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International Monetary Arrangements for the 21st Century

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September 1993

Department of Economics

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Chapter 1. Introduction

The most important lesson to be gleaned from recent research on international monetary economics is that the exchange rate is an asset price. Like movements in the price of General Motors stock, exchange rate fluctuations reflect investors' changing perceptions of prospective capital gains and losses. In the same way that the demand for General Motors stock fluctuates with new information, so too does the demand for foreign exchange.

Although this analogy is widely appreciated -- not least by investors -- in most policy discussions it is quickly set aside. No one argues for stabilizing the price of General Motors stock, movements in which are seen as playing a positive role in shaping resource allocation. Yet many policymakers and scholars insist on the need to stabilize the exchange rate, this despite the fact that it can be seen as playing the same kind of allocatory role.[1] No one argues the need for international cooperation to regulate the price of General Motors stock, although shares are held by investors in many countries. Yet there exists a long history of attempts to negotiate international conventions to stabilize exchange rates. No one proposes establishing international institutions with responsibility for limiting stock price movements. Yet the International Monetary Fund is only the most recent organization created with this goal in mind.

What then could justify the proliferation of schemes to regulate -- in the limit to fix -- exchange rates between national currencies? In part the explanation, as Kenen (1992) emphasizes, is the fact that the exchange rate may be the single most important price in the economy. A change in its level

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[1] The analogy between the allocational role of stock prices and exchange rates is explicit in recent theoretical work. See for example Murphy (1989) and Gavin (1992).

can alter the prices in home currency of all the foreign goods against which domestic producers compete, affecting profitability, investment, output and employment throughout the economy.[2] It can force the wholesale reallocation of resources between sectors producing traded and nontraded goods. Uncontrolled exchange rate fluctuations to which households and firms find it difficult to adjust can therefore impose significant costs. Those who subscribe to this reasoning argue for an international monetary system which minimizes superfluous exchange rate fluctuations and insures the orderliness of necessary changes.

These arguments are most compelling to those who are skeptical about the efficiency of the foreign exchange market. They indict exchange rates for excessive volatility, accusing them of fluctuating by more than is justified by the variance of economic fundamentals.[3] Foreign exchange traders, they suggest, are susceptible to fads and fashions, swinging from excessive optimism to undue pessimism.[4] If there exist costs to persistent exchange rate misalignments (deviations of exchange rates from their long run equilibrium levels), then there may be good grounds for policy intervention to prevent unwarranted fluctuations.

Such arguments provide a rationale for government intervention in the foreign exchange market. But why should they encourage the establishment of

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[2] The extent of the relative price change induced by a movement in the exchange rate depends of course on the structure of the relevant markets. These questions are the subject of the burgeoning literature on exchange rate pass through (Mann 1986; Dornbusch 1987).

[3] Two studies (Woo 1985; West 1987) building on Shiller's (1992) influential work on the excess volatility of stock prices but applying the methodology to the foreign exchange market both reach this conclusion.

[4] The implications of these possibilities are explored by Frankel and Froot (1988) and Froot and Thaler (1990).

an international system of rules and institutions designed to facilitate the joint management of exchange rates by a collectivity of countries? An obvious answer is that the exchange rate, as the relative price of two national currencies, is affected by the policies of both of the issuing governments. Officials concerned to obtain reelection or reappointment will concentrate on the impact of policies on their constituencies to the neglect of foreign repercussions. Motivated by domestic considerations, they may fail to take into account the impact of their policies on the foreign exchange market and hence on their foreign counterparts. International cooperation in the management of exchange rates may be a way of achieving the coordination of national economic policies from which all countries benefit.[5] And to prevent governments from reneging on their pledge to cooperate, it may be necessary to establish international institutions for pooling information, monitoring compliance and sanctioning defectors.

The debate over reform of the international monetary system is traditionally framed as a contest between fixed and flexible rates. Milton Friedman, in his classic 1953 article, "The Case for Flexible Exchange Rates," argued that the rationale for regulating the price of foreign exchange is no better than that for pegging the price of carrots or potatoes. Charles Kindleberger (1981) and others have been equally eloquent in articulating the case for fixed rates. A panoply of theoretical models has been deployed to analyze the conditions under which one or the other of these arrangements delivers desirable results.

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[5] This is one of the premises of the literature on international economic policy coordination (see Bryant, 1993 for a survey). Canzoneri and Gray (1985) were first to analyze the precise conditions under which an exchange rate stabilization agreement is an effective means of insuring the optimal coordination of national macroeconomic policies.

Given the terms of the debate, it is ironic that international systems of durably fixed and freely floating exchange rates are almost never observed. Certainly, particular countries have maintained one or the other arrangement for limited periods of time. France in the first half of the 1920s allowed the franc to float freely. The U.S. allowed the dollar to float free of intervention in the first half of the 1980s. Italy floated the lira following its exit from the European Monetary System (EMS) in 1992. Equally, Luxembourg since World War II has fixed its franc to that of Belgium. Argentina pegs to the U.S. dollar, Austria and Estonia to the German mark. But these are policies adopted unilaterally by individual countries. They do not constitute **international** monetary systems.

Virtually all international monetary regimes with which the world has experience lie in the no-man's land between permanently fixed and freely floating rates. Governments intervene to stabilize exchange rates, but not continuously. They resist some exchange rate fluctuations but not others. In effect, every international monetary system has been a hybrid of fixed- and floating-rate regimes.

The hybrid nature of observed international monetary systems is a logical compromise between competing objectives. All such systems have all sought to reconcile the desire for autonomy for national stabilization policies with the goal of restraining inflation and promoting international economic integration. In general, it will not be optimal to adopt a system of permanently fixed exchange rates that constrains national stabilization policies under all circumstances. Nor will it be optimal to choose a system of free floating under which national policymakers are unprotected from pressures to inflate and free to disregard the impact of domestic policies on

foreign countries. Like optimizing agents in any utility-maximizing model, policymakers will prefer, when available, an "interior solution" -- in this case, a system combining in some proportion the advantages of fixed and floating rates. Contingent exchange rate rules when they can be feasibly implemented, in other words, preferable to simple rules. Such contingent rules fly under the banners of "pegged but adjustable rates," "exchange rate target zones" and the like.

The premise of this study is that this no-man's land of hybrid international monetary systems is rapidly becoming uninhabitable territory. Calls for international monetary reform to reestablish a system of pegged-but-adjustable rates or target zones with periodic realignments (e.g. Williamson and Miller 1987, Krugman 1990, McKinnon 1990) will consequently prove futile. Changes in technologies, institutions and politics are eroding the viability of such intermediate arrangements. Increasingly, countries will be forced to choose between greater exchange rate flexibility on the one hand and monetary unification on the other.

The immediacy of this dilemma is evident in recent trends in exchange rate arrangements. Between 1982 and 1992 the share of countries with independently floating exchange rates rose from 8 to 22 per cent. Meanwhile, one set of countries with a particularly strong attachment to pegging, namely the 12 members of the European Community, embarked on a concerted effort to establish a monetary union by the end of the decade (and was forced in 1993 to abandon at least temporarily its attempt to peg intra-European exchange rates within narrow bands, a fact which can be taken as further support of the central premise of this study). A number of countries attempting to unilaterally hold their exchange rates within narrow bands have been forced to

significantly widen the band (as in Chile) or to abandon it entirely (as in Finland and Sweden).[6] Already the middle ground of pegged but adjustable rates and narrow target zones is being hollowed out.

In which direction countries should move is not obvious. The choice between greater exchange rate flexibility and monetary unification depends on a host of cross-cutting considerations. A rational decision depends not just on economic but also on political factors. Given its implications for a wide range of economic and political objectives, the choice between greater exchange rate flexibility and money union will emerge as perhaps the single most important economic policy decision for governments and their constituencies at the dawn of the 21st century.

To make these points, the remainder of the study is organized as follows. Chapter 2 describes the menu of international monetary arrangements from which policymakers have traditionally selected. Chapter 3 introduces three conditions that any adequate international monetary system must satisfy. These are the ability to effect relative price adjustments, compatibility with the pursuit of robust monetary rules, and a capacity to contain market pressures. Chapter 4 illustrates the importance of these three conditions with a look back at the history of the international monetary system, showing how the ability of successive international monetary regimes to meet these conditions explains their viability and how their subsequent failure to meet one or more of these criteria explains their eventual collapse.

Chapter 5 is the core of the study: it explains why most of the entrees on the traditional menu are no longer palatable. It analyzes which of the

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[6] Where target zones have been more successfully maintained (as in Israel), this reflects the maintenance of capital controls, which I argue below is no coincidence.

preconditions for a viable system will be impossible to satisfy in the 21st century by most of the arrangements that aspiring international monetary reformers continue to contemplate. It argues that policymakers face an increasingly stark choice between floating rates and monetary union.

Chapter 6 details the factors that should enter into the selection of an option from this limited list. The next two chapters operationalize these factors by using them to explain recent tendencies toward fixed exchange rates and monetary unification in some parts of the world but increased reliance on floating rates in others. Given that the most dramatic international monetary initiatives are those currently underway in Western Europe, an entire chapter (the seventh) is devoted to this experience. I conclude that, despite the recent crisis in the EMS and growing doubts about the adequacy of the Maastricht Treaty, prospects for some form of monetary union remain brighter in Europe than in other parts of the world. The real constraints on achieving that goal are political, not economic, although there also exist political factors contributing to the momentum for unification.

Comparisons with Asia, the former Soviet Union and the Western Hemisphere, aside from their interest and importance, also help to shed light on the for monetary unification in Europe; their prospects are considered in Chapter 8. I conjecture that many of these parts of the world, like Europe before them, will seek to move away from floating exchange rates. Outside Europe, however, the political and economic preconditions for monetary union are less well developed. Countries in these regions are likely therefore to experiment with unilateral pegs, unilateral target zones, and EMS-like arrangements. If the premise of this study is correct, such arrangements will be at best temporarily successful, representing for some a way station on the

route to monetary union and for others an isolated interruption to an extended period of floating.

Chapter 2. Policy Options

The problem of selecting from the menu of options for international monetary reform will be familiar to patrons of Chinese restaurants. Each diner may prefer to place his own order. The table will ultimately receive an interesting array of dishes, but several individually ordered and consumed dishes will not constitute a banquet. Each country may similarly choose whether to float its exchange rate, to peg to a partner, or to adopt a target zone. But the sum of these decentralized exchange rate policy decisions will not necessarily constitute a coherent international monetary system.

The other approach is for the diners to coordinate: to agree on an order of which all will partake. For a given budget constraint, this should enable them to consume a meal with a wider assortment of desirable features. Indivisibilities may permit the kitchen to produce dishes like Peking Duck that could not be served to a single patron. In the international monetary context, a group of countries may agree to a system of pegged but adjustable exchange rates with international credit lines, to a managed float with reciprocal intervention obligations, or to a monetary union, none of which are available to a country acting alone.

The viability of such arrangements is contingent upon the participation of countries with compatible tastes, in the same way that the attractions of the banquet depend on the participation of a party of likeminded diners. But coordinating an order poses logistical problems. How can one be sure that the tastes of all the diners will be accommodated? How can one be assured that all the essential food groups will be represented? How can special dietary needs be met?

Whichever strategy is chosen for ordering dinner, the process

necessarily starts by considering the individual dishes on offer. This chapter proceeds in like fashion, first enumerating the options for exchange rate policy that may be pursued by countries unilaterally, and then considering the possibilities for collectively establishing an international monetary system.

Ordering a la Carte

Freely floating exchange rates. The simplest option for exchange rate policy is freely floating exchange rates. However desirable economically or viable politically this arrangement is judged, it is the limiting case and therefore the benchmark against which other options are gauged.

The literature on the merits and limitations of floating exchange rates is too extensive to be usefully rehearsed here. Suffice it to say that policymakers have shown by revealed preference an aversion to relying for extended periods on freely floating rates. As mentioned in Chapter 1, interludes of free floating are not hard to identify. But all such episodes are limited in duration -- they are eventually and sometimes quickly superseded by other arrangements.

Three features of freely floating exchange rates are conducive to this propensity. First, nominal exchange rate fluctuations can lead to large changes in real exchange rates (relative national price levels) with significant persistence. (See Figure 2.1 for a case in point: the U.S. dollar in the 1980s.) Policymakers and their constituencies will view the consequent misalignments as costly.[7] Second, even if purchasing power parity is quickly

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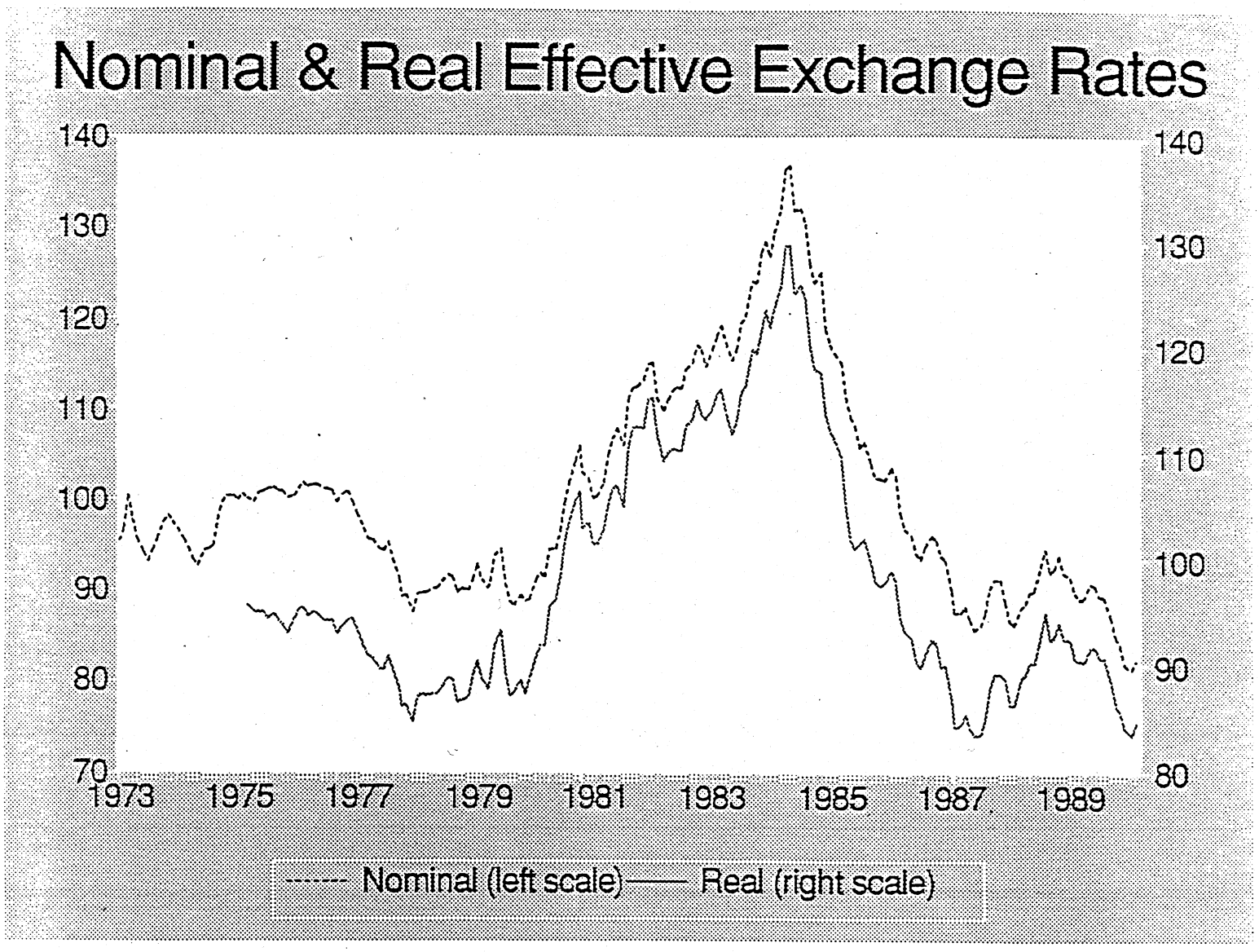
[7] Williamson (1983) provides a catalogue of reasons why misalignments are costly; these include capricious changes in households' purchasing power, costs of adjustment for firms, induced unemployment, misdirected investment, added inflation and intensified pressure for protectionism.

FIGURE 2.1


Nominal & Real Effective Exchange Rates
140
130
120
110
100
90
80
70
140
130
120
110
100
90
80
1973
1975
1977
1979
1981
1983
1985
1987
1989
Nominal (left scale)
Real (right scale)

restored (persistent misalignments are not a problem), floating rates tend to be associated with increased relative price variability, with costs of its own.[8] Figure 2.2 illustrates this point for three major exchange rates during Bretton Woods and the post-Bretton Woods float. And third, allowing the exchange rate to float without restriction may remove a nominal anchor useful for stabilizing price expectations and disciplining the conduct of macroeconomic policy.

For all these reasons, freely floating exchange rates are very much the exception.

Managed floating. Under managed floating, exchange rates are allowed to fluctuate but subject to intervention. Beyond this it is difficult to generalize about managed floating exchange rates as a class. A third to a half of IMF member countries follow some form of managed floating (see Table 2.1). These range from the various countries that allow their exchange rates to float independently (where exchange rate management is not framed in terms of a reference currency or explicit indicators) to petroleum-producing nations that limit the flexibility of the exchange rates vis-a-vis the U.S. dollar (Table 2.2). The share of countries whose exchange rates float, under various degrees of management, has risen from less than a fifth of all IMF members in 1975 to a third in 1982 and fully half in 1992. This is no coincidence, I argue in Chapter 5 below.

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[8] Two studies which make this point are Rogoff (1985b) and Artis and Taylor (1988). It is conceivable that the increase in real exchange rate volatility in periods of floating reflects a greater prevalence of real shocks that destabilize both real and nominal rates (Stockman, 1987). Krugman (1990) rebuts this view. Tamim Bayoumi and I (1993a) have attempted to measure such disturbances for the industrial economies, finding little evidence of a significant increase in the magnitude of real disturbances between Bretton Woods and the post-Bretton Woods float.

