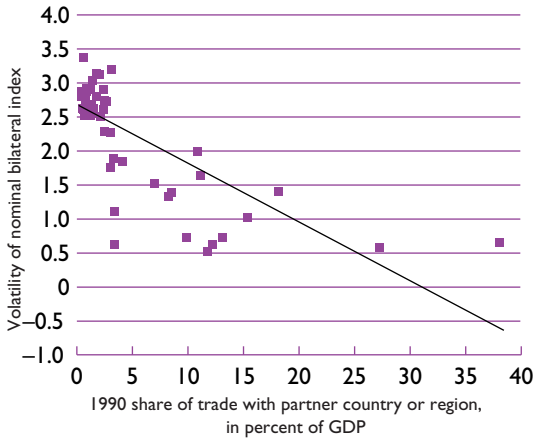
Appendix I Trade Weights and Exchange Rate Volatility

This appendix presents some evidence for the hypothesis that the exchange rates of large, relatively closed economies will tend to be more volatile than those of small, relatively open economies. This is done (a) by relating the volatility of the bilateral nominal exchange rate of a country with a trade partner to the importance (as a share of its GDP) of its trade with that partner (in Table A1.1); and (b) by relating a measure of openness to the volatility of the U.S. dollar and effective nominal and real exchange rates (Table A1.2).

Table A1.1 shows the standard deviations of the growth rates of the (bilateral) exchange rates of 13 countries and the euro area with the U.S. dollar, the deutsche mark, the Japanese yen, and the synthetic euro. The table also shows the share of trade of each of the 13 countries and the euro area with the United States, Germany, Japan, and the euro regions.[54] In general, the bilateral rate with an area representing a small portion of a particular country's trade was more volatile than that with a more important trade partner. The correlation coefficient between volatility as measured here and trade shares was 0.74. Note that in almost all cases the two highest volatilities were found for those two partner countries (or areas) with which the share of trade was lowest. The most notable exception was Australia, a major commodities exporter, where all four volatilities were relatively high. Of course, a decision to target a particular exchange rate parity can override this negative relationship, so that European countries that were members of the European Monetary System (EMS) or that "shadowed the deutsche mark" provide some exceptions. Notably, the European countries—where intraregional trade is generally quite high—all show relatively low volatility with the synthetic euro and the deutsche mark, in comparison with volatility vis-à-vis the dollar and the yen. For visual illustration, Figure A1.1 provides a scatter diagram of the data in Table A1.1, together with the least squares line given by a regression of volatility on trade shares.

[54]The 13 countries are Australia, Belgium, Canada, Finland, France, Germany, Italy, Japan, the Netherlands, Sweden, Switzerland, the United Kingdom, and the United States.

Figure A1.1. Selected Industrial Countries: Openness and Volatility of Bilateral Nominal Exchange Rates



Source: See Table A1.1.

Table A1.2 relates the 1990 proportion of trade to GDP in the 13 countries and the euro area to the volatility of their bilateral U.S. dollar and effective exchange rates over the 1980–98 period. The hypothesis is that the larger the country or the more closed it is, the higher the volatility of its exchange rate. This hypothesis was not borne out for the European countries in the sample for the bilateral U.S. dollar exchange rates, presumably because a large number of these countries were pegging, explicitly or implicitly, for much of the period to the deutsche mark and hence shared that currency's volatility against the U.S. dollar. For Canada, which has quite an open economy and trades predominantly with the United States, the volatility of the bilateral exchange rate with the U.S. dollar was only 30–40 percent of the other volatilities reported in the table. Turning to effective exchange rates, the statistics presented in the table broadly support the hypothesis that exchange rate volatility is inversely related to openness.

Table A1.1. Openness and Volatility[1] of Bilateral Nominal Exchange Rates, June 1973–December 1998

	1990 Trade[2] with (In percent of GDP)	Volatility of Nominal Bilateral Index[3]		1990 Trade[2] with (In percent of GDP)	Volatility of Nominal Bilateral Index[3]
Australia			Japan		
United States	2.47	2.29	United States	2.42	2.91
Germany	0.62	3.37	Germany	0.50	2.62
Japan	3.08	3.20	Japan	...	...
Euro area	1.80	3.15	Euro area	1.25	2.53
Belgium-Luxembourg			Netherlands		
United States	2.51	2.75	United States	2.63	2.73
Germany	13.08	0.73	Germany	11.73	0.52
Japan	0.99	2.61	Japan	0.90	2.60
Euro area	38.02	0.65	Euro area	27.27	0.58
Canada			Sweden		
United States	15.33	1.02	United States	2.11	2.50
Germany	0.48	2.87	Germany	4.07	1.84
Japan	1.39	3.03	Japan	0.86	2.87
Euro area	1.52	2.62	Euro area	11.13	1.64
Finland			Switzerland		
United States	1.25	2.53	United States	2.05	3.13
Germany	3.02	1.75	Germany	8.25	1.34
Japan	0.78	2.74	Japan	1.34	2.66
Euro area	6.95	1.52	Euro area	18.15	1.41
France			United Kingdom		
United States	1.33	2.68	United States	2.44	2.61
Germany	3.38	1.11	Germany	2.99	2.27
Japan	0.56	2.61	Japan	0.85	2.91
Euro area	9.83	0.73	Euro area	10.89	1.99
Germany			United States		
United States	1.73	2.81	United States	...	...
Germany	...	...	Germany	0.42	2.81
Japan	1.04	2.62	Japan	1.23	2.91
Euro area	12.18	0.63	Euro area	1.30	2.56
Italy			Euro Area		
United States	1.02	2.61	United States	1.49	2.56
Germany	3.26	1.89	Germany	3.39	0.63
Japan	0.38	2.88	Japan	0.71	2.53
Euro area	8.47	1.39	Euro area	...	...

Sources: IMF, *Direction of Trade Statistics*, *World Economic Outlook* database, and *International Financial Statistics*.

[1] Volatility is measured by the standard deviation of the growth rate (defined as the difference of the natural logarithm) of the series.

[2] Trade is defined as the average of the country's exports to and imports from the partner country or area.

[3] The bilateral exchange rate indices (average of 1990 = 100) are monthly series from June 1973 to December 1998.

Table A1.2. Selected Industrial Countries: Openness and Volatility of Bilateral and Effective Exchange Rates, February 1980–December 1998

	1990 Proportion of Trade in GDP[2]	Volatility of Bilateral Exchange Rate vs. U.S. dollar[1]		Volatility of Effective Exchange Rates[1]					
				Whole Period		1980M2–1987M3		1987M4–1998M12	
		Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real
Belgium-Luxembourg	69.8	2.85	2.81	0.82	0.84	1.00	1.02	0.69	0.70
Netherlands	45.4	2.83	2.82	0.73	0.75	0.80	0.82	0.68	0.70
Switzerland	29.1	3.18	3.13	1.38	1.37	1.46	1.41	1.32	1.34
Germany	25.0	2.84	2.79	0.90	0.91	0.99	1.01	0.87	0.87
Sweden	24.3	2.58	2.63	1.55	1.62	1.56	1.64	1.54	1.61
Canada	21.8	1.02	1.11	1.17	1.25	1.04	1.10	1.25	1.33
United Kingdom	20.8	2.73	2.81	1.83	1.86	2.04	2.08	1.69	1.70
Finland	19.8	2.77	2.78	1.38	1.40	0.88	0.96	1.61	1.61
France	18.8	2.79	2.74	0.89	0.88	1.08	1.10	0.73	0.71
Italy	16.1	2.73	2.69	1.37	1.38	0.81	0.80	1.62	1.63
Australia	13.8	2.33	2.35	2.36	2.31	2.55	2.47	2.23	2.20
Euro Area	10.9	2.71	2.66	1.57	1.57	1.76	1.78	1.45	1.43
Japan	8.8	3.06	3.15	2.52	2.52	2.35	2.39	2.57	2.58
United States	7.9	. . .	. . .	1.68	1.67	1.89	1.90	1.54	1.52

Sources: IMF, Information Notice System, *International Financial Statistics*, and *World Economic Outlook* database.

[1]All effective exchange rates are based on U.S. dollar per national currency bilateral rates. Volatility is measured by the standard deviation of the growth rate (defined as the difference of the natural logarithm) of the series. The series are monthly from February 1980 to December 1998.

[2]The average of exports and imports in percent of GDP for the year 1990.

Appendix II Exchange Rate Arrangements of Small Economies

Reflecting different structural characteristics, the exchange rate arrangements of small economies have evolved somewhat differently from those of larger economies. This appendix reviews the exchange rate arrangements used in small economies and examines some of the factors that have influenced, and will continue to influence, the choice of those arrangements. It highlights that the majority of these economies probably will maintain pegged exchange rate regimes, most typically by pegging to a single currency.

Table A2.1 shows the distribution of exchange rate arrangements and other selected data for the 73 IMF members that had a level of GDP of less than $5 billion in 1997.[55] These economies include many island states or territories in the Caribbean, the Pacific, the Indian, and the Atlantic Oceans, as well as numerous small or less-developed continental countries in Africa and elsewhere. As shown in the table, some of these small economies let their exchange rates float, but most maintain pegged exchange rates. In the latter cases, the exchange rate typically is set in terms of a single currency such as the U.S. dollar or the French franc, though a basket of currencies is sometimes used.

