



# IV

## Exchange Rate Arrangements and Economic Performance in Developing Countries

In the 1980s and 1990s, as globalization and changes in policy orientation have resulted in closer international trade and financial linkages, the economic performance and growth prospects of many developing countries have been greatly enhanced. The adoption of outward-oriented policy strategies and the accompanying liberalization of international trade and payments have been found to be critical ingredients of successful economic development.<sup>78</sup> The pressures of globalization have served to accentuate both the benefits of good economic policy management and the costs of inappropriate policies. Sound economic management includes maintaining an appropriately valued currency. It has long been recognized that “getting the exchange rate right” is essential for achieving macroeconomic stability on a sustained basis.<sup>79</sup> Moreover, as demonstrated by recent exchange market crises in a number of emerging market countries, challenges facing countries may change over time, suggesting a need to adapt exchange rate arrangements to changing circumstances.

This chapter discusses currency arrangements in developing countries, their evolution, the factors underlying the choice of regime, and some key macroeconomic characteristics of economies with pegged and economies with more flexible exchange rate arrangements. It also discusses several related policy issues, including currency misalignments, stabilization of high-inflation economies, how long to maintain a peg, and the challenges posed in a world of high capital mobility by banking sector weaknesses.

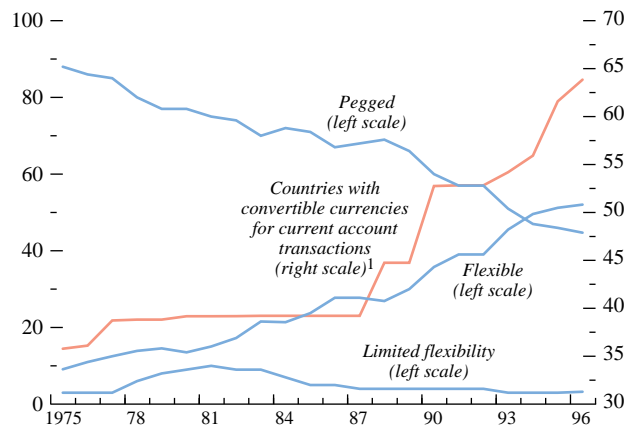
### Changing Pattern of Exchange Rate Arrangements

Over the past two decades, the mix of exchange rate arrangements in developing countries has changed significantly. Following the breakdown of the Bretton Woods par value system and the widespread adoption of floating exchange rates by the major advanced

**Figure 25. Developing Countries: Evolution of Exchange Rate Regimes**

(In percent of total number of countries)

Over the past two decades, an increasing number of developing countries have adopted flexible exchange rate arrangements.



Note: The classification is based on officially reported exchange rate arrangements as of year-end. “Pegged” regimes include exchange rate arrangements in which the currency is pegged to a single currency, to the SDR, or to a basket of currencies. “Flexible” regimes consist of exchange rate arrangements in which the exchange rate is adjusted according to a set of indicators, follows a managed float, or is independently floating. For some countries, the exchange rate may be classified as “managed floating” or “independently floating” but in fact is informally pegged. The differences between pegged and flexible regimes may therefore not be as significant as those indicated in the figure. The total number of countries included increases over time in keeping with increasing Fund membership.

<sup>1</sup>Percent of developing countries that have accepted Article VIII of the IMF’s Articles of Agreement; countries are weighted by their 1990–95 share of aggregate exports of all developing countries.

<sup>78</sup>Anne O. Krueger, “Trade Policy and Economic Development: How We Learn,” *American Economic Review*, Vol. 87 (March 1997).

<sup>79</sup>See, for example, Stanley Fischer, “Economic Growth and Economic Policy,” in *Growth-Oriented Adjustment Programs*, ed. by Vittorio Corbo, Morris Goldstein, and Mohsin Khan (Washington: IMF and World Bank, 1986).

**Table 14. Developing Countries: Officially Reported Exchange Rate Arrangements<sup>1</sup>***(In percent of total)*

	1976	1981	1986	1991	1996
Pegged	86	75	67	57	45
U.S. dollar	42	32	25	19	15
French franc	13	12	11	11	11
Other	7	4	4	3	4
SDR	12	13	8	5	2
Composite	12	14	18	20	14
Limited flexibility	3	10	5	4	3
Single	3	10	5	4	3
Cooperative	—	—	—	—	—
More flexible	11	15	28	39	52
Set to indicators	6	3	4	4	2
Managed floating	4	9	13	16	21
Independently floating	1	4	11	19	29
<b>Number of countries</b>	<b>100</b>	<b>113</b>	<b>119</b>	<b>123</b>	<b>123</b>

<sup>1</sup>Based on end-of-year classification.

economies in the early 1970s, most developing countries initially continued to peg their currencies either to a key currency—predominantly the U.S. dollar or the French franc—or to a basket of currencies.<sup>80</sup> Starting in the late 1970s, however, a number of developing countries moved away from these arrangements.

At first, the shift was mainly away from single-currency pegs to pegs defined in terms of baskets of currencies, for example, the SDR, or to limited flexibility with respect to a single currency (Figure 25 and Table 14).<sup>81</sup> But since the early 1980s, there has been a marked shift toward more flexible exchange rate arrangements. Thus, whereas in 1975, 87 percent of developing countries had some type of pegged exchange rate, while only 10 percent had flexible exchange rates, by 1985 the proportions were 71 percent and 25 percent, respectively, and by the mid-1990s most countries had reportedly adopted a flexible

<sup>80</sup>As discussed further below, a major reason was that many developing countries restricted the convertibility of their currencies for current transactions, thus essentially obliging them to peg—either explicitly or implicitly—to a convertible foreign currency. Exchange controls and restrictions on making and receiving foreign payments make it impossible for commercial banks to make a unified market in foreign exchange by intermediating the unrestricted demands and supplies of the nonbank sector. A freely floating exchange rate is a feasible option only when a currency is convertible for current account transactions.

<sup>81</sup>Exchange rate arrangements are officially classified into three major categories: (1) pegged, which includes pegs to any single currency, the SDR, or any other currency basket; (2) limited flexibility in terms of a single currency or a group of currencies in a cooperative arrangement; and (3) more flexible, which includes arrangements under which the exchange rate is adjusted at relatively frequent intervals according to a set of indicators, other managed floating, and independently floating. The only currencies classified as having limited flexibility at present are four member countries of the Gulf Cooperation Council, and no developing countries are in a cooperative arrangement with limited flexibility.

exchange rate regime (see Figure 25). When the relative economic size of countries is taken into account, the shift in exchange rate regimes appears to have been even more pronounced. Thus, in 1975 developing countries with pegged exchange rates accounted for 70 percent of developing countries' total trade, while countries with flexible exchange rates accounted for only 8 percent. By 1996, this pattern had been virtually reversed (Figure 26). These figures are based on officially declared exchange rate arrangements. In some countries, however, an arrangement may be officially classified as “managed floating” or even “independently floating,” even though the exchange rate continues to be used actively as a policy instrument and is effectively set by the authorities. Indeed, some of these countries continue to informally peg their exchange rate to one of the major reserve currencies, particularly the U.S. dollar. The shift toward more flexible exchange rate regimes since the 1970s may therefore be less pronounced than indicated by official statements and classifications, but it is still significant.

Notwithstanding the increasing adoption of more flexible exchange rate arrangements, some countries have continued to maintain pegged exchange rate regimes,<sup>82</sup> the prime example being the 14 sub-Saharan countries of the CFA zone, which have pegged their currencies to the French franc since 1948.<sup>83</sup> Also, a few countries have reverted to a fixed exchange rate regime. The most notable examples are Argentina, which adopted a currency-board-type arrangement in 1991 and has maintained it since, and Hong Kong, China, which has had a currency-board-type arrangement since 1983. All other developing countries that switched from a flexible to a pegged exchange rate subsequently reverted to flexible arrangements.

The shift toward more flexible exchange rate arrangements has been broadly based across geographic regions (Table 15). In 1976, pegged rate regimes were dominant in all four of the *World Economic Outlook's* regional groupings of developing countries: Africa, Asia, the Middle East and Europe, and the Western Hemisphere. This was still true in 1986, especially in Africa and the Middle East and Europe region. But by 1996, flexible exchange rate regimes had become dominant in all regions. Pegged rate regimes are now most common among countries in Africa and the Middle East and least prevalent among countries in the Western Hemisphere. In Africa, countries with currencies pegged to the French franc or the South African rand now account for the

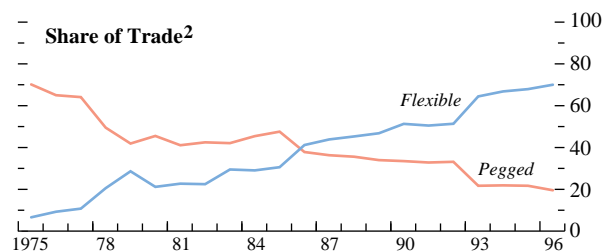
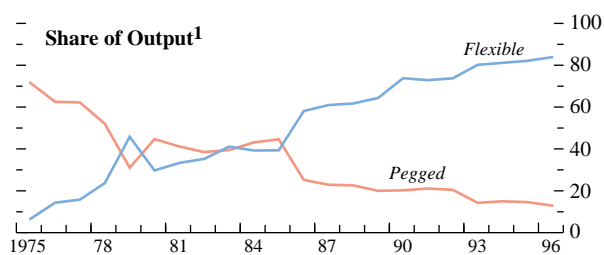
<sup>82</sup>A number of these countries, in particular those with currencies pegged to the French franc or the South African rand are part of monetary unions.

<sup>83</sup>A fixed rate of 50 CFA francs to the French franc was maintained until 1994, when the CFA franc was devalued to 100 CFA francs per French franc. Guinea Bissau joined the CFA franc zone in May 1997, raising the number of member countries to 15.

**Figure 26. Developing Countries: Share of Output and Trade by Exchange Rate Regime**

(In percent of total developing country output and trade)

Countries with officially reported flexible exchange rate arrangements account for most of the developing countries' total output and trade.



Note: The classification is based on officially reported exchange rate arrangements as of year-end. "Pegged" regimes include exchange rate arrangements in which the currency is pegged to a single currency, to the SDR, or to a basket of currencies. "Flexible" regimes consist of exchange rate arrangements in which the exchange rate follows a managed float or is independently floating. For some countries, the exchange rate may be classified as "managed floating" or "independently floating" but in fact is informally pegged. The differences between pegged and flexible regimes may therefore not be as significant as those indicated in the figure. The total number of countries included increases over time in keeping with increasing Fund membership.

<sup>1</sup>Real GDP, valued at purchasing power parities, of developing countries in each regime as a share of total developing country GDP.

<sup>2</sup>Exports and imports of developing countries in each regime as a share of total developing country exports and imports.

bulk of pegged regimes.<sup>84</sup> The exchange rate arrangements of a few Middle Eastern countries (Bahrain, Qatar, Saudi Arabia, and the United Arab Emirates) are formally classified as ones of "limited flexibility," but in fact the currencies of these countries are tightly linked to the U.S. dollar.