FIGURE 2.2

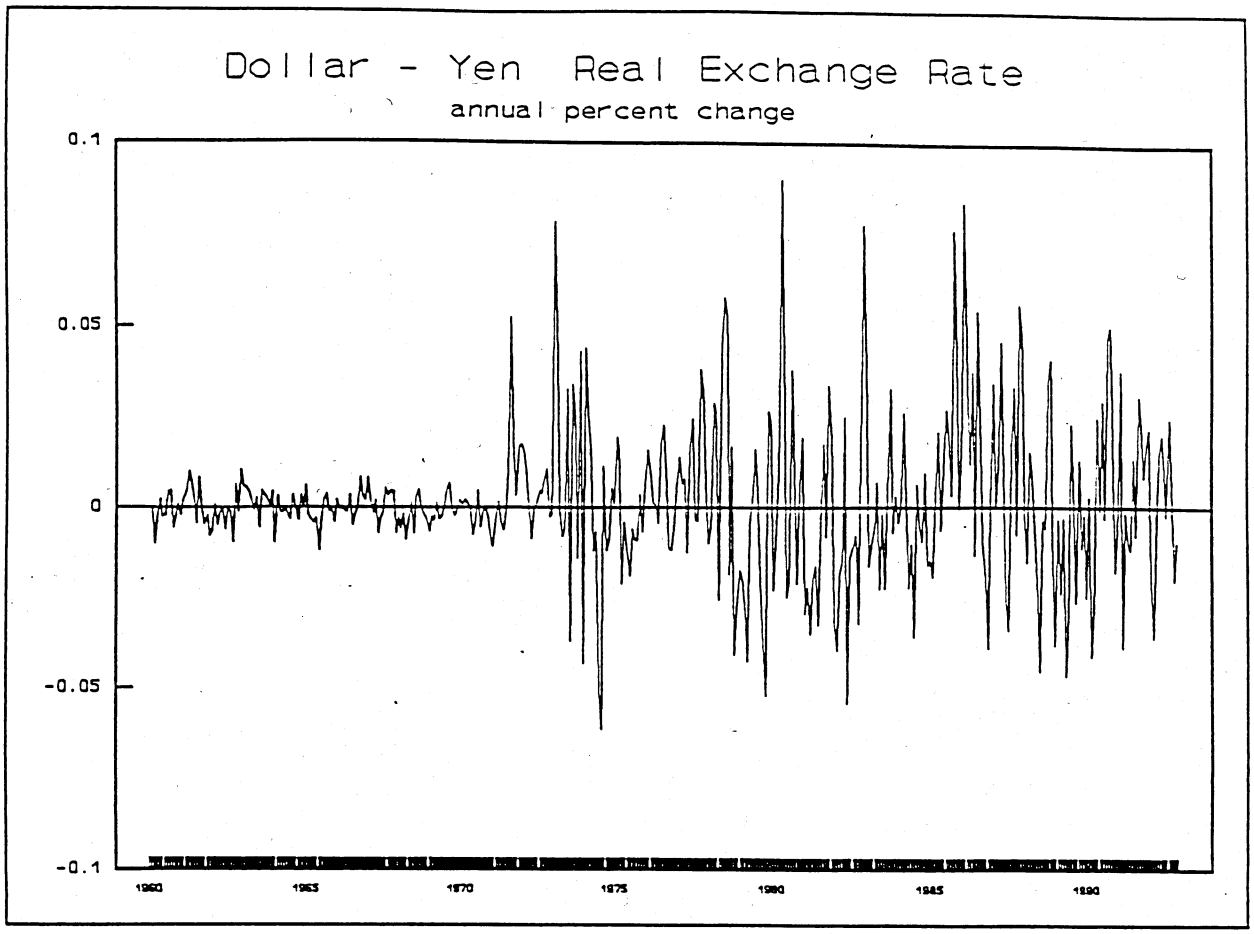
Dollar - Yen Real Exchange Rate
annual percent change
0.1
0.05
0
-0.05
-0.1
1960
1965
1970
1975
1980
1985
1990

FIGURE 2.2

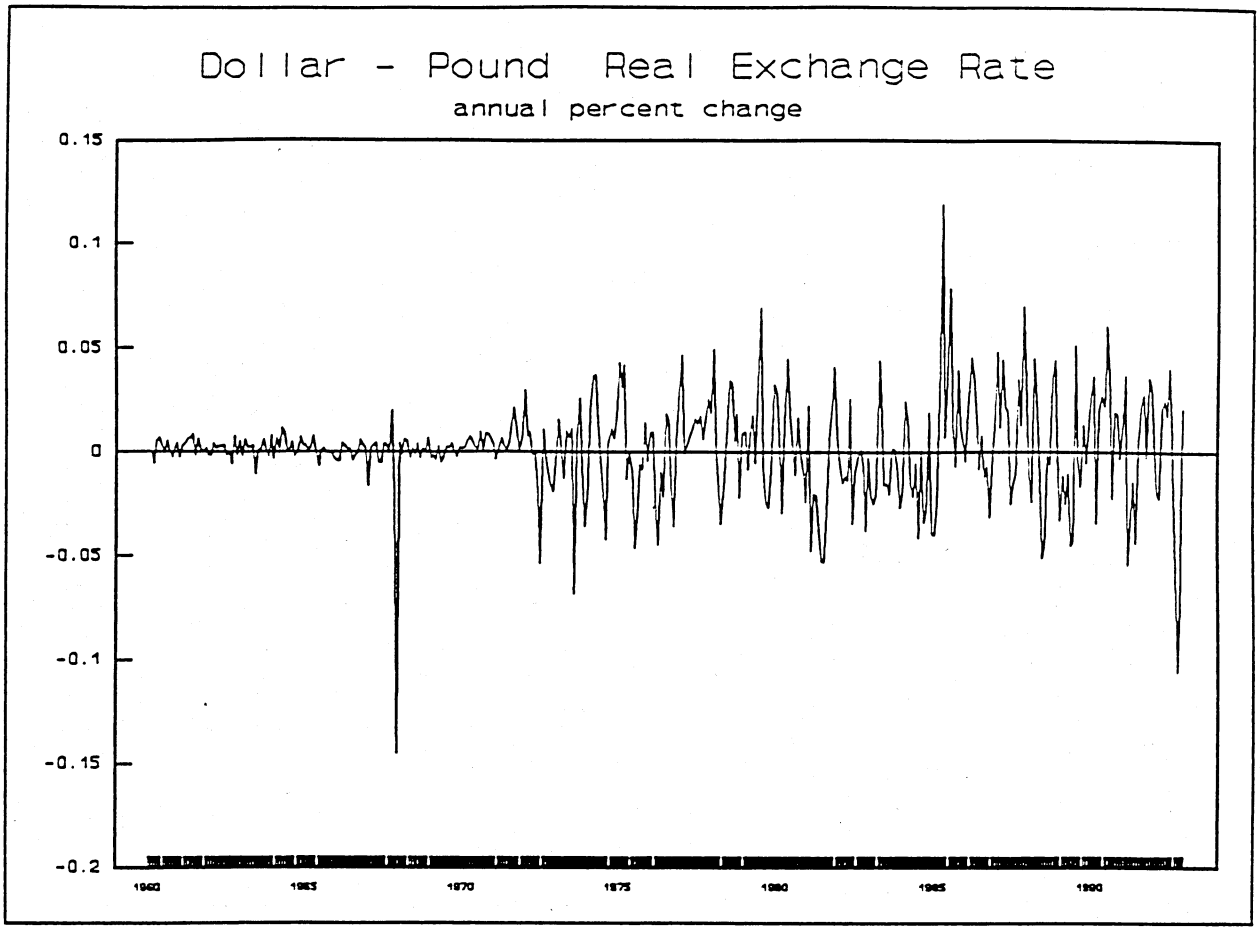
Dollar - Pound Real Exchange Rate
annual percent change
0.15
0.1
0.05
0
-0.05
-0.1
-0.15
-0.2
1960
1965
1970
1975
1980
1985
1990

FIGURE 2.2

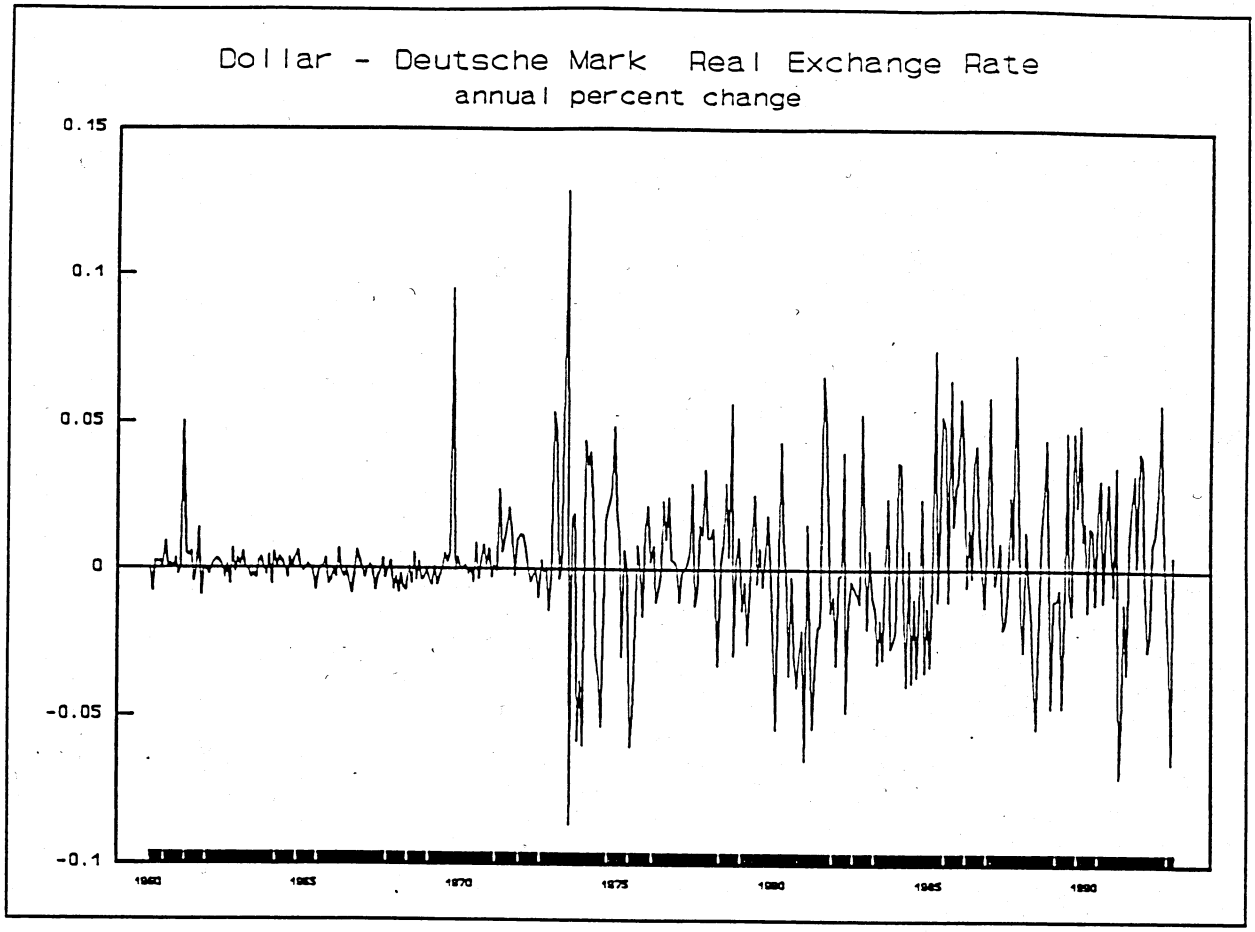
Dollar - Deutsche Mark Real Exchange Rate
annual percent change
0.15
0.1
0.05
0
-0.05
-0.1
1960
1965
1970
1975
1980
1985
1990

Table 2.1
Tabulation of Exchange Rate Arrangements
(As of September 30, 1992)

Classification Status[1]				1989	End of Period 1990				1991				1992		
	1986	1987	1988	QIV	QI	QII	QIII	QIV	QI	QII	QIII	QIV	QI	QII	QIII
Currency pegged to															
US Dollar	32	38	36	32	30	28.	25	25	27	26	25	23	23	24	26
French Franc	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
Russian ruble	--	--	--	--	--	--	--	--	--	--	--	--	--	5	5
Other Currency	5	5	5	5	5	5	5	5	5	5	5	4	4	6	6
SDR	10	8	8	7	7	7	7	6	6	6	6	6	6	5	5
Other currency composite	30	27	31	35	34	35	35	35	35	35	34	33	32	31	31
Flexibility limited vis-à-vis a single currency	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Cooperative arrangements	8	8	8	9	9	9	9	10	10	10	10	10	10	9	9
Adjusted according to a set of indicators	6	5	5	5	5	4	4	3	5	5	5	5	5	4	4
Managed floating	21	23	22	21	23	21	23	23	22	22	23	27	25	23	22
Independently floating	19	18	17	20	21	23	26	25	27	28	29	29	33	36	41
Total[6]	151	151	151	152	152	151	154	154	155	155	155	156	156	158	167

[1] Excluding the currency of Cambodia, for which no current information is available. For members with dual or multiple exchange markets, the arrangement shown is that in the major market.
[2] Compromises currencies which are pegged to various "baskets" of currencies of the members' own choice, as distinct from the SDR basket.
[3] Exchange rates of all currencies have shown limited flexibility in terms of the U.S. dollar.
[4] Refers to the cooperative arrangement maintained under the European Monetary System.
[5] Includes exchange arrangements under which the exchange rate is adjusted at relatively frequent intervals, on the basis of indicators determined by the respective member countries.
[6] Including the currency of Cambodia, Effective May 22, 1990, the Yemen Arab Republic and the People's Democratic Republic of Yemen merged as the Republic of Yemen.

Table 2.2
Exchange Rates Arrangements
(As of September 30, 1992)

Currency pegged to					
US Dollar	French Franc	Russian ruble	Other currency	SDR	Other composite[2]
Angola	Benin	Armenia	Bhutan (Indian	Iran, I.R.of	Algeria
Antigua &	Burkina Faso	Belarus	Rupee)	Libya	Austria
Barbados	Cameroon	Georgia	Estonia	Myanmar	Bangladesh
Argentina	C. African	Kyrgyzstan	(deutsche	Rwanda	Botswana
Bahamas, The	Rep.	Moldova	Mark)	Seychelles	Burundi
Barbados	Chad		Kiribati		
			(Australian		Cape Verde
Belize	Comoros		dollar)		Cyprus
Djibouti	Congo		Lesotho (South		Czechoslovakia
Dominica	Côte d'Ivoire		African Rand)		Fiji
Ecuador	Equatorial		Namibia (South		Hungary
Ethiopia	Guinea		African Rand)		
	Gabon				Iceland
Grenada			Swaziland		Jordan
Iraq	Mali		(South African		Kenya
Liberia	Niger		Rand)		Kuwait
Marshall	Senegal				Malawi
Islands	Togo				
Mongolia					Malaysia
					Malta
Nicaragua					Mauritania
Oman					Mauritius
Panama					Morocco
St. Kitts &					
Nevis					Nepal
St. Lucia					Norway
					Papua New
St. Vincent and					Guinea
the Grenadines					Solomon
Suriname					Islands
Syrian Arab					Sweden
Rep.					
Trinidad and					Tanzania
Tobago					Thailand
Yemen,					Tonga
Republic of					Vanuatu
					Western Samoa
Yugoslavia					
					Zimbabwe

Table 2.2 (continued)

Flexibility Limited in terms of a Single Currency or Group of Currencies		More Flexible		
Single Currency[3]	Cooperative arrangements[4]	Adjusted according to a set of indicators[5]	Other managed floating	Independently floating
Bahrain	Belgium	Chile	China, P.R.	Afghanistan
Qatar	Denmark	Colombia	Egypt	Albania
Saudi Arabia	France	Madagascar	Greece	Australia
United Arab Emirates	Germany	Zambia	Guinea	Bolivia
	Ireland		Guinea-Bissau	Brazil
				Bulgaria
	Luxembourg		India	Canada
	Netherlands		Indonesia	Costa Rica
	Portugal		Israel	Dominican Rep.
	Spain		Korea	El Salvador
			Lao P.D. Rep	Finland
			Maldives	Gambia, The
			Mexico	Ghana
			Pakistan	Guatemala
			Poland	Guyana
			Sao Tome & Principe	Haiti
				Honduras
				Italy
			Singapore	Jamaica
			Somalia	Japan
			Sri Lanka	Latvia
			Tunisia	Lebanon
			Turkey	Lithuania
				Mozambique
			Uruguay	New Zealand
			Viet Nam	Nigeria
				Paraguay
				Peru
				Philippines
				Romania
				Russia
				Sierra Leone
				South Africa
				Sudan
				Switzerland
				Uganda
				Ukraine
				United Kingdom
				United States
				Venezuela
				Zaire

A common approach to managed floating is leaning against the wind. When the exchange rate weakens, the central bank or government intervenes to support it. When it strengthens, they intervene to limit its appreciation.[9]

Several rationales are suggested for this policy. One is that many exchange rate fluctuations are temporary and as such confer unnecessary economic costs. If the nominal rate appreciates currently but will depreciate subsequently, leaning against the wind can reduce the costs associated with that purely temporary fluctuation. It is not clear, however, why currency traders, cognizant of this pattern, would not buy currencies which have weakened (and sell those which had strengthened) in anticipation of future capital gains, thereby damping temporary fluctuations and obviating the need for the authorities to lean against the wind in the first place.[10] Thus, this argument for intervention rests at bottom on the inefficiency of the market.[11]

An alternative view is that, absent intervention, most of the shocks driving exchange rate changes are permanent. Recent statistical work suggesting that exchange rates follow a random walk is consistent with this

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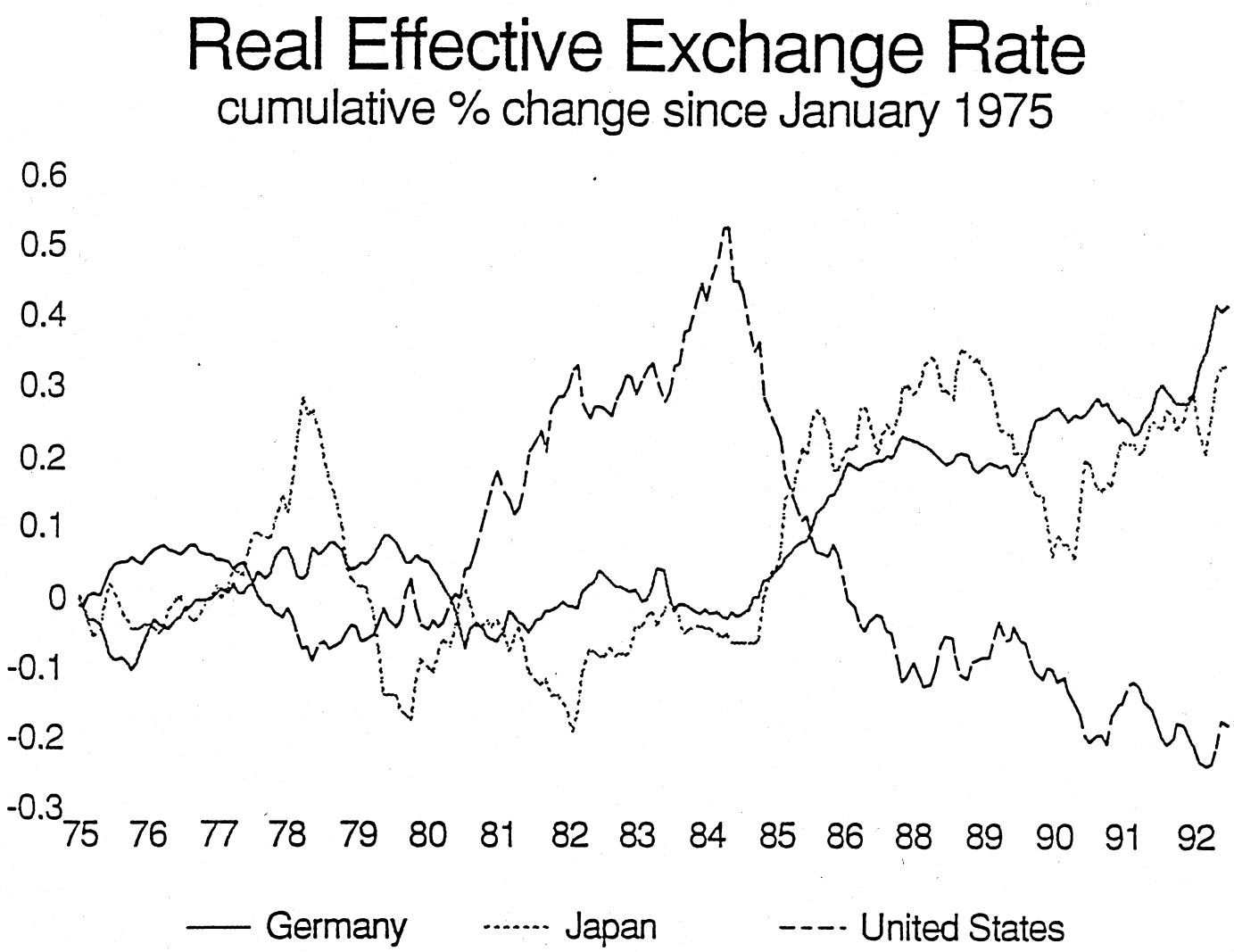
[9] An example of this policy is Canada in the 1950s, then the only industrial country with a floating rate. In 100 of 123 months from October 1950 through December 1960, the Canadian Exchange Fund Account acquired reserves when the currency was strengthening and expended reserves when it was weakening. Yeager (1966), p.426.

