies is hard to come by (the frequency used in the figure is quarterly). However, the volatility of reserves, as measured by

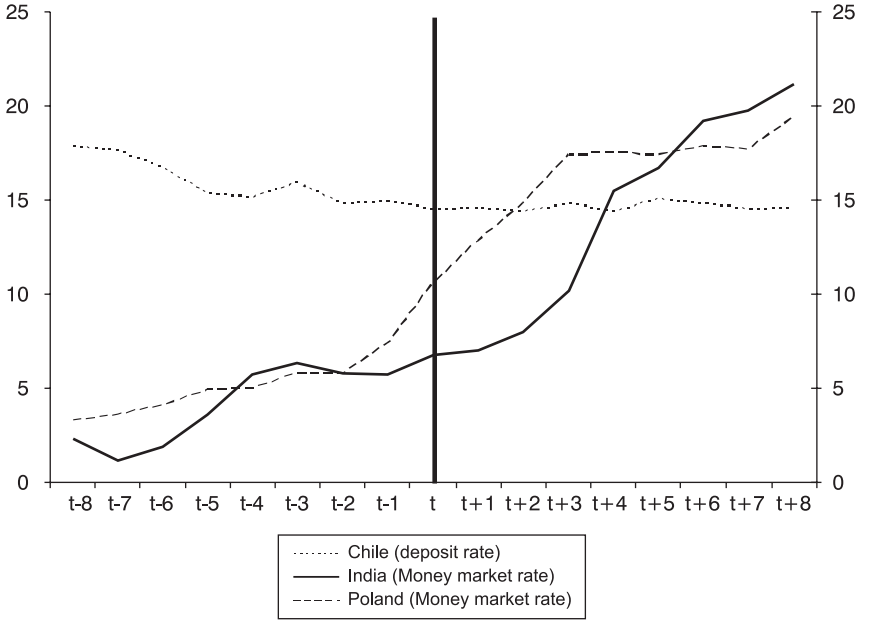

FIGURE 5 Total reserves minus gold (quarterly data, billions of US dollars).
Source: IMF, *International Financial Statistics*.
Note: Period t corresponds to the quarter of exit (1999 – Q3 for Chile, 1993 – Q1 for India, and 1995 – Q2 for Poland).

the standard deviation of monthly percentage change in total official reserves three years prior to floating and three years after, fell significantly in all three countries for which data were available: from 3.34 to 2.05 for Chile, from 22.26 to 7.04 for India, and from 6.74 to 3.72 for Poland. At the very least, these results are consistent with less central bank intervention in the post-exit regime.

The increase in the level of official reserves may be the result of a variety of factors, two of which being particularly relevant in the present context. First, as noted earlier, most countries adopted a managed float upon exiting and used interest rates as well as (to a lesser extent) sterilized intervention more heavily to limit movements in the nominal exchange rate. Higher reserves could be seen as evidence that countries did not consider foreign exchange market intervention only to smooth out excessive currency fluctuations, but also as a way to affect the level of the currency through cumulative purchases of foreign exchange – perhaps with the objective of avoiding a real appreciation. Second, greater openness (which may be one reason why, as indicated earlier, countries may choose to exit from an adjustable peg), may be associated with greater exposure to volatile shocks. If the degree of "loss aversion" (which reflects the tendency for agents to be more sensitive to reductions, as opposed to increases, in their consumption, thereby leading to larger weights being attached to "bad" states of nature) rises at the same time, the precautionary demand for international reserves may also increase. Aizenman and Marion (2003) made that argument in the context of the aftermath of a currency crisis, but in principle it could apply with equal force to the behavior of reserves in an orderly exit motivated (at least in part) by the need to cope with external volatility.[17]

4 CONCLUSIONS AND POLICY LESSONS

In recent years, intermediate exchange rate regimes have proved to lack the flexibility needed to handle large and abrupt changes in market sentiment and short-term capital flows. Exits from this type of arrangements have often been the involuntary result of recurrent speculative attacks, and have at times been associated with costly financial crises. At the same time, however, several countries have proved capable of exiting an intermediate regime without major economic disruptions. The purpose of this paper was to examine the conditions for orderly exits from adjustable pegs and narrow exchange rate bands, as well as the behavior of capital flows in the context of these exits. The first part of the paper discussed various issues associated with orderly transitions from an adjustable peg or a narrow band regime. After reviewing the reasons for seeking an exit, it discussed the conditions for an exchange rate regime switch to be successful. In particular, the analysis identified the ability to implement in a timely manner a credible alternative anchor to the nominal exchange rate and the availability of adequate instruments to manage liquidity in the post-exit regime as important prerequisites. Transparency in the policy process was also viewed as important to maintain confidence and convince the public of the need for reform. The second part discussed the factors affecting the pace of exit and the nature of the post-exit regime. An important issue in this context is the speed of the pass-through effect of the exchange rate to prices. The third part focused on the behavior of private capital flows before, during, and after orderly exits. The level and composition of these flows was examined in the context of exchange rate