Of the countries in the Western Hemisphere with pegged exchange rates, all peg their currencies to the U.S. dollar. In Asia, although no country formally pegs to the dollar, in many cases the dollar appears to have had a very large weight in currency baskets, at least until recently (Table 16). Among the Asian economies with flexible exchange rate arrangements, the majority have always favored managed floating, but in the 1990s a number of countries adopted "independently floating" rates. Arrangements in which the exchange rate is adjusted according to a set of indicators were prevalent in Western Hemisphere countries in the 1970s and early 1980s, but they have since become less common. Instead, Western Hemisphere countries with flexible arrangements are evenly divided between those with managed and those with independently floating rates. In Africa, the great majority of countries with flexible exchange rate arrangements have chosen to float independently.

### Factors Underlying the Evolution of Exchange Rate Arrangements

Many considerations have entered into individual countries' decisions to adopt a particular arrangement. The early response to the adoption of floating rates among the world's major currencies in the early 1970s reflected developing countries' conditions at the time. For the majority of countries with essentially stable internal financial conditions the initial response was to continue to peg to the same currency that each had pegged to during the Bretton Woods system.<sup>85</sup> Countries with unstable internal financial conditions, and which during the par value system had engaged in frequent exchange rate adjustments, shifted to crawling pegs or managed floating.<sup>86</sup> Over time, however,

<sup>84</sup>Exchange market reforms in Africa are described in Box 3 of the October 1994 *World Economic Outlook*.

<sup>85</sup>The choice of foreign currency to which the domestic currency is pegged assumed greater importance after the breakdown of the Bretton Woods system. Under the par value system, pegging to one currency resulted in a fixed rate vis-à-vis all other currencies, except when exchange rates were realigned. Since realignments were quite rare, pegging to the pound sterling or the French franc was little different from pegging to the U.S. dollar.

<sup>86</sup>Jacques J. Polak, "The Choice of an Exchange Rate Regime," in *Development Issues in The Current International Monetary System: Essays in Honour of Byanti Kharmawan*, ed. by Dahlan M. Satalaksana (Singapore: Addison Wesley, 1988), pp. 132–48 reprinted in J.J. Polak, *Economic Theory and Financial Policy: The Selected Essays of Jacques J. Polak*, Vol. I (Brookfield, Vermont: Edward Elgar, 1994), pp. 281–97.

**Table 15. Geographical Distribution of Officially Reported Exchange Rate Arrangements***(Number of countries)*

	Africa	Asia	Middle East and Europe	Western Hemisphere	Total
1976					
Pegged	39	15	13	19	86
To a basket of currencies	12	7	5	—	24
Limited flexibility	—	1	2	—	3
More flexible	1	1	2	7	11
Independently floating	—	—	1	—	1
Total	40	17	17	26	100
1986					
Pegged	34	14	11	21	80
To a basket of currencies	15	9	6	2	32
Limited flexibility	—	2	4	—	6
More flexible	13	7	2	11	33
Independently floating	8	1	1	3	13
Total	47	23	17	32	119
1996					
Pegged	25	11	8	11	55
To a basket of currencies	5	9	5	—	19
Limited flexibility	—	—	4	—	4
More flexible	25	13	5	21	64
Independently floating	20	5	2	9	36
Total	50	24	17	32	123

other considerations played a role. One of these was the movement of key currencies. Thus, a number of countries that had pegged to the pound sterling or the U.S. dollar mainly on historical, rather than economic, grounds abandoned the peg to the currency concerned in favor of a basket peg when the depreciation of sterling in the second half of the 1970s and the strong appreciation of the U.S. dollar in the first half of the 1980s entailed too low or too high a value for their currency. More broadly, the uncertainties associated with fluctuations in the exchange rates of the major currencies induced a number of countries to shift from single-currency to basket pegs.

Another development that influenced the choice of regime was the rapid acceleration of inflation in many developing countries during the 1980s. Countries with high rates of inflation compared with their trading partners were obliged to depreciate their currencies to prevent a deterioration in international competitiveness. This was especially so for countries in the Western Hemisphere, several of which adopted crawling pegs. As inflation accelerated to extremely high rates, however, a number of countries adopted a

pegged exchange rate as a central element of stabilization programs.<sup>87</sup>

Yet another factor that induced shifts out of pegged exchange rate arrangements in the 1980s was a series of external shocks—including the steep rise in international interest rates and the slowdown of growth in the industrial countries in the early part of the decade, adverse terms of trade movements, and the debt crisis—which required real exchange rate depreciations in a number of developing countries and, hence, greater flexibility in exchange rate policy. In recent years, increased capital mobility, which has increased the risks of the emergence of external and domestic imbalances and constrained the scope for sterilized intervention, may also have played a role.

In fact, the trend toward increased flexibility to a large extent reflects many instances in which countries

<sup>87</sup>The use of the exchange rate as a nominal anchor is discussed further below.

**Table 16. Implicit Weights of U.S. Dollar and Japanese Yen in Nominal Values of Selected Asian Currencies**

Currency	Estimate A <sup>1</sup>		Estimate B <sup>2</sup>	
	U.S. Dollar	Japanese Yen	U.S. Dollar	Japanese Yen
Korean won	0.96	-0.01	0.84	0.17
Singapore dollar	0.75	0.13	0.75	0.18
Malaysian ringgit	0.78	0.07	0.87	0.16
Indonesian rupiah	0.95	0.16	0.97	0.01
Philippine peso	1.07	-0.01	1.07	0.03
Thai baht	0.91	0.05	0.86	0.09

Source: Shinji Takagi, "The Yen and Its East Asian Neighbors, 1980-95; Cooperation or Competition?" NBER Working Paper No. 5720 (Cambridge, Massachusetts: National Bureau of Economic Research, August 1996).

<sup>1</sup>Estimate A from Jeffrey A. Frankel and Shang-Jin Wei, "Yen Bloc or Dollar Bloc?: Exchange Rate Policies of the East Asian Economies," in *Macroeconomic Linkage: Savings, Exchange Rates, and Capital Flows*, ed. by Takatoshi Ito and Anne Krueger (Chicago: University of Chicago Press, 1994).

<sup>2</sup>Estimate B from C.H. Kwan, *Enken no Keizaigaku* (The Economics of the Yen Bloc), in Japanese (Tokyo: Nihon Keizai Shimbunsha, 1995).

faced balance of payments difficulties that were managed partly through exchange rate adjustment.<sup>88</sup> Exchange rate flexibility came increasingly to be adopted as an instrument in the adjustment process in a world economy characterized by increasing international integration and, in some respects, increased potential instability. The increased preference for greater exchange rate flexibility has also been associated with the adoption of more open, outward-looking policies toward trade and financial flows and an increased emphasis on market-determined exchange rates and interest rates. A growing number of countries have relaxed or eliminated exchange restrictions and introduced currency auctions and interbank trading in foreign currencies, reducing the direct role of monetary authorities in exchange rate determination. This has generally been associated with the removal of credit ceilings and interest rate controls and the development of indirect instruments of monetary control.

Overall, however, the evolution of exchange rate arrangements in developing countries has been toward flexibly managed exchange rates rather than purely floating rates. As a practical matter, developing countries for the most part are not in a position to allow their exchange rates to float freely as in the case of the major currencies. Financial markets in many developing countries are not highly developed and foreign exchange markets are often thin, so that considerable volatility can arise in an unmanaged market, with a few transactions causing extremely large short-term

exchange rate movements. In such markets, it may also be difficult for participants to identify an equilibrium exchange rate. There is thus generally a need for active management to help guide the market. Even in countries that accept a high degree of exchange rate flexibility there is a need to pay considerable attention to exchange market conditions and for policy adjustments and official intervention to help avoid excessive volatility and serious misalignment.

### Analytical Issues in the Choice of Regime

The economic literature has identified a number of factors relating to an economy's structural characteristics, its susceptibility to external shocks, and macroeconomic and institutional conditions that influence the relative desirability of alternative exchange rate regimes.<sup>89</sup>

#### Country Characteristics and Nature of Shocks

The early literature on the choice of exchange rate regime, which was based on the theory of optimum currency areas, focused on the characteristics that determine whether a country would be better off, in terms of its ability to maintain external and internal balance, with a fixed or a flexible exchange rate arrangement. That literature generally indicated that small open economies are better served by a fixed exchange rate, and that the less diversified is a country's production and export structure and the more geo-

<sup>88</sup>For instance, between 1985 and 1992 all countries that shifted to "independently floating" did so in response to severe balance of payments difficulties and most did so as a prior action or performance criterion in the context of an IMF program—see Peter J. Quirk, "Recent Experience with Floating Exchange Rates in Developing Countries," in *Approaches to Exchange Rate Policy: Choices for Developing and Transition Economies*, ed. by Richard C. Barth and Chorng-Huey Wong (Washington: IMF, 1994).

<sup>89</sup>For reviews of the literature see Peter Wickham, "The Choice of Exchange Rate Regime in Developing Countries," *Staff Papers*, IMF, Vol. 32 (June 1985), pp. 248-88; Bijan B. Aghevli, Mohsin S. Khan, and Peter J. Montiel, *Exchange Rate Policy in Developing Countries: Some Analytical Issues*, IMF Occasional Paper No. 78 (March 1991); and Peter Isard, *Exchange Rate Economics* (Cambridge University Press, 1995), Chapter 11.



**Table 17. Considerations in the Choice of Exchange Rate Regime**

Characteristics of Economy	Implication for the Desired Degree of Exchange Rate Flexibility
Size of economy	The larger the economy, the stronger is the case for a flexible rate.
Openness	The more open the economy, the less attractive is a flexible exchange rate.
Diversified production/export structure	The more diversified the economy, the more feasible is a flexible exchange rate.
Geographic concentration of trade	The larger the proportion of an economy's trade with one large country, the greater is the incentive to peg to the currency of that country.
Divergence of domestic inflation from world inflation	The more divergent a country's inflation rate from that of its main trading partners, the greater is the need for frequent exchange rate adjustments. (But for a country with extremely high inflation, a fixed exchange rate may provide greater policy discipline and credibility to a stabilization program.)
Degree of economic/financial development	The greater the degree of economic and financial development, the more feasible is a flexible exchange rate regime.
Labor mobility	The greater the degree of labor mobility, when wages and prices are downwardly sticky, the less difficult (and costly) is the adjustment to external shocks with a fixed exchange rate.
Capital mobility	The higher the degree of capital mobility, the more difficult it is to sustain a pegged-but-adjustable exchange rate regime.
Foreign nominal shocks	The more prevalent are foreign nominal shocks, the more desirable is a flexible exchange rate.
Domestic nominal shocks	The more prevalent are domestic nominal shocks, the more attractive is a fixed exchange rate.
Real shocks	The greater an economy's susceptibility to real shocks, whether foreign or domestic, the more advantageous is a flexible exchange rate.
Credibility of policymakers	The lower the anti-inflation credibility of policymakers, the greater is the attractiveness of a fixed exchange rate as a nominal anchor.

graphically concentrated its trade, the stronger also is the case for a fixed exchange rate (Table 17).<sup>90</sup> The attractiveness of a fixed exchange rate is also greater the higher is the degree of factor mobility, the less a country's inflation rate diverges from that of its main trading partners, and the lower is the level of economic and financial development.