[10] This observation was the basis for Friedman's (1953) classic argument that the exchange rate fluctuations should be smoothed by stabilizing speculation. Moreover, if exchange rate fluctuations are known to be temporary, agents can protect themselves against any associated costs through recourse to the forward market.

[11] There is by now a vast literature on the inefficiency of foreign exchange markets. See for example Hansen and Hodrick (1980). Much of it focuses on the inefficiency of the forward market -- that is, on the failure of the forward discount to accurately predict depreciation over the contract period.

FIGURE 2.3


Real Effective Exchange Rate
cumulative % change since January 1975
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
-0.3
75 76 77 78 79 80 81 82 83 84 85 86 88 89 90 91 92
Germany
Japan
United States

conclusion. If the authorities do not alter the policy variables under their control in ways that offset the impact on the exchange rate of those shocks, there is no reason for investors to engage in stabilizing speculation. If, in contrast, the authorities are expected to lean against the wind, market participants will learn to anticipate their actions. They will buy the currency in advance of official purchases, minimizing the intervention needed to achieve a given degree of exchange rate stabilization. This is a theme of the literature on exchange rate target zones; I return to it in that context.

All this glosses over the question of what instruments are used for intervention, an issue whose relevance extends beyond managed floating. The debate revolves around the question of whether it is possible for policymakers to alter the exchange rate without changing money supplies.[12] If domestic and foreign interest-bearing assets are perfect substitutes, capital is highly mobile and sterilized intervention (effectively a swap of domestic and foreign bonds) conveys no information about future policies, then the only way the authorities can affect the exchange rate is by altering money supplies. This is not to say that exchange rate management is impossible, only that other objectives of monetary policy may have to be sacrificed in order to reach an exchange rate target. In contrast, if domestic and foreign assets are imperfect substitutes, then an open market operation (say, a sale of foreign bonds for domestic currency) that is sterilized (through a purchase of domestic bonds for domestic currency) can alter the exchange rate (one of the relative prices in financial markets that equates asset supplies with stock demands) without requiring a change in money supplies.

The available evidence suggests, however, that the time varying risk

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[12] See for example Rogoff (1984) and Obstfeld (1988).

premium whose absence is difficult to reconcile with the assumption of imperfect substitutability is small if it exists at all. This implies that scope for sterilized intervention to manage the exchange rate is limited.

But if sterilized intervention signals a shift in future monetary policies, it can affect the exchange rate now without requiring a shift in monetary policy until later.[13] The evidence (e.g. Kaminsky and Lewis, 1993) seems to indicate the existence of a statistically significant signalling effect. For signalling to matter, however, it must be backed up eventually by the anticipated changes in money supply. This requires that policy changes be predictable, which brings us to the case of exchange rate target zones.

Target zones. An exchange rate band or target zone attempts to limit fluctuations of exchange rates to a given interval. Within the band the exchange rate is allowed to float, perhaps freely, but when the edge of the band is reached, further movement is blocked by intervention. A target zone thus combines elements of pegged and floating exchange rates.

A target zone can be implicit or explicit.[14] For it to be effective, however, the authorities' commitment to defending the rate once it reaches the edge of the band must be credible. If the authorities commit to defending the rate when it reaches the edge of the band, they should enjoy a "target zone honeymoon." Investors will begin buying the currency as it approaches the bottom of the band, since they anticipate that the authorities are committed to buying it, making available capital gains, when the edge of the band is reached. They will begin selling the currency as it approaches the top of the

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[13] The signalling effect was first described by Mussa (1981). Edison (1993) surveys the subsequent literature.

[14] Whether an implicit or explicit zone is preferable is taken up below.

band, since they expect the authorities to sell it when the limit of the band is reached. This reduces, for any given set of fundamentals, the probability that the edge of the band will actually be reached. Over a given range of parameters, the exchange rate may be stabilized without any intervention.[15]

An attraction of target zones is that they provide a device for reconciling the desire for exchange rate stability with autonomy for domestic policy. The rate is allowed to fluctuate only within the band, limiting volatility. But even this limited flexibility should provide some autonomy for monetary policy. If the authorities expand the money supply, driving the exchange rate down to the bottom of its band, the knowledge that it can only appreciate subsequently will render investors willing to hold it at reduced interest rates. Hence, monetary policy can be used to affect interest rates -- and the macroeconomic aggregates that interest rates influence -- even while holding the exchange rate within the band. The autonomy for domestic policy is limited: the reduction in interest rates can only be temporary, since it will disappear once the exchange rate recovers to the center of the band. Put another way, a loose monetary policy now which causes the exchange rate to depreciate must be followed by a tight monetary policy later to hold it within the band.[16] And the very idea that limited monetary autonomy and exchange rate stability can be reconciled is premised on the assumption that the authorities' commitment to defense of the zone is credible, an assumption which cannot be taken for granted.

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[15] Statistical evidence of the particular s-shaped relationship between the exchange rate and the fundamentals predicted by the early target-zone literature (viz. Krugman 1991) is mixed. See Flood, Rose and Mathieson (1990). Lewis (1990) shows how more realistic intervention rules featuring intra-marginal interventions alter the predictions of the model.

[16] These points are modelled in detail by Svensson (1992).

Much of the recent attention to target zones emanates from their advocacy by Williamson (1985) and Williamson and Miller (1987). Their analyses have led to rediscovery of the fact that all pegged exchange rate systems resemble target zones.[17] Short of monetary unification, exchange rates are never rigidly fixed in practice. Pegging the exchange rate means using policy to prevent it from fluctuating beyond prescribed limits -- that is, maintaining a narrow target zone.

Chile, Finland, Israel, Norway and Sweden have all adopted unilateral target zones. It is worth considering one of these arrangements, Sweden's, in some detail. Following the krone's 1982 devaluation, the Riksbank pegged the exchange rate to a trade-weighted currency basket.[18] In May 1991, it shifted to a unilateral ecu peg. The target value relative to the basket was specified but the implicit bands around the index were not revealed. Later the Riksbank disclosed that it had been working with a band of plus or minus 2.25 per cent. In mid-1985 the band was narrowed to 1.5 per cent and announced.

From this announcement until November of 1992, when it fell casualty to the crisis in the European Monetary System (EMS), the krona was kept continually within its band. The three-month-ahead forward trade, a simple measure of the credibility of the exchange rate, moved outside the band only in mid-1985, when the authorities responded by narrowing the target zone, and toward the end of August 1992, as the EMS crisis approached (Horngren and Lindberg, 1993).

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[17] See for example Giovannini (1989), where the analogy is emphasized.

[18] Initially the Riksbank had planned to introduce a unilateral D-mark peg, but there was confusion about whether this would be acceptable to Germany without the approval of the Bundesbank.

As this experience suggests, the question for advocates of target zones is what lends them credibility. If the band is wide and the authorities do not have occasion to demonstrate their commitment to the exchange rate's defense, why should currency traders believe them when they insist that there exists a point where they are committed to intervene? Indeed, if the markets believe the authorities are inclined to realign (to shift the band when its edge is reached), the target zone honeymoon may be replaced by a target zone divorce in which the volatility of the exchange rate is amplified as it approaches the edge of the band.[19]

In theoretical treatments (e.g. Flood and Isard 1989) it is assumed that the authorities incur a lump-sum cost when violating their commitment to hold the exchange rate within the zone. The knowledge that this cost exists lends their commitment credibility, since it will not be optimal to incur it by reneging when the returns to doing so are low. Indeed, the authorities may seek to influence the size of that cost, since it affects the tradeoff between flexibility and credibility.[20]

This approach is incomplete for at least two reasons. First, it is not clear what that fixed cost is, how it is determined, and how its magnitude can be influenced. And second, the approach assumes away problems of incomplete information and moral hazard which greatly complicate any attempt to exploit potential tradeoffs between credibility and flexibility.[21]

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[19] For theoretical and empirical analyses of this possibility, see Bertola and Caballero (1991) and Bertola and Svensson (1993).

[20] See Cukierman, Kiguel and Liviatan (1992). The larger the fixed cost, the less scope for the authorities respond flexibly to exceptional shocks but the greater their credibility.

[21] These problems are the subject of Chapter 3 below.

Pegged exchange rates. A narrow target zone with periodic realignments is analytically indistinguishable from a pegged but adjustable rate. Historical examples of this kind of arrangement abound. Under the pre-World War I gold standard, countries unilaterally pegged their currencies to a given quantity of gold and thereby to one another. They did the same from the mid-1920s. As of September 1992, 26 countries pegged their currencies to the U.S. dollar, 14 (mainly former French West African colonies) to the franc, 5 former Soviet republics to the Russian ruble, and 6 to other currencies. Five nations pegged to the SDR, and 31 maintained other basket pegs. There has been a significant decline in recent years in the share of countries pegging their currencies: between 1982 and 1992 the share pegging to a single currency dropped from 40 to 26 per cent, while the share maintaining a basket peg remained stable at around 25 per cent. (Here basket pegs include SDR pegs.)

In line with the target zone analogy, exchange-rate pegs typically entail a margin within which the rate is allowed to fluctuate, and circumstances under which the peg may be altered or abandoned. All so-called "fixed-rate commitments" entail fluctuation bands and contingencies under which the fixed rate may be unfixed. Gold standard parities, for example, were surrounded by bands of approximately plus or minus one-half of one per cent, within which the exchange rate could fluctuate without occasioning either corrective gold flows or central bank intervention.[22] Gold standard pegs could be and were changed. Prior to 1913, most such changes were temporary. Countries experiencing financial difficulties temporarily suspended gold convertibility, allowing their exchange rates to depreciate for

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[22] The edges of these bands were the so-called "gold points." Bloomfield (1959) remains the definitive reference to the literature on this subject.

a time but restoring them to their previous level once normalcy returned.[23] After World War I, permanent changes were more common.

Is there such a thing as a truly fixed exchange rate? An approximation is the currency board arrangement adopted by countries like Argentina and Estonia, whereby the central bank is required to maintain the stability of the exchange rate vis-a-vis a reference currency. Under the law passed by the Estonian Parliament in May 1992, the country's currency (the kroon) must be fully backed by gold and foreign exchange.[24] The Bank of Estonia can change the quantity of notes and coin in circulation only to the extent that there are changes in its gold and foreign reserves. The Bank stands ready to convert kroons into deutschmark for most current account transactions. The exchange rate is pegged to the deutschmark at the rate of 1 DM = 8 EEK. In a concession to realism, the kroon is allowed to fluctuate within a band of plus or minus three per cent.

Is this a fixed and unadjustable exchange rate? Though the Bank of Estonia currently has no discretion over the level of the peg, there remains the possibility that the currency law will someday be changed. It could be revoked or modified by the Estonian Parliament in response to changing economic or political conditions.[25] The Irish punt was unalterably fixed to

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[23] Counterexamples to both generalizations can be found. Thus, for example, various Latin American countries permanently abandoned exchange rate pegs prior to 1913 (Ford, 1962; Fishlow, 1989). Britain, in a famous episode, restored its previously-abandoned exchange rate peg in 1925. For a recent analysis emphasizing these aspects of gold standard pegs, see Bordo and Kydland (1992). I return to the historical evidence on these issues in Chapter 4 below.

[24] For details on what follows, see Lainela and Sutela (1993).

[25] Lainela and Sutela (1993) argue that Estonian officials in fact understand their currency board to be a temporary arrangement and that it is likely to be abandoned in the not-too-distant future. See also Hanke, Jonung

the British pound sterling for more than 150 years, but even that exceptionally durable link was broken in 1979. As Portes (1993, p.2) puts it, "'Permanently fixed exchange rates' is an oxymoron." The exchange rate only exists so that it might one day be changed.[26]

The same point applies to crawling pegs, under which the authorities pre-announce not a level for the exchange rate peg but a series of levels that constitute a path.[27] They might announce their intention of allowing the exchange rate to depreciate against a foreign currency or a basket at, say, 2 per cent a month. Even though domestic inflation persistently exceeds foreign inflation, a crawling peg may deliver many of the benefits of a stable exchange rate. The question for advocates of a crawling peg is, once again, what lends credibility to the authorities' commitment to the pre-announced rate of crawl.

This is a controversial issue in countries prone to chronic inflation, where crawling pegs and, more recently, simple pegs have been used in stabilization programs. Though the usefulness of an exchange rate peg as a nominal anchor in the disinflation process has been contested for years, most economists now reject the extreme view that the exchange rate is irrelevant for disinflation and stabilization. Equally, most reject the heterodox view that the monetary and fiscal sources of the inflation are mere byproducts of exchange rate instability, so that it is both necessary and sufficient in

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and Schuler (1993).

[26] This has been the view of most academic analysts in the wake of 1992 EMS crisis; see for example De Grauwe (1993).

[27] Another indication of the close parallels between narrow bands and pegged rates is that some target zone arrangements (in Chile and Israel, for example) have allowed the central parity of the band to crawl downward at a preannounced rate.

order to stabilize for the government to peg the exchange rate. The middle ground is that pegging the exchange rate can usefully buttress the requisite monetary and fiscal measures. By slowing inflation temporarily, it can reveal the share of the budget deficit that is structural and the share that is inflation-induced, clarifying what steps the government must take to put its financial house in order. It can provide a nominal anchor for price and wage setters to focus upon, solving the coordination problems raised by stabilization.[28]

If pegging the rate reveals that the government has not put its financial affairs in order, wage and price inflation will not halt. The exchange rate will become overvalued, and intervention in its support will lead to a steady loss of reserves. The authorities' stated commitment to maintain the peg, whether crawling or fixed, will not be regarded as credible. Anticipating the exhaustion of the country's international reserves, speculators will eventually run on the central bank, forcing abandonment of the peg.[29]

Complete Meals (Systemic Options)

All of the preceding options are for countries going it alone. The alternative is to reconstruct international monetary arrangements at the systemic level. Attempts to do so -- at Genoa in 1922, in London in 1933, at Bretton Woods in 1944, in Jamaica in the 1970s -- often seek to establish systems of pegged but adjustable rates or currency bands. Recently, however, policymakers' attention has turned, especially in Europe, to the goal of

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[28] See Corden (1993) and the references cited therein.

[29] The seminal model of balance-of-payments crises is Krugman (1979). For variations on this theme, see Flood and Garber (1984a).

fixing exchange rates once and for all.

A pegged rate system. Bretton Woods is prototypical of pegged exchange rate systems. Under the terms of the Bretton Woods Agreement, countries agreed to declare official parities against gold or the dollar, to hold their exchange rates within one per cent of those parities, and to change their parities only in the event of special circumstances, referred to as "fundamental disequilibrium."

How does a systemic agreement like Bretton Woods differ from a set of unilateral pegs?[30] Under a systemic agreement, each country can expect to receive support from the other participants. In turn, participating countries are expected to take other positive steps and to refrain from certain actions in order to maintain their good standing. Under Bretton Woods, for example, countries were entitled to draw credits from the IMF, initially without restriction and then subject to increasingly stringent conditions -- credits which could be used to support an exchange rate under duress.

This feature of the Bretton Woods System, which has its counterpart in other pegged rate systems, can be thought of as an insurance policy. Each country pays premia in normal times, providing a pool of resources upon which it can draw when experiencing a crisis. These resources reduce the cost of defending the exchange rate; assuming that different currencies weaken at different times (which is necessarily the case when currencies are pegged to one another rather than to a nonmonetary numeraire like gold), the availability of this insurance allows a set of rates to be defended at lower

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[30] Exchange rate experience under Bretton Woods is analyzed in more detail in Chapter 4 below. Here I provide only enough detail to illustrate the features of pegged rate systems and to show how they differ from unilateral pegs.

cost than would be entailed by the maintenance of a unilateral peg.

Insurance is notorious for the moral hazard problems it creates. The International Monetary Fund, like any good insurance company, was therefore vested with responsibility for minimizing the incidence of the problem. The Fund's role was to monitor member countries and to warn those whose actions were heightening the danger of a crisis that they might not qualify for indemnification. It was to require of such countries the adoption of corrective policies and to monitor their implementation. Changes in central parities were to be undertaken only with the prior approval of the Fund.[31]

A system of target zones. Systems of exchange rate target zones are broadly similar to systems of pegged but adjustable rates. As with unilateral target zones, the width of the zone need not be announced. In 1987, for example, the finance ministers of the G-7 countries agreed at the Louvre meeting to establish "reference values" for the dollar and other currencies "around current levels" but refused to specify the width of the reference range.[32] They agreed to a narrow margin of plus or minus 2 1/2 per cent, after which intervention would be called for on a voluntary basis, and a wider band of plus or minus five per cent, at which point concerted intervention would be obligatory.[33]

Alternatively, the reference range or band width of the zone can be

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[31] Whether the IMF adequately carried out these responsibilities is at the center of the debate over the collapse of the Bretton Woods System. These issues come in for further discussion in Chapter 4 below.

[32] These phrases from the subsequent communique are cited in Frankel (1990). While officials denied the existence of quantitative target ranges, subsequent research suggests that they in fact set an explicit reference range. Funibashi (1988), pp.183-187.

[33] Though these band widths were not announced, they were widely understood to exist. Kenen (1988) cites examples of press commentary.

announced by the parties to the agreement, as in the case of the European Monetary System. In return for declaring a central rate and agreeing to other restrictions (devaluing only with the unanimous consent of member countries, for example), EMS participants are entitled to draw on the system's Very Short Term Financing Facility and to receive support from other members.[34]

Is it better to announce a central parity and band width for each participating country, as do the members of the Exchange Rate Mechanism of the European Monetary System, or to keep the particulars of the band secret, as did Sweden after 1982 and the G-7 countries following the Louvre? An implicit band avoids creating focal points for speculation. Currency traders will not know the bottom of the band, so they will be unsure at what point the authorities will attempt to keep the rate from falling further and thus at what point capital gains are available in the event that the latter fail. An explicit band, on the other hand, signals clearly the authorities' commitment to stabilize the exchange rate and should therefore enjoy greater credibility than an implicit zone. Chapter 3 below suggests that priority should be attached to the second of these considerations.

Williamson's proposal for a target zone system for the industrial countries lies midway on this continuum.[35] Participants would preannounce target zones for real effective exchange rates, with the central rate surrounded by a 10 per cent band on either side. They would manage the nominal exchange rate, using foreign exchange market intervention and domestic monetary policy, so as to keep the real rate within the band. But while the

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[34] For details, see Ungerer et al. (1986) and Giavazzi and Giovannini (1989).