The high degree of trade openness of these economies is expected to, if anything, increase further in coming years, tending to reinforce the predominance of pegs in these countries. The key consideration for these highly open economies is that, where trade in goods and services represents a large fraction of domestic production and consumption, the microeconomic benefits of reducing transaction costs and exchange rate risks by pegging the exchange rate can be substantial. In addition, if the tradable sector of the economy is large, domestic wages and prices are likely to react more quickly to changes in the nominal exchange rate. This effect makes it more difficult to modify the real exchange rate through changes in the nominal exchange rate, which instead mostly destabilize domestic prices.

Furthermore, although increased capital mobility may pose a problem for the maintenance of currency pegs in some small economies, most of these economies are not yet closely integrated into international private capital markets. Consequently, the possibility of sudden and massive speculative attacks—such as those that have been observed in some bigger and more advanced economies—remains limited. Even with an open capital account, the fact that such open economies have no incentive to engineer an inflationary surprise enhances the credibility of their pegs. Small economies that maintain pegs that are inconsistent with their macroeconomic policies, however, will still be exposed to damaging currency crashes.

It is also probable that the majority of these economies will continue to peg their exchange rates to a single foreign currency. Many small economies have a large trade partner that provides an obvious standard of reference for setting the peg, and/or are highly dependent on tourism receipts from visitors that use or have easy access to a strong and internationally liquid foreign currency. Pegging the exchange rate to the single most relevant currency not only provides such an economy with a simple and transparent nominal anchor, but also helps to minimize potentially large transaction costs and exchange rate risks. Another relevant consideration is that some small economies have strong political and cultural links with the country that issues the reference currency.

For many small economies, however, the lack of an obvious candidate for a single currency peg will make it preferable to continue to peg to a currency basket or to let the exchange rate float. This will be the case especially for small economies with highly diversified economic and political relations with the rest of the world, and with tourism receipts that do not represent an important share of their exports. It may also be the case for a small economy with a large trade partner that does not have a sufficiently stable and liquid currency.

Small economies with floating exchange rates are typically somewhat larger than small economies with pegged exchange rates. This is consistent with

[55]Data for the individual economies underlying Table A2.1 are presented in Table A2.2.

Table A2.1. Small Economies[1]: Distribution of Exchange Rate Arrangements and Selected Indicators
(1998 unless otherwise indicated)

Exchange Rate Arrangement	Number of Countries	Average Size of Economy	Average Trade Share[2]	Average Share of Largest Export Partner[3]	Average Share of Tourism Receipts in Percent of Exports[4]	Fraction of Countries with Controls on Current Account[4]
Pegged	45	1.58	51.8	33.6	18.9	0.78
Peg to single currency	37	1.56	51.4	33.4	16.1	0.81
U.S. dollar	16	1.20	61.1	29.5	37.2	0.69
French franc	13	2.03	34.4	36.9	7.6	1.00
Other	8	1.52	63.4	37.2	8.3	0.75
Peg to basket of currencies	8	1.68	53.4	34.1	28.9	0.63
Flexible	28	2.15	51.3	34.3	9.2	0.57
Managed float	11	2.00	69.7	27.7	7.2	0.64
Independent float	17	2.25	38.7	38.9	10.5	0.53
Memorandum item:						
Small economies	73	1.80	51.6	33.9	11.5	0.70

Source: Based on Table A2.2.
[1] Countries with estimated nominal GDP less than $5 billion in 1998 (subject to availability of data from the *World Economic Outlook*).
[2] Average of exports and imports in percent of GDP.
[3] Largest exports as a share of total exports.
[4] As of 1997.

the fact that the costs of the institutions and the technical expertise required for a well-behaved independent monetary policy and an efficient domestic financial market grow less than proportionally with the size of the economy. For some small economies, it is apparent that these costs can be too high, or even prohibitive, relative to the potential benefits of exchange rate flexibility.

It is important to note that most of the small economies in Tables A2.1 and A2.2 maintain restrictions on current account payments. These restrictions are especially frequent among those small economies that have pegged exchange rates. The lack of currency convertibility in these economies contradicts the fact that small economies are likely to benefit the most by having a high degree of economic integration to the rest of the world. Accepting the obligations of Article VIII of the IMF's Articles of Agreement remains a key challenge for most small economies.

The threshold of $5 billion for GDP is of course arbitrary and increasing it to, say, $20 billion would add a further set of 18 peggers (to a single currency or to a basket) and 24 countries with more flexible arrangements. The peggers include Iceland and Luxembourg among the industrial countries. Iceland pegs to a basket of currencies, while Luxembourg has had a pegged rate for most of the last century, in the form of a monetary union with Belgium. The extent of Luxembourg's goods and labor market integration with its larger neighbor have made a pegged rate both desirable and sustainable, despite the presence of a high degree of capital mobility.

Table A2.2. Small Economies[1]: Exchange Rate Arrangements and Selected Indicators

(1998 unless otherwise indicated)

	Size of Economy (In billions of U.S. dollars)	Trade as Share of GDP[2]	Largest Export Partner		Tourism Receipts in Percent of Exports[5]	Controls on Current Account[5]
			Share[3]	Partner country[4]		
Pegged to the U.S. dollar						
Antigua and Barbuda	0.61	87.0	18.8	Spain	...	1
Bahamas, The	4.12	52.0	22.7	United States	80.0	1
Barbados	2.33	58.4	14.3	United Kingdom	...	1
Belize	0.67	53.0	28.9	United States	27.8	1
Djibouti	0.53	51.4	38.3	Somalia	1.7	0
Dominica	0.25	56.8	22.5	United Kingdom	31.4	1
Grenada	2.30	10.3	30.0	United States	...	1
Liberia[6]	3.07	30.4	27.4	Singapore	...	0
Maldives[6]	0.40	117.0	32.4	United States	68.7	0
Marshall Islands	0.10	...	...	...	...	0
Micronesia, Fed. States of	0.21	...	...	...	0.0	0
Netherlands Antilles	2.51	66.5	17.5	United States	...	1
St. Kitts and Nevis	0.29	60.9	60.3	United States	50.7	1
St. Lucia	0.68	70.1	51.9	United Kingdom	...	1
St. Vincent and the Grenadines	0.30	57.9	31.3	United Kingdom	...	1
Suriname[6]	0.82	83.7	16.2	United States	...	1
Pegged to the French franc						
Benin	2.32	27.8	23.4	Brazil	5.5	1
Burkina Faso	2.54	38.4	67.2	Côte d'Ivoire	7.8	1
Central African Republic	1.06	27.2	42.5	Belgium	2.3	1
Chad	1.67	25.8	24.4	Germany	3.3	1
Comoros	0.19	28.6	62.1	France	46.0	1
Congo, Republic of	1.99	96.2	86.7	United States	0.2	1
Equatorial Guinea	0.46	88.7	87.6	United States	0.5	1
Gabon	4.57	70.6	75.0	United States	0.2	1
Guinea-Bissau	0.20	62.5	85.0	India	...	1
Mali	2.65	28.7	21.8	Italy	3.3	1
Niger	2.01	18.9	68.3	France	6.0	1
Senegal	4.86	34.5	21.5	France	10.8	1
Togo	1.51	37.1	11.3	Canada	2.1	1
Pegged to other currency						
Bhutan[7]	0.36	53.7	...	...	4.9	1
Brunei Darussalam[8]	4.86	50.2	51.4	Japan	...	1
Cape Verde[9]	0.50	46.7	89.3	Portugal	11.4	1
Kiribati[10]	0.06	72.6	21.3	Japan	15.4	0
Lesotho[11]	0.83	116.1	...	...	10.9	0
Namibia[11]	2.99	60.0	...	...	11.1	1
San Marino[12]	...	...	...	...	...	0
Swaziland[11]	1.18	99.8	12.8	South Africa	3.4	1
Pegged to a currency basket						
Botswana	5.11	40.3	...	...	...	0
Burundi	0.98	10.2	34.9	Germany	1.0	1
Fiji	2.33	58.5	32.1	Australia	25.6	1
Malta	3.99	96.3	18.0	United States	23.2	1
Samoa	0.21	43.0	51.1	Australia	50.3	1
Seychelles	0.56	69.5	22.1	United Kingdom	34.2	0
Tonga	0.17	49.4	50.3	India	28.6	1
Vanuatu	0.25	53.6	30.5	Japan	39.5	0
Flexible arrangements:						
Other managed float						
Azerbaijan	4.10	42.5	23.7	Iran	13.8	1
Kyrgyz Republic	1.87	48.8	25.0	Germany	0.6	0
Lao PDR	1.11	51.5	13.0	Thailand	12.9	0
Macedonia FYR	3.25	52.0	20.5	Germany	...	1
Malawi	1.69	40.2	14.4	South Africa	1.1	1