Another approach to the choice of exchange rate regime has focused on the effects of various random disturbances on the domestic economy.<sup>91</sup> The optimal regime in this framework is the one that stabilizes macroeconomic performance, that is, minimizes fluctuations in output, real consumption, the domestic price level, or some other macroeconomic variable. The ranking of fixed and flexible exchange rate regimes depends on the nature and source of the

shocks to the economy, policymakers' preferences (i.e., the type of costs they wish to minimize), and the structural characteristics of the economy. An extension of this approach assumes that the choice of exchange rate regime is not simply one between a perfectly fixed or a freely floating exchange rate. Rather, there is a range of regimes of varying degrees of exchange rate flexibility reflecting different intensities of official intervention in the foreign exchange market.<sup>92</sup> Although these approaches do not yield model-free conclusions, the typical finding is that a fixed exchange rate (or a greater degree of fixity) is generally superior if the disturbances impinging on the economy are predominantly domestic nominal shocks, such as money demand shocks, whereas a flexible rate (or a greater degree of flexibility) is preferable if disturbances are predominantly foreign shocks or domestic real shocks, such as shifts in the demand for domestic goods.

### Credibility Versus Flexibility

A more recent strand of analysis has emphasized the role of credibility and political factors in the choice of exchange rate regime. A point that emerges from this

<sup>90</sup>The relationship between production and export structure and the desired degree of exchange rate flexibility is not unambiguous. The literature on the choice of exchange rate regime by developing countries generally has argued that countries with less diversified exports tend to experience greater fluctuations in foreign exchange earnings, often as a result of commodity-specific developments, and may thus opt for pegged exchange rates so as to avoid the additional disruptive effects of large exchange rate fluctuations. However, the greater the implied exchange rate fluctuations, the more difficult it may be to maintain a pegged exchange rate.

<sup>91</sup>Two important contributions were Stanley Fischer, "Stability and Exchange Rate Systems in a Monetarist Model of the Balance of Payments," in *The Political Economy of Monetary Reform*, ed. by Robert Z. Aliber (New York: Allanheld, Osmun and Co. Publishers Inc., 1977), pp. 59–73; and Robert P. Flood, "Capital Mobility and the Choice of Exchange Rate System," *International Economic Review*, Vol. 2 (June 1979), pp. 405–16.

<sup>92</sup>See, for instance, Jacob A. Frenkel and Joshua Aizenman, "Aspects of the Optimal Management of Exchange Rates," *Journal of International Economics*, Vol. 13 (November 1982), pp. 231–56; and Robert Flood, J.S. Bhandari, and J.P. Horne, "Evolution of Exchange Rate Regimes," *Staff Papers*, IMF, Vol. 36 (December 1989), pp. 810–35.

### Box 5. Currency Boards

Currency board arrangements (CBAs) have been adopted in a number of countries as a means of enforcing financial discipline and stabilizing economies, especially from initial circumstances of financial instability. Their ability to help restore confidence in financial markets and withstand subsequent financial market pressures has long been demonstrated. Djibouti has had a currency board since 1949, Brunei Darussalam since 1967, and Hong Kong, China restored its currency board in 1983. Subsequently, the Argentine Convertibility Law applied the same principles of monetary control under the fixed exchange rate system it introduced in 1991, showing that CBAs could also be used to halt hyperinflations and maintain low inflation even in relatively large economies. Shortly thereafter, two more CBAs were introduced, in the transition economies of Estonia and Lithuania. Most recently, a CBA has been established in Bulgaria and one is scheduled to begin operation soon in Bosnia and Herzegovina.<sup>1</sup>

*What is a CBA?* A CBA represents an unequivocal commitment to supply or redeem, without limit, monetary liabilities of the central bank *qua* currency board at a fixed exchange rate. Moreover, these are the *only* terms under which monetary liabilities will be exchanged. This means that currency boards, in their pure form, cannot extend credit to the government, the banking system, or anyone else. Under these conditions, even short-term interest rates are purely market determined, linked to interest rates in the country to whose currency the domestic currency is anchored, and completely independent of the will of the monetary authorities. The commitment to exchange monetary liabilities for foreign currency at a fixed exchange rate requires that the currency board have sufficient foreign exchange to honor this commitment. This ideally means that its foreign reserves at least equal the value of its monetary liabilities. Excess reserves are only necessary in CBA arrangements where the central banks wishes to pursue some, albeit limited, policy functions.

<sup>1</sup>For a discussion of recent CBAs see Adam Bennett, "Currency Boards: Issues and Experiences," *Finance & Development*, Vol. 32 (September 1995); and Tomás J.T. Baliño and Charles Enoch, *Currency Board Arrangements: Issues and Experiences*, IMF Occasional Paper No. 151 (August 1997).

*What are the preconditions for the successful introduction of a CBA?* First, the prohibition on central bank lending to the government requires considerable fiscal discipline. While some financing may be available to the government domestically, and some externally, both sources are subject to constraints (crowding out, external debt sustainability). Given these financing constraints, countries with currency boards must therefore commit themselves to appropriately tight fiscal positions over the medium term. Second, the limited resources available for the currency board to act as lender of last resort means that the banking system must be robust and able to function without routine central bank credits. Third, the commitment to the exchange rate peg must be seen to be durable. This requires that wages and prices be flexible and labor markets relatively free of distortions.

*What makes CBAs as robust as they have been in a number of countries?* CBAs offer the strongest form of exchange rate peg that is possible short of full currency union. Their strength derives from a number of factors, including the preconditions listed above, but most of all from the free operation of market forces in determining interest rates. In particular, they avoid the "too little, too late" trap that policymakers can fall into when determining interest rates in a discretionary manner. Their administrative and operational simplicity has also been an important feature in some small open economies. The credibility of CBAs comes from the governments' commitment to the rules of the game in determining the issuance of money, and from the framework they provide that fosters fiscal discipline and structural reform. It also comes from the fact that a CBA entails a much higher cost of abandoning a fixed parity than is the case for fixed-but-adjustable exchange rate arrangements. In most existing CBAs, the exchange rate is set by law, making changes to the exchange rate very costly for governments.

*What are the problems that CBAs can encounter?* The cast iron convertibility of domestic currency into foreign currency comes at the expense of the convertibility of commercial bank deposits into cash that central banks provide as lenders of last resort. This is because a currency board can serve as lender of last resort only to the extent that it has external reserves exceeding what is required to back the monetary base. Its capacity to support commercial banks is therefore bounded, so that such support must be on stricter terms than nor-

analysis is that when the domestic rate of inflation is extremely high a pegged exchange rate, by providing a clear and transparent nominal anchor, can help establish the credibility of a stabilization program. An exchange rate anchor may also be preferable because of instability in money demand as inflation is reduced sharply. This contrasts with the traditional view that the less a country's inflation rate diverges from that of its main trading partners the more desirable is a fixed exchange rate.

In some cases, a fixed exchange rate can help to discipline a country's policies, especially fiscal policy.<sup>93</sup> This is particularly relevant for developing countries that do not have the same capacity as advanced economies to separate fiscal and monetary policy. A fixed exchange rate constrains the authorities' use of

<sup>93</sup>An argument that flexible exchange rates may prove as effective in disciplining policies is taken up below.

mal.<sup>2</sup> The reliance of CBAs on interest rates to equilibrate financial markets, meanwhile, forces banks to assume an important share of the burden of adjustment, and the absence of central bank monetary operations to smooth out very short-term interest rate volatility implies that banks must be able to weather such volatility. All this means that banking supervision must be even more rigorous than usual. Bank collapses have occurred in some CBAs (Argentina<sup>3</sup> and Lithuania in 1995, Estonia in 1992 and 1994, and Hong Kong, China in 1986), but all were handled within the constraints established by their respective CBAs. In Bulgaria, to forestall another bank crisis in the context of its CBA, troubled banks were subject to restructuring prior to the CBA, and banking supervision was strengthened.

*What are the benefits of CBAs?* CBAs confer considerable credibility on fixed exchange rate regimes. This credibility is most noticeable in the narrowing of interest rate differentials vis-à-vis the anchor currency. Thus, interest rates in Argentina declined from 12½ percent a month just before the introduction of the currency board in March 1991 to 1½ percent the following month. In Bulgaria, interest rates declined from over 18 percent a month before the announcement, in March 1997, that a CBA was to be implemented on July 1, to under ½ of 1 percent a month in mid-July. Interest rates on (credit-risk-free) instruments in Estonia have closely tracked those of the peg currency. In Hong Kong, China, interest rates have generally oscillated around those of the peg currency (the U.S. dollar), reflecting their role as automatic stabilizer—high when money demand was high or markets were subject to disturbances (such as after the Mexico crisis) and low when conditions were softer.

In their role as nominal anchors, CBAs help deliver price stability. Structural changes and other adjustments in the economy, however, can sometimes result in inflation remaining for a time higher than in the country whose currency provides the peg. For example, faster productivity

growth in the tradables sector than in nontradables, which tends to be a feature of an economy that is growing relatively rapidly, may mean that faster overall inflation than in the anchor country, and an associated real appreciation of the domestic currency in terms of overall price indices, implies no loss of international competitiveness in terms of traded goods prices. This helps explain why inflation in Hong Kong, China has been persistently higher than in the United States, host to the peg currency, without giving rise to difficulties for the former in terms of competitiveness. Inflation in Estonia and Lithuania also remains higher than in Germany and the United States, the respective reserve currency countries. This partly reflects the phasing of utility price adjustments, and the initial undervaluation of the Estonian kroon and Lithuanian litas and their subsequent real appreciation through domestic price increases. Sometimes, however, inflation can simply reflect the strength of domestic demand, unleashed by the confidence-boosting effects of the (often long-awaited) stabilization. Thus Argentina's inflation during 1991–94, while dramatically lower than before its CBA, remained well above international levels partly for this reason. Here there are dangers for competitiveness, as wages and prices may get bid up to unsustainable levels. To avert these risks, fiscal policy needs to take a more active role in cooling demand, and labor markets must be made as flexible as possible.

Given the stringent preconditions and attendant risks, currency boards are obviously not appropriate for all countries or in all circumstances. CBAs can evolve, with the introduction (or reintroduction) of instruments and facilities more normal for conventional central banking arrangements. Thus, the currency board arrangements of Hong Kong, China and Argentina already allow for limited interest-rate-smoothing open market operations, and the Hong Kong Monetary Authority now effectively applies a band on overnight interest rates. CBAs could evolve to the point where countries could one day choose to exit them in favor of other arrangements, including greater exchange rate flexibility. For CBAs to deliver their promise of credibility and financial stability, however, it is essential that they be seen to represent a durable commitment. Steps toward evolution, or toward exit, should therefore be taken only after the CBA has been in force for a sustained period of time and has done its job, on the condition that the authorities enjoy a high degree of credibility in their commitment to financial discipline, and where such steps would clearly represent an advantage to the country concerned.