[35] The proposal is generalized in Williamson and Miller (1987).

markets would know the central rate and the band width for each country's real effective rate, they would not know the central rate or band width for any bilateral nominal rate. Moreover, rather than imposing rigid limits on exchange rate fluctuations, Williamson's target zones feature "soft buffers," which would allow the rate to move outside the band under exceptional circumstances.

As soon as one contemplates the implementation of such proposals, questions arise. What insures that the participating countries will agree on the appropriate joint stance for their monetary policies? What lends credibility to their stated commitment to defend their target zones? If the target zone features soft buffers, what will convince the markets that the zone will be defended when its limits are reached?[36]

Monetary union. For those who despair of solving these problems yet remain adverse to variable exchange rates, monetary union has obvious appeal.[37] In a monetary union, insuring the pursuit of a common monetary policy is guaranteed by creating a transnational entity that assumes control of the participating countries' monetary policies. Thus, the Maastricht Treaty, the European Community's framework for monetary union, provides for the establishment of a European central bank responsible for the monetary policies of all participating countries. The credibility problem is solved by issuing a single currency which circulates in all participating countries and by withdrawing national currencies from circulation. By raising the cost of quitting the union, this institutional exit barrier enhances the credibility

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[36] These problems provide the subject of much of Chapter 3 below.

[37] Here I concentrate on comparisons between monetary union and other exchange rate arrangements in the steady state. The transition to a monetary union opens up other issues addressed in Chapter 7.

of countries' commitment to participation.[38]

If monetary union is such an effective solution to the exchange rate problem, why then do we observe so few monetary unions between separate sovereign nations? One reason is that monetary union represents an extremity on the tradeoff between the stability and certainty provided by fixed rates and the policy autonomy enjoyed under floating. Having renounced the option of varying the exchange rate and pursuing an independent monetary policy, members of a monetary union may find themselves constrained in responding to national macroeconomic shocks. The absence of exchange risk, together with a high degree of financial-market integration, imply that the same level of interest rates must prevail in all participating countries; hence, it will no longer be possible to use monetary policy to vary those rates in response to changes in local economic conditions. Stabilization may be hamstrung.[39]

The other reason one observes so few monetary unions among separate sovereign nations has to do with the questions of governance raised by such arrangements. How should policy be formulated -- by majority rule in a one-

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[38] The authors of the Delors Report (Committee for the Study of Economic and Monetary Union 1989) recognized the importance of a single currency as an institutional exit barrier. The Maastricht Treaty does not however require the issuing of a single currency and the removal of national currencies from circulation upon the inauguration of monetary union. Until this is done, the European Central Bank is merely required to exchange all national currencies at par.

[39] "May" is a weaker word than "will." There are at least three qualifications to the argument. First, monetary-cum-interest rate policy may not be an effective response to cyclical disturbances, especially if real wages are impervious to price level changes. If so, sacrificing the monetary instrument will be costless. Second, even if monetary instruments are useful, a common, union-wide monetary policy could suffice if the nations joined together in the monetary union experience similar disturbances. And third, forsaking monetary independence will be less costly when there exist other instruments, such as national fiscal policy and intergovernmental transfers, to take up the slack. I return to these issues in Chapter 6.

country, one-vote system, or by weighted voting in which weights are proportional to national populations? Should each nation have veto power over decisions, or should members of the board of the union-wide central bank not have national affiliations at all?

Since a union-wide central bank can, by definition, run only one monetary policy, its policy necessarily matches the interests of some countries more closely than others. What then assures the continued participation of countries with divergent policy preferences? Perhaps efficiency advantages of a single currency outweigh the costs associated with loss of monetary independence. Alternatively, monetary union may be part of a larger political bargain, in which a country agrees to monetary unification, which might not be in its self interest when taken in isolation, in return for receiving other political or economic concessions. Thus, Germany is said to have agreed to monetary union at Maastricht in return for an expanded foreign policy role in the context of a European foreign policy.[40] This suggests that, until other parts of the world achieve a degree of political integration comparable to that of the European Community, equally ambitious attempts at monetary unification are unlikely to be observed.

Summary

There would appear to be no shortage of international monetary options from which countries can choose (although I suggest below that the range of feasible options is now much more limited than the preceding menu suggests). Countries may proceed unilaterally, selecting the international monetary arrangement that is optimal from the national point of view taking the

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[40] For elaboration of this argument, see Garrett (1993), Martin (1993) and Eichengreen and Frieden (1993).

decisions of other nations as given. Or they may harmonize their decisions so as to coordinate on a superior solution. Either way it is necessary to identify the characteristics of a desirable international monetary system. It is to this task that the next chapter turns.

Chapter 3. Prerequisites for International Monetary Stability

What is meant by a successful exchange rate policy or a satisfactory international monetary system? It is important in addressing this question to avoid the tendency to contrast the perceived shortcomings of the prevailing regime with an idealization of the alternatives.[41] In an era of floating, there is a tendency to associate a smoothly functioning international monetary regime with exchange rate stability. And when exchange rates are fixed, there is an analogous tendency to contrast the shortcomings of the existing system with an idealization of the alternative, in this case models of smoothly adjusting floating rates.

These tendencies reflect a simple verity: fixed and flexible exchange rates both have advantages. Fixed rates minimize the disruptions caused by exchange-rate volatility and check the more erratic proclivities of policymakers. Flexible rates allow for policy initiatives to insulate the economy from disturbances. Traditionally, successful exchange rate policies and satisfactory international monetary arrangements are those which have succeeded in combining the advantages of both.

International monetary arrangements that have incorporated these features all share three characteristics. These are an ability to effect relative price adjustments, compatibility with the pursuit of robust monetary policies, and a capacity to contain market pressures.[42] A system with the capacity to effect relative price adjustments is able to accommodate disturbances. Either the exchange rate itself provides this capacity, or

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[41] This point is emphasized by Kenen (1988).

[42] This taxonomy builds on Eichengreen and Wyplosz (1993), although I develop it in different directions here.

substitutes are created for this function of exchange rate changes. A system with this characteristic thus delivers the main advantages of flexible rates. The pursuit of robust monetary rules and the capacity to contain market pressures are means of limiting exchange-rate volatility at acceptable cost. A system with these characteristics thus also delivers the main advantages of fixed rates.

Capacity to Effect Relative Price Adjustments

The disturbances most difficult for any economy to accommodate require significant changes in a large number of prices. Events abroad which reduce the demand for U.S. exports, for example, require a fall in the relative price of all the traded goods the U.S. produces in order to sustain their demand and prevent the emergence of unemployment and balance-of-payments problems. When exchange-rate changes are precluded, this response must occur through the synchronous adjustment of a large number of wages and prices. But if some prices adjust sluggishly, output losses and balance-of-payments difficulties can result. Exchange rate changes may avert these losses by altering many prices at once. This is the "daylight-savings time" argument for adjustable rates.

Under a system of permanently fixed rates (insofar as such a thing is possible short of monetary unification), the entire adjustment burden falls on domestic prices. Under pegged but adjustable rates, easily accommodated shocks are absorbed through adjustments in prices, while exceptional ones may occasion exchange-rate changes.

This perspective suggests that a satisfactory international monetary system requires a high degree of exchange-rate flexibility when domestic-

currency prices and costs are sticky.[43] When prices are inflexible downward, for example, a negative demand disturbance will produce unemployment rather than deflation, and an exchange rate change which allows the authorities to pursue demand-management policies to offset the disturbance will be exceptionally valuable. Thus, when disturbances requiring relative price adjustments are frequent and large, the advantages of exchange-rate flexibility are magnified.

That exchange rates can be used to facilitate adjustment is most obvious under floating. But the same is true of the systems of "fixed" (or, more accurately, pegged) exchange rates that have prevailed over the last 100 years. All such systems have featured escape clauses permitting exchange rates to be changed in the event of exceptional shocks.[44] Even under the classical gold standard, as we shall see in Chapter 4, there was provision for suspending gold convertibility and allowing the exchange rate to depreciate in the event of exceptional shocks.

The theory of escape clauses emphasizes that "fixed" rates can be changed without undermining the authorities' commitment to exchange rate stability if such changes are initiated only in response to exceptional shocks that are directly observable or otherwise independently verifiable and if those shocks are not initiated by the authorities themselves. If these conditions are met, then the costs of maintaining exchange rate stability under most circumstances should be relatively low. When no exceptional shock justifying a permanent depreciation has been observed, market participants,

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[43] This is one of the messages of the literature on optimum currency areas discussed in Chapter 6 below.

[44] On the theory of escape clauses, see Grossman and van Huyck (1988), De Kock and Grilli (1989), Flood and Isard (1989) and Giovannini (1993).

when they see the exchange rate weakening, will expect the authorities to intervene in its support. Traders will purchase it in anticipation of those measures of support, strengthening the rate without the need for actual intervention. The costs of stabilizing the exchange rate will be minimized. In the event of an exceptional shock requiring far-reaching adjustment, however, the authorities will be able to alter that rate without undermining the credibility of their commitment to defending it in normal times.

In theory, then, an escape clause permitting exchange rate changes in the event of exceptional shocks should not interfere with the ability to reap the benefits of exchange rate stability. Whether resort to an escape clause is feasible in practice, when exceptional exogenous shocks are difficult to distinguish from other disturbances, is a more difficult question, as I now explain.

Compatibility with the Pursuit of Robust Monetary Rules

If the contingencies triggering exceptional exchange rate changes are not independently verifiable and clearly exogenous with respect to the authorities' actions, an exchange-rate escape clause will lack credibility.[45] Market participants may dismiss the central bank's assurances that the exchange rate's fluctuation is temporary and reversible, since no readily observable, exogenous shock triggering the escape clause has occurred. They may suspect that the authorities are manipulating the rate under cover of their contingent rule, manufacturing the relevant disturbance or claiming that it has occurred when it has not. The movement of the rate to the edge of its fluctuation band will not elicit stabilizing speculation.

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[45] These private-information and moral-hazard problems are emphasized by Canzoneri (1985) and Obstfeld (1992), respectively.

Even worse, the escape clause may be positively destabilizing. Imagine that the authorities vow to devalue only when circumstances are sufficiently bad. If the markets expect that the authorities are inclined to manufacture or simply to announce unverifiable circumstances justifying a devaluation, they will sell the currency in anticipation, increasing the pressure on the authorities to the point where the latter are forced to respond as expected. In the limit, this renders the escape clause and exchange rate stability incompatible, requiring the authorities to choose between them.[46]

Private-information and moral-hazard problems thereby handicap efforts to construct hybrid systems combining the advantages of fixed and flexible rates. They create difficulties for all intermediate systems, from regimes of pegged but adjustable rates like Bretton Woods to target zones with realignment options and soft buffers.

A solution is for the government to acquire a reputation for defending its currency peg. Even if the markets are incapable of verifying whether an exceptional exogenous disturbance justifying a change in the exchange rate peg has occurred, so long as the government possesses a reputation for defending the rate in the event of all but the most exceptional exogenous disturbances, it will pay for currency traders to bet that this is what the authorities will do when the exchange rate weakens. Market participants may not possess all the information available to the Dutch government when it decides whether or not to alter the guilder-DM exchange rate, for example, but the reputation the Netherlands Central Bank has acquired from years of pegging the guilder to the DM still induces traders to speculate in stabilizing ways. The fact that the escape clause exists (that the Netherlands can still alter the guilder price

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[46] This is an implication of the model developed by Obstfeld (1992).

of the DM) is thereby reconciled with exchange rate stability.

To acquire this reputation, the authorities must pursue a consistent policy (in the present example, pegging the exchange rate to the DM) in the face of all but the most exceptional shocks. Whether an exceptional shock cited by the authorities as justification for an exchange rate adjustment really occurred and was truly exogenous with respect to the government's actions can generally be verified with the passage of enough time and the accumulation of evidence from successive episodes. By behaving over time in a consistent manner, the authorities can acquire the reputation needed to support the smooth operation of an exchange-rate escape clause. This is how the stability of pegged but occasionally adjustable exchange rates under the classical gold standard is best understood.

Some argue that credibility can also be acquired by making the central bank independent of political influence. Independence will not in general suffice, however, for the central bank may retain an incentive to behave in time-inconsistent ways. Imagine a central bank playing a noncooperative game with the domestic fiscal authority.[47] In deciding whether to use the inflation tax and to disregard its exchange rate commitment in order to help finance the government's deficit, an optimizing central bank will solve the Ramsey-Phelps optimal taxation problem, equating at the margin the costs of revenues raised with distortionary taxes and seigniorage. Faced with a government engaged in high levels of spending and levying highly distortionary taxes, an independent central banker possessing discretion will rationally create additional inflation. Central banks may state their intention of maintaining price and exchange rate stability and of refusing to monetize

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[47] The example that follows is drawn from Canzoneri and Diba (1991).

additional budget deficits; but when such deficits accrue, the monetary authorities, upon solving the Ramsey-Phelps problem, will find it optimal to equate the deadweight loss of distortionary taxes and inflation on the margin, violating their pre-announced rule. This knowledge may then encourage their fiscal counterparts to run excessive deficits. The problem of time inconsistency thereby limits the ability of even an independent central bank to credibly commit to a monetary policy consistent with exchange-rate stabilization.

Thus, central bank independence by itself may not solve the problem. It must be buttressed directly by a rule requiring the monetary authorities to adhere to a certain policy, or indirectly by a rule requiring the fiscal authorities to do so. An example of the former is the currency board arrangements described in Chapter 2, while an instance of the latter is the "excessive deficits procedures" of the European Community's Maastricht Treaty on Economic and Monetary Union.[48]

Simply invoking rules as a source of credibility assumes a solution to the problem. If discretionary policy lacks credibility, what makes the rules credible? When the time for time inconsistency comes, those with discretion over the rules will have the same incentive to violate them as discretionary policymakers have to exercise their discretion.[49] A resolution of this

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[48] These procedures limit the debts and deficits that states can run when seeking to qualify for membership in the European monetary union and provide sanctions to be applied to members that subsequently run "excessive" debts and deficits. For details, see Buiter, Corsetti and Roubini (1993).

[49] "Self-imposed rules tend to lose their force, and thus their influence on credibility, as soon as they come into conflict with other policy goals," as Kenen (1988, p.19) puts the point.

paradox is to construct institutions which make violating the rules costly.[50] Governments can tie their hands in various ways. They can sign the IMF Articles of Agreement, committing to declare a par value for their currency and to hold their exchange rate within a narrow band or else to lose access to the resources of the Fund. They can ratify the Maastricht agreement, an international treaty under which other they incur fines in the event that they pursue certain macroeconomic practices.

This is a way for governments to tie themselves to the mast -- to bond themselves by creating extra costs if they fail to adhere to the relevant policies (as discussed in Chapter 2 above). If they sign an international exchange-rate stabilization agreement but then renege, they may suffer other diplomatic costs as well. Their commitment to adhere to the agreement is thereby lent credibility. The more efficiently the parties to the agreement monitor compliance and the more rapidly and vigorously they respond to violations, the greater will be the added credibility.[51] This provides an argument for international monetary reform at the systemic level in preference to unilateral national initiatives, and for international institutions to monitor compliance with the relevant rules. Both sorts of measures could help governments credibly commit to the pursuit of robust monetary rules.

Capacity for Containing Market Pressures

The third characteristic of a smoothly-operating exchange rate policy and a stable international monetary system is the capacity to contain market

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[50] This argument is an application of the literature on institutions as a solution to time-consistency problems. See North (1993). It is also the basic message of the literature on issue linkage in international politics. See Tollison and Willet (1979).

[51] See Alt and Eichengreen (1991) for a formalization and application of this point.

pressures. As an asset price, a freely floating exchange rate is likely to fluctuate volatilely in response to new information. When offered a costless one-way bet, as will be the case when the authorities attempt to operate a system of pegged-but-adjustable rates or exchange-rate target zones, currency traders may bet heavily against the official position on even the off-chance that the authorities are incompletely committed to it. To prevent these pressures from destabilizing a particular exchange rate and even an entire exchange rate system, the authorities must possess means of containing market pressures.

Two types of market pressures. Not all market pressures are necessarily to be resisted. Here it is useful to distinguish two models of balance-of-payments crises. In the seminal model of Krugman (1979), a crisis ensues because the authorities run monetary and fiscal policies fundamentally incompatible with the exchange rate peg. Budgets deficits are too large, their monetization of fiscal deficits is too rapid, and reserve losses are too great for the authorities to continue resisting pressure to devalue. The capacity to contain market pressures for a time may be useful to provide the breathing space for organizing an orderly realignment and preserving a system of pegged but adjustable exchange rates, but it would be silly to attempt to resist that pressure indefinitely, given underlying policies.

In contrast, a second class of models, due to Flood and Garber (1984) and Obstfeld (1986), suggests that there are circumstances under which speculative attacks on pegged exchange rates can occur and even succeed without any imbalance in underlying policies. In the absence of an attack, the exchange rate peg can be maintained indefinitely. Thus, these models do not assume the fiscal deficits and excessively expansionary monetary policies

that provoke the attack in the Krugman model. But if, and only if, an attack occurs, the authorities may be forced to modify policy in a more expansionary direction. Knowing that policy will be modified in the event of an attack, speculators have an incentive to undertake it, since they reap capital gains once the expansionary shift induces a depreciation. Thus, if the authorities have the capacity to resist this attack, they can maintain exchange-rate stability indefinitely. The greater the capacity to resist market pressures, the more stable will be the exchange rate system.

Instruments for containing market pressures. Three instruments are available for containing market pressures. The first is interest rates. The authorities can raise rates on domestic-currency-denominated assets to whatever heights are required to render investors indifferent between holding them and holding foreign exchange. Since discrete exchange rate changes occurring in short order offer very large capital gains to currency traders who sell their domestic-currency-denominated assets just prior to devaluation and buy them back immediately after, rendering them indifferent may require raising domestic interest rates to very high levels. A 10 per cent devaluation expected to occur in 10 days with 90 per cent probability offers risk-neutral investors an expected annualized return of nearly 500 per cent. To defend a currency peg it may be necessary to raise interest rates to that level.[52]

Alternatively, the government can apply capital controls. Controls on short-term capital movements need not be impermeable in order to provide insulation from market pressures. If it costs five per cent of principal to

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[52] That this is more than a hypothetical is evident in the experience of Sweden in September 1992, when the Riksbank raised its marginal lending rate to 500 per cent to fend off a speculative attack.

evade controls, speculators will be indifferent between holding domestic- and foreign-currency-denominated assets even if they expect an impending ten per cent devaluation.[53]

Figure 3.1 shows how much difference controls made for the level of interest rates in various European countries in the 1980s. The onshore-offshore interest differential for France and Italy reached 20 per cent during periods of intense speculative pressure. The implication is that the authorities in these countries had to raise domestic rates by 20 percentage points less than they would have otherwise to render domestic investors indifferent between holding domestic and foreign assets.[54] For Ireland, where controls were maintained through the end of 1992 (their effect is measured in Figure 3.1 by the deviation from covered interest parity), controls still had a very sizeable impact when the punt came under speculative attack toward the end of that year. An 80 per cent deviation from covered interest parity like that evident in Ireland in late 1992 can greatly diminish the costs of defending a currency against speculative pressures.

Finally, other participants in the international system can support the currency under attack. International cooperation can serve as insurance, in other words: each country pays insurance premia by contributing to collective support of other currencies; when its own currency signs of instability, it receives the support of its foreign counterparts. The increase in interest

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[53] This is under the assumption that evading the controls costs ten per cent on a roundtrip.