Table A2.2. ***(concluded)***

	Size of Economy (In billions of U.S. dollars)	Trade as Share of GDP[2]	Largest Export Partner		Tourism Receipts in Percent of Exports[5]	Controls on Current Account[5]
			Share[3]	Partner country[4]		
Mauritania	0.90	71.9	18.2	Japan	2.4	1
Mauritius	4.03	62.4	30.5	United Kingdom	18.0	0
Nicaragua	2.07	30.2	54.5	United States	9.3	0
Solomon Islands	0.32	82.4	36.0	Japan	5.4	1
Tajikistan	0.98	83.8	46.4	Uzbekistan	. . .	1
Turkmenistan	1.64	201.2	22.0	Iran	0.9	1
Flexible arrangements:						
Independent float						
Albania	3.94	20.1	59.4	Italy	4.5	0
Armenia	1.86	37.1	23.2	Belgium	3.6	0
Eritrea	0.65	34.1	. . .	. . .	37.2	1
Gambia, The	0.41	54.5	72.8	Belgium	9.6	0
Guinea	3.83	21.5	14.9	United States	0.7	1
Guyana	0.74	103.4	25.2	Canada	. . .	0
Haiti	3.89	15.3	86.3	United States	36.6	0
Madagascar	3.75	25.0	45.7	France	8.7	0
Moldova	2.25	55.6	50.5	Russia	3.3	1
Mongolia	1.06	52.2	49.5	China, PR Mainland	4.4	0
Mozambique	3.89	28.7	17.1	Spain	. . .	0
Papua New Guinea	3.70	63.7	18.7	Australia	2.9	1
Rwanda	2.08	13.8	32.9	Belgium	0.7	1
São Tomé and Príncipe	0.04	66.6	85.9	Netherlands	32.3	1
Sierra Leone	0.65	26.7	33.5	Belgium	10.9	1
Somalia	2.16	16.4	59.8	Saudi Arabia	. . .	1
Zambia	3.35	33.8	10.3	Saudi Arabia	5.1	0
Memorandum Item: Fraction of countries with controls						
Small economies						0.67
Industrial countries						0.00
Other developing countries						0.59
Other transition countries						0.44

Sources: IMF, *World Economic Outlook*, *Direction of Trade Statistics*, *Annual Report on Exchange Arrangements and Exchange Restrictions*, and country desks; World Bank, *World Development Indicators*.

[1]Countries with estimated nominal GDP less than $5 billion in 1998 (subject to availability of data from the *World Economic Outlook*).

[2]Average of exports and imports in percent of GDP.

[3]Country's largest exports as a share of total exports.

[4]Partner country for largest exports.

[5]As of 1997.

[6]Country officially reports a managed or independent float.

[7]Pegged to the Indian rupee.

[8]Pegged to the Singapore dollar.

[9]Pegged to the Portuguese escudo.

[10]Pegged to the Australian dollar.

[11]Pegged to the South African rand.

[12]Pegged to the Italian lira.

Appendix III Recent Experience with Exchange-Rate-Based Stabilizations

Since the late 1980s, a significant number of developing countries have undertaken *exchange-rate-based stabilization programs*—that is, disinflation programs that included preannounced limits on nominal exchange rate movements. Major programs of this type were implemented in several Latin American economies with histories of chronically high inflation, as well as in many transition economies that had suffered dramatic increases in inflation following the collapse of central planning. A list of these stabilization programs for the countries where 12-month inflation at the beginning of the program exceeded 100 percent is presented in Table A3.1. The experiences with these programs has tended to confirm the benefits and pitfalls of using the exchange rate as the nominal anchor for reducing high inflation.[56]

All of these programs had remarkable success in reducing inflation from extremely high levels (see Table A3.1). After their implementation, the stabilizing effect of the exchange rate commitment on prices and expectations typically permitted inflation to be reduced rapidly, and by the third year of the program annual inflation in most cases had reached single-digit rates. Moreover, these gains in disinflation have been sustained, with inflation typically falling further subsequently. Even in those cases where the exchange rate commitment was abandoned, inflation remains substantially lower than it was before the start of the program.

As in earlier exchange-rate-based stabilization programs, disinflation during recent programs was generally accompanied by rapid real economic growth (see Figure A3.1). In most cases, this phenomenon is explained more by the timing of the programs than by aggregate demand and supply effects induced by the stabilization itself: the programs typically were launched after a period of one or more years of recession or stagnation, and they generally followed or coincided with major structural reforms, which were especially radical in the transition economies. Nonetheless, the persistence of rapid real output growth during the recent programs is consistent with the evidence from earlier programs that stabilizations from high inflation that rely on the exchange rate as the nominal anchor tend to be expansionary.[57]

The recent exchange-rate-based stabilizations also confirm the risks that can be associated with this disinflation strategy (see Figure A3.1). In all countries there was a marked tendency during the first three years of the program for the domestic currency to appreciate in real terms, with a concomitant increase in the external current account deficit. This increase was generally financed by substantial capital inflows, partly attracted by the restoration of investor confidence and the expectation that the exchange rate commitment would be honored at least in the near future. These capital inflows often permitted international reserves to be maintained or even increased, but in general they implied a considerable buildup in external liabilities. As a result, the economies implementing these programs became increasingly dependent on international capital markets and more vulnerable to sudden reversals in capital flows.

In this context of heightened external vulnerability, inconsistencies between economic policies and the exchange rate regime led in some cases to severe currency crises, including the collapse of the Mexican peso in December 1994, the Russian ruble in August 1998, and the Brazilian real in January 1999. In each of these cases, a combination of domestic and external factors led to the attack on and subsequent devaluation of the domestic currency, but policy slippages invariably played an important role. In

Note: This appendix is taken from the May 1999 *World Economic Outlook* (IMF, 1999).

[56]For a recent review of the theoretical and empirical literature on exchange-rate-based stabilization, see Calvo and Végh (1999). Most of that literature focuses on stabilizations undertaken until the mid-1980s. See also IMF (1996).

[57]The expansionary effects of exchange-rate-based stabilization programs have been attributed to demand effects resulting from inflation inertia, lack of credibility, and the timing of the purchases of consumer durables, and to supply effects stemming from the response of labor supply and investment. For details, see Calvo and Végh (1999).

Table A3.1. Major Exchange-Rate-Based Stabilization Programs

(Since the late 1980s[1])

Country	Beginning Date	Exchange Rate Arrangement[2]	Twelve-Month Inflation: At start of program	Twelve-Month Inflation: Third year of program	Twelve-Month Inflation: In 1998	Did the Program End in a Currency Crash?
Mexico	December 1987	Peg, crawling peg, widening band	143.7	29.9	18.6	Yes (December 1994)
Poland	January 1990	Peg, crawling peg, crawling band	639.6	39.8	8.6	No
Uruguay	December 1990	Crawling band	129.8	52.9	8.6	No
Nicaragua	March 1991	Peg, crawling peg	20,234.3	3.4	. . .	No
Argentina	April 1991	Currency board	267.0	4.3	0.7	No
Estonia	June 1992	Currency board	1,085.7	29.2	4.4	No
Croatia	October 1993	Asymmetric peg, managed float	1,869.5	4.0	5.3	No
Lithuania	April 1994	Currency board	188.8	8.4	2.4	No
Brazil	July 1994	Peg, crawling peg	4,922.6	6.1	0.4	Yes (January 1999)
Russia	July 1995	Band, crawling band	226.0	5.5	66.8[3]	Yes (August 1998)
Bulgaria	July 1997	Currency board	1,471.9	. . .	3.2[3]	No

Sources: National authorities; and IMF staff estimates.