<sup>2</sup>Another drawback of CBAs sometimes noted is the loss of seigniorage from having central bank money backed, completely in pure CBAs, by foreign exchange reserves. Much of this loss, however, can be offset by investing the foreign exchange reserves in interest-bearing liquid foreign assets.

<sup>3</sup>Subsequent to the crisis, the Argentine authorities set up a credit facility with foreign commercial banks to have available "lender-of-last-resort" funds in the event of a financial crisis.

the inflation tax as a source of revenue, the more so if the exchange rate is rigidly fixed as in a monetary union or currency board (Box 5). The advantage is that if the commitment not to use the inflation tax implied by the adoption of a rigidly fixed exchange rate is credible, it allows the authorities to tie down private sector expectations of inflation. In contrast, a flexible exchange rate provides the authorities with greater scope for revenue from seigniorage, but at the expense of a

lack of precommitment as regards future inflation.<sup>94</sup> An adjustable peg provides the authorities with the option to devalue and tax the private sector by generating unanticipated inflation. The risk is that the peg may be

<sup>94</sup>The benefit is that it allows the excess burden of taxation to be spread over taxes and seigniorage. See Gabriel de Kock and Vittorio Grilli, "Fiscal Policies and the Choice of Exchange Rate Regime," *Economic Journal*, Vol. 103 (March 1993), pp. 347–58.



come unsustainable if confidence in the authorities' willingness or ability to maintain it is lost.<sup>95</sup>

In this framework, the choice of regime involves a trade-off between "credibility" and "flexibility," and may depend not only on the nature of the economy and the disturbances to which it is subject but also on political considerations. For instance, it may be more costly politically to adjust a pegged exchange rate than to allow the nominal exchange rate to move by a corresponding amount in a more flexible exchange rate arrangement—because the former is clearly visible and involves an explicit government decision, while the latter is less of an event and can be attributed to the market. When the political costs of exchange rate adjustments are high, it is therefore more likely that a more flexible exchange rate arrangement will be adopted, the more so the larger and more frequent the expected adjustment under a pegged regime.<sup>96</sup>

### Choice of Peg: Single Currency or Basket?

When the choice of regime has been made in favor of a pegged exchange rate, a further choice arises between pegging to a single currency and pegging to a basket of currencies. When the peg is to a single currency, fluctuations in the anchor currency imply fluctuations in the effective (trade-weighted) exchange rate of the economy in question. By pegging to a currency basket instead, a country can reduce the vulnerability of its economy to fluctuations in the values of the individual currencies in the basket. Thus, in a world of floating exchange rates among the major currencies, the case for a single-currency peg is stronger if the peg is to the currency of the dominant trading partner. However, in some cases, a significant portion of the country's debt service may be denominated in other currencies. This may complicate the choice of currency to which to peg. For instance, for a number of east Asian countries, the United States is the major export market, but debt is often serviced largely in Japanese yen. With their currencies typically pegged to dollar-dominated baskets, movements in the yen-dollar rate in recent years have thus posed difficulties for some of these countries.<sup>97</sup>

<sup>95</sup>A similar analysis applies if the authorities' concern is not with raising revenues, but rather reaching a target rate of unemployment.

<sup>96</sup>See Susan M. Collins, "On Becoming More Flexible: Exchange Rate Regimes in Latin America and the Caribbean," *Journal of Development Economics*, Vol. 51 (October 1996), pp. 117–138; and Sebastian Edwards, "The Determinants of the Choice Between Fixed and Flexible Exchange Rate Regimes," NBER Working Paper No. 5756 (Cambridge, Massachusetts: National Bureau of Economic Research, September 1996). Manuel Guitián, "The Choice of an Exchange Rate Regime," in Barth and Wong, *Approaches to Exchange Rate Policy*, has argued that the choice of exchange rate regime reflects normative, rather than technical criteria, specifically, national preferences for either an "open" or "closed" system.

<sup>97</sup>The choice of peg may also depend on other factors, including the expected inflation rate over the long run and the perceived strength of commitment to the peg when a particular currency is pegged to a single currency as opposed to a basket of currencies.

## Macroeconomic Characteristics of Exchange Rate Regimes

In an era when countries are becoming increasingly linked to one another through trade and capital flows, the functioning of a country's exchange rate regime is a critical factor in economic policymaking. At issue is the extent to which a country's economic performance and the way in which monetary and fiscal policies affect inflation and growth depend on the exchange rate regime. For the following analysis, the various exchange rate arrangements are aggregated into two regimes, labeled "pegged" and "flexible." The former comprises arrangements in which the domestic currency is pegged to a single foreign currency or to a basket of currencies, including the SDR. The latter consists of arrangements in which the exchange rate is officially classified as "managed" or "independently floating."<sup>98</sup>

The major difference in economic performance between these two groupings of exchange rate arrangements is with respect to inflation. Inflation in countries with pegged exchange rates has been consistently lower and less volatile than in countries with more flexible exchange rate arrangements (Figure 27), but the difference has narrowed substantially in the 1990s. In contrast to the marked difference in inflation performance across regimes, there is no clear relationship between exchange rate regime and output growth over the past two decades as a whole.<sup>99</sup> During the 1990s, however, the median growth rate in countries with flexible exchange rate arrangements appears to have been higher than in countries with pegged exchange rates; but this reflects, in part, the inclusion of the rapidly growing Asian economies in the flexible exchange rate category. When these economies are excluded, growth performance does not appear to have diverged significantly between the two sets of exchange rate arrangements.

Countries that have officially declared flexible exchange rate regimes are on average larger economies. They are also less open, where openness is measured by the ratio of trade to output, which partly reflects the fact that larger economies tend to be more self-sufficient (Figure 28). These findings accord with the theory of optimal currency areas, which predicts that, all else being equal, the smaller and the more open is an economy, the stronger is the case for a fixed exchange rate. There is no apparent relationship between a country's export diversification (i.e., its main source of ex-

<sup>98</sup>The small number of countries with arrangements classified as "limited flexibility with respect to a single currency" have been omitted from the sample.

<sup>99</sup>Evidence for a large group of countries—advanced and developing—is presented in Atish R. Ghosh, Anne-Marie Gulde, Jonathan D. Ostry, and Holger C. Wolf, "Does the Nominal Exchange Rate Regime Matter?" IMF Working Paper 95/121 (November 1995).

**Table 18. Exchange Rate Regime and Main Source of Export Earnings***(Number of countries)*

	1976	1981	1986	1991	1996
<b>Pegged to a</b>					
single currency	62	54	48	40	36
Fuel	9	7	5	6	6
Manufactures	3	1	—	—	—
Primary products	23	19	16	13	10
Services <sup>1</sup>	16	20	21	16	15
Diversified source	11	7	6	5	5
<b>Pegged to a basket</b>					
of currencies	24	31	32	30	19
Fuel	3	3	5	4	2
Manufactures	2	2	2	2	1
Primary products	9	14	13	10	4
Services <sup>1</sup>	4	6	8	8	9
Diversified source	6	6	4	5	3
<b>Limited flexibility</b>					
Fuel	3	11	6	5	4
Manufactures	2	4	4	4	4
Primary products	—	—	—	—	—
Services <sup>1</sup>	—	3	—	—	—
Diversified source	—	1	1	1	—
Diversified source	1	3	1	—	—
<b>Managed float</b>					
Fuel	4	10	15	20	26
Manufactures	1	1	—	—	3
Primary products	—	2	3	3	4
Services <sup>1</sup>	—	1	1	7	6
Diversified source	—	1	2	2	4
Diversified source	3	5	9	8	9
<b>Independently floating</b>					
Fuel	1	4	13	23	36
Manufactures	—	—	1	2	1
Primary products	—	—	—	1	1
Services <sup>1</sup>	—	—	5	6	18
Diversified source	1	1	3	8	8
Diversified source	—	3	4	6	8
<b>Total countries</b>	<b>100</b>	<b>113</b>	<b>119</b>	<b>123</b>	<b>123</b>

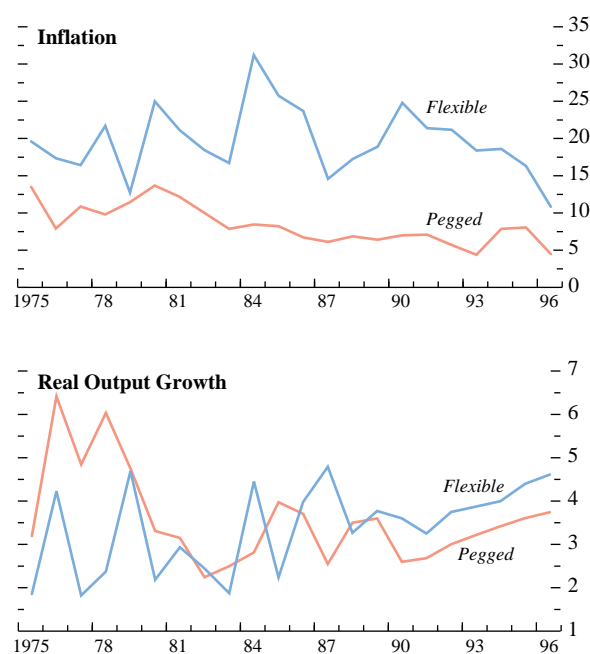
<sup>1</sup>Services, factor income, and private transfers.

port earnings) and its exchange rate regime (Table 18). An increasing number of both commodity exporters and diversified exporters have shifted toward more flexible exchange rate arrangements, and a majority of commodity exporters and diversified exporters have adopted a flexible regime.

These observations do not imply any necessary relationship between the exchange rate arrangement and economic performance. In particular, it is not the case that flexible exchange rates are necessarily associated with higher inflation, as there are a number of countries with flexible exchange rate arrangements that have had relatively low inflation (and robust growth). Nor are pegged exchange rates necessarily associated with lower growth. Economic growth can be satisfactorily high, and inflation desirably low, under either pegged or flexible exchange rate arrangements provided that appropriate policies and other conditions for good economic performance are in place.

**Figure 27. Developing Countries: Growth and Inflation by Exchange Rate Regime***(Annual percent change; median of group)*

While inflation in countries with pegged exchange rates has typically been lower than in countries with flexible exchange rates, there is no clear relationship between the exchange rate regime and output growth.

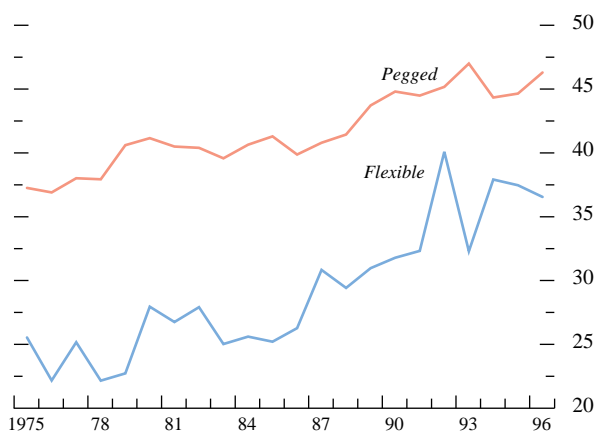


Note: The classification is based on officially reported exchange rate arrangements as of year-end. "Pegged" regimes include exchange rate arrangements in which the currency is pegged to a single currency, to the SDR, or to a basket of currencies. "Flexible" regimes consist of exchange rate arrangements in which the exchange rate follows a managed float or is independently floating. For some countries, the exchange rate may be classified as "managed floating" or "independently floating" but in fact is informally pegged. The differences between pegged and flexible regimes may therefore not be as significant as those indicated in the figure. The total number of countries included increases over time in keeping with increasing Fund membership.