[54] That domestic-currency denominated assets already outside the country could be traded on terms free of capital controls is not relevant here. The issue is to what extent the yields on domestic-currency assets had to be raised to prevent additional quantities from flowing out of the country. The offshore rate can be taken as an indicator of the product of the expected devaluation magnitude and expected devaluation probability.

rates or impediments to international capital mobility that must be applied by the country whose currency is under attack is thereby moderated, lowering the costs of defense. As we shall see in Chapter 4, cooperation in support of particular currencies, whether organized via ad hoc arrangements between central banks and governments, through the facilities of an international organization like the BIS or the IMF, or under the provisions of an automatic credit line like the Very Short-Term Financing Facility of the EMS, has been a feature of all successful international monetary systems.

Traditionally, these prerequisites for international monetary stability have been provided through a number of different institutional arrangements. The problem posed by deep integration is that accompanying changes in technology, politics and market structures may render their provision increasingly difficult. In these new conditions, their provision may be possible only under a very limited set of international monetary arrangements.

Summary

A viable international monetary system must satisfy three conditions. First, it must feature a means for bringing about changes in relative prices. Even if exchange rates are pegged, there must be allowance for them to change in response to disturbances requiring relative price shifts too large to be easily accommodated by decentralized markets, or else there must exist a substitute for the otherwise obligatory exchange rate movements. Second, robust monetary rules must be pursued to lend credibility to the rates that prevail in the absence of exceptional disturbances. Countries may unilaterally earn a reputation for adhering to such rules, or they may create international institutions to monitor compliance and levy sanctions against violators. Finally, provision must be made for containing market pressures in

the event of uncertainty about the policy rule actually followed by the authorities, where options for doing so include capital controls and foreign support.

Have all international monetary systems that operated successfully for extended periods satisfied these conditions? And can the eventual collapse of particular international monetary arrangements be understood in terms of their failure to meet one or more of them? It is to these questions that the next chapter turns.

Chapter 4. Evidence from the Historical Record

I now review the history of the international monetary system in light of the concepts developed in Chapter 3. This provides concrete illustrations of the importance for the functioning of a viable international monetary system of the ability to effect relative price changes, of the credible pursuit of robust monetary rules, and of the capacity to contain market pressures.

The Classical Gold Standard

The classical gold standard is commonly portrayed as epitomizing a smoothly functioning international monetary system. Between 1880 and 1913 the leading industrial nations maintained the free convertibility of domestic currency into gold at a fixed price. Through arbitrage in international gold markets, these domestic policies yielded stable exchange rates. So long as external convertibility was maintained and there were no impediments to international gold shipments, exchange rates could not vary by more than the gold points (a band around the ratio of domestic and foreign gold prices defined by the costs of shipping and insuring gold).[55]

Yet, superficially at least, the classical gold standard would seem to have satisfied none of the prerequisites for a smoothly functioning international monetary system. Exchange rates were stabilized for extended periods without obvious recourse to capital controls or international support. Wages and prices were far from flexible; recent historical investigations lend little support to the notion that the 19th century was an era of perfect

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[55] Exchange rates under the gold standard fluctuated, in other words, within a narrow target zone whose limits were defined by the gold points. Along with these pecuniary costs, there was also the opportunity cost of the funds devoted to arbitrage activities (funds invested in gold did not earn interest for the period the gold was in transit).

market flexibility.[56]

In this view, the smooth operation of the classical gold standard is a mystery of the highest order. Fortunately, recent research goes a long way toward solving it. One strand emphasizes the existence and operation of escape clauses.[57] Countries buffeted by exceptional disturbances could and did suspend gold convertibility temporarily to facilitate adjustment without sacrificing credibility. The prototypical example of an exceptional disturbance is a war: thus, Britain was able to suspend convertibility during the French wars without undermining the credibility of its commitment to gold, as was the United States during its Civil War. Escape clauses could also be invoked in response to purely financial disturbances, like the 1847 suspension by the Bank of England. The exceptional nature of the crisis and the temporariness of the suspension were signalled by an emergency waiver of the Bank Act of 1844 issued by the Chancellor of the Exchequer and validated by Parliament's passage of a special law.

What rendered credible the claim that suspensions were temporary? In

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[56] Structured labor markets limited the flexibility of wages, both over time and across workers, even prior to widespread trade unionism and the rise of large corporations with personnel departments. Comparisons of wage flexibility for pre-WWI and interwar Britain do not provide strong evidence of a secular decline in labor market flexibility. See Hatton (1988) and Thomas (1992). Even for the U.S., where early studies (e.g. Cagan 1956, Sachs 1980) suggested a secular decline in wage flexibility, subsequent research casts doubt on this presumption. In any case, even if prices were less flexible after World War II than before World War I, this hardly need imply a high degree of flexibility in the earlier period. For examples of recent revisionism see Carter and Sutch (1990) and Allen (1992). The most recent study of this subject (Obstfeld, 1992) concludes judiciously that "Nominal prices in most industrial countries display symptoms of stickiness even in the gold standard period. Nominal price inflexibility seems to have increased after World War II, but the evidence favoring this hypothesis is not overwhelming, and the extent of the increase may not be large."

[57] See in particular Bordo and Kydland (1992) and Giovannini (1993).

Europe the commitment to gold convertibility was the very cornerstone of policy.[58] In the countries at the core of the system -- Britain, France and Germany -- there was no doubt, barring the most exceptional circumstances, that the authorities would take whatever steps were needed to defend the central bank's gold reserves and maintain the convertibility of the currency, and to restore convertibility at the previous rate if it proved necessary to suspend it temporarily. This was the epitome of a robust monetary rule.

Lending it additional credibility was the fact that the connections between monetary policy and the domestic economy remained incompletely understood. So long as there was no properly articulated theory of the relationship between central bank policy and the economy, observers could disagree about whether the level of interest rates was aggravating unemployment, which neutralized the pressure that might have otherwise been brought to modify monetary policy. The credibility of governments' commitment to convertibility was enhanced by the fact that those who suffered most from unemployment were in no position to make their objections felt. In most countries, the right to vote was limited to men of property (women still being denied the vote virtually everywhere). Labor parties representing working men were in their formative years. The working man at risk of unemployment when the central bank raised interest rates had little opportunity to voice his objections, much less to expel from office the government and central bankers responsible for the policy.

Chapter 3 described how fiscal rules can buttress the credibility of an exchange rate commitment. The argument applies to the fiscal norms under

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[58] This point is emphasized by Eichengreen (1992) and Bordo and Kydland (1992).

which governments functioned at the gold standard's European core. Public spending ratios were low. Budgets were balanced. Governments "generally abided by a balanced budget objective, which could be regarded, in effect, as representing the required fiscal constraint on national policies."[59]

For all these reasons, a negative disturbance to a country's balance of payments typically did not weaken the exchange rate to the point where painfully large interest rate increases had to be undertaken. Instead, the exchange rate's incipient weakness was offset by capital inflows prompted by the expectation that the authorities would do what was required to stabilize it. This fact limited the distress caused by those necessary steps.

Experience was very different at the periphery of the gold standard system. Latin American countries also suspended convertibility and allowed their currencies to depreciate when the supply of foreign capital or the demand for domestic exports was disrupted. There, however, the credibility of governments' commitment to gold convertibility did not always survive intact. Though suspensions of convertibility were characterized as temporary, this did not always turn out to be the case.

The explanation lies in differences, compared to Europe, in the credibility and robustness of the monetary regime and in capacity for containing market pressure. In the United States, agricultural debtors and silver-mining interests formed a powerful coalition opposed to deflation and advocating modification of the monetary standard to allow for the coinage of silver. Such groups existed in Europe as well, but in the U.S. they had better access to the political process due to universal male suffrage. Throughout Latin America, as in the United States, depreciation was welcomed

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[59] Goodhart (1992).

by landowners with fixed mortgage obligations and exporters wishing to enhance their competitive position internationally. As in the United States, the two groups were often one and the same. And as in the United States, their ranks were swelled by mining interests favoring the coinage of silver.

Nor did adherence to strict fiscal standards buttress the credibility of the exchange rate commitment. Latin American countries repeatedly failed to control their fiscal policies, leading to monetization of the public debt, the suspension of gold convertibility and exchange rate depreciation. Even in the United States, the persistence of budget deficits in the early 1890s threatened the commitment to the exchange rate peg (Garber and Grilli, 1986).

For all these reasons, then, most countries of the Western Hemisphere did not have unblemished records of obeying robust monetary rules, prompting questions about their commitment to the prevailing exchange rate. Latin American countries were forced repeatedly to abandon the gold standard involuntarily in the final decades of the 19th century. The same was nearly true of the United States during the run-up to the 1896 presidential campaign, in which William Jennings Bryan made the exchange rate a central issue.[60] Thus, in the same way that robust monetary rules and well-defined escape clauses facilitated the functioning of the classical gold standard at its European center, at its periphery their absence disrupted its operation.

The gold standard also required means of containing market pressures. Such pressures could be intense: prior to 1914 the volume of international

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[60] See Eichengreen (1993a). In comparing the dollar exchange rate with those of the German mark and the French franc, Giovannini (1993) concludes that capital showed less of a tendency to flow in stabilizing directions in the U.S. case.

capital flows -- long- and short-term alike -- reached impressive heights.[61] Countries did not deploy capital controls to insulate themselves from speculative pressures; instead, they utilized the so-called "gold devices" to widen the band within which their bilateral exchange rates could float. Recall that fluctuation bands for exchange rates under the gold standard were given by the gold points (the wedge created for gold-market arbitrage by costs of insurance and shipping). Measures widening this band could thereby relieve the pressure for the authorities to respond by raising interest rates in the event of a capital outflow that weakened the exchange rate. Central banks might raise buying and selling prices for gold bars or redeem notes only for worn and clipped gold coin, measures tantamount to depreciation.[62] They might discourage gold exports by redeeming notes only at the central bank's head office. Some, like the Bank of France, could legally redeem their notes either in gold coin or in silver pieces whose market value was less than their face value, another practice tantamount to a temporary suspension.

The other means of coping with market pressures was international cooperation among central banks and governments. Cooperation was episodic, but instances in which it occurred were precisely those in which the system's anchor currencies came under attack. Central banks discounted bills on behalf of the affected country or lent gold to its monetary authority. The most famous such instance was the 1890 Baring Crisis, when the Bank of England was faced with the insolvency of a major British bank, Baring Brothers, which had extended bad loans to the Government of Argentina. The Bank of England

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[61] See Bloomfield (1963a,b). This is true even by late 20th century standards. See Bayoumi (1990), Eichengreen (1991) and Obstfeld (1993).

[62] For details, see Morgenstern (1959), p.441.

borrowed £3 million of gold from the Bank of France and obtained a pledge of £1.5 million of gold coin from Russia.[63] With the help of this foreign support, the crisis was surmounted, and sterling's gold standard parity survived intact.

This kind of regime-preserving cooperation was repeated subsequently. In 1895 a consortium of European banks, with the encouragement of their governments, helped defend the U.S. gold standard. In 1898 the Reichsbank and German commercial banks obtained assistance from the Bank of England and the Bank of France. In 1906 and 1907 the Bank of England, confronted once more with a financial crisis, again obtained support from the Bank of France and, in addition, from the Reichsbank. The Russian State Bank shipped gold to Berlin to replenish the Reichsbank's reserves. In 1909 and 1910 the Bank of France again discounted English bills, making gold available to London. Smaller European countries such as Belgium, Norway and Sweden also borrowed reserves from foreign central banks and governments. This would appear to be a clear instance of the kind of risk-pooling arrangements described in the preceding chapter.

Significantly, however, regime-preserving cooperation was largely limited to the gold standard's European core and on occasion the United States.[64] Smaller, less-developed countries of the periphery did not enjoy

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[63] The action was not unprecedented. The Bank of England had borrowed gold from the Bank of France in 1839, with the intermediation of the very same Baring Brothers. The Bank of England returned the favor in 1847. The Swedish Riksbank had borrowed several million kroner from the Danish National Bank in 1882.

[64] Since the United State did not have a central bank, this was not central bank cooperation, of course; rather, it brought together the U.S. Treasury and various European banks. Garber and Grilli (1986) provide an analysis of the Belmont Morgan Syndicate through which the U.S. gold standard

comparable support. Their capacity to contain market pressures was therefore more limited.

The success of the classical gold standard at its European center is thus explicable in terms of the prerequisites for a viable international monetary system identified in Chapter 3. The absence of those prerequisites and the consequent instability of the gold standard at the periphery is further proof by counterexample.

It is interesting to speculate how long this system would have endured had World War I not intervened. de Cecco (1984) argues that by 1913 the prewar system was already exhibiting incipient instability. The prewar years were marked by growing consciousness of unemployment, especially in countries like Britain. Authors like Ralph Hawtrey (1913) offered theories connecting high interest rates with trade depression. The extent of the franchise was broadened. These factors intensified the pressure to modify the conduct of monetary policy to achieve domestic objectives unrelated to maintenance of the exchange rate.

Once seeds of doubt about the authorities' overriding commitment to exchange rate stability were planted, resort to the exchange rate escape clause grew problematic. The kind of temporary suspensions of gold convertibility that had been commonplace in previous years were no longer feasible, which made the relative price adjustments associated with exceptional shocks more difficult to effect. International cooperation remained sufficiently extensive that the system survived, but it was not clear that it would suffice in the event of a major disturbance.

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was supported.

Interwar Arrangements

Floating exchange rates. International monetary arrangements between the wars are notorious for their poor performance. The experience with flexible exchange rates in the first half of the 1920s, for example, created an aversion to generalized floating that lingered for half a century. That experience is readily explained by the absence of robust monetary rules. The entire constellation of forces that had facilitated their pursuit before 1914 was weakened by World War I. Central banks were subordinated to ministries of finance and budget, limiting their independence. Universal male suffrage, the rise of parliamentary labor parties, and the prominence acquired by the connections between monetary policy and unemployment politicized the policy decisions of central bankers, who enjoyed little inherited protection. The immediate postwar period was dominated by disputes over economic policy generally, of which consistent, robust monetary policies were one casualty. So long as central banks were in thrall to governments, political deadlocks over whose taxes should be raised or whose public programs should be cut ended up in the lap of the monetary authorities, who were forced to print money to reconcile incompatible claims.

The new gold standard. This disastrous experience bred its own solution. Ultimately, financial chaos broke down resistance to fiscal compromise, and high inflation weakened opposition to central bank independence. By 1925-6 the gold standard system was revived. For predictable reasons, however, this new gold standard proved less hardy than its prewar predecessor. Monetary policy remained politicized, especially so long as unemployment was lodged at double-digit rates. Fiscal policy was

increasingly difficult to subordinate to the pursuit of robust monetary rules. Central banks that raised interest rates to defend the currency came under political pressure from those concerned with the consequences for unemployment.

For political reasons, then, the pursuit of robust monetary rules proved not to be feasible. This rendered problematic recourse to the escape clause feature of the prewar system. Like the immediate prewar years but in contrast to much of the 19th century, governments hesitated to resort to temporary suspensions of convertibility.

Containing market pressures was equally difficult. International support for weak exchange rates proved difficult to arrange: domestic political constraints, international political disputes and incompatible conceptual frameworks stood in the way. Interest groups that might be hurt by cooperative adjustments of economic policies were able to stave them off. The dispute over European war debts and German reparations obstructed efforts to cooperate. And the different, not entirely compatible conceptual frameworks employed in various countries prevented policymakers from reaching a common understanding of their economic problems and agreeing on a solution. By 1931 market pressures proved impossible to contain, and the new gold standard broke down.

Managed floating. International monetary arrangements then evolved toward managed floating. Some two dozen countries abandoned the gold standard following Britain's departure in September 1931, and a procession of others followed in the subsequent months. A few, like the United States, eventually repegged to gold at new, devalued rates. The vast majority cut the link to gold convertibility once and for all, however. But rather than letting their

currencies float freely, governments attempted to influence their movement through foreign exchange intervention. Exchange equalization funds were established with the goal of damping exchange rate fluctuations.

The managed float of the 1930s featured none of the prerequisites for a smoothly functioning international monetary system. Governments shifted from one policy rule to another, casting doubt on their commitment to prevailing exchange rates. The magnitude of exchange rate risk premia increased significantly (Eichengreen, 1992b). Speculative capital frequently moved in destabilizing directions. Efforts to cooperate in containing market pressures rarely amounted to much.

The 1936 Tripartite Agreement was a first tentative step toward constructing a viable international monetary system. Governments reaffirmed their commitment to cooperate, and exchange rate volatility due to competitive depreciation was minimized. Standard measures of the foreign exchange risk premium suggest that it declined after 1936.[65] All this suggests that the Tripartite Agreement mattered. But real progress in reconstructing the international monetary system only gathered momentum after World War II.

Post-World War II Arrangements

Bretton Woods. The Bretton Woods Agreement was an effort to reestablish the conditions for a viable international monetary. Admittedly, domestic constraints and international politics were as important as economic logic in shaping the agreement's form. But the Bretton Woods Agreement nonetheless

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[65] Consistent with this view of falling exchange rate uncertainty is the fact that exchange rate volatility, although showing up before 1936 in gravity models of bilateral trade flows as an obstacle to international trade, no longer matters for the post-1936 period. The evidence on risk premia is reported in Eichengreen (1992a), chapter 12. The gravity equations are estimated and analyzed by Eichengreen and Irwin (1993).

proved remarkably successful in establishing a workable international monetary order.

To provide the capacity to undertake relative price adjustments, the Bretton Woods Agreement included an escape clause. Though required to declare par values for their currencies and to maintain them within one per cent of that value (defined in terms of the July 1, 1944 gold content of the U.S. dollar), signatories were still permitted to alter that par in the event of "fundamental disequilibrium." Unfortunately, disagreement between American and British negotiators about how much leeway countries should possess to invoke this escape clause caused them to leave the term undefined. That countries were supposed to consult with the International Monetary Fund and obtain its agreement before devaluing and that they might become ineligible for Fund resources if they failed to do so can be thought of as attempts to guarantee that the disturbances in response to which exchange rate changes were taken were independently verifiable.[66] In practice, countries did not always obtain Fund authorization in advance of devaluation, however. On only one occasion, that of France in 1948, did the Fund treat an exchange rate change as unauthorized. Nothing in the procedures governing changes in par values guaranteed that these would be taken only in response to disequilibria caused by shocks not of a government's own making.

That these procedures did not guarantee that changes in par values would occur only in response to exceptional shocks that were both independently verifiable and not of the authorities' own making left countries hesitant to resort to the escape clause for fear that its utilization would damage the

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[66] Dominguez (1993) emphasizes the monitoring and informational roles of the IMF.

credibility of their monetary policies.[67] From this point of view, it is no surprise that exchange rate changes by industrial-country participants in the Bretton Woods System were rare. The only ones of any significance between 1950 and 1970 were by France in 1958 and 1969, Germany in 1961 and 1969, the Netherlands in 1961 and the U.K. in 1967.

The other way to understand this hesitancy to resort to the escape clause provision of the Bretton Woods Agreement is in terms of the absence of robust monetary rules. Skeptical that governments were adequately committed to the pursuit of robust rules, the markets disregarded official assurances that any weakening of the exchange rate was temporary. Hence, the authorities could not afford to allow any significant weakening at all.