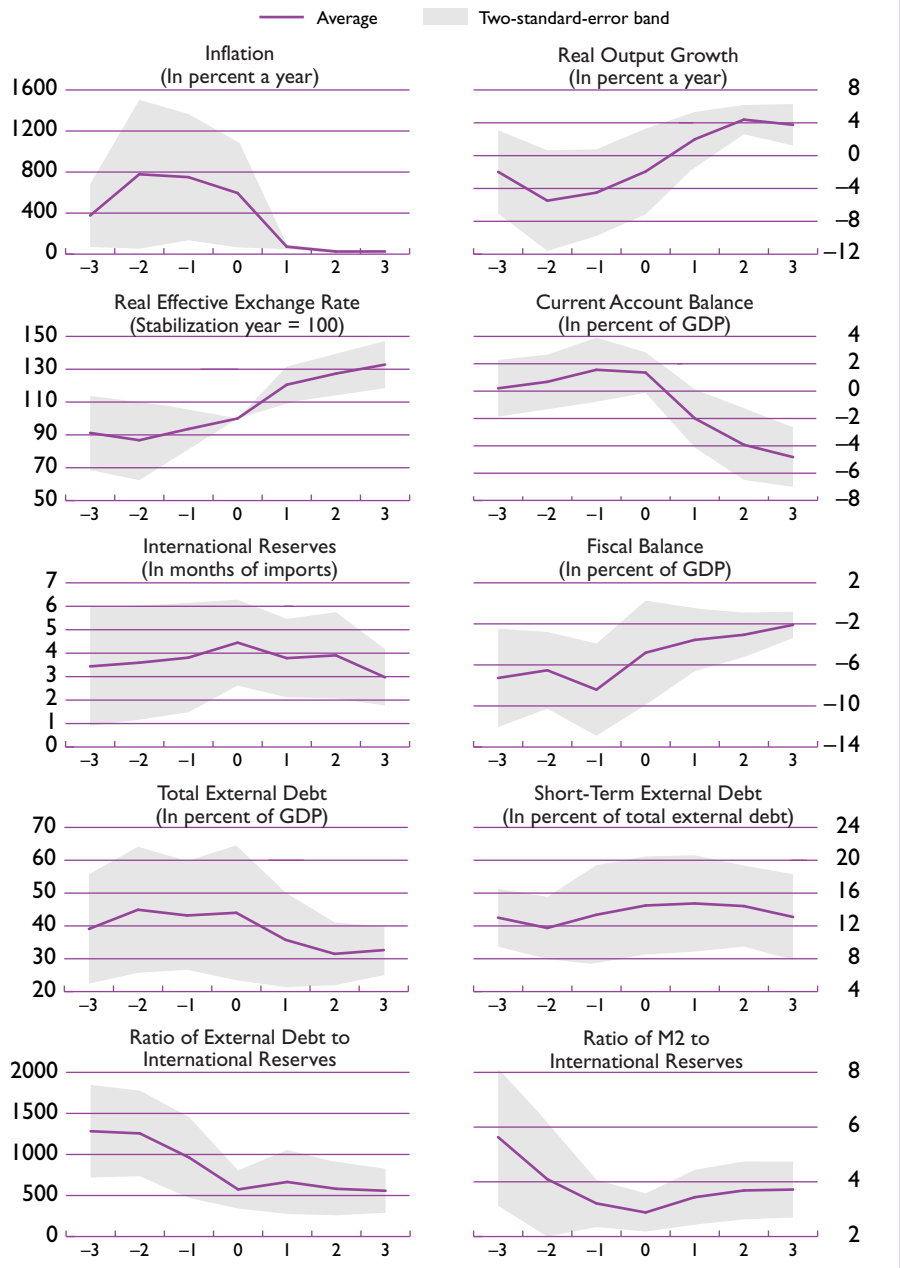
[1]In countries where the 12-month inflation rate was above 100 percent at the beginning of the stabilization program.

[2]Where more than one arrangement is listed, the sequence of arrangements is indicated.

[3]November 1997–November 1998.

Figure A3.1. Recent Exchange-Rate-Based Stabilizations: Selected Economic Indicators[1]

(Centered on the year of stabilization)



Sources: World Bank and IMF staff estimates.

[1]Includes data for the following exchange-rate-based stabilization experiences (year of stabilization in parentheses): Mexico (1987), Poland (1990), Uruguay (1990), Argentina (1991), Croatia (1993), Lithuania (1994), Brazil (1994), and Russia (1995).

Mexico, the crisis came after a period of accommodating monetary policy and a strong expansion of credit that was inconsistent with the exchange rate anchor.[58] In Russia, the failure for many years to bring the fiscal situation under control led to levels of public debt and debt-service payments that became increasingly unsustainable. And in Brazil, the efforts of the government to cut the public-sector deficit and reduce the public debt encountered opposition and delays in the Congress. All these crises were very costly in terms of their effects on the authorities' credibility, with rising inflation and plummeting output following the devaluations.

Most of the recent programs, however, did not end in a currency crash.[59] In half of the countries that did not experience a currency crash, the consistency of economic policies and the exchange rate regime was ensured by the constraints imposed by the adoption of *currency board arrangements*, which, in addition to fixing the value of the exchange rate, limit the issuance of domestic currency to the amount that can be covered by the central bank's holdings of foreign exchange. This type of monetary and exchange rate arrangement was adopted by Argentina, Estonia, Lithuania, and, more recently, Bulgaria. The currency boards implemented in these countries all remain in place, confirming that the decision to adopt such an arrangement should be made not only from the perspective of short-run inflation stabilization, but also taking into account the medium- or long-run consequences of the inability to implement an independent monetary policy after the stabilization is accomplished.[60]

In the other half of the countries that did not experience a currency crash, the consistency of macroeconomic policies was attained in part by accepting some degree of exchange rate flexibility. In Poland, for instance, the exchange rate regime during the stabilization started as a fixed peg to the U.S. dollar but was later modified, first to a fixed peg to a basket of currencies, then to a preannounced crawling peg, and subsequently to a preannounced crawling band with ±7 percent margins. To varying degrees, the stabilizations in Uruguay, Nicaragua, and Croatia also allowed for some degree of exchange rate flexibility, either by design of the exchange rate regime adopted at the beginning of the stabilization or by subsequent revisions of the original regime as stabilization progressed.[61] Without supporting economic policies, however, the introduction of some degree of exchange rate flexibility was generally insufficient to prevent a currency crash. Before their collapse, the exchange rate regimes in Mexico, Russia, and Brazil had all been made more flexible, although not sufficiently so to avoid a crisis resulting from other policy shortcomings.[62]

To summarize, recent experiences with exchange-rate-based stabilization programs confirm that they can be very effective in stopping high inflation, and that economic performance can improve significantly soon after the program launch. It is key, however, that disciplined macroeconomic policies be implemented while the exchange rate anchor is in place. In addition, a decision will need to be made on whether a longer-term, binding commitment should be made to a fixed exchange rate, or whether some degree of exchange rate flexibility should be allowed after a while. In the latter case, the degree of flexibility should be sufficient to be consistent with the fiscal and monetary policies being implemented.

[58]The Mexican crisis was discussed in detail in Annex I of IMF (1995c), and in Chapters II and III of IMF (1995a).

[59]Defined as a nominal depreciation of the domestic currency of at least 25 percent in a year, along with a 10 percent increase from the previous year in the rate of depreciation. This definition is similar to the one used in Frankel and Rose (1996); it excludes instances where a currency came under severe pressure but the authorities were able to defend it.

[60]For a review of currency board arrangements, see Baliño, Enoch, and others (1997).

[61]These revisions typically pointed toward accepting greater exchange rate flexibility. In Croatia, however, the replacement of an original ceiling on the nominal exchange rate by a noncommittal managed-float regime did not imply greater volatility in the exchange rate. Also, the exchange rate band in Uruguay recently was narrowed (in April 1998).

[62]For a discussion of methods for moving to greater exchange rate flexibility under alternative circumstances, see Eichengreen, Masson, and others (1998).

Appendix IV IMF Advice on Exchange Rate Policy

In recent years, some external observers have criticized the IMF because it appeared to unduly favor fixed exchange rates, others because it appeared to show an inordinate fondness for currency devaluation, and yet others because it appeared to have no principles guiding its advice on exchange rate regimes.[63] The coexistence of these criticisms, which cannot all be valid at the same time, reveals the extent of confusion about the IMF advice on exchange rate policy. This appendix reviews the advice given to member countries.[64]

Consistent with Article IV of the IMF's Articles of Agreement, the usual approach taken by the IMF on this matter has been to abide by a member country's preferred exchange rate regime and to tailor its overall policy advice accordingly. True, discussions about the appropriate exchange rate policy and, in particular, the dismantling of exchange rate restrictions (an area that falls under the direct purview of the IMF as stated in Article VIII of the Articles of Agreement) may be important and, at times, central aspects of program negotiations and surveillance discussions. Moreover, in some cases, the reform of the foreign exchange system or an exchange rate devaluation becomes a precondition for Board approval of an IMF arrangement. But if a country shows a strong preference for a particular exchange rate regime, the usual approach followed by the IMF is to accept the country's choice and then provide policy advice that is consistent with the maintenance of the chosen regime. In countries where a particular exchange rate regime rules out changes in the exchange rate, the IMF advises that the burden of any adjustment required must fall on other policies. Where a change in the exchange rate is possible, the IMF may recommend that appropriate economic and financial policies be used in combination with increased exchange rate flexibility.

The substantial deference that the IMF gives to national authorities in their choice of exchange rate regime reflects both idiosyncratic and broader factors. From the IMF's operational viewpoint, these factors include the need to respect the right of members to determine their own exchange rate arrangement—as established by Article IV of the IMF's Articles of Agreement—and experience showing that IMF programs tend to perform best when their associated policies are most closely "owned" by the national authorities in charge of implementing them. From a broader perspective, in turn, the advice that the IMF can provide on this matter is naturally bound by the lack of agreement in the economics profession about how to determine the appropriate exchange rate regime when the choice is other than obvious. Indeed, it must be recognized that while so far economic science has developed a number of criteria that seem relevant for the choice of exchange rate regime, there is no agreement on how precisely to quantify the various criteria or, to the extent that they conflict, on how to decide which should take priority.[65]

There have been many episodes since the breakdown of the Bretton Woods system of fixed exchange rates that reveal the IMF's typical practice of abiding by a country's preferred exchange rate regime. A vivid example is provided by the many arrangements approved for countries in the CFA franc zone in the years preceding the January 1994 devaluation of the CFA franc—a period when IMF staff voiced repeatedly, though subtly, its concern about the harmful effects of maintaining the old parity. (In some cases, however, the negotiations on the policies needed to address these concerns implied delays in the approval of arrangements with some countries in the region.)