### Figure 28. Developing Countries: Openness by Exchange Rate Regime<sup>1</sup>

(In percent of GDP; average of group)

Countries with pegged exchange rates are on average more open economies.



Note: The classification is based on officially reported exchange rate arrangements as of year-end. “Pegged” regimes include exchange rate arrangements in which the currency is pegged to a single currency, to the SDR, or to a basket of currencies. “Flexible” regimes consist of exchange rate arrangements in which the exchange rate follows a managed float or is independently floating. For some countries, the exchange rate may be classified as “managed floating” or “independently floating” but in fact is informally pegged. The differences between pegged and flexible regimes may therefore not be as significant as those indicated in the figure. The total number of countries included increases over time in keeping with increasing Fund membership.

<sup>1</sup>Openness is defined as half the sum of exports and imports of goods and services, in percent of GDP.

Countries with pegged regimes have until recently tended to run larger current account deficits than countries whose currencies have been more flexible. This reflects the influence of various factors, including policies and countries’ external environments, and in part perhaps the fact that since the early 1980s, countries with pegged exchange rates have experienced losses of competitiveness relative to countries with officially declared more flexible exchange rate arrangements. On average, the real effective exchange rates in 1996 of countries with single-currency pegs were essentially unchanged from 1980, while currencies pegged to a basket had depreciated in real effective terms by a cumulative 14 percent, and countries with flexible exchange rates by 55 percent, over the same period (Figure 29).

### Inflation: Discipline of a Pegged Currency

The lower inflation associated with a pegged regime, at least until recently, is perhaps a reflection of the greater policy discipline imposed by the regime. For the exchange rate to serve successfully as a nominal anchor, monetary policy has to be subordinated to the requirements of the peg.<sup>100</sup> This limits the ability of policymakers to finance fiscal deficits through seigniorage. Consequently, budget deficits need to be financed through the sale of bonds or adjusted through increased taxes or spending reductions, or both. Since bond financing affects the rate of interest, which in turn strains the peg through changes in capital flows, and since the scope for raising taxes is limited, at least in the short run, fiscal policy also needs to be consistent with the peg. This interlocking of policies by “tying the hands” of policymakers enhances the credibility of their commitment to low and stable inflation, reining in inflation expectations.

The disciplinary and credibility effects of a pegged-but-adjustable exchange rate regime need not necessarily be greater than those of more flexible arrangements, however. In a pegged exchange rate regime the authorities in some cases may be able to shift the inflationary cost of not adjusting fiscal imbalances into the future, by allowing international reserves to take the strain or external debt to accumulate until the peg can no longer be sustained. In a flexible arrangement, on the other hand, the costs may be revealed more quickly through exchange rate and price movements, so that a flexible rate regime may exert a stronger dis-

<sup>100</sup>In the short-run these constraints may not be binding, provided macroeconomic policy is expected to remain consistent with maintaining the peg over time. For example, although Honduras had a fixed parity from 1918 to 1990 and Guatemala between 1926 and 1986, in both these countries the respective central banks were able to conduct independent monetary policy over the short run without violating the parity (see Sebastian Edwards and Fernando J. Losada, “Fixed Exchange Rates, Inflation and Macroeconomic Discipline,” NBER Working Paper No. 4661 (Cambridge, Massachusetts: National Bureau of Economic Research, February 1994).

cipline on policies, provided markets correctly assess the situation.<sup>101</sup> Similarly, a flexible arrangement may provide just as much credibility, since adjustment in a flexible rate regime takes place through widely observable exchange rate movements, while under a fixed regime it takes place through reserve losses and increases in external debt, which may be difficult to monitor if central bank activities are less transparent.<sup>102</sup> This, of course, assumes that central banks do not intervene heavily to limit movements in the exchange rate, so that the exchange rate arrangement is genuinely flexible. In any event, constraining the policymaker will not necessarily ensure the credibility of a pegged rate if the economy is not functioning successfully. For instance, raising interest rates to defend a parity may help to demonstrate the authorities' commitment but still harm the credibility of the peg because of unfavorable effects on real activity or the health of the banking system.<sup>103</sup>

## Exchange Rate Arrangements: Problems and Policies

### Exchange-Rate-Based Stabilizations

Since the 1970s, many developing countries have at times faced situations involving persistently high inflation, large fiscal deficits, rapid monetary expansion, a deteriorating balance of payments position, and a crisis of confidence among both domestic and foreign investors. In addressing these difficulties, policymakers have often sought to bring about the necessary adjustments through exchange-rate-based stabilization programs.<sup>104</sup> The decision to use the exchange rate as the nominal anchor instead of, say, monetary targets has often been influenced by the instability of the demand for money that tends to arise in such crisis situations, and by the belief that the adoption of a visible anchor would enhance the credibility of the program. By pegging the exchange rate to a low-inflation currency, or adopting a predetermined path of small devaluations, it has been argued, inflation would be brought down

<sup>101</sup>See Aaron Tornell and Andres Velasco, "Fixed Versus Flexible Exchange Rates: Which Provides More Fiscal Discipline?" NBER Working Paper No. 5108 (Cambridge, Massachusetts: National Bureau of Economic Research, May 1995).

<sup>102</sup>See Harry G. Johnson, "The Case for Flexible Exchange Rates, 1969," in *Approaches to Greater Flexibility of Exchange Rates: The Bürgenstock Papers*, ed. by George Halm (Princeton: Princeton University Press, 1970).

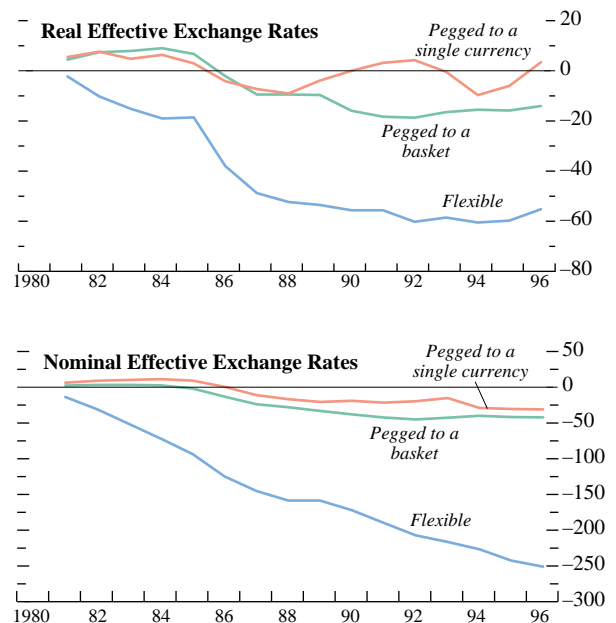
<sup>103</sup>See Allan Drazen and Paul R. Masson, "Credibility of Policies Versus Credibility of Policymakers," *Quarterly Journal of Economics*, Vol. 109 (August 1994), pp. 735–54.

<sup>104</sup>Experiences with and lessons from exchange-rate-based and money-based stabilization programs, including the role of wage and price norms and the need for credible and sustainable fiscal adjustment, are described in greater detail in Chapter VI of the October 1996 *World Economic Outlook* and in Box 11 of the May 1994 *World Economic Outlook*.

**Figure 29. Developing Countries: Exchange Rate Movements of Countries with Pegged and Countries with Officially Declared Flexible Exchange Rate Arrangements**

(Cumulative percent change)

Countries with flexible exchange rates have experienced a relatively larger cumulative real depreciation since the early 1980s.



Note: The classification is based on officially reported exchange rate arrangements as of year-end. "Pegged" regimes include exchange rate arrangements in which the currency is pegged to a single currency, to the SDR, or to a basket of currencies. "Flexible" regimes consist of exchange rate arrangements in which the exchange rate follows a managed float or is independently floating. For some countries the exchange rate may be classified as "managed floating" or "independently floating" but in fact is informally pegged. The differences between pegged and flexible regimes may therefore not be as significant as those indicated in the figure. The total number of countries included increases over time in keeping with increasing Fund membership.



rapidly because the traded goods component of the price level would be stabilized, because of the attendant restraint imposed on wage- and price-setting behavior, and because of the restraint imposed on aggregate demand, especially government spending. Some of the major exchange-rate-based stabilization programs in chronically high-inflation countries were undertaken in Latin America, such as the programs in Chile (1978), Uruguay (1978), Argentina (1991), and Mexico (1987); another was undertaken in Israel (1985). Some of these were “orthodox” programs, in which the exchange rate was the sole nominal anchor, while others were “heterodox,” where the exchange rate was supplemented by wage and price controls. Typically, an initial and often large devaluation was followed by a predetermined path of depreciation for the exchange rate, aimed at boosting the external position, reining in monetary growth, and imposing fiscal discipline by limiting financing from the central bank. Concomitantly, market-oriented trade, financial sector, and structural reforms were also put in place.<sup>105</sup>

Although reservations have been expressed about such stabilization packages—the foremost being that the exchange rate can become seriously misaligned and unsustainable in the medium term—significant success in bringing down inflation rather quickly was achieved in some countries, such as Mexico, where inflation was brought down by over a third in the first year of the program from an annual rate close to 160 percent at the start, while in other countries, such as Uruguay, the rate of inflation converged rather slowly to the devaluation rule. Furthermore, in almost all of the successful and temporarily successful programs, public sector deficits were sharply reduced within the first two years of the program—for instance, in Argentina, Israel, Mexico, and Uruguay—and the economy was rapidly remonetized. In economies experiencing very high inflation or hyperinflation, extensive dollarization increased the attractiveness of the exchange rate as the nominal anchor in stabilization (Box 6).

### Complications with Exchange-Rate-Based Nominal Anchors

Paradoxically, the very forces that were behind the success of these exchange-rate-based stabilization programs in reducing inflation and imposing policy

discipline eventually put enormous strain on the pegs and ultimately led to their abandonment. In order to signal the authorities’ commitment to disinflate or to sustain a low rate of inflation—the signaling element being central to the approach adopted in these programs—the nominal exchange rate was either kept fixed or allowed to depreciate at a rate less than the differential between the rate of domestic inflation and the inflation rate of the country to whose currency the exchange rate was pegged. However, this necessarily entailed a real appreciation of the currency over time.<sup>106</sup> Indeed, in all such exchange-rate-based stabilization programs, except in that of Uruguay, the real exchange rate appreciated considerably over several years. The resulting increase in the price of nontraded goods relative to traded goods encouraged producers to shift production toward the former and consumers to shift demand toward the latter, causing the current account position to worsen.<sup>107</sup>

Typically in these cases, the large current account deficits that arose were initially financed by increased capital inflows that were attracted by the restoration of investor confidence, higher interest rates, and the expectation that at least for the near future the nominal anchor would remain in place. In many of these countries, however, investors soon came to perceive that the twin problems of continued current account deficits and real exchange rate appreciation could not continue and that the peg would be abandoned in favor of devaluation. This contributed to a sudden reversal of capital inflows triggering balance of payments crises that eventually resulted in a further round of exchange rate devaluations, fulfilling market expectations. This pattern of large capital inflows followed by sudden reversals was mirrored in boom-bust cycles of expansions and contractions in economic activity.