This statement that central banks did not always follow robust monetary rules is a relative one. The robustness of the prevailing monetary rules may have compared unfavorably with the gold standard era, when central banks' commitment to exchange rate stability dominated other peacetime objectives and insulation from political pressures was extensive. After World War II, in contrast, monetary policymakers were torn between the desire for exchange rate and price stability on the one hand and Keynesian arguments for policy activism to reduce unemployment and stabilize the business cycle on the other. At the same time, however, the stability of monetary policy -- the robustness of prevailing monetary rules in the present terminology -- was impressive compared to either the immediately preceding period (the 1920s and 1930s) or the years following the breakdown of the Bretton Woods System. Recent research on Bretton Woods suggests that exogenous shifts in monetary policy

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[67] Britain's unilateral devaluation in 1949 may have had just such a credibility-damaging effect, as argued by Obstfeld (1993).

were relatively uncommon, especially following the restoration of current account convertibility at the end of 1958.[68] An implication is the success which Bretton Woods enjoyed was due partly to the robustness, limited but significant, that characterized monetary policies.

What accounts for this modest robustness of monetary rules in the heyday of Bretton Woods? Outside the U.S. and the U.K., the influence of the Keynesian revolution over the conduct of policy remained weak, and efforts to use monetary policy to manipulate output and employment were still few.[69] Memory of exchange rate volatility in the first half of the 1920s and of beggar-thy-neighbor devaluations in the 1930s left governments reluctant to alter monetary policy if doing so meant risking exchange rate instability.

Perhaps the most significant changes in international monetary arrangements achieved at Bretton Woods were those designed to contain market pressures. The Agreement provided for an International Monetary Fund to support currencies in distress. Members subscribed quotas one-quarter in gold and three-quarters in their own currency, but could draw, subject to conditions, 125 per cent of their quotas in gold. In the event of balance-of-payments difficulties, they could thereby borrow from the Fund. Borrowings were conditional on the pursuit of policies stipulated by the Fund and on repayment within three to five years. Standby arrangements, whereby member

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[68] Bordo (1993) and Eichenbaum and Evans (1993) report various measures of the magnitude of monetary policy shocks during these years, concluding that they were smaller than in surrounding periods. In Eichengreen (1993b) I use a different methodology, following Blanchard and Quah (1989), to derive estimates of aggregate demand disturbances, to which monetary policy disturbances are one contributor, and find that these were smaller between 1959 and 1970 than in surrounding periods. I also show that inflationary monetary policy disturbances were much less persistent than after 1971.

[69] In Germany, for example, the use of monetary policy for stabilization was virtually unknown. See Schonfield (1965) and Bordo (1993).

countries could obtain financial assistance from the Fund in advance of difficulties, were introduced in 1952. This was not the kind of unlimited support needed to sustain a weak currency indefinitely, but it provided ammunition for countries seeking to counter speculative attacks.

The industrial countries provided one another additional support through ad hoc agreements. In 1961 the leading central banks initialled the Basle Agreement, committing to hold one another's currencies and to engage in reciprocal lending. Later that year the London gold pool was established to stem the drain of gold reserves from the United States. In 1962 the industrial countries established swap facilities to provide reciprocal lines of credit. This was followed by the General Agreement to Borrow (under which the IMF could borrow from industrial countries with payments surpluses to assist those with deficits), the introduction of Special Drawing Rights (proposed in 1968 and allocated in 1970), and other devices for increasing the resources that could be made available to central banks in distress. Again, this was not unlimited support; even the sum of these resources did not necessarily suffice to repel the speculative pressures that financial markets could bring to bear. But they could be very important in specific instances: an example is the March 1964 multilateral credit facility which prevented Italy from having to devalue the lira.

Two implications follow for the durability of the Bretton Woods System. First, the extent of international cooperation in the provision of exchange-rate support was one of the features that distinguished Bretton Woods from its immediate predecessors. Second, much of the cooperation that supported the system's key currencies was provided outside the IMF. This suggests that it was not the provisions of the Bretton Woods Agreement per se, but its

compatibility with ancillary arrangements negotiated by the industrial countries, that lent the system its capacity to contain market pressures.

Also important for containing market pressures were capital controls. Controls on capital movements were utilized by most countries throughout the Bretton Woods years. Although these could be circumvented eventually, doing so was costly, leaving governments some room for adjusting policy in stabilizing directions before the exchange rate collapsed or for arranging for an orderly devaluation. Indeed, until 1959 most countries controlled foreign-exchange transactions on current as well as capital account.[70]

The literature on the decline and fall of Bretton Woods has traditionally emphasized the System's structural flaws.[71] A complementary approach would proceed in terms of the concepts developed in Chapter 3. The late 1960s saw a decline in the robustness of monetary policy in the United States, where monetary stability and defense of the $35 gold price were subordinated to the financial imperatives of the Vietnam War, and also in Europe, where Euro-Keynesianism met with growing favor. Britain's stop-go policies, culminating in the 1967 sterling crisis, epitomized the tendency for macroeconomic policymakers to vacillate in their pursuit of domestic and international economic objectives and to fail to adhere to a consistent policy line.

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[70] Prominent exceptions were the United States, Canada and a few Latin American countries. In Europe, exchange rates were regulated under the aegis of the European Payments Union, which superimposed another layer of external monitors (the EPU Managing Board) and additional sources of external support (EPU credit lines) on top of the Bretton Woods System. Thus, the success of the EPU is readily explicable in terms of the prerequisites for a viable international monetary system emphasized here. For details, see Triffin (1957) and Eichengreen (1993c).

[71] A comprehensive review of the literature on the collapse of Bretton Woods is provided by Garber (1993).

On the decline in the robustness of monetary policy rules followed a predictable increase in the rigidity of the exchange rate system. Unable to appeal to a contingent rule, governments sought to buttress the credibility of their commitment to the exchange rate by resisting all pressures to devalue or revalue. Closing off the escape clause heightened the difficulty of adjusting relative prices. International cooperation grew increasingly difficult with French President Charles De Gaulle's criticisms of the United States' "exorbitant privilege" and worries about the stability of the dollar.[72] Meanwhile, the growing porousness of capital controls weakened the defenses countries erected unilaterally to contain market pressures.[73] The collapse of the Bretton Woods System of pegged but adjustable exchange rates in 1971 was a predictable consequence.

Post-Bretton Woods Arrangements. The only generalization about post-Bretton Woods international monetary arrangements that can be advanced with confidence is that they resist generalization. Often called the post-Bretton Woods "nonsystem," international monetary arrangements over the last two decades have oscillated between unilateral efforts at exchange rate stabilization and ad hoc attempts at collaborative exchange rate management like the Louvre and Plaza Accords.

Three post-Bretton Woods initiatives are worth considering for the light they shed on the prerequisites for international monetary stability. The

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[72] From this perspective, the dissolution of the Gold Pool in 1968 comes as no surprise.

[73] Obstfeld (1993) analyzes changes over time in deviations from covered interest parity, a standard measure of the extent of capital controls and related barriers to international capital market integration. He concludes that "the results on the whole support the interpretation of the Bretton Woods period as one in which capital mobility was still imperfect, but increasing."

first is the unsuccessful attempt at exchange-rate stabilization undertaken by European countries in the years when the Bretton Woods System its final breaths. In 1972 the members of the European Economic Community established the "snake in the tunnel," whereby intra-European exchange rates were held within narrower margins than required by the Smithsonian Agreement. They created a "Very Short Term Financing Facility" (VSTF) to help member countries bridge temporary balance-of-payments deficits. Following the collapse of the Smithsonian "tunnel" in 1973, the snake was maintained but less than wholly successfully. Some countries left temporarily, others permanently. Only Germany and its small Northern European neighbors adhered faithfully to the system.

A second notable post-Bretton Woods initiative was the Louvre-Plaza accord initialled by finance ministers of the Group of Five Countries in the mid-1980s. The three major industrial-country currencies -- the dollar, the deutschmark and the yen -- had been left to float freely in the first half of the 'eighties. Between mid-1980 and mid-1985 the trade-weighted value of the dollar against foreign currencies had risen by nearly 90 per cent, and the U.S. real exchange rate moved strongly in the same direction. At the Plaza Hotel in New York in September 1985, the G-5 countries therefore agreed to adjust their monetary and fiscal policies with the aim of depreciating the dollar. By February 1987 they concluded that dollar depreciation had gone far enough, at the Louvre in Paris they negotiated the exchange rate stabilization agreement described in Chapter 2 above. But in less than a year, the 1987 stock market crash and the exchange rate pressures that followed put paid to their efforts.

The only initiative that might be held out as a serious step toward

sustainable international monetary reform is the European Monetary System (EMS). Established in 1979 out of the carcass of the Snake, the EMS has evolved into an increasingly cohesive and ambitious exchange-rate arrangement. Until the September 1992 crisis erupted, the EMS was widely regarded as a success. It was believed that it pointed the way toward international monetary reform on a global scale.

The prerequisites for a viable international monetary system emphasized in this study shed light on both the post-1979 solidification of the EMS and its subsequent difficulties. The EMS as initially implemented made provision for accommodating disturbances and containing market pressures. Currencies were allowed to vary within a fluctuation band (normally 2.25 per cent, but 6 per cent in the case of the wider band temporarily accorded some new entrants to the system). Shifts of the band were permitted in the event of persistent balance-of-payments disequilibria. From the inception of the EMS through January 1987 there were 11 realignments, on average more than one a year. (See Table 4.1.)

That governments resorted to realignment only in the event of shocks not of their own making is dubious, however. Most participating countries hardly followed what can be characterized as robust monetary rules; typically, realignment was provoked not by exogenous shocks but by persistent domestic inflation. The standard deviation of inflation rates across EMS countries actually rose in the first four years of the EMS compared to the preceding period (Table 4.2). Nonetheless, the EMS requirement that a country wishing to change its parity first obtain the agreement of all other participating countries prevented significant abuses of the system.

That the EMS not only survived but prospered in the face of less-than-

Table 4.1

Exchange-Rate Realignments Within the EMS

1979-1987

	Dm	DG	FF	BFR	LIT	DKR	IRL
Sept. 24, 1979	2.0	--	--	--	--	-2.9	--
Nov. 30, 1979	--	--	--	--	--	-4.8	--
Mar. 23, 1981	--	--	--	--	-6.0	--	--
Oct. 5, 1981	5.5	5.5	-3.0	--	-3.0	--	--
Feb. 22, 1982	--	--	--	-8.5	--	-3.0	--
Jun. 14, 1982	4.25	4.25	-5.75	--	-2.75	--	--
Mar. 21, 1983	5.5	3.5	-2.5	1.5	-2.5	2.5	-3.5
Jul. 22, 1985	2.0	2.0	2.0	2.0	-6.0	2.0	2.0
Apr. 7, 1986	3.0	3.0	-3.0	1.0	--	1.0	--
Aug. 4, 1986	--	--	--	--	--	--	-8.0
Jan. 12, 1987	3.0	3.0	--	2.0	--	--	--

Note: The numbers are percentage changes of a given currency's bilateral central rate against those currencies whose bilateral parities were not realigned. A positive number denotes an appreciation, a negative number a depreciation. On March 21, 1983, and on July 22, 1985, all parities were realigned.

DM=Deutsche Mark, DG=Dutch guilder, FF=French franc,
BFR=Belgian/Luxembourg franc, LIT=Italian lira, DKR=Danish kroner,
IRL=Irish punt.

Source: Fratianni and von Hagen (1992), p. 22.

robust monetary policies is a tribute to the devices used to contain market pressures. Prominent among these was the System's Very Short-Term Financing Facility, permitting weak-currency countries to borrow from their stronger counterparts to defend their exchange rates.[74] Short-term financing was increased from 6 to 14 billion ecu, while medium-term financing ceilings were raised from 5.45 to 14.1 billion ecu. According to the EMS Act of Foundation, when a bilateral exchange rate reached the maximum permissible distance from its declared central parity, both central banks concerned were required to intervene. (The Basle-Nyborg Agreement of 1987 made allowance for intra-marginal interventions.) Another conspicuous feature of the EMS was the maintenance of capital controls. These took a variety of forms, ranging from taxes on holdings of foreign-currency assets to restrictions on the ability of banks to lend abroad. Along with realignments and the Very Short-Term Financing Facility, controls squared the circle. The knowledge that weak-currency countries would ultimately realign reassured their strong-currency counterparts that their intervention obligations were limited. Capital controls, though porous, provided sufficient insulation to arrange orderly realignments before governments were overwhelmed by speculative pressures, and thus insured the survival of the system.

The changing balance between these constituent elements in the period leading up to the September 1992 EMS crisis sheds light on which ones were essential to the system's operation. Adherence to robust monetary rules, though still far from perfect, grew more rather than less prevalent as the period progressed. (For evidence, again see Table 4.2.) What grew less

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[74] This facility had actually been established in conjunction with the Snake, as described above.

Table 4.2
Inflation in Europe
(Average Annual Inflation Rates in Per Cent)

	1974-8	1979-82	1983-6	1987-9
Av. EMS	9.9 (3.6)	10.4 (4.4)	4.6 (2.3)	2.3 (1.1)
Av.EC non EMS	16.3 (3.5)	16.1 (3.6)	12.6 (5.9)	6.6 (2.5)
Ac. Europe non-EC	8.4 (3.5)	8.8 (2.0)	5.2 (1.8)	3.7 (0.9)

Note: Europe non-EC includes Switzerland, Norway, Sweden, Finland (not Austria because its currency is linked to the DM). Standard deviations are in parentheses.
Source: Gros and Thygesen (1992).

prevalent was resort to the escape clause. From February 1987 until the September 1992 crisis, no further realignments took place. This shift was a corollary of the removal of capital controls, which were a casualty of the Single European Act designed to create a Single European Market.[75] The removal of controls made orderly realignments more difficult to arrange. Countries consequently attempted to pursue policies obviating the need to realign at all. With the increasing rigidity of the exchange-rate system, strong-currency countries like Germany lost confidence that realignment by weak-currency countries would limit intervention obligations to acceptable levels; unlimited intervention threatened domestic price stability, something that countries like Germany were unwilling to countenance. Thus, just as balance-of-payments pressures were building, the EMS's traditional means of containing them were weakened or removed. The events of 1992 predictably culminated in a crisis that drove two currencies from the ERM and weakened confidence in the EMS. A second speculative crisis less than a year later forced the virtual dismantling of the system.

This analysis of recent EMS history illustrates a general proposition: increases in capital mobility make hybrid exchange rate arrangements -- pegged but adjustable rates, target zones and the like -- increasingly difficult to operate. Insofar as further increases in capital mobility are inevitable, governments will be confronted with a stark choice: they will either have to revert to more freely floating exchange rates or move forward to

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[75] The Single European Act had mandated their eliminated by July 1st, 1990, except in Spain and Ireland, which were exempted until December 31st, 1992, and Portugal and Greece, which were exempted until December 31st, 1995. In addition, the SEA allowed for emergency controls for a period of no more than six months. The Maastricht Treaty, however, rules out their use for any period from the beginning of Stage II on January 1, 1994.

Table 4.3

Global Foreign Exchange Market Turnover Corrected for Double-Counting and Estimated Gaps in Reporting: Daily Averages

	April 1989[1]	April 1992[2]		Percentage Change[3]
	(in billions of US dollars)			
Total reported gross turnover	932	1,354	(1,263)	35
of which:				
- with other reporting local banks/dealers	*377*	*447*	*(428)*	*[14]*
- spot. outright forward and swaps	--	*433*	*(415)*	
- OTC options[4,5]	--	*14*	*(14)*	
- with banks/dealers located abroad	*431*	*630*	*(570)*	*[32]*
- spot. outright forward and swaps	--	*615*	*(555)*	
- OTC options[4,5]	--	*15*	*(15)*	
- all other[5]	*124*	*277*	*(264)*	*n.a.*
Adjustment for domestic double-counting[6]	-189	-223	(-214)	
- spot. outright forward and swaps	--	-217	(-207)	
- OTC options	--	-7	(-7)	
Total reported turnover net of local double-counting ("net-gross")	744	1,130	(1,048)	41
Adjustment for cross-border double-counting[1,6]	-184	-298	(-270)	
Total reported "net-net" turnover	560	832	(778)	39
Estimated gaps in reporting[1]	60	48	102	
Estimated global turnover[6]	**620**	**880**	**880**	**42**
of which:				
- all "traditional" market segments[7]	*590*	*820*	*820*	*39*
- spot	*350*	*400*	*400*	*15*
- options and futures	*30*	*60*	*60*	*100*

[1] Changes have been made to the earlier published estimates of both cross-border double-counting and gaps in reporting in 1989. [2] Figures in round brackets relate to countries providing data in both 1989 and 1992. Within these countries, coverage became slightly more comprehensive.
[3] Except for estimated global turnover, percentage changes are calculated using data from countries reporting data in both years but, owing to changes in the classification of counterparties, the figures in square brackets are indicative only. [4] Estimates based on the assumption that one-half of OTC options business with non-dealer counterparties ($ 16 billion)and gross options business conducted via organized exchanges ($ 5 billion) are included in "all other". This category also includes gross turnover in futures ($ 9 billion) as well as all other business with no-dealer counterparties. In 1989, this category contained all estimated (non-interbank) business with "customers". [1] No adjustment was made for double-counting of exchange-traded options and futures or for countries not providing counterparty information on OTC options transactions. On the assumption that all such business was with other reporting entities the maximum double counting in 1992 would have been roughly $ 10 billion. [7] Spot. outright forward and swap transactions.

Source: Group of Ten (1992)

monetary unification. The next chapter develops this point.

Table 5.1
Net Foreign Exchange Market Turnover
(In billions of U.S. dollars a day)

	March 1986	April 1986	April 1992
United Kingdom	90	187	300
United States	59	129	192
Japan	48	115	128
Singapore	---	55	74
Switzerland	---	57	68
Hong Kong	---	49	61
Germany	---	---	57
France	---	26	35
Australia	---	30	30
Canada	9	15	22

Source: Goldstein et al. (1993), p. 24.

Chapter 5. The Challenge of Deep Integration

Countries have traditionally been able to select from a menu of international monetary arrangements arrayed along the spectrum from freely floating to permanently fixed exchange rates. Most have preferred intermediate options combining elements of the two extremes. The thesis of this chapter is that these intermediate options will no longer be viable in the 21st century.

Mounting Market Pressures

Defense of an exchange rate peg or an exchange rate target zone requires that governments be able to resist market pressures. They must be able to hold out in the face of the kind of speculative attacks, described in Chapter 3, not grounded in economic fundamentals. The capital mobility characteristic of the late 20th century makes such resistance increasingly difficult.

One reason for this difficulty is the sheer magnitude of the resources that can be brought to bear against an exchange rate peg. The foreign exchange market is now the world's largest financial market. Net daily turnover in nine of the major national markets is estimated to approach $1 trillion.[76] As Table 5.1 shows, this is a new development: the volume of transactions has risen dramatically over recent years, more than quadrupling between 1986 and 1992 alone. Certain segments of the market, notably swaps, outright forwards and options, have grown significantly faster than these averages. The volume of transactions has been reported to rise dramatically -

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[76] See Goldstein et al. (1993) and Group of Ten (1993) for estimates in this range. The higher figure nets from total reported gross turnover sources of domestic double-counting such as swaps and OTC options, while the latter also adjusts for cross-border double-counting.