[63]The latter criticism, for instance, is illustrated by the following passage from a recent editorial of the *Wall Street Journal* (11/21/97) that stated: "take the very important question of what kind of foreign exchange rate regime an IMF client nation will be advised to follow. This is the kind of thing investors need to know. Well, good luck parsing the guiding principles. The IMF supports Hong Kong's peg to the dollar, and in 1995 actually rode to the rescue of Argentina's peso by supporting a currency board. But for some reason, the IMF favors floats in Southeast Asia. How the IMF decides in a given case is anyone's guess. Do they do it with dartboards? Dice? Computers? Does [former] Managing Director Michel Camdessus flip a coin?"

[64]This appendix draws partly on Mussa and Savastano (1999).

[65]Most of these criteria are discussed in the main body of the text. A systematic presentation can also be found in Appendix I of Eichengreen, Masson, and others (1998).

Many other examples are provided by a large number of IMF arrangements approved in the 1980s that were examined in an external evaluation of IMF conditionality and that led the evaluators to conclude, with some surprise, that "perhaps the strongest tendency of IMF conditionality was to leave existing exchange rate policies intact."[66]

In recent years, the views of country authorities have continued to play the key role in shaping the course of exchange rate policy in IMF-supported programs. For example, Argentina made its own decision to adopt a currency board in early 1991, and received explicit support from the IMF in the form of a stand-by arrangement only in July of that year. When the peg came under intense pressure in the tequila crisis of 1995, a new program supported by the IMF helped Argentina sustain its decision to persevere with its currency board. Similarly, in mid-December 1994, Mexico devalued the peso and then moved to a floating rate system before reaching any agreement with the IMF. Also outside of any IMF arrangement, Brazil adopted the Real Plan in mid-1994 and defended it against intense pressures resulting from the tequila crisis and from the contagion effects of the Asian crisis beginning in October 1997. When Brazil requested, negotiated, and agreed on a program supported by the IMF in November 1998, the decision to continue with the Real Plan (without changing the exchange rate or modifying its rate of crawl) was fundamentally a decision of the Brazilian authorities. As market pressures intensified in mid-January 1999, the decision to devalue the real and subsequently to let it float was again a decision taken by the Brazilian authorities, although with the knowledge that the IMF and the international community probably would not continue to support an exchange rate policy that had become unsustainable in the face of declining market confidence and massive outflows of reserves.

Of course, accepting a country's preferred exchange rate regime does not prevent the IMF from offering the authorities an assessment of whether the prevailing exchange rate is broadly consistent with the country's external and domestic policy goals, nor from recommending policy changes that may be required in order to ensure such consistency. In fact, since providing this type of advice is at the core of the IMF's surveillance and use of resources responsibilities, the staff pays considerable attention to the sustainability of the exchange rate policy followed in countries where the authorities are committed to defend a particular path for the exchange rate, as well as to the possibility of misalignments in the observed level of the exchange rate in countries that let the exchange rate float. For that purpose, IMF staff routinely examines a wide range of economic indicators for each member country—either in the context of surveillance or when negotiating and monitoring IMF arrangements—and analyzes them in the light of the country's structural characteristics, the international context, and the accumulated knowledge of exchange rate issues. In recent years, in addition to traditional domestic and external sector indicators such as the fiscal deficit, monetary or domestic credit growth, the real exchange rate, international reserves, the current account, and several others, the staff has started to pay increasing attention to indicators in the financial sector and the capital account.[67]

In the case of IMF-supported programs, the IMF lends to a country defending a peg or some type of exchange rate commitment only if its ex ante assessment is that such a policy is sustainable under the conditions of the program. It is true that in some cases, such as in Russia in 1998 and in Brazil in 1999, the ex post result has been that the peg or commitment was abandoned, typically in the context of significant policy slippages that implied that the program was not implemented as agreed. In the vast majority of the above cases, however, the lending support provided by the IMF to countries maintaining or defending pegs has permitted them to restore external viability without exposure to currency crashes. For instance, in the IMF arrangements approved between mid-1988 and mid-1991 for the 36 countries that were reviewed in Schadler and others (1995), in only one of 13 countries that used the exchange rate as nominal anchor was there a currency crash during the planned duration of the program (Argentina in 1989, after the actual fiscal adjustment had fallen significantly short of target). In recent years, the experiences with IMF programs in countries such as Argentina, Bulgaria, CFA franc zone countries, Estonia, and Uruguay reveal a similar outcome.

Finally, it is important to note that in most of the recent currency crises, IMF support came only after exchange rate pegs had been abandoned, and official intervention was usually strictly limited in IMF programs. This was the case for Mexico in the tequila crisis, and for Thailand, Indonesia, the Republic of Korea, and the Philippines in the Asian crisis.

[66]See IMF Assessment Project (1992; p. 39). Johnson and others (1985) examined IMF-supported programs in a single year (1983), finding that a high proportion of them involved exchange rate action. However, few of them involved a change in a long-standing peg.

[67]On early warning indicators of currency crises, see Berg and Pattillo (1998), IMF (1998a, 1999), and Milesi-Ferretti and Razin (1998). On the assessment of exchange rate misalignments, see Isard and Faruqee (1998).

Appendix V Longer-Term Prospects for Regional Exchange Rate Policy Cooperation

For regional groups of countries that have significant intraregional economic linkages, as well as diversified linkages to industrial countries, there is a natural question about the desirable degree of cooperation in their exchange rate and other related policies. The two regional groups that presently stand out in this regard are the larger economies in the Association of Southeast Asian Nations (ASEAN) group (perhaps together with some non-ASEAN, Asian economies) and the countries in Mercosur.

As discussed in the main text, because it takes time to build political consensus and develop institutional frameworks for regional cooperation on exchange rate and related policies, the possible arrangements discussed in this appendix are probably not for implementation in the relatively near term. Nevertheless, it is relevant to consider the potential for such arrangements, with a view toward possibly building the basis for their implementation in the not too distant future.

There are three main approaches to regional cooperation on exchange rate and related policies that would appear to merit consideration. One approach is a mutual exchange rate pegging arrangement (or joint float), along the lines of the Exchange Rate Mechanism (ERM) of the European Monetary System (EMS). A second and substantially more ambitious approach would be to create regional currency unions. A third approach, which is essentially an alternative to a regional currency union, is to consider adoption of an outside currency as the monetary standard for the regional group. For assessing all three approaches, the theory of optimal currency areas is relevant. The economic criteria for it to be desirable for countries to consider forming a regional currency arrangement are, in fact, essentially the same as the criteria (described in Section III of the main text) for exchange rate pegging to be a sensible policy.

Mutual Exchange Rate Pegging

In this form of arrangement, countries participating in the regional group would agree to limit fluctuations of their mutual exchange rates to within agreed bands around prescribed central parities. The central parities might be defined in terms of some formula involving only exchange rates among currencies in the group or, much more likely, they might be defined with reference to some external standard such as the currency of one of the major industrial countries or (probably preferably) an agreed basket of such currencies. Moreover, there probably would be understandings concerning mutual support and appropriate policy reactions when exchange rates reached or neared the limits of these bands. There would also be a mechanism for regional consultation on adjustments of central parities when such adjustments appeared necessary to deal with "fundamental disequilibria."

The virtues and defects of such an arrangement, and the circumstances in which it is likely to work reasonably well or relatively poorly, are illustrated by European experience with the ERM and its predecessors. In Europe, the ERM and its predecessors did help to stabilize exchange rates among the participating countries. This was particularly important because trade linkages between the participating countries (measured relative to their total trade and, especially, relative to their GDPs) were very substantial—an indication that these countries fit one of the key criteria for an optimal currency area. In contrast, intraregional trade linkages in ASEAN and Mercosur (discussed further below), while important, are significantly less so than in Europe. Also (as discussed further below), the ASEAN and Mercosur countries seem to be subject to much greater asymmetry of shocks than that which typically characterizes the situation in Europe—another indication that these regional groups do not fit particularly well the criteria for optimal currency areas. Moreover, in Europe there was a central country, Germany, whose currency formed the natural focus for efforts at regional exchange rate stabilization. There is no corresponding counterpart in either ASEAN or Mercosur. And in Europe, as the effective degree of capital market integration increased, the ERM became increasingly vulnerable to market pressures.

All of this does not necessarily argue that regional pegging arrangements would be entirely unworkable and undesirable for ASEAN or Mercosur. However, for such an arrangement to be helpful, it probably should have fairly wide bands and should contemplate the possibility of relatively frequent adjustments of central parities. In view of the substantial involvement of the key countries of ASEAN and Mercosur with global financial markets, an effort to tightly manage exchange rates through some regional mechanism, without extremely strong policy commitments and institutional support, is probably an invitation to repeated crises.

Common Currency Areas

Currency unions among independent states have been relatively rare, since they typically require tight integration along many economic and perhaps political dimensions. The most important in scale is the euro zone, which has been in operation as a common currency area only since the beginning of 1999. Other examples include the Eastern Caribbean dollar area and the CFA franc zone. In the latter example, two groups of west and central African states have for 50 years maintained a common currency pegged (with one adjustment in 1994) to the French franc (now to the euro), with the support of the French Treasury. Also, four southern African countries maintain the Common Monetary Area, in which the South African rand circulates freely in the neighboring states of Lesotho, Namibia, and Swaziland (which also issue their own currencies at par with the rand).