<sup>106</sup>For example, at the outset of Mexico’s 1987 program, the authorities were aware of this “real appreciation syndrome” but argued that the initial devaluation would provide the built-in cushion to sustain real appreciation without hurting the country’s external position, that the country had sufficient reserves, and that productivity gains would offset the adverse effects on competitiveness of the rise in the real exchange rate; see Pedro Aspe, *Economic Transformation, the Mexican Way* (Cambridge, Massachusetts: MIT Press, 1993).

<sup>107</sup>Sergio Rebelo and Carlos A. Végh, “Real Effects of Exchange-Rate-Based Stabilization: An Analysis of Competing Theories,” NBER Working Paper No. 5197 (Cambridge, Massachusetts: National Bureau of Economic Research, July 1995), provide evidence suggesting that this phenomenon was pervasive. However, among low-inflation countries that undertook exchange-rate-based stabilization, such as Trinidad and Tobago (1988), Morocco (1990), and the CFA franc zone countries (1993), although real exchange rates appreciated, the effects of fiscal adjustment on domestic absorption outweighed the relative price effects to improve the current account. Moreover, since most of these countries had largely protectionist trade regimes before the adoption of the program, the trade reforms at the outset of the program—for instance, the removal of quantitative restrictions and reductions in tariffs—counteracted the negative effects of the distortion in relative prices to lessen the impact on exports over time.

<sup>105</sup>Guillermo Calvo and Carlos A. Végh, “Inflation Stabilization and Nominal Anchors,” in Barth and Wong, *Approaches to Exchange Rate Policy*; Mauro Mecagni, “Experience with Nominal Anchors,” in *IMF Conditionality: Experience Under Stand-By and Extended Arrangements*, ed. by Susan Schadler, IMF Occasional Paper No. 129 (September 1995); and Anne O. Krueger, “Nominal Anchor Exchange Rate Policies as a Domestic Distortion,” NBER Working Paper No. 5968 (Cambridge, Massachusetts: National Bureau of Economic Research, March 1997) contain more detailed descriptions of the prototypes of exchange-rate-based stabilization programs. See also Chapter VI of the October 1996 *World Economic Outlook*.

### Duration of Pegs

While exchange-rate-based stabilization programs typically have been short-lived, the duration of pegs has differed across countries. An analysis of 87 episodes of pegged regimes in Latin America and Jamaica, in the period 1957–90, found that the probability of a peg being abandoned was directly affected by the rate of real exchange rate appreciation and the degree of openness of the economy.<sup>108</sup> This suggests that the decision of how long to maintain a peg depends on the authorities' concern about international competitiveness, since a more open economy stands to lose more from a real exchange appreciation than one that relies less on external trade. Among these 87 episodes, the exit rate from a peg was high. The median duration of a peg was about ten months, but about one-third of the pegs were abandoned by the seventh month and more than half by the end of the first year. Along with the degree of openness, the net foreign asset position of the banking system also influenced the timing of the decision to exit. Over time, however, real exchange rate misalignment became increasingly influential in the exit decision. Political events such as irregular changes in the executive branch of the government were also important factors in determining how long a peg lasted. In cases where exchange rates were pegged for reasons other than as a policy response to economic imbalances, they were often long lasting. Thus, in Honduras, the exchange rate parity with the U.S. dollar lasted from 1918 to 1990; in Guatemala, from 1926 to 1986; among the 14 countries that make up the CFA franc currency zone the peg to the French franc remained unchanged from 1948 to 1994; while the peg to the U.S. dollar of the eight-country common currency area of the East Caribbean has been in place since the mid-1960s.

### Exiting a Peg Smoothly

Predetermined exchange rate paths seem, on average, to have been effective in stabilizing inflation, but they can be associated with volatile output growth and a worsening of international competitiveness. As the real exchange rate rises, especially if inflation is not reduced sufficiently fast, the conflict between the authorities' objectives of reducing inflation and maintaining competitiveness becomes increasingly apparent, raising the probability of a speculative attack. More often than not, the end of a peg comes about with disruptions to the economy. While it is clearly important to exit before the real appreciation becomes too large, the transitional exit arrangement to a new

<sup>108</sup>For details see Michael W. Klein and Nancy P. Marion, "Explaining the Duration of Exchange-Rate Pegs," NBER Working Paper No. 4651 (Cambridge, Massachusetts: National Bureau of Economic Research, February 1994).

**Table 19. Currency Crashes by Exchange Rate Regime<sup>1</sup>**

	1975–81	1982–89	1990–96
Pegged to a single currency	11	18	9
Pegged to a basket of currencies	2	12	11
Limited flexibility	2	2	—
Managed float	7	14	12
Independently floating	1	3	13
<b>Total</b>	<b>23</b>	<b>49</b>	<b>45</b>

<sup>1</sup>A currency crash is defined as a 25 percent or more depreciation in a year with at least a 10 percent increase in the rate of depreciation over the previous year. The exchange regime identified with a country is the arrangement followed the year prior to the crash. The 14 countries constituting the CFA franc zone are treated as one observation. The CFA franc currency "crashed," in the sense described, in 1981 and 1994. In 1981 it was the result of a change in the French franc–U.S. dollar exchange rate while in 1994 the parity with the French franc was devalued.

parity or a floating regime needs to be sufficiently flexible to allow the rate of depreciation to vary, and thus to accommodate any residual speculative pressures. Moreover, given the observed impermanence of exchange rate pegs, a strategy to exit a parity needs to be addressed as part of an overall adjustment policy package. In many cases, the initial trade reforms have to be aggressive and deep, so that the benefits of the structural changes on exports offset, at least in part, the negative effects of the cumulative real appreciation. Financial sector liberalization, provided it is accompanied by regulatory and supervisory changes that enforce prudential guidelines effectively, are also necessary in many cases, so that deeper markets, together with more diversified portfolios of financial institutions, can help to minimize the consequences of speculative pressures. Furthermore, reforms that broaden the tax base and make expenditure less rigidly indexed to inflation are often required for fiscal policy to be sufficiently flexible to respond to shocks and thus to complement monetary policy in the management of a more flexible arrangement.

### Misalignments and Currency Crashes

Exchange rate misalignments and currency crises can arise in both pegged and more flexible exchange rate arrangements. Of the 116 separate currency "crashes"<sup>109</sup>—defined as a depreciation of at least 25 percent and a 10 percent increase in the rate of depreciation over the previous year—that took place between 1975 and 1996, close to half were under flexible regimes (Table 19). Moreover, the distribution of

<sup>109</sup>This follows the definition used in Jeffrey A. Frankel and Andrew K. Rose, "Currency Crashes in Emerging Markets: Empirical Indicators," NBER Working Paper No. 5437 (Cambridge, Massachusetts: National Bureau of Economic Research, January 1996).

### Box 6. Dollarization

Dollarization, the holding by residents of a significant share of their assets in foreign-currency-denominated form, is a common feature of developing and transition economies.<sup>1</sup> It is a response to economic instability and high inflation, and to the desire of domestic residents to diversify their asset portfolios. In countries experiencing high inflation dollarization is typically quite widespread, as the public seeks protection from the cost of holding assets denominated in domestic currency. But remarkably, the increase in dollarization in some Latin American and Asian countries has continued and even accelerated in recent years following successful stabilization.<sup>2</sup>

To understand this development, it is useful to distinguish between two motives for holding foreign currency assets: currency substitution and asset substitution. Currency substitution occurs when assets denominated in foreign currency are used as means of payment, while asset substitution occurs when assets denominated in foreign currency serve as stores of value. Currency substitution typically arises during high inflation, when the cost of holding domestic currency for transactions purposes is high. Asset substitution results from portfolio allocation decisions and reflects the relative risk and return characteristics of domestic and foreign assets. In many developing countries, assets denominated in foreign currency have often provided residents with the opportunity to insure against major domestic macroeconomic risks.

Most studies of dollarization focus on foreign currency deposits (FCD) in the domestic banking system, data for which are readily available. This focus can be misleading, however. Foreign currency in circulation, although largely unmeasured, is a major component of dollarization in some countries; indeed, willingness to hold foreign currency deposits may at times be inversely correlated with the use of foreign currency. Some data are available on cross-border deposits, that is, deposits of domestic residents at banks abroad. Such deposits do not imply dollarization per se, because they are located abroad, but they are relevant for the analysis because they are close substitutes for foreign currency deposits.

Foreign currency deposits constitute a significant share of broad money in a number of developing countries. Indeed, shares of 15–20 percent are common in countries where residents are allowed to maintain such deposits. On account of their large size, persistence, and volatility, holdings of foreign currency deposits in Latin America and the transition economies of eastern Europe, the Baltics, Russia, and the former Soviet Union are of particular interest.

In the transition economies, with the advent of market reforms in the early 1990s, restrictions on foreign currency deposits were generally eased. As a result, FCD ratios rose rapidly, reaching peaks of 30–60 percent in most transition economies during 1990–95. High inflation, neg-

ative real interest rates on assets denominated in domestic currency, and sharp depreciations that increased the domestic currency value of foreign currency deposits contributed to the rise. Following price stabilization, FCD ratios declined sharply in a number of countries, including Armenia, Estonia, and Poland. Valuation effects associated with substantial real appreciations, which more than offset rises in the dollar volumes of foreign currency deposits, also contributed to the decline in FCD ratios in some countries. FCD ratios remained high in some other countries, such as Latvia and Georgia. Among Latin American countries, although dollarization is closely linked to histories of high inflation and financial instability, FCD ratios increased sharply in some cases after inflation had been reduced in the late 1980s and early 1990s. One possible explanation is “hysteresis” or some form of nonreversibility in the process of dollarization. Thus, for example, changing uses and practices in the settlement of transactions may be slow processes that involve (informal) institutional changes and take place only when significant benefits are gained by switching currencies.

While hysteresis may explain the persistence of dollarization, it cannot explain its steady rise after inflation moderated. The surge in capital inflows to developing countries in the 1990s offers another explanation. It suggests that for several Latin American countries increases in foreign currency deposits (in dollar terms) in the 1990s coincided with declines in the holdings of cross-border deposits, including the short-lived reversal in Mexico and Argentina at the time of the Mexican peso crisis (*see figure*). The increases in foreign currency deposits may simply have reflected shifts in residents’ portfolios from cross-border deposits.<sup>3</sup> The increase in dollarization may thus stem from an increase in confidence in the domestic economy and banking system (although not in the domestic currency), rather than a persistent lack of credibility. This could be part of the remonetization of the economy. Since the persistent increase in the FCD ratio seems to be related to shifts from cross-border deposits, no net increase in overall assets denominated in foreign currency may be involved. In fact, a more comprehensive measure of dollarization, inclusive of cash and cross-border deposits, might show a declining trend.