- by at least a factor of two or three -- in periods of intense speculation.[77]

The trend reflects financial innovation: improvements in trading and settlement practices and advances in computer and communications technologies have enabled banks and other financial institutions to handle a larger volume of foreign exchange transactions at lower cost and with minimal risk of settlement failure. The development of derivative instruments, including futures and options, has enabled investors to unbundle risks, facilitating foreign investment (Table 5.2). Harmonization of accounting standards and disclosure requirements and provision of credit assessments by rating agencies have helped to disseminate information on the creditworthiness of international borrowers. The growth of the market also reflects positive steps by governments to promote the development of local financial centers. In addition, relaxation by countries such as the U.S. and Japan of limits on the share of institutional portfolios that may be held in foreign assets has stimulated cross-border diversification (Table 5.3).[78]

In an obvious sense financial deregulation and the removal of capital controls have figured in the growth of foreign exchange transactions. This is a specific instance of the deregulatory trend characteristic of policy in industrial and developing countries in the 1980s and 1990s. To cite but one example, the Single European Act which mandated the removal of capital controls by EC member countries was part of an effort to enhance economic efficiency by forging an integrated internal market free of regulatory

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[77] Group of Ten (1993), p.15.

[78] For details, see Goldstein et al. (1993) and Group of Ten (1993).

Table 5.2

Markets for Selected Derivative Instruments

Notional principal amounts outstanding at end-year,
in billions of US dollars equivalent

	1986	1989	1990	1991
Exchange-traded instruments[1]	**583**	**1,762**	**2,284**	**3,518**
Interest rate futures	370	1,201	1,454	2,159
Interest rate options[2]	146	387	600	1,072
Currency futures	10	16	16	18
Currency options[2]	39	50	56	59
Stock market index futures	15	42	70	77
Options on stock market indices[2]	3	66	88	132
Over-the-counter instruments[3]	**500 (e)**	**2,402**	**3,451**	**4,449**
Interest rate swaps[4]	400 (e)	1,503	2,312	3,065
Currency and cross-currency interest rate swaps[4.5]	100 (e)	449	578	807
Other derivative instruments[4.6]	-	450	561	577
Memorandum item:				
Cross-border plus local foreign currency claims of BIS reporting banks	4,031	6,498	7,578	7,497

[1] Excludes options on individual shares and derivatives involving commodity contract. [2] Calls plus puts. [3] Only data collected by ISDA. Excludes information on contracts such as forward rate agreements, over-counter currency options, forward exchange positions, equity swaps and warrants on equity. [4] Contracts between ISDA members reported only once. [5] Adjusted for reporting of both currencies. [6] Caps. dollar, floors and swaptions.

Source: BIS, "Recent Developments in International Interbank Relations", October 1992.

e= estimate

Table 5.3

Institutional Investors' Holdings of Foreign Securities

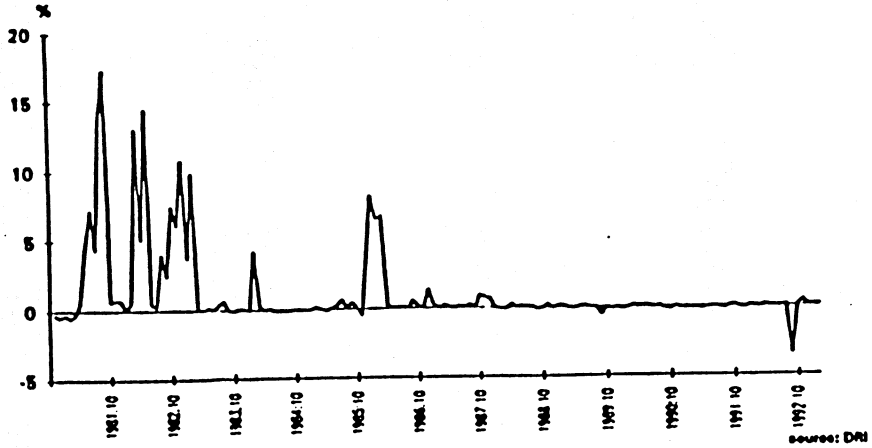
As a percentage of their total securities holdings

	1980[3]	1985[4]	1990	1991
United States				
Private pension funds[1]	1.0	3.0	4.2	5.2
Japan				
Life insurance companies	9.0	26.4	30.0	28.4
Non-life insurance companies	7.4	19.4	29.1	28.5
Trust accounts of banks	2.2	14.0	19.4	22.1
Postal Life Insurance	0.0	6.7	11.6	12.1
Norinchukin Bank	4.3	10.3	22.7	32.6
Canada				
Life insurance companies	21.	2.2	2.3	2.7
Pension funds	6.1	6.6	6.0	7.6
Italy				
Insurance companies	11.7	10.1	11.6	9.7
United Kingdom[2]				
Insurance companies	6.9	17.3	20.7	--
Pension funds	10.3	17.8	23.6	--
Belgium				
Insurance companies and pension funds	1.7	3.3	3.3	--
Netherlands				
Insurance companies	5.2	10.3	9.3	10.3
Private pension funds	10.6	13.8	21.1	23.5
Public pension funds	1.7	2.8	5.2	5.7
Sweden				
Insurance companies	--	1.5	10.4	12.5

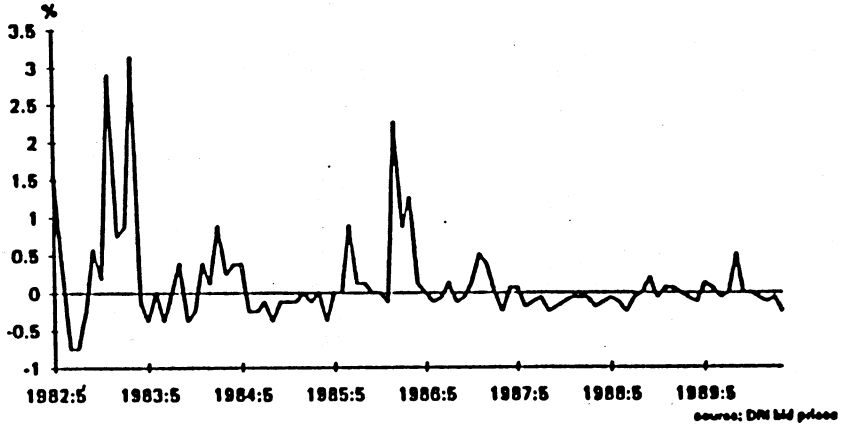
[1] Tax-exempt funded schemes (excluding IRAs). [2] Pension funds exclude central government sector but include other public sector. Unit trust investment allocated as follows: 50 percent foreign and 50 percent at end-1989 (on the basis of partial survey results); other years calculated in proportion to changes in the measured share of foreign assets. [3] For the Netherlands, 1983 figures. [4] For Sweden, 1987 figures.

Source: TAKEDA M. and P. Turner, "The Liberalization of Japan's Financial Markets: Some Major Themes", BIS Economic Papers, No. 34, November 1992.

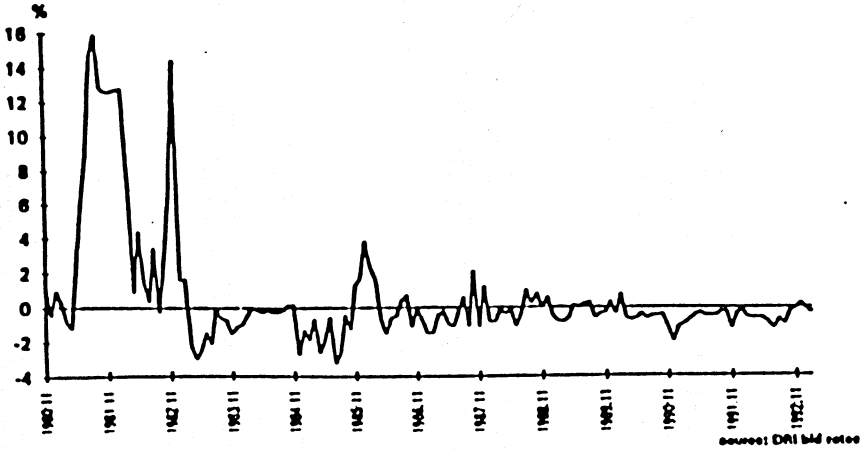
Spread Offshore - Onshore Interbank Rates: France (1 month)



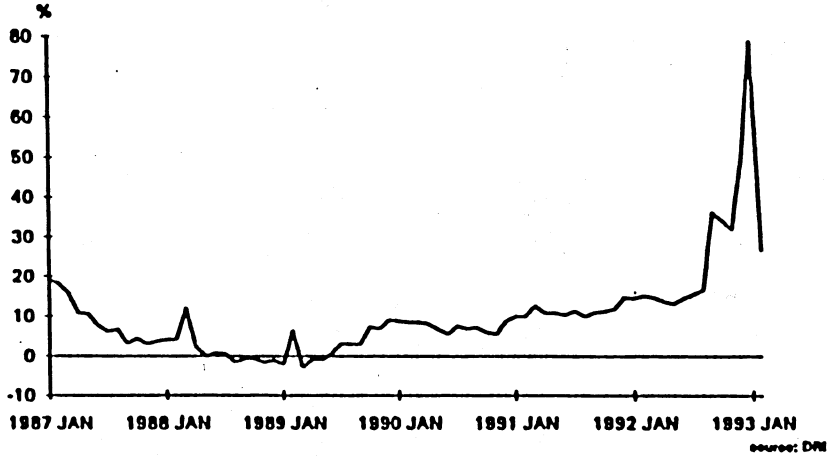
Difference between Commercial and Financial Interest Rates in Belgium (1 month)



Spread Offshore - Onshore Interbank Rates: Italy (1 month)



Deviations from Covered Interest rate Parity: Ireland (1 month)



restraints.[79]

But the relaxation and removal of capital controls has not been limited to Europe. The same trend is evident in Japan, Latin America and other parts of the world.[80] It suggests that ongoing developments in technology and market structure will continue to render capital controls archaic. In the same way that new technologies rendered the authorities incapable of preventing residents of the German Democratic Republic from watching Western television and citizens of Russia and China from using micro-computers and fax machines, they will increasingly render attempts to segment capital markets unworkable.

These developments have created a large pool of liquid funds ready to move at the first whiff of devaluation risk. Total cross-border ownership of tradable securities has risen to an estimated $2.5 trillion as of 1992. Most of these securities are highly liquid and include not only the underlying assets but a variety of repackaged derivatives such as currency swaps. Positions in these assets are actively managed by institutional investors such as mutual and pension funds (Table 5.4). This trend can be expected to persist: it has been estimated that the share of foreign assets in the portfolios of the world's 300 largest pension funds, for example, will rise from 7 to 12 per cent over the next five years.[81] Fund managers in the business of monitoring current developments are able to alter the composition

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[79] This is not to deny that there also existed a strand of thought that viewed the Single Market as a means of minimizing pressure for competitive deregulation and for harmonizing social and regulatory policies at a high level throughout the Community.

[80] A comprehensive survey of capital account liberalization is Mathieson and Rojas-Suarez (1993).

[81] Group of Ten (1993), p.6.

Table 5.4

The Growth of Institutional Investors

Country	Pension Funds and Life Insurance Companies			Collective Investment Institutions			Total		
	1980	1985	1990[3]	1980	1985	1990[3]	1980	1985	1990[3]
	financial assets as a percentage of household financial assets								
United States	17.8	21.1	23.5	2.2	5.0	7.7	20.0	26.0	31.2
Japan	13.8	16.6	20.8	1.8	3.6	5.6	15.6	20.2	26.4
Germany	19.4	24.4	27.1	3.2	4.8	8.1	22.6	29.0	35.1
France	8.0	11.2	14.7	2.7	12.4	21.7	10.6	23.6	36.3
Italy[1,2]	1.6	0.9	3.2	n.a.	2.1	2.9	n.a.	2.9	6.1
United Kingdom[1]	39.9	49.9	53.7	1.6	3.1	4.9	41.5	53.1	58.6
Canada	19.4	23.3	26.7	1.0	1.6	3.0	20.4	24.9	29.7

[1] Total assets. [2] At book value. [3] For Italy and United Kingdom. 1989 figures.

Source: Group of Ten (1993).

of their portfolios at low cost. Meanwhile, improvements in trading and information systems and in back-office clearance and settlement systems have increased the speed and reduced the cost at which such portfolio rearrangement can be undertaken. Already the volume of net daily foreign exchange transactions exceeds the total official reserves of all IMF member countries combined. (These approached $750 billion in September 1992, the last episode of intense one-way speculation. See Table 4.3.) The otherwise impressive quantities of intervention in which the EC countries engaged during the 1992 EMS crisis -- $46 billion in July and August, $228 billion in September and October -- pale in comparison with the $20 trillion of foreign exchange transactions conducted each month.[82]

Implications for International Monetary Arrangements

The extent of the resources that the markets can bring to bear makes it difficult to hold out in the face of a speculative attack. This is especially true insofar as systems of pegged but adjustable rates and narrow target zones offer investors costless one-way bets. If the peg is rigid (or, equivalently, the band is narrow) there is little scope for a weak exchange rate to appreciate, creating scant danger of capital losses. But if the peg is abandoned and the rate depreciates in short order, speculators reap substantial capital gains. Meanwhile, the removal of capital controls and the improvements in trading technologies detailed above have reduced the transactions costs of placing this one-way bet.

There is no better authority on this problem than the currency speculator George Soros (writing before to the famous episode of bear speculation against the Bank of England in which he participated in the summer

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[82] Alogoskoufis (1993). These figures refer to gross intervention.

of 1992):

> "Target zones are unlikely to discourage speculation. On the contrary, they may constitute an invitation to speculate against the authorities with limited risk. By endorsing a set of target zones, the authorities would expose themselves to speculative attack at a time and place to be chosen by the speculators. History shows that under these conditions the speculators usually win."
>
> Soros (1987, p.328).

It is hard to imagine a clearer description of the problem.

With the rise in international financial transactions, the supply of speculative capital that can be brought to bear against a currency whose stability is placed in doubt is in effect perfectly elastic. Chapter 3 identified three techniques for containing these pressures: increased interest rates, capital controls, and unlimited foreign support. What are the implications of deep financial integration for the effectiveness of these instruments?

Reimposition of Capital Controls. As explained in Chapter 3, capital controls can be used to provide insulation from speculative pressures. Yet the removal of controls is a corollary of deep economic integration. Improvements in trading practices and advances in communications technologies will make capital controls increasingly difficult to enforce. The growing interpenetration of direct foreign investments will make it easier to manipulate transfer prices and to use other devices to circumvent controls. Enforcing controls will therefore require an increasingly onerous regulatory apparatus. Administering them will become prohibitively costly and disruptive of other commercial and financial activities. Changes in technology and market structure will thereby militate against their use.

Increased interest rates. In principle, the central bank can raise interest rates to whatever heights are required to render investors

indifferent between holding domestic and foreign assets, thereby sustaining its exchange rate peg. Deep integration may increase the costs of applying this instrument, however, in the limit rendering it counterproductive.

Interest-rate increases will be particularly costly for countries with high levels of public debt that are close substitutes for foreign debt instruments. If domestic and foreign government bonds are close substitutes for one another, as will generally be the case when financial markets are integrated, expectations of an impending devaluation will cause a wholesale shift out of domestic bonds unless investors are compensated by a commensurate increase in domestic interest rates. (When domestic and foreign government bonds are imperfect substitutes and international financial markets are imperfectly integrated, the requisite increase in interest rates will be moderated.) If taxation is highly distortionary, raising the additional tax revenues needed to pay the debt service costs associated with increased interest rates may be especially painful. Thus, deep integration may limit a government's ability to employ the interest rate defense.

Indeed, deep integration may induce self-fulfilling balance-of-payments crises for countries in this position. The increase in taxation needed to finance the extra debt service may be so costly and distortionary that the government will be unable to undertake it. Increased interest rates may so raise the cost of debt service that currency traders have reason to anticipate that the authorities will be forced to abandon their policies of monetary stringency and monetize the resulting deficit Thus, even when in the absence of an attack monetary and fiscal policies are consistent with the indefinite maintenance of the exchange rate peg, if a speculative attack on the currency nonetheless ensues, the induced increase in interest rates may render the

resulting crisis self-fulfilling.[83]

Moreover, in an environment where investors can easily substitute between domestic and foreign treasury bills, fears of devaluation induced by the rise in interest rates may lead investors to hesitate to roll over their maturing treasury bills, and the government may find itself in a funding crisis in which it is forced to buy up the maturing debt irrespective of the inflationary consequences.[84] If further increases in taxes are prohibitively costly, the government may have to resort to inflationary finance. In this situation, even if underlying policies are consistent with maintenance of the exchange rate peg so long as no speculative attack ensues, the funding crisis may nonetheless allow the attack to succeed.[85]

Another circumstance in which interest rate increases can be ineffectual and -- in the limit -- destabilizing is when the condition of domestic banks is weak. Investors may anticipate that high interest rates will so weaken the banks that the government will be forced to shift toward a more inflationary policy to prevent a banking collapse. Increases in central bank interest

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[83] The realism of these fears is illustrated by the case of Italy, where the debt-to-income ratio exceeds 100 per cent and every percentage point increase in interest rates adds significantly to the budget deficit. 29 per cent of the Italian government's debt takes the form of treasury bills, 48 per cent the form of floating rate securities. Together these amount to some 84 per cent of GDP. Raising interest rates by a point for one year therefore increases the budget deficit by about a percentage point of GDP.

[84] For models of funding crises, see Alesina, Prati and Tabellinni (1990) and Giavazzi and Pagano (1990).

[85] An example of the problem is again provided by Italy in 1992. The Bank of Italy was forced to increase its holdings of government bills and bonds by 14.2 trillion lire during the exchange-rate crisis that September. At the September treasury bill auction, the central bank bought 1 trillion lire's worth at the alarmingly high interest rate of 17 per cent. The government drew down its account at the Bank of italy by 17.5 trillion lire. Goldstein et al. (1993), p.53.

rates tend to be passed through quickly into interbank rates, which raises costs for banks requiring overnight funding of their balance sheets.[86] They tend to aggravate the problem of nonperforming assets on bank balance sheets.

Where the banks are already weak, dramatic interest rate increases can raise the specter of bank failure. Given the destabilizing macroeconomic repercussions of widespread bank failure, this may force the government to bail out the banks by assuming their bad debts and using public funds to recapitalize them. It may be forced to resort to inflationary finance to underwrite these costs. This scenario is most plausible when international financial integration facilitates shifts of funds between domestic and foreign banks and, as in the preceding example, the government has reason to hesitate in increasing taxes.

Note again that the consequent balance-of-payments crisis is self-fulfilling. In the absence of the attack, the banking system may have only modest problems, underlying monetary and fiscal policies may be in balance, and the exchange rate peg may be sustainable indefinitely. But if an attack nonetheless occurs, the induced instability of the banking system may raise the costs of defending the exchange rate peg to unsustainable heights.

A third instance in which the interest rate defense can be ineffectual is when higher interest rates produce an intolerable rise in unemployment. If the perceived marginal social costs of unemployment rise with its level, policies which further aggravate unemployment may prove impossible to bear when its baseline level is high. It may be impossible to counter a speculative attack with an increase in interest rates that threatens to

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[86] The experience of Sweden in September 1992 illustrates the point. See Goldstein et al. (1993), p.56.

depress aggregate demand. Even if the central bank initiates the interest rate increase, it may auger a predictable political backlash that will force a reduction in interest rates subsequently. Since speculators are forward looking, the initial increase will not deter them from betting against the currency. Under these circumstances, the initial interest-rate increase will be ineffectual, and the speculative attack can be self-fulfilling.

Foreign support. The only other defense against speculative attacks in a world of high capital mobility is foreign support. Foreign governments and central banks can replenish the international reserves of the country under attack. They can support its currency directly by purchasing it on the open market.