[17]Aizenman and Marion (2003) also argued that, in the aftermath of a crisis, countries faced with higher perceived sovereign risk or higher fiscal liabilities may opt to hold more reserves. These motives are less relevant in the context of an orderly exit.

regime transitions in three countries: Chile, India, and Poland. The analysis suggested no clear patterns among these countries regarding the evolution of capital flows. In the case of Chile, because of factors that were unrelated to the exit *per se*, but it was noted that interest rates and the volatility of official reserves fell in all three of them, and that the level of official reserves increased in all cases – possibly as a result of a "precautionary" motive due to greater exposure to external shocks.

Although, as discussed earlier, there is a need for more formal quantitative analysis of the conditions under which exits are successful, a few lessons do emerge from the analysis. The first, and obvious one, is that the best timing for an orderly exit is a period of relative stability in the market for foreign exchange, or a period of nominal appreciation. Therefore, countries should adopt an "opportunistic" approach to exchange rate regime shifts. However, "good times" are often those when policymakers are unwilling to consider large-scale changes. For instance, it may be difficult to introduce greater exchange rate flexibility in a period of large capital inflows, as Chile and Poland did, because of pressure from exporters (Eichengreen, 1999). Thus, how to ensure that countries that are more forward looking in setting policies remains a matter of debate.

The second lesson is that replacement of the exchange rate anchor must be accompanied by a clear and explicit commitment to low inflation. This may require far-reaching institutional reforms (such as greater operational independence of the central bank) and a significant increase in the capacity to conduct monetary policy analysis – as is the case, most notably, if the post-exit regime involves the adoption of an inflation target. In countries lacking institutional preparation, a gradual exit is a more prudent option. This could be most effectively implemented in the context of a band regime with a pre-announced gradual widening of the margins of exchange rate fluctuations, and with a progressive reduction in central bank intervention within the bands.

The third lesson is that fiscal discipline is essential for exchange rate stability, no matter what the post-exit exchange rate regime is. Under a floating arrangement, destabilizing movements in expectations resulting from perceived inconsistencies in the macroeconomic policy mix, changes in market sentiment unrelated to fundamentals, or pure contagion effects, may all lead to erratic movements in the exchange rate and create pressures on prices (particularly if the pass-through effect is fast and significant), thereby undermining the achievement of an inflation target. Retaining the ability to conduct sterilized intervention, therefore, may be important.

As for the behavior of capital flows during orderly exits, the analysis of three country cases (Chile, India, and Poland) proved instructive. In both India and Poland, capital inflows actually increased in the aftermath of the regime switch. In the case of Chile, capital inflows fell, but this seems to have been a consequence of contagion effects associated with the unfolding crisis in Argentina, rather than a lack of confidence in the exit process. Without the regime switch, the drop in capital inflows could have been even larger, because of a loss in confidence. Thus, capital flows appear to have helped, rather than hindered, the change in regime in the cases reviewed.

Nevertheless, caution is needed before drawing strong conclusions from the analysis. First, the sample is small, and a larger group of countries would need to be considered to make a more informed assessment. Second, the data used are subject to limitations. For instance, the FDI flows reported in the GDF database include among other items new equity, retained earnings, intra-firm debt, and valuation adjustments. However, valuation adjustments largely reflect currency fluctuations; adding them to reported FDI flows tends to distort the data. This is particularly problematic for periods surrounding an exchange rate exit, given that the exchange rate may depreciate quite significantly over a period of two to three years following the regime switch. In addition, data on official reserves do not take into

account central bank obligations in forward markets. By intervening in these markets, central banks incur future liabilities in foreign currency that should be netted out from officially reported reserves.

Third, and perhaps more important, the descriptive approach used here must be supplemented by formal econometric tests to establish the relative strength of the various factors at play. A possible approach could be to estimate a model relating capital flows and their composition to some fundamental determinants (both domestic and external) prior to the exit, perhaps along the lines of Mody, Taylor, and Kim (2001), and Taylor and Sarno (1997), and use it to predict the behavior of these flows in the aftermath of the regime switch. The impact of changes in interest rate differentials and other variables could then be more accurately evaluated, with differences between actual and predicted values being construed possibly as an indication of a "confidence effect" associated with the regime change.

Acknowledgements

This paper was prepared as a background study for the *Global Development Finance 2004* Report of the World Bank. I would like to thank Mansoor Dailami, Homi Kharas, Klaus Schmidt-Hebbel, and participants at the Symposium on Capital Markets held in Medellin, Colombia (25–26 February 2004) for helpful comments and suggestions, and Inci Otker-Robe for access to her data. The views expressed in this paper are mine and do not represent those of the Bank or the individuals acknowledged.