Dollarization introduces additional complications into the choice of exchange rate regime. A key implication of *currency substitution* is that exchange rates will tend to be more volatile. One reason is that there may be frequent and unexpected shifts in the use of domestic and foreign

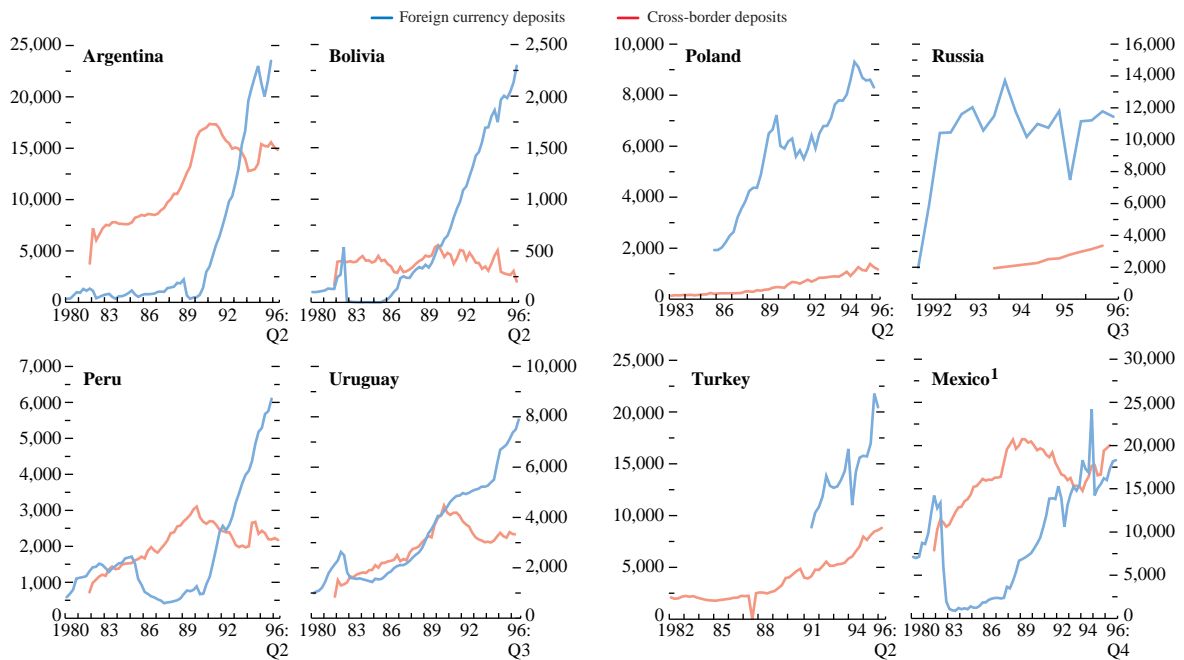
<sup>3</sup>While the decline in cross-border deposits is apparently smaller than the increase in foreign currency deposits in absolute terms, three points should be noted. First, the actual stock of cross-border deposits is most likely underestimated, which means that the actual decline in cross-border deposits in dollar terms was probably higher. Second, cross-border deposits displayed a strong upward trend until the beginning of the period of capital inflows; compared with that trend, the relative decline in cross-border deposits is much larger. Third, there may have been shifts from holdings of foreign currency to foreign currency deposits.

<sup>1</sup>The foreign currency most commonly held is the U.S. dollar, but “dollarization” refers here to the use of any foreign currency.

<sup>2</sup>See Andrew Berg, Eduardo Borensztein, and Zhaouhui Chen, “Dollarization, Exchange Rates, and Monetary Policy,” IMF Working Paper (forthcoming).

## Foreign Currency and Cross-Border Deposits

(In millions of U.S. dollars)



Sources: Bank for International Settlements; central bank bulletins; and IMF staff estimates.

<sup>1</sup>The sharp fall in foreign currency deposits in 1982 reflects a forced conversion into peso deposits.

money for transactions. Another is that demand for the domestic-currency-denominated component of the money stock will be more sensitive to changes in its expected opportunity cost. In other words, the interest elasticity of domestic money demand will be higher when there is significant currency substitution.

In a floating exchange rate regime, this higher elasticity and instability of money demand would likely result in greater exchange rate volatility. This strengthens the argument for the adoption of a pegged exchange rate when currency substitution is extensive. Nevertheless, the broader considerations that guide the choice of exchange rate system still apply. In particular, if shocks originate mostly in money markets, then fixed exchange rates provide more stability, but if shocks are mostly real in nature, floating rates are superior in stabilizing output.

There is a clear case for fixing the exchange rate when a highly dollarized economy is stabilizing from very high inflation or hyperinflation. Currency substitution is likely to be important, and monetary shocks are likely to predominate, especially as successful stabilization may result in a large but unpredictable increase in the demand for domestic currency. Moreover, during hyperinflation, foreign currency may assume the role of unit of account,

and the exchange rate may also serve as an approximate measure of the price level, making it a powerful guide for expectations in the transition to a low-inflation equilibrium. Argentina in 1991 is an example of a country where an exchange rate anchor helped to stop hyperinflation in the context of extensive currency substitution.

Dollarization in the sense of *asset substitution* also has implications for the choice of an exchange rate regime. The most important may be that the availability of foreign currency deposits in domestic banks increases capital mobility, as the public can potentially shift between foreign currency deposits held with domestic banks and abroad, as well as between foreign-currency- and domestic-currency-denominated deposits held in domestic banks. These various assets are likely to be close substitutes for savers, which strengthens the link between interest rates on dollar deposits at home, international dollar interest rates, and domestic currency interest rates. This would limit the control that the central bank can exert on monetary conditions, such as the level of interest rates on domestic currency. In contrast to the implications of currency substitution, dollarization in the sense of asset substitution may thus increase the usefulness of a flexible exchange rate arrangement in enhancing monetary autonomy.



currency crashes over time does not show any markedly greater prevalence under either regime, although for both types of arrangements the currency crashes cluster around the period immediately following the 1982 debt crisis.<sup>110</sup> That a significantly larger incidence of crashes has not been observed for pegged regimes, as one might have expected, points to the fact that only a few developing countries have truly floating exchange rates and that in most countries the exchange rate is used as a policy instrument. It also points to the importance of sound fundamentals in helping to prevent misalignments and currency crashes, regardless of the exchange rate regime. It should further be noted that in view of the growing magnitude of financial flows to many developing countries, the macroeconomic repercussions of reversals in these flows owing to perceived or real misalignments and policy weaknesses are likely to be more severe than in the past.

### Challenges of Rapid Growth and Capital Inflows for Exchange Rate Regimes

The successful development of emerging market economies may be expected to carry with it an underlying tendency for their domestic currencies to appreciate in real effective terms. This is a long-run tendency reflecting the process of convergence or relatively rapid economic growth. The newly industrialized economies of Korea, Taiwan Province of China, Singapore, and Hong Kong, China provide the clearest evidence of a positive association between rapid per capita output growth and real exchange rate appreciation.<sup>111</sup> In Chile, the association is less striking, while in Thailand and Malaysia, economic growth over the past two decades has been associated with relatively small real depreciations.

The positive relationship between economic growth and real appreciation is often assumed to arise from a tendency for productivity growth in the tradable goods sector to outpace that in the nontradables sector to a greater extent the more rapid is the economy's overall productivity growth. This implies that the higher is the

growth rate of total productivity, the more will the prices of nontradables rise relative to the prices of tradables, and the more will the domestic currency appreciate in real terms when measured using general price indices.<sup>112</sup> Such real appreciation does not necessarily entail any loss of competitiveness in terms of traded goods prices. It appears, however, that at least among countries in Asia, rapid per capita output growth has been associated with an increasing relative price of nontradables only in Korea and Taiwan Province of China.<sup>113</sup> In the other rapidly growing economies, this association appears to have been muted or absent, reflecting perhaps the relatively early stages of their development and excess capacity in the nontradables sector that only recently appears to have been eliminated. These factors may also help to explain why the association between rapid growth and real appreciation has not been observed more broadly. It is possible, however, that in the future, when these economies reach a higher stage of development, the effect of differential productivity growth on the relative price of nontradables may assert itself.

Another reason why relatively rapid economic growth has not been more broadly associated with real exchange rate appreciation is that the relative prices of tradables across countries have varied over time. Long-term trends in the relative prices of tradables across countries may reflect, inter alia, shifts in the international distribution of tradables production;<sup>114</sup> the interaction between changes in the relative prices of different categories of tradables and cross-country differences in the weights used in constructing price indices; and changes in the costs of international "goods arbitrage" owing to changes in trade restrictions, transportation costs, and other costs of market penetration.<sup>115</sup>

The choice between the two types of regime, in these circumstances, largely reflects the preference of policymakers between nominal exchange rate appreci-

<sup>110</sup>The definition of currency crashes, and hence their distribution in pegged and flexible exchange rate arrangements, refers solely to actual exchange rate changes and does not take into consideration foreign exchange market intervention and increases in interest rates, which may be other indicators of exchange market pressure. It may be argued that when these other indicators are taken into account, the incidence of currency crashes is likely to be higher under pegged than under floating exchange rate arrangements.

<sup>111</sup>The results are for real exchange rates based on GDP deflators or on Penn relative prices. For Korea, real exchange rates based on consumer prices do not show a trend appreciation. See Takatoshi Ito, Peter Isard, Steven Symansky, and Tamim Bayoumi, *Exchange Rate Movements and Their Impact on Trade and Investment in the APEC Region*, IMF Occasional Paper No. 145 (December 1996).

<sup>112</sup>This phenomenon is generally referred to as the Balassa-Samuelson effect. See Bela Balassa, "The Purchasing Power Parity Doctrine: A Reappraisal," *Journal of Political Economy*, Vol. 72 (December 1964), pp. 584–96; and Paul A. Samuelson, "Theoretical Notes on Trade Problems," *Review of Economics and Statistics*, Vol. 46 (May 1964), pp. 145–54.

<sup>113</sup>For details see Takatoshi Ito, Peter Isard, and Steven Symansky, "Economic Growth and Real Exchange Rate: An Overview of the Balassa-Samuelson Hypothesis in Asia," NBER Working Paper No. 5979 (Cambridge, Massachusetts: National Bureau of Economic Research, March 1997).

<sup>114</sup>Countries' production structures evolve as their economies develop, with the production of more sophisticated and higher-quality products typically accounting for an increasing share of total production. If the price indices of tradables do not fully capture these changes, the influence of economic development on the composition of tradables will tend to be reflected in trends in the relative price of tradables across countries.

<sup>115</sup>See Ito, Isard, Symansky, and Bayoumi, "Exchange Rate Movements."

ation and relatively more rapid inflation. Thus, for instance, between 1980 and 1996, while Hong Kong, China under a currency-board-type arrangement had a higher inflation rate than Singapore under a managed floating regime, the appreciations of their real effective exchange rates were roughly similar.