Economic theory and experience suggest that there is no simple answer as to whether a group of countries would benefit from a common currency. The theory of optimal currency areas describes the factors that determine whether a particular set of countries would be better off with or without a common currency.[68] These factors are similar to the criteria for choosing to peg to another currency, but with the added need to consider building regional monetary institutions and macroeconomic coordination. Creation of such institutions and the introduction of a common currency would remove the risks of speculative attack to which pegs can be subjected in the presence of high capital mobility. This appendix considers the application of optimal currency area criteria to the countries that compose Mercosur and ASEAN.

The first consideration is that countries that trade substantially with each other would benefit from a common currency, which would minimize transaction costs and disruptions due to exchange rate fluctuations. By this criterion, neither ASEAN nor Mercosur are obvious candidates for a common currency, as their share of regional trade is about one-fourth, compared to one-half for the countries of the EU or NAFTA (Table 3.2).

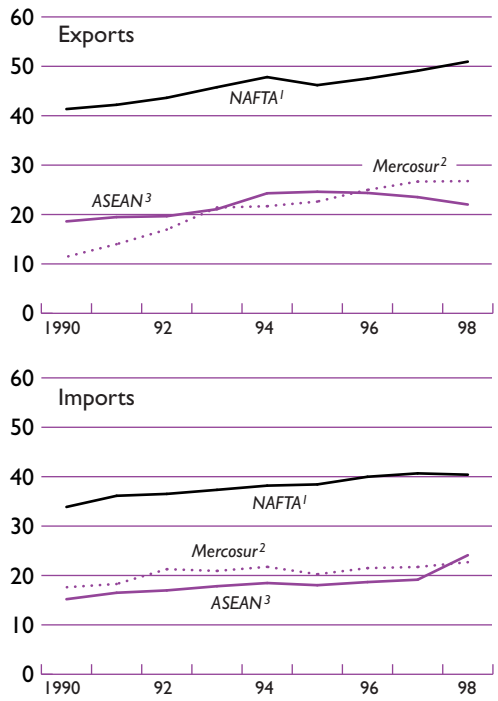
An important caveat to this conclusion is that this analysis is based on historical trade shares. Mercosur in particular is fairly recent, and intraregional liberalization has grown and is likely to continue to grow in both regions over time, as shown in Figure A5.1. This liberalization is likely to promote intraregional trade, as argued by Frankel and Rose (1998) and as discussed above. It is possible, moreover, that the formation of a common currency could itself strengthen trade links by reducing exchange rate swings and any resulting protectionist pressures, thereby encouraging more trade within the region. Countries with a common currency forgo the ability to adjust their nominal exchange rate. Thus, the second consideration is whether the loss of this flexibility would likely be costly, because the countries in question suffer asymmetric shocks. The evidence for Mercosur and ASEAN suggests that countries within each region suffer from dissimilar patterns of shocks. For example, Bayoumi and Eichengreen (1994) find that shocks to output in Brazil and Argentina are highly uncorrelated, suggesting that a fixed bilateral exchange rate would create serious problems with regard to stabilization of output in the two countries. Supply shocks affecting some of the ASEAN countries, in particular Indonesia, Malaysia, and Singapore, are quite similar, while those for the Philippines and Thailand are relatively asymmetric, showing lower correlation with the other countries of ASEAN.[69] In consequence, the costs of reducing flexibility implied by the adoption of common currencies could be substantial for some of the countries of Mercosur and ASEAN.

An important limitation of these studies based on historical data is that they necessarily ignore the likelihood that the correlation of shocks depends in part on the exchange arrangement. Some sources of actual output fluctuation are monetary and would be eliminated by the creation of a common currency. For example, some of the large fluctuations in the Argentina/Brazil bilateral real exchange rate have reflected divergent monetary policies and the fact that their currencies were subjected to different pres-

[68]The theory of optimal currency areas originated from Robert Mundell's (1961) seminal work.

[69]For other groupings of Asian countries, Bayoumi and Eichengreen (1994) and Eichengreen and Bayoumi (1999) find that the symmetry of shocks is distinctly greater.

Figure A5.1. Selected Regional Groups: Intraregional Trade
(As a share of total regional trade; annual averages)



Source: IMF, *Direction of Trade Statistics*.
[1]NAFTA (North American Free Trade Agreement): Canada, Mexico, and the United States.
[2]Mercosur: Argentina, Brazil, Paraguay, and Uruguay, as well as associate members Bolivia and Chile.
[3]ASEAN (Association of Southeast Asian Nations): Cambodia, Indonesia, Lao P.D.R., Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam. (Brunei data not available.)

sures stemming from the tequila crisis.[70] More generally, the structures of economies that are linked in a common currency area are sure to evolve as a result of that linkage. This integration might increase or might decrease the degree of commonality of shocks faced by the countries. If the countries became more specialized in their industrial structure they might then be subject to different industry-specific shocks. If, on the other hand, they became vertically integrated, then demand shocks might affect both countries more symmetrically. Empirically, there is some evidence that growing trade integration leads to patterns of shocks becoming more similar over time.[71]

A further factor that influences whether a group of countries should create a common currency is the degree of internal flexibility in goods and labor markets. A fixed exchange rate regime, by eliminating the option of exchange rate adjustments, puts more pressure on adjustments of nominal wages and prices when real exchange rates become misaligned as a result of asymmetric shocks. Countries with relatively flexible wage rates and goods prices, then, would find a fixed exchange rate regime less costly. By this benchmark, the countries of ASEAN would appear to be better suited to a common currency by virtue of a relative absence of rigidities in labor and product markets. A common currency would, in contrast, place substantial pressure on labor markets in the countries of Mercosur, some of which exhibit significant inflexibility. The relatively slow decline of unemployment rates observed in particular in Argentina even after a period of strong growth suggests that much progress remains to be made.[72]

A final and important factor in considering whether to establish a common currency area is the need to strengthen regional economic institutions. A common currency area requires a substantial degree of coordination of monetary and fiscal policies, best assured in some dimensions by the creation of shared institutions, most importantly a common central bank (or coordinated system of central banks). The countries must also agree on a common monetary-policymaking process and ultimately on a common policy.

Coordination of fiscal policy will also be complex. First, some fiscal policy issues are tightly linked to monetary policy itself. In ASEAN, for example, it is common for national central banks to pursue sectoral credit growth objectives, which implicitly involve subsidies and taxes. To manage a common monetary policy it would likely be necessary that disguised fiscal activities be made explicit. Moreover, a system of fiscal transfers could be important in buffering shocks that affect the countries within the region differentially.[73] This sort of mecha-

[70]Bevilaqua (1997) describes the role of macroeconomic policy, particularly inflation stabilizations, in "shocking" the Argentinean and Brazilian economies at different times. However, Eichengreen and Bayoumi (1999) find a low correlation even for shocks that they identify as supply shocks and which thus are not in principle related to monetary policy. See also Levy-Yeyati and Sturzenegger (1999), who reach similar conclusions.

[71]See Frankel and Rose (1998).

[72]Even this structural aspect of the economy may be somewhat endogenous to the exchange rate regime. Nominal prices and wages are presumably more downward-flexible now in Argentina than they were in the period before the currency board began operating.

[73]Sachs and Sala-i-Martin (1991) argue that fiscal transfers between regions of the United States are an important component of adjustment to asymmetric shocks.

nism, however, would be politically challenging to implement.

As discussed above, labor market flexibility would be important to compensate for the loss of the exchange rate as a policy tool. Although this primarily concerns internal wage flexibility and labor mobility, such flexibility would also be enhanced by agreements promoting intraregional mobility. A lack of emphasis on this issue in the run-up to the creation of the euro is widely acknowledged to have been an important omission.[74] These institutional developments would require a substantial degree of cooperation and regional solidarity.

While the costs of volatile bilateral exchange rates may be increasing with greater regional trade integration, the requirements of institutional and structural reform appear challenging for both Mercosur and ASEAN. The interdependence of the various aspects of regional integration is well illustrated by the EU, where the introduction of the euro has followed more than 40 years of initiatives leading to greater harmonization, coordination, and convergence among member countries, with greater political integration remaining a firm objective for the future. The countries of Mercosur have made substantial progress in creating independent national central banks. Progress in creating strong financial institutions, flexible labor markets, and sustainable fiscal policies is more mixed. The countries of ASEAN also have some distance to go before they can meet these requirements.[75] In both regions, it seems that regional solidarity would need to be developed in order to create a regional central bank and to abandon irrevocably national currencies and national monetary policymaking sovereignty.