References

Agénor, P.-R. (1992) *Parallel Currency Markets in Developing Countries: Theory, Evidence, and Policy Implications.* Princeton Essays in International Finance, No. 188. Princeton, NJ: Princeton University Press.

Agénor, P.-R. (2002) Monetary policy under flexible exchange rates: an introduction to inflation targeting, In Loayza, N. and Soto, R. (Eds) *Inflation Targeting: Design, Performance, Challenges.* Santiago: Central Bank of Chile.

Agénor, P.-R. (2003) Benefits and costs of international financial integration: theory and facts, *The World Economy,* **26,** 1089–1118.

Agénor, P.-R., and Flood, R. P. (1994) Macroeconomic policy, speculative attacks and balance of payments crises, In Van der Ploeg, F. (Ed.) *The Handbook of International Macro-economics.* Oxford: Basil Blackwell.

Agénor, P.-R. and Montiel, P. J. (1999) *Development Macroeconomics,* second edition. Princeton, NJ: Princeton University Press.

Aizenman, J., and Marion, N. P. (2003) The high demand for international reserves in the Far East: what is going on?, *Journal of the Japanese and International Economies,* **17**, 370–400.

Albuquerque, R. (2003) The composition of international capital flows: risk sharing through foreign direct investment, *Journal of International Economics,* **61**, 353–383.

Amato, J. D. and Gerlach, S. (2002) Inflation targeting in emerging and transition economies: lessons after a decade, *European Economic Review,* **46**, 781–790.

Asici, A. A. and Wyplosz, C. (2003) The art of gracefully exiting a peg, *Economic and Social Review,* **34**, 211–228.

Benavente, J. M., Johnson, C. and Morandé, F. (2003) Debt composition and balance sheet effects of exchange rate depreciations: a firm-level analysis for Chile, *Emerging Markets Review,* **4**, 397–416.

Bonomo, M., Martins, B. and Pinto, R. (2003) Debt composition and exchange rate balance sheet effects in Brazil: a firm level analysis, *Emerging Markets Review,* **4**, 368–396.

Broda, C. (2001) Coping with terms-of-trade shocks: pegs versus floats, *American Economic Review,* **91**, 376–380.

Broda, C. (2004) Terms of trade and exchange rate regimes in developing countries, *Journal of International Economics,* **63**, 31–58.

Bubula, A. and Otker-Robe, I. (2002) The evolution of exchange rate regimes since 1990: evidence from *de facto* policies, Working Paper No. 02/155, International Monetary Fund.

Bubula, A. and Otker-Robe, I. (2003) Are pegged and intermediate exchange rate regimes more crisis prone? Working Paper No. 03/223, International Monetary Fund.

Calderón, C., Loayza, N. and Servén, L. (2003) Do capital flows respond to risk and return? Policy Research Working Paper No. 3059, the World Bank.

Calderón, C. and Schmidt-Hebbel, K. (2003) Macroeconomic policies and performance in Latin America, *Journal of International Money and Finance,* **22**, 895–923.