In a number of fast-growing economies, upward pressures on currencies in recent years have stemmed largely from increased private capital inflows, which appear to have dominated any tendency toward real appreciation stemming from differential productivity growth. In such situations, if the nominal exchange rate is not allowed to appreciate in response to the inflows, with official intervention being used to maintain a formal or informal peg, inflationary pressures will build up and the real exchange rate will tend to appreciate through higher domestic inflation. To avoid such consequences, central banks have often attempted to sterilize the reserve inflows. But such operations tend to be effective at best only in the short term. Sterilization prevents domestic interest rates from falling in response to the inflows and thus tends to maintain the yield differentials that give rise to them. In fact, the inflows may grow if investors' expectations strengthen as the pressures and intervention persist. The result may be a widening current account deficit. In any event, given the relatively small size of the domestic financial market, compared with the size of international capital flows, sterilization efforts tend to become less effective over time. Also the quasi-fiscal losses of intervention, arising from the differential between the interest earned on foreign reserves and that paid on debt denominated in domestic currency, will mount with greater sterilization efforts. As signs of overheating and of the tension between the authorities' desire, on the one hand, to contain inflation and, on the other, to maintain a stable exchange rate become increasingly apparent, investors are likely to begin to doubt whether the situation is sustainable. A turnaround in market sentiment can then bring about a sudden reversal in capital flows and an external financing crunch that could result in significant losses in international reserves (if the central bank continues to support the nominal rate) or a large adjustment in the exchange rate.

In view of the limited efficacy of open market operations in sterilizing large capital inflows, a number of countries have adopted a variety of supplementary monetary or prudential measures. In Colombia, in 1991, statutory reserve requirements were raised sharply. However, limits to the extent to which reserve requirements can be raised without giving rise to considerable disintermediation, especially when financial markets are in the process of being liberalized and expanded, constrain the feasibility of this tool. In some instances, public sector deposits have been shifted from commercial banks to the central bank to reduce banks' reserves. Some countries, for instance, Brazil,

Malaysia, the Philippines, and Thailand, have used prudential regulations, such as limits on open foreign currency positions. In Indonesia, the central bank has used forward exchange swaps to create an artificial offsetting capital outflow to limit domestic money creation; such operations, though, are likely to result in quasi-fiscal losses for the central bank if forward rates diverge significantly from spot rates. Chile, in 1992, and Colombia, in 1993, responded to capital inflows by widening their exchange rate bands, thus allowing some exchange rate appreciation. Chile, and recently Thailand, also introduced selective capital controls; while these instruments can for a time relieve some of the pressure on the currency and ease inflationary pressures, they are unlikely to prevent completely an appreciation of the real exchange rate.

In considering alternative regimes, an important concern is that the short-run benefits of preventing a nominal appreciation can be outweighed by its costs if it jeopardizes long-run growth by leading to conditions causing macroeconomic disruptions. If monetary policy is locked in by exchange rate policy, the burden of adjustment will fall largely on fiscal policy. While in some high-growth countries sustained fiscal surpluses have helped to contain overheating pressures associated with capital inflows, the need to increase public investment in infrastructure and utilities may in the future constrain the role fiscal policy can play in this regard. Allowing the nominal exchange rate to appreciate gradually so that upward pressures on the real exchange rate are accommodated smoothly would appear to be a safer way of maintaining macroeconomic stability. By allowing the exchange rate to adjust in response to capital inflows, policymakers can influence market expectations about the behavior of the exchange rate. In particular, by establishing that exchange rate appreciations can be followed by depreciations, so that market participants face a two-way bet, some short-term inflows may be deterred and the need for subsequent corrections of the exchange rate may be less acute. Indeed, it is critical that both foreign and domestic investors have a realistic perception of exchange rate risks.

### **Exchange Rate Volatility and Banking Sector Weaknesses**

The effects of exchange rate changes on an economy depend on, among other factors, the health of the banking system. With rapid economic growth increasing firms' willingness to invest and foreign capital inflows adding to liquidity, bank lending has increased markedly in many cases where countries have experienced surges in capital flows. In Mexico, for example, bank lending to the private sector increased to an average of about 27 percent of GDP during 1989–94 from an average of 11 percent of GDP in the preceding three years. In Indonesia the corresponding

increase during 1990–94 was close to 20 percentage points of GDP, and in Thailand average bank lending increased to over 80 percent of GDP in 1988–94 compared with an average of 55 percent in 1985–87. In such cases, rapid credit expansion is often accompanied by increased optimism about the outlook for the economy broadly, and for asset values in particular, and the resulting rise in asset prices, especially prices of real estate, by raising the value of loan collateral and households' financial wealth, further reinforces the process. Thus, if the banking sector is poorly supervised and without adequate prudential regulations, commercial banks, in responding to surges in foreign capital inflows, may end up with portfolios excessively exposed both to domestic assets with vulnerable values and to foreign currency liabilities. A depreciation of the domestic currency may then undermine banking stability, as the banking sector suffers large losses. Although various mechanisms, such as deposit insurance funds, have in recent years been put in place in a number of developing countries, more often than not banking sector losses have continued to end up eventually as fiscal burdens. In this context, it is important that the maintenance of a pegged or managed exchange rate not be interpreted as an implicit commitment by the authorities to maintain the foreign currency value of the stock of outstanding domestic credit.<sup>116</sup>

The establishment and observance of a set of core regulatory, supervisory, and accounting standards—in particular, compliance with the recommendations of the Basle Committee's "Core Principles for Effective Banking Supervision"—would go some way toward meeting the need in emerging market economies for stronger prudential standards and banking supervision.

### Capital Account Convertibility

Many of the emerging market economies that in recent years have experienced rapid growth and large capital inflows have gradually relaxed or removed capital controls and are proceeding toward full capital account convertibility. Remaining restrictions on the free flow of capital are nonetheless still significant; they are also largely asymmetric—controls on inflows and foreign-owned capital are generally less stringent than those on outflows and domestically owned capital. Increased two-way liberalization will not only increase allocative efficiency, as the experience of the advanced economies shows, but also will provide domestic investors with greater opportunities to diversify their portfolios and reduce risks, while at the same

time relieving some of the potentially excessive upward pressure on domestic asset prices. In recent years, many of the Asian and Latin American emerging market economies have experienced price bubbles in real estate markets, which, in the aftermath of their collapse, have caused widespread disruptions in the financial sector.

Successful movement toward full capital account convertibility requires a cautious removal of controls in a context of not only sound macroeconomic fundamentals and a sound banking sector, but also an exchange rate policy that allows an adequate degree of flexibility. Since the size of the exchange market in developing countries is often small compared with the size of capital flows, sustained changes in capital flows can have a significant impact on the net demand for foreign exchange. If such changes are not allowed to be absorbed by exchange rate movements, a buildup of imbalances can lead to a currency crash, adversely affecting the financial sector and the rest of the economy. The increasing number of developing countries adopting more flexible regimes in part reflects the recognition that an increased degree of exchange rate flexibility may be helpful in the transition to capital account convertibility. But while exchange rate flexibility may be helpful in this regard, it is the adoption of appropriate and transparent fiscal and monetary policies that ultimately will safeguard macroeconomic stability, regardless of the exchange rate regime.

As developing countries become more integrated with international financial markets, they may experience increased volatility of cross-border capital flows. The volatility may be caused by changes in external financial conditions or by investors' changing perceptions of a country's economic prospects and creditworthiness. How to manage such volatility without imposing capital controls is an important consideration for policymakers. One way of reducing capital account volatility would be to avoid excessive reliance on short-term flows. However, it would be unrealistic to attempt to distinguish flows that are destabilizing from those that perform important stabilizing functions in the foreign exchange and other financial markets; and it would be undesirable to aim to eliminate short-term capital flows entirely. To deal with the pressures associated with short-term flows, countries are likely to need to manage their exchange rates flexibly, as well as to make their domestic financial policies more disciplined. Greater exchange rate flexibility need not imply free floating: it may involve the adoption of wider bands around formal or informal central parities and active intervention within the band. Both the desirable width of the band and the appropriate intervention policy within the band will depend on the extent to which fiscal policy can be used to stabilize domestic demand. The greater the stabilization role that fiscal policy can play, the less will be the need for wide bands and for intervention to deal

<sup>116</sup>See Michael P. Dooley, "Capital Controls and Emerging Markets," *International Journal of Finance and Economics*, Vol. 1 (July 1996), pp. 197–205.

with real or external financial shocks. Wider bands and intervention may not always be the full solution, however. It is important that the exchange rate not be misaligned. At times this may require exchange rate adjustments to reflect changes in fundamentals associated with capital flows. Of course, appropriate and transparent economic and financial policies are necessary to safeguard macroeconomic stability under any exchange rate regime; but they may not always be sufficient to prevent exchange market pressures and volatility.

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Exchange rate arrangements can affect both macroeconomic outcomes and the conduct of monetary and fiscal policies. While country experiences suggest that neither of the two main types of exchange rate regime can be unambiguously ranked above the other in terms of macroeconomic performance, countries with pegged rates have, at least until recently, experienced relatively lower and more stable rates of inflation, and relatively less volatile real exchange rates. Output growth does not appear to differ across exchange rate regimes but is often more variable in less flexible arrangements. In particular, there is a risk that output growth will be excessively volatile when the peg is not adjusted in response to changing fundamentals. These findings do not, however, imply that flexible exchange rates need necessarily be associated with high or more variable inflation in the future. Indeed, over the past several years, inflation in the developing world has come down sharply, even as the number of countries adopting more flexible exchange rate arrangements has steadily increased. Furthermore, median inflation rates in countries with pegged and in countries with more flexible exchange rates have converged consid-

erably in recent years. This is probably a reflection of the fact that the same factor that has underlined the need for greater exchange rate flexibility, namely, the increased international integration of financial markets, has also served to discipline countries' macroeconomic policies.

In pegged regimes, monetary policy is subordinated to the needs of the peg, and the burden of adjusting to shocks falls largely on fiscal policy. Fiscal policy, therefore, has to be flexible and disciplined for a pegged regime to function effectively. With a more flexible arrangement, greater independence of monetary policy is retained but inflation tends to be higher and more variable. These are some of the trade-offs that traditionally have made the determination of the most appropriate arrangement difficult. The assessment is even more complicated when an economy is undergoing financial sector and structural reforms, which make the relative importance of monetary and real shocks difficult to ascertain.

Considerations affecting the choice of exchange rate regime may change over time. For instance, when inflation is high, a pegged exchange rate may prove a more suitable anchor for bringing inflation down efficiently, at least in the short run. When stabilization is achieved, countries may prefer to shift toward a more flexible regime. This option is particularly relevant when countries are faced with large capital inflows and a risk of overheating. Under these circumstances, a more flexible exchange rate may help alleviate pressures associated with capital inflows and will also help provide an early signal of the possible need for domestic policy adjustments, thereby helping to contain the external imbalance. Regardless of the exchange arrangement, macroeconomic policies need to support the arrangement to ensure its success.