Common Links to a Third Currency: "Dollar" Zones

Building regional institutions to support a regional currency is a demanding task. Indeed, existing common currency areas developed on the basis of pegs by a set of countries to a strong central currency. In the case of the euro, the deutsche mark provided a stable central currency that lent credibility to the transition to the common currency, and the Bundesbank provided a model for the European Central Bank. Yet, even with strong political consensus, the task of actually moving to EMU took many years to complete. For the currencies of the west and central African states of the CFA franc zone, monetary policy credibility derives in important measure from their tight linkage to the French franc and the associated support of the French Treasury.[76]

Countries considering the creation of a common currency area may, therefore, consider adopting a common third currency, such as the dollar. This avoids the need to create some of the complex intraregional institutions such as a central bank and, by eliminating the exchange rate as an issue, immediately enhances the credibility of the currency area. However, countries considering such an arrangement ought to consider whether the region augmented by the country issuing the currency (e.g., the United States) is an optimal currency area. Since Argentina has already linked its currency to the U.S. dollar, the issue would not arise for that country, but it would arise for Argentina's Mercosur neighbors. The same criteria discussed above—that is, the extent to which trade shares are high and patterns of shocks are similar—apply.

Table 3.2 shows the trade shares for Mercosur including the United States and ASEAN including the United States and, alternatively, Japan. Although still low compared to the degree of trade integration of EU members prior to the introduction of the euro, these trade shares are substantially higher than those for Mercosur or ASEAN alone. Therefore, looking solely at the potential benefits would suggest that joining a larger currency area by adopting a major international currency should make the formation of a currency union more attractive.

The problem of asymmetric shocks, however, is more acute. Shocks to the United States and Japan, for example, are likely to be quite different from the shocks that impact ASEAN and Mercosur members.[77] This is illustrated by the pressures put on the de facto pegs to the dollar of Asian countries following the dollar's appreciation in 1995–97. Also, as Larrain (1999) points out, the dollar's "safe haven" character tends to cause it to appreciate during bouts of crisis in emerging market countries.

While the requirements for regional institutional and structural development are reduced under this option, others remain, and new ones are created. The

[74]See Eichengreen (1998).

[75]On the prospects and history of Asian economic integration, see Eichengreen and Bayoumi (1999) and Bayoumi and Mauro (1999).

[76]Central bank credibility is also enhanced by tight limits on credits to member governments and the independence of the regional central banks.

[77]Bayoumi and Eichengreen (1994) find, for example, that supply shocks in the United States are negatively correlated with supply shocks in Argentina, Paraguay, and Uruguay and only slightly positively correlated with supply shocks in Brazil, over the 1972 to 1989 period. Their results on the relationship between supply shocks in Japan and the ASEAN countries present a less clear pattern, but it is clear that the correlations are not high relative, say, to those among EU countries.

needs for labor market flexibility, fiscal policy sustainability, and financial system strength are similar to those of an autonomous common currency area. Moreover, the adoption of an outside currency (unlike a peg) implies a transfer of seigniorage to the country that issues the currency, unless some sharing arrangement can be made with that country.

A potentially more serious problem is that the lender of last resort function of central banks of the region would be impaired. Problems at individual financial institutions could still be handled if the central bank (or some other government agency) had resources beyond the backing required for the currency or could draw on established lines of credit with international banks. However, the authorities would lose the ability to provide potentially unlimited liquidity in response to a sudden generalized shift from bank deposits to currency throughout the entire system. This loss of flexibility should not be exaggerated, however. In any exchange rate regime, the injection of liquidity into the banking system to keep it from defaulting on depositors may only lead to greater pressure on foreign exchange reserves or on the exchange rate, and so an emerging market central bank would in any case encounter limits to its effectiveness in dealing with crises. Also, the need for a systemic lender of last resort might be ameliorated by the presence of large and solid foreign banks in the domestic market both because those banks might indirectly obtain support from their head offices, and because depositors' confidence in the financial backing of those institutions might be higher.

Of course, countries could choose to anchor their exchange rate policy to an outside currency without adopting that currency, as in a regional pegged regime such as a currency board. This is, in effect, a variant of the previous option: if regional groups adopt their own common currency, the region as a group may choose to peg to an external currency. But it would be a mistake to think that the choice of a peg to an outside currency would greatly reduce the requirements for operating the common currency. For a group of countries without their own strong central currency (which is the case for both ASEAN and Mercosur) the requirements for coordinating policy across countries would remain substantial, and the credibility gains from an adjustable peg would likely be limited. Such a peg would be subject to speculative attack unless the commitment to supporting policies, including the coordination among members of the currency union, was viewed as strongly credible.

Conclusion on Regional Currency Arrangements

The successful experience of NAFTA shows that regional trading areas do not have to share a common currency. However, closer forms of integration, largely driven by political rather than economic forces, may be incompatible with flexible rates. In Europe, many policymakers came to a strong belief that further integration required monetary union. Eichengreen (1998) suggests how to reconcile these different experiences in order to draw lessons for prospective currency unions such as Mercosur and ASEAN. Where integration is at most a customs union or a free trade agreement, as with NAFTA, exchange rates that float intraregionally appear much more sustainable. In contrast, freely fluctuating exchange rates may create intolerable political strains in cases where integration is to extend to the harmonization in national policies across a wide array of economic and social issues, requiring substantial transfer of policymaking authority to supranational bodies. Whether Mercosur or ASEAN will, in the future, wish to consider a strong form of exchange rate and monetary policy cooperation, including possibly a common currency, thus depends in large part on how far they intend to pursue the project of regional economic and political integration.

If these countries want to consider fuller integration, the challenges for the creation of a common currency are substantial, as discussed above. All of this suggests that these regions should not base the decision of whether or not to adopt a common currency on short-run considerations. Over time, many of the obstacles to a common currency area could be overcome if there is the political will to do so. Moreover, some of the steps required to form a common currency area may be ends in themselves for the countries involved. Enhanced labor market flexibility, sustainable fiscal policies, and monetary policies that achieve convergence to low inflation, for example, would be valuable even in the absence of a currency union. Even tighter political cooperation within the region may be an objective in its own right. To the extent that it is, the goal of a common currency may provide an instrument to help achieve these other objectives. The difficulties should not be underestimated, but if the countries in the region desire integration beyond the level of a customs union and work toward that end, a common currency would eventually be a viable option.

Appendix VI Summing Up by the Acting Chairman

Exchange Rate Regimes in an Increasingly Integrated World Economy[78]

Executive Directors welcomed the opportunity to revisit the question of choice of exchange rate regime—a topic central to the Fund's mandate and to the international monetary system. They considered that the diversity of exchange rate regimes present in the international monetary system was likely to continue, and emphasized that no single exchange rate arrangement was appropriate for all countries, or in all circumstances. Many factors properly enter into the choice of regime. These primarily include economic criteria, such as the extent of trade with partner countries, symmetry of shocks, and the existence of institutions and markets able to handle exchange rate fluctuations. But they may also include political considerations, such as a desire to proceed with regional integration.

Many Directors considered that the widespread liberalization and expansion of capital movements had made it more difficult to sustain pegged rates and thus, for a significant number of countries, had tended to shift the balance of advantage in favor of adopting more flexible regimes. However, Directors emphasized that exchange rate flexibility was not a soft option and that exchange rate and macroeconomic stability required the pursuit of stability-oriented policies. They also acknowledged that very constraining pegs—such as currency boards—when supported by macroeconomic policy discipline, could also be credible and sustainable.

Directors agreed that, whether exchange rates were pegged or flexible, greater capital mobility had exposed domestic financial institutions to increased pressures in the form of interest rate or exchange rate fluctuations, which underlined the essential need to strengthen financial systems. Directors also emphasized the contribution that other factors—such as corporate financial structures and transparency in public decision making—could make to the effective operation of exchange rate regimes, both pegged and flexible. They also pointed to the need to encourage the development of futures and forward markets that would make it easier to hedge against exchange rate movements.

Directors considered the regime likely to prevail in the medium term among the three major currency blocs centered on the dollar, the euro, and the yen. These currencies would likely continue to anchor the international monetary system, and thus affect significantly the environment in which other countries' exchange rate choices are made. The launch of the euro at the beginning of 1999 was a major event for the international monetary system. Directors did not believe that it would change the existing system of flexibility among the exchange rates of the key currencies, nor did most Directors consider that there was any evidence that the euro would fluctuate significantly less against the dollar and the yen than had been the case for a basket of its component currencies. Directors considered it likely, as well as appropriate, that the largest countries would focus their monetary policies primarily on domestic considerations, especially to ensure domestic price stability, rather than target a particular level for their currency's exchange rate. While recognizing the constraints on the effectiveness of remedial official action, Directors nonetheless emphasized that large misalignments and volatility in these currencies' values were a cause for concern, in particular for small, open commodity-exporting countries. They stressed that the Fund should remain vigilant and ensure that externalities arising from the macroeconomic and structural policies of major currency countries are fully taken into account in the surveillance process. A few Directors pointed to the potential benefits of coordinated exchange rate management to further help limit short-term exchange rate volatility.

For the smaller, more open economies, and especially those with limited involvement in global capital markets, Directors considered that a peg to one or another of the major currencies, or to the currency of

[78]The IMF Executive Board discussed the paper on Exchange Rate Regimes in an Integrated World Economy on September 21, 1999. This summing up represents the Acting Chairman's summary of the Board discussion.

a dominant trading partner (where one existed), or to a basket of currencies would likely continue to be the preferred course. For such countries with both disciplined fiscal policies and no reason to exercise an independent monetary policy, a peg could be credible and hence unlikely to suffer from speculative attacks.