Calvo, G. A. (1998) Capital flows and capital-market crises: the simple economics of sudden stops, *Journal of Applied Economics,* **1**, 35–54.
Calvo, G. A. and Mishkin, F. S. (2003) The mirage of exchange rate regimes for emerging market countries, Working Paper No. 9808, National Bureau of Economic Research
Calvo, G. A. and Reinhart, C. (2002) Fear of floating, *Quarterly Journal of Economics,* **117**, 379–408.
Cerra, V. and Saxena, S. C. (2000) What caused the 1991 currency crisis in India? Working Paper No. 00/57, International Monetary Fund.
Choudhri, E. U. and Hakura, D. S. (2001) Exchange rate pass-through to domestic prices: does the inflationary environment matter? Working Paper No. 01/194, International Monetary Fund.
Chuhan, P., Perez-Quiros, G. and Popper, H. (1996) International capital flows: do short-term investment and direct investment differ?," PRE Working Paper No. 1669, the World Bank.
Claessens, S., Dooley, M. P. and Warner, A. (1995) Portfolio capital flows: hot or cold?, *World Bank Economic Review,* **9**, 153–174.
Corbo, V. and Hernández, L. (1996) Macroeconomic adjustment to capital inflows: lessons from recent Latin American and East Asian experience, *World Bank Research Observer,* **11**, 61–85.
Cukierman, A., Spiegel, Y. and Leiderman, L. (2004) The choice of exchange rate bands: balancing credibility and flexibility, *Journal of International Economics,* **62**, 379–408.
Domac, I. and Mendoza, A. (2004) Is there room for foreign exchange inter-ventions under an inflation targeting framework? Evidence from Mexico and Turkey, PRE Working Paper No. 3288, The World Bank.
Duttagupta, R. and Otker-Robe, I. (2003) Exits from pegged regimes: an empirical analysis," IMF Working Paper No. 03/147.
Edwards, S. (2004) Financial openness, sudden stops and current account reversals, Working Paper No. 10277, National Bureau of Economic Research.
Eichengreen, B. (1999) Kicking the habit: moving from pegged rates to greater exchange rate flexibility, *Economic Journal,* **109**, 1–14.
Eichengreen, B. and Masson, P. (1998) Exit strategies: policy options for countries seeking greater exchange rate flexibility, IMF Occasional Paper No. 168.
Fiess, N. (2003) Capital flows, country risk, and contagion, Policy Research Working Paper No. 2943, the World Bank.
Gagnon, J. E. and Ihrig, J. (2002) Monetary policy and exchange rate pass-through, unpublished, Federal Reserve Bank, Board of Governors.
Galindo, A., Panizza, U. and Schiantarelli, F. (2003) Debt composition and balance shee effects of currency depreciation: a summary of the micro evidence, *Emerging Markets Review,* **4**, 330–339.
Goldfajn, I. and Valdés, R. (1999) The aftermath of appreciations, *Quarterly Journal of Economics,* **114**, 229–262.
Hernández, L. and Montiel, P. J. (2003) Post-crisis exchange rate policies in five Asian countries: filling in the 'hollow middle', *Journal of the Japanese and International Economies,* **17**, 336–369.
Ho, C. and McCauley, R. N. (2003) Living with flexible exchange rates: issues and recent experience in inflation targeting emerging market economies, Working Paper No. 130, Bank for International Settlements.
Hutchison, M. and Neuberger, I. (2002) Sudden stops and the Mexican wave: currency crises, capital flow reversals and output loss in emerging markets, Working Paper No. 02–03, Federal Reserve Bank of San Francisco.
Kalasopatan, C. (2003) The reversal of international bank lending flows in emerging countries during financial crises, paper presented at the METU Conference in Economics, Ankara.
Kohli, R. (2003) Real exchange rate stabilization and managed floating: exchange rate policy in India, 1993–2001, *Journal of Asian Economics,* **14**, 369–387.
Komulainen, T. and Lukkarila, J. (2003) What drives financial crises in emerging markets?, *Emerging Markets Review,* **4**, 248–272.
Kraay, A. (2003) Do high interest rates defend currencies during speculative attacks?, *Journal of International Economics,* **59**, 297–321.
Larraín B., Felipe, M. Labán, R. and Chumacero, R. A. (1997) What determines capital inflows? an empirical analysis for Chile, Harvard Institute for International Development, Discussion Paper No. 590.
Mody, A., Taylor, M. P. and Kim, J. Y. (2001) Modelling fundamentals for forecasting capital flows to emerging markets, *International Journal of Finance and Economics,* **6**, 201–216.
Montiel, P. J. (2003) Tight money in a post-crisis defense of the exchange rate: what have we learned?, *World Bank Research Observer,* **18**, 1–23.
Morandé, F. G. and Tapia, M. (2002) Exchange rate policy in Chile: from the band to floating and beyond, Working Paper No. 152, Central Bank of Chile.
Obstfeld, M. (1994) Risk taking, global diversification, and growth, *American Economic Review,* **84**, 1310–29.
Perry, G. and Servén, L. (2003) The anatomy of a multiple crisis: why was Argentina special and what can we learn from it? Policy Research Working Paper No. 3081, the World Bank.
Rebelo, S. and Végh, C. (2002) When is it optimal to abandon a fixed exchange rate? Unpublished, University of California at Los Angeles.
Rogoff, K. S. and Reinhart, C. M. (2002) The modern history of exchange rate arrangements: a reinterpretation, Working Paper No. 8963, National Bureau of Economic Research.
Rogoff, K. S., Husain, A. M., Mody, A., Brooks, R. and Oomes, N. (2003) Evolution and performance of exchange rate regimes, Working Paper No. 03/243, International Monetary Fund.

Sarno, L. and Taylor, M. P. (1999) Hot money, accounting labels and the permanence of capitals flows to developing countries: an empirical investigation, *Journal of Development Economics,* **59**, 337–364.
Soto, C. and Selaive, J. (2003) Openness and imperfect pass-through: implications for monetary policy, Working Paper No. 216, Central Bank of Chile.
Subramanian, A. (1997) The Egyptian stabilization experience: an analytical retrospective, Working Paper No. 97/105, International Monetary Fund.
Taylor, M. and Sarno, L. (1997) Capital flows to developing countries: long- and short-term determinants, *The World Bank Economic Review,* **11**, 451–470.