For a significant number of other economies, however—notably medium-sized industrial and emerging market economies—many Directors considered that the heightened policy requirements imposed by the liberalization of capital flows had increased the difficulty of defending pegged rates. As a result, they perceived a tendency toward either more flexible arrangements or more constraining, and hence more credible, exchange rate systems—including the adoption of a currency board, "dollarization," or monetary union involving a move to a common currency. Directors noted that this tendency had been evident among industrial countries. A number of medium-sized countries have flexible exchange rates, while others, particularly in Europe, have replaced national currencies with the euro. Directors observed that this tendency had been less evident among developing countries, in part because for many of them capital mobility is still restricted.

Most Directors agreed that for many of the so-called "emerging market economies," which by definition have access to international capital markets, a substantial degree of exchange rate flexibility is desirable. However, they did not consider that freely flexible exchange rates would be a viable option for all such economies, and recognized that in practice, many would want to use intervention and domestic monetary policy to guide exchange rate movements. Such arrangements could be loosely managed or they could be less flexible, including a crawling peg or band. Directors also noted that pegged rates (or active crawling pegs) could be quite appropriate in other circumstances, such as stabilization from high inflation.

Directors noted that under a flexible regime, a credible alternative framework to the exchange rate peg is needed to provide a nominal anchor. A number of Directors believed that inflation targeting could provide such a transparent and credible framework for developing countries, just as it does for several industrial countries. Some Directors stressed that the preconditions for successful inflation targeting, which included the independence of the central bank from fiscal or political pressures, a reliable framework for forecasting inflation, and the ability to move interest rates to attain the inflation objectives, were not satisfied in many developing countries. In the view of these Directors, these considerations might reinforce the case for countries adopting a pegged arrangement.

In considering whether regional exchange rate arrangements might be appropriate for groups of developing countries, Directors focused on two regions, Mercosur and ASEAN. Some Directors considered that in neither of these cases did the countries in the region form an optimum currency area, since some of them had different economic structures and faced different shocks. They stressed that not only economic similarity, but also political solidarity, was necessary to make a monetary union work. On this criterion, both Mercosur and ASEAN probably needed to progress further in their commitment to regional institutions before contemplating monetary union. Other Directors pointed out that the ongoing macroeconomic stabilization and structural reforms in countries in these areas should help achieve faster progress toward regional groupings.

Directors also considered the issue of exchange rate policy advice in the context of Fund-supported programs, noting that past practice has been not to dictate the member's exchange rate arrangement, but rather to assess the consistency of economic policies with the regime chosen. Directors noted that in recent programs with Asian crisis countries and with Mexico, large-scale Fund assistance had been provided after an exit from unsustainable official or de facto pegs or bands, rather than in defense of an exchange rate commitment. Nevertheless, the Fund had at times provided financing to countries with pegged exchange rates that were forced to abandon them during the life of the program, two recent examples being Brazil and Russia.

Directors recognized that countries' choices regarding exchange rate regimes could be difficult and sensitive. While taking due account of these difficulties, the Fund should offer its own views to assist national authorities in their policy deliberations. In particular, the Fund should seek to ensure that countries' policies and circumstances are consistent with their choice of exchange rate regime. In some cases where the issue arose, this would require the Fund to offer advice on an appropriate strategy for exiting a fixed exchange rate regime. Directors agreed that the Fund should not provide large-scale assistance to countries intervening heavily to support an exchange rate peg, if this peg is inconsistent with the underlying policies. In this context, some Directors stressed the importance of supporting institutional arrangements that can help make domestic policy commitments more credible.

In closing the discussion, Directors agreed that there were no simple answers to the question of the choice of exchange rate regime. Depending on a country's starting point in terms of inflation history, economic structure, and political commitment, various arrangements ranging from a hard peg to a high degree of exchange rate flexibility could be consid-

ered. Whatever exchange rate regime was adopted, however, its consistency with underlying macroeconomic policies was essential. Directors further noted that the Fund should continue to exercise firm surveillance over the exchange rate systems of members and should strive to provide clear advice to members on their choice of exchange rate systems. Directors agreed that the Board needed periodically to revisit country experience and the Fund's policy advice in this important area, which was central to its mandate.

Exchange Rate Regimes in an Increasingly Integrated World Economy—Further Considerations[79]

Executive Directors reaffirmed the main conclusions of their previous discussion as summarized in the Acting Chairman's summing up of Executive Board Meeting 99/107 (9/21/99). In their further discussion, Directors noted that the choice of an exchange rate regime assumed particular importance for both advanced and emerging market economies with substantial and growing involvement in world capital markets. They emphasized the complexities involved in judging precisely at which point an economy is sufficiently integrated with world capital markets to drive the country's choice of exchange rate regime toward one or the other end of the spectrum of options: namely a hard peg, which necessarily implies that monetary policy be made almost entirely subservient to the maintenance of the peg, or a regime of substantial exchange rate flexibility, which, to be stable, requires that a nominal anchor other than the exchange rate be provided. A number of Directors also stated that a spectrum of viable alternative options existed between the two extreme exchange rate regimes. Another option that is available—to maintain or even reinforce controls of capital movements if some monetary independence is to be pursued together with exchange rate pegging arrangements—was seen by a number of Directors as not sustainable in the medium term.

With respect to countries that opt for a fixed exchange rate regime, Directors emphasized that institutional constraints that bind monetary policy to maintenance of the parity (such as the very hard pegs implied by arrangements of the currency board type), together with fiscal discipline, are important in ensuring the credibility and stability of the regime, and increasingly so with the degree of participation in world financial markets.

As for other supporting policies, Directors emphasized that countries should avoid de jure or de facto pegs not adequately supported by other elements of economic policy and institutions; in particular, there should be reasonable assurance that the authorities are able and willing to adjust interest rates in order to defend the peg in cases of stress without threatening massive insolvencies or a collapse in employment and output.

With respect to flexible exchange rate regimes, Directors stressed that flexibility still requires that macroeconomic policies be coherent with the regime, and that macroeconomic stability still requires strong macroeconomic policies. They emphasized the importance of providing an alternative nominal anchor to the exchange rate, and noted that inflation targeting would be one such alternative. A few Directors noted, however, that inflation targeting is a demanding framework. Directors encouraged the staff to continue its work on the effectiveness and appropriate form of inflation targeting policies, as well as on other policies that could provide a nominal anchor for the economy. They looked forward to considering, in the near term, the implications of inflation targeting for Fund conditionality. In addition, for emerging market countries that adopt more flexible exchange rate regimes, most Directors wished to reaffirm their earlier conclusion that, in general, it would be appropriate to limit excessive fluctuations not only through adjustment in domestic monetary policy, but also through intervention.

A number of Directors noted that countries with extensive capital controls appear to have had some more latitude than countries with open capital and trade accounts for using monetary policy for domestic objectives while maintaining an exchange rate peg, particularly in the short run. Directors recognized, however, that such controls are a source of distortions that are often costly and detrimental to growth in the long run. Directors thought that it would be in the longer-term interest of emerging market economies to move toward a more open capital account. They emphasized that such moves toward liberalization must be undertaken in a safe and orderly manner, with due attention being paid to the strengthening of macroeconomic policies and of the domestic financial system.

Turning to the use of pegging arrangements, notably of the active crawling peg variety, Directors agreed that they could prove a useful tool in stabilizing from high inflation. However, Directors noted that it was important to recognize the need for an exit strategy and prepare for it early enough to avoid the scheme becoming unsustainable and collapsing,

[79]The IMF Executive Board discussed the paper on *Exchange Rate Regimes in an Increasingly Integrated World Economy—Further Considerations* on November 15, 1999. This summing up represents the Acting Chairman's summary of the Board discussion.

leading to a renewal of inflation and serious employment problems. Such an exit would involve a move to a flexible regime, or possibly to a peg at a different level. Ideally, the transition to a new exchange regime should take place during a period of relative calm in exchange markets. Directors stressed that the Fund should continue to play an important role in providing members with timely and candid advice on the appropriate exit strategy. They emphasized the critical importance of a robust financial system and strong prudential regulations and supervision in advance of the exit. Directors encouraged the staff to collaborate at an early stage with countries using pegs in designing such exit strategies.

Directors emphasized that, in its approach to issues dealing with exchange rate regimes, the Fund must take into account the provisions in the Articles of Agreement that it is for members to choose their exchange rate arrangements. They stressed that the Fund should continue, in the context of Article IV consultations, to discuss with country authorities the requirements for making a chosen exchange rate regime function reasonably well in the particular circumstances of that country and to actively advise on the suitability of the exchange rate regime. They agreed that in program cases, renewed emphasis should be placed on the overall consistency of the member's economic policies, including its choice of exchange rate regime, and that the Fund should continue to avoid providing its financial support to defend an unsustainable peg, or an unsustainable exchange rate in the context of a managed float.

Directors invited the staff to continue to monitor, debate, and analyze the accumulating experience of members with exchange rate regimes in the context of open capital markets, so as to enable the Fund to continually improve its policy advice and the effectiveness of its financial support to its members.

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