In principle, there are no limits to the effectiveness of this defense. Foreign central banks and government can purchase with their currency however many units of foreign exchange are sold by currency traders. In practice, however, extensive foreign support may have undesirable consequences for the countries extending it, which will limit their willingness to offer it.

Consider the defense of the currency of a country running a high rate of inflation and suffering competitiveness problems. The strong-currency country will have to purchase all the assets of the weak-currency country that speculators sell. The danger this poses is inflation. In a world where exchange rates are governed in the long run by purchasing power parity, supporting the currency of a high-inflation country may require bringing inflation in other countries up to the level prevailing in the country under attack. This follows if the only form of intervention capable of affecting exchange rates is unsterilized. Even if intervention is partially sterilized, as in the case of Bundesbank intervention in support of other EMS currencies

in September 1992, it may be taken to signal a greater future willingness to relax the commitment to price stability in order to defend foreign currencies. This is a price which inflation-adverse central banks may be unwilling to bear.

If the strong-currency countries could be certain that specific policy adaptions in the weak-currency countries will follow, they might be willing to extend however much support was needed to preserve the exchange rate peg. If inflationary tendencies in the weak currency countries were reigned in, foreign support could be provided without a danger of significant inflationary consequences for the creditor country. But in a world of sovereign governments, there can be no certainty that the requisite policy adjustments will follow. Countries with weak exchange rates will have gotten themselves into their difficulties through a hesitancy to pursue the kinds of policies preferred by their foreign counterparts with stronger currencies. There may be ample justification, in other words, for skepticism on the part of the creditors.

In a world of sovereign countries, therefore, foreign support is necessarily limited. Strong-currency countries will no more be willing to extend unlimited support to their weak currency counterparts than would a commercial bank be willing to extend unlimited credit unconditionally to a private borrower.[87]

This observation explains what would otherwise be paradoxical features of various international monetary arrangements. The Act of Foundation of the

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[87] An interesting exception is the CFA franc countries, which compromise their sovereignty by giving seats on their central bank boards to the former colonial power, France. Consistent with the present argument. France extends unlimited foreign support in return. For details, see Chapter 8 below.

European Monetary System, for example, provides explicitly for foreign support.[88] It speaks of "unlimited" interventions at "compulsory" intervention rates. It requires participating central banks to open for one another very short-term credit facilities "unlimited in amount." Yet the history of the EMS clearly demonstrates that intervention is not unlimited. In September of 1992, for example, there was no technical obstacle to the Bundesbank purchasing sufficient quantities of British pounds and Italian lire to prevent sterling and the lira from depreciating against the mark. But while the Bundesbank provided extensive support, that support was not unlimited. Fear of the inflationary consequences provides the obvious explanation. Over the weekend preceding Italy's devaluation Bundesbank President Helmut Schlesinger reportedly sought to arrange a general realignment of EMS currencies.[89] Had the other currencies been devalued against the deutschmark, the Bundesbank's intervention obligations would have been limited, and the link between inflation in Germany and elsewhere in the EMS would have been broken. For reasons that remain unclear, a realignment proved impossible to arrange. The Bundesbank then informed its EMS partners that they should not expect further support when the markets reopened.

In justifying its actions, the Bundesbank apparently appealed to an agreement with the German Government, which dated from the time the EMS was established. This stated that the Bundesbank's obligation to provide unlimited support for other EMS currencies was qualified by its overriding commitment to price stability. If it could not be reassured that other

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[88] The discussion here draws on Vaubel (1978), Begg and Wyplosz (1993) and Eichengreen and Wyplosz (1993).

[89] For details, see Eichengreen and Wyplosz (1993).

countries would take corrective measures to stem their inflation and balance-of-payments deficits, then the Bundesbank was be relieved of its intervention obligation.[90] This was the understanding the Bundesbank invoked when its EMS partners refused to realign.

Much space has been devoted to this episode in order to make a general point, namely the unrealism of expecting unlimited foreign support for a currency in distress. Unlimited intervention can have unlimited costs and will not in general be extended unless binding conditions are attached. And when applied to a sovereign nation, the necessary conditions are ultimately unenforceable.

This point is general in that it applies not just to systems of pegged but adjustable rates but also to narrow target zones. When the exchange rate reaches the lower end of the band, the same defenses must be invoked. Interest rates will have to be raised to high levels, which may prove economically unsustainable, or very extensive foreign support will have to be provided, which may prove politically insupportable. Neither response will necessarily suffice in a world of high capital mobility.

These pressures are clearly evident in the adaptations taken recently by countries utilizing target zones. Chile, for example, has maintained an exchange rate band against the U.S. dollar since 1985 but with the progress of financial liberalization has been forced to widen the band from 4 per cent to 6 per cent, 10 per cent and, in January 1992, 20 per cent. Finland, Norway and Sweden were forced to abandon their unilateral target zones in 1992.

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[90] This understanding is recounted in the memoirs of the then president of the Bundesbank, Otmar Emminger. Emminger (1986), pp.361-362.

What Options Remain?

The only feasible options for the future, by this interpretation, are more freely floating exchange rates or arrangements akin to monetary union. Floating obviates the need to defend the exchange rate. Issuing central banks and their foreign counterparts can still intervene to damp fluctuations, but uncertainty about the evolution of economic fundamentals prevents them from credibly committing to preventing the exchange rate from fluctuating beyond any specific limit.

The other option, monetary union, obviates the problem as well. The separate national currencies of the participating countries can be replaced by a single currency that circulates throughout the union. The danger of exchange rate changes is thus eliminated by abolishing the exchange rate itself. Alternatively, national currencies can continue to circulate, but control over their issue can be vested with a transnational entity with the power to issue them and the obligation to exchange them at par.[91] If the single central bank allows the currency of one member state to slip below par, investors will rush in to purchase that currency in anticipation of capital gains. By eliminating all possibility of exchange rate changes, the effectiveness of the interest rate instrument is greatly enhanced. If policymakers wish to induce a capital inflow into a particular member state, a relatively small increase in local interest rates will suffice, since there is no longer a danger that the interest rate premium will be offset by capital

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[91] A point that is often overlooked is that at the outset of Stage III of the process of European monetary unification, although the European central bank will immediately come into operation it need not create the single currency at that time but only exchange existing currencies at par. See Kenen (1992).

losses due to changes in the exchange rate.[92] And by creating a transnational entity that spans the authority of several sovereign countries, unlimited intervention is rendered acceptable.

Freer floating and monetary union, then, are the only options that remain in a world of high international capital mobility. The next chapter considers the problem of choosing between them.

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[92] This point is documented for regions of the United States by Ingram (1959), who uses data for Puerto Rico.

Chapter 6. The Optimum Currency Dilemma

Changes in technology and market structure, I have argued, will confront policymakers with an increasingly stark choice between greater exchange rate flexibility and monetary unification. A large literature on optimum currency areas speaks to their dilemma.[93] It points to factors on which policymakers should focus when choosing between flexible exchange rates and monetary union, identifies for what countries the choice will be particularly difficult, and suggests ancillary measures that may temper their predicament.

The Economics of Optimum Currency Areas

Research on optimum currency areas has sought to identify structural characteristics of countries that shape the costs and benefits of a separate currency. The message of this literature is that a national money whose supply can be independently controlled and whose rate of exchange against foreign currencies can therefore vary is most beneficial for countries experiencing different disturbances than their neighbors and consequently valuing monetary autonomy to facilitate adjustment. It is most costly for countries where the maintenance of a separate currency implies the greatest increase in transactions costs.

Economic Size. Every individual, household and city block faces idiosyncratic shocks. Yet no one would argue for a separate currency for each individual, household or city block. A currency hardly functions as a useful unit of account if only you denominate prices in it. It can hardly serve as a

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[93] Three seminal contributions to the optimum currency area literature are Mundell (1961), McKinnon (1963) and Kenen (1969). Early but still useful surveys are Ishiyama (1975) and Tower and Willet (1976). A more recent survey which touches on the political considerations I emphasize here is Goodhart (1993).

useful means of payment if only you issue it.[94] It can hardly provide a desirable store of value if these such problems limit its liquidity.

For these reasons, fixed exchange rates and monetary unification are attractive to smaller economies. The three formal monetary unions currently in operation -- the West African Monetary Union, the Central African Monetary Union, and the East Caribbean Monetary Union -- and two de facto unions -- Luxembourg with Belgium and Liechtenstein with Switzerland -- all involve relatively small economies. The strongest result to emerge from the recent study of choice of exchange rate regime by Honkapohja and Pikkarainen (1992) is that small countries peg their exchange rates.

Openness. Individuals, households and city blocks are very open (that is, they transact extensively with other individuals, households and city blocks). If all exchange took place within the block (the latter was closed to trade with the rest of the city), the transactions services of a block currency (as distinct from a currency bloc!) would not be inferior to those provided by a city-wide money. But the more transactions are conducted with other blocks, the greater the resources that would have to be devoted to recalculating external prices in local currency, converting currencies, etc. The more open is the economy, then, the less adequate are the means of payment and unit of account services provided by a separate domestic currency. And the more concentrated is a country's trade with a subset of partner countries, the more these means-of-payment and unit-of-account functions can be enhanced

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[94] Its reputation will not be known and distant correspondents will hesitate to accept it. Actually, one can imagine the development of institutions to ameliorate this problem. Thus, in 19th century America, when free banks were allowed to issue their own notes, note reporting services sprang up to provide information about bank notes and to quote discounts on the different issues. The point here is that these services are not free of costs.

through the formation of a monetary union limited in geographical scope.

Working in the same direction, it is sometimes asserted, is the fact that more open economies possess smaller shares of nontraded goods in total output, leaving them with less ability to use nominal exchange rate changes to alter the real exchange rate. A negative shock weakening a country's balance of payments may require shifting resources from nontraded to traded goods production, and a nominal devaluation which raises import prices in domestic-currency units acts like a shift to daylight savings time to coordinate this adjustment; the smaller the nontraded goods sector, the weaker this mechanism, the argument runs. Yet studies reviewed by Edwards (1988) and Corden (1993) show that even very open economies can use nominal exchange rate changes to affect the real exchange rate. If openness is associated with a decision to forsake monetary autonomy for currency unification, then, this must reflect the savings in transactions costs rather than any irrelevance of exchange-rate changes for adjustment.

Susceptibility to inflation. Inflation weakens a currency's ability to provide store-of-value services and, when it reaches sufficient heights, eliminates it as a means of payment and unit of account. Hence, one should expect countries most vulnerable to inflationary pressure to be most willing to sacrifice their monetary autonomy.

This, of course, is the prevailing explanation for why countries like Argentina established a rigid dollar link following their repeated failure to resist inflationary pressures, and why other EC countries have linked their currencies to the deutschmark in the European Monetary System. As previous chapters explained, however, the idea that an exchange rate peg provides anti-inflationary credibility raises as many questions as it answers. What

prevents countries from abandoning the peg when pressures to do so intensify, in the manner of the U.K. and Italy in 1992? Cannot the causal connection between pegged exchange rates and price stability (viz. Edwards, 1992) be explained away by unobserved differences between peggers and floaters?

Even if inflation-prone countries can credibly delegate authority over their monetary policies to the country against whose currency they peg, monetary unification reopens the Pandora's box that pegging sought to slam shut. A member of a monetary union regains influence over the formulation of union-wide monetary policy -- the very thing it sought to renounce by delegating control to the anchor country to which it pegged. One reason why France and other members of the European Monetary System are now proponents of European monetary unification is that they wish to regain control of their monetary policies from the German Bundesbank. The question is what prevents them from using their influence, once reacquired, in the same inflationary manner as before. The infeasibility of an exchange rate peg and the unavoidable choice between floating and monetary unification thus introduces difficult questions for countries whose choice is largely shaped by considerations of inflation vulnerability.

Specialization. The larger are nation-specific shocks (the less symmetric is the distribution of macroeconomic disturbances across countries), the less adequate is a common monetary policy for facilitating adjustment, and the stronger the case for a national currency to permit the pursuit of an independent national policy. Kenen (1969) took this insight, due to Mundell (1961), and argued that countries in which output and employment are widely spread across sectors will have the least reason to float. Insofar as industry-specific disturbances prevail, economies with broadly-diversified

industrial bases are least likely to experience disturbances requiring the kind of economy-wide adjustment that can be promoted by changing the exchange rate. If one traded-goods-producing sector booms when another slumps, a country possessing both can simply shift resources between them without any change in the exchange rate. An exchange rate change which alters the price of traded goods relative to domestic-currency-denominated labor costs is not helpful when some traded-goods prices have to rise and others have to fall.

This observation, which predicts that diversified economies will find it least costly to peg their exchange rates, must confront the observation that highly specialized nations in fact prefer to peg. The petroleum-producing countries of the Middle East, which epitomize this category, peg to the dollar, as mentioned above. Honkapohja and Pikkarainen (1992) find that a high degree of specialization, along with small size, is the strongest correlate of the decision to peg. Part of the explanation is that exchange rate changes are of least use to countries that are specialized completely in the production of a single commodity. If the economy's entire stock of productive resources is already dedicated to that sector, an exchange rate change will do little to facilitate adjustment to a terms-of-trade shock.[95] Fixing the value of the national currency in terms of that export commodity, this being the implication of adopting a floating rate, will subject households to fluctuations in their purchasing power; they may prefer the government to insure them against those purchasing-power risks by stabilizing the value of the currency in terms of some broader aggregate of goods (i.e. by

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[95] The studies of Edwards and Corden, cited above, remind us that doing little is different than doing nothing; exchange rate adjustments can still have some effect, notably by coordinating changes in the real product wage and hence in export competitiveness.

joining a currency area).[96]

This analysis thus suggests a u-shaped relationship between specialization and exchange rate policy: highly specialized and highly diversified countries will be most inclined to join a currency area, with countries in the middle preferring to float.

Other Asymmetric Shocks. Sectoral specialization is not the only source of asymmetric shocks.[97] Countries can experience nation-specific shocks to the velocity of circulation, to the stability of the banking system, to the level of wages, or to the productivity of labor. They can experience nationwide droughts, brutally cold winters, and (as in the case of Finland following the breakup of the Soviet Union) the collapse of their national export markets. In such cases the national authorities may wish to change the exchange rate to facilitate adjustment.

The question is whether possession of a national currency in fact eases adjustment to such nation-specific shocks, or whether there are cases where it stands in the way. Money, as a nominal variable, is most directly useful as a response to nominal shocks. But if coordination failure is important, one can invoke the "daylight-savings-time" argument that monetary policy is also useful for adjusting to real disturbances. The observed behavior of governments is consistent with this view: the fact that Finland abandoned its policy of pegging to the ecu, devaluing in 1991 and floating in 1992, is hard to explain, for example, if one insists that monetary-cum-exchange-rate policy is useless for coping with real shocks.

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[96] This point is made by McKinnon (1963) and Purvis (1976).

[97] Indeed, Stockman (1987) suggests that it is not one of the principal sources.

Insofar as domestic monetary policy is the source of shocks, a currency union may eliminate the disturbance and thereby the need for a response; conversely, if foreign monetary policy is the source, a floating exchange rate provides insulation. Domestic velocity shocks are easily dispatched in a currency union through the requisite inflow or outflow of the common currency, while foreign velocity shocks may subject a single small member of a currency union to a sizeable monetary disturbance. Clearly, the magnitude of asymmetric shocks is not a sufficient statistic for choosing between monetary unification and floating; it is necessary also to know the nature and source of those disturbances.

Factor Flexibility. Labor mobility was, along with the symmetry of shocks, the other consideration emphasized by Mundell. He argued that economies between which labor is relatively mobile are good candidates for monetary union, since asymmetric shocks affecting one but not the others can be accommodated by labor flows between them. Blanchard and Katz (1992) confirm that labor flows between U.S. regions in fact play a major role in adjustment to disturbances within the U.S. economic and monetary union.

In this context, "labor mobility" should be understood as shorthand for labor market flexibility generally. Incipient unemployment in a depressed region that can be headed off either by emigration or by currency depreciation which reduces real producer wages can also be eliminated by a reduction in labor costs denominated in domestic currency. Thus, an economy with relatively flexible labor markets (in the sense that regional wages are allowed to vary absolutely and relative to those prevailing elsewhere) is the best candidate for monetary union.

This criterion is clearly related to the sectoral diversification of

production. Only if labor is mobile internally can diversified economies accommodate sector or region specific shocks by shifting resources across sectors or regions. Such economies can accommodate shocks by changing relative prices and costs only if wages and prices are flexible. Similarly, a group of regions are most likely to constitute a smoothly-adjusting currency union if their relative wages are flexible and workers display a propensity to move between them.

Labor-market flexibility cannot be taken as exogenous with respect to international monetary arrangements any more than can monetary shocks. If the government is prepared to adjust the nominal exchange rate in response to shocks, workers and firms will have less reason to write contracts allowing for changes in money wages. If the government opts for monetary unification, workers and firms should realize that an inappropriate level of domestic money wages can no longer be accommodated by nominal exchange rate adjustments and write contracts that deliver a greater degree of wage flexibility.[98]

Fiscal Flexibility. Labor mobility is an appropriate response to permanent disturbances. Relocation being costly, it may not make sense if disturbances are short lived. For such cases theory points to external borrowing as an efficient means of smoothing consumption and production. If incomes fall temporarily, households, to sustain their consumption, can borrow from other parts of the economic and monetary union.

Atkeson and Bayoumi (1991) show that households do in fact use capital

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[98] Italy's abolition of its scala mobile in anticipation of European monetary unification may be seen as an example of this tendency. Horn and Persson (1988) provide a model formalizing this idea. Bertola (1988) presents arguments suggesting that once exchange rates are immutably fixed, workers will be more likely to respond to asymmetric shocks through inter-regional migration.

markets to insure against region-specific risks. But they do so only to a limited extent. Human capital is illiquid, contracting being discouraged by private-information and moral-hazard problems. Hence, there is a role for government to arrange the capital flows that private markets fail to mobilize. They can increase transfer payments to residents, running budget deficits and financing them externally. Where governments are best able to undertake this function, the costs of monetary unification should be relatively low.[99]

The question is how much capacity local governments possess to undertake this function. Sovereign borrowers, who retain the option of defaulting, cannot borrow without limit. Even if governments are able to surmount private-information problems, in other words, moral hazard remains. The amount governments can borrow will depend on the conditions under which they operate.[100] The more mobile are factors of production, the more footloose is a local jurisdiction's tax base, and the lower the level of debt at which it will find itself rationed out of the capital market. In the United States, Bayoumi, Goldstein and Woglom (1993) find that state governments are rationed out of the market when their debt-to-state-product ratio reaches about 9 per cent.

Fears that this constraint may bind have led to suggestions for the need for systems of intergovernmental transfers in a monetary union. This argument, which goes back at least to Ingram (1959), is that long-term

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[99] This is a restatement of the well-known point in international macroeconomics that the costs of forsaking a policy instrument (in the case of monetary union, an independent monetary policy) will be low when another flexible instrument is available (in this case, fiscal policy).

[100] Thus, Bayoumi and Eichengreen (1993b) find that states with statutory or constitutional restrictions preventing them from running persistent deficits are able to borrow more before being rationed out of the capital market.

contracts between local jurisdictions to provide one another regional coinsurance accomplish what decentralized markets cannot. These long-term contracts take the form of systems of fiscal federalism, in which regions reduce their tax payments to the federal government when they suffer an asymmetric regional shock, and receive transfers from the federal authorities (and, indirectly, from other regional governments). Areas within which the institutions of fiscal federalism are well developed should therefore be inclined to opt for monetary unification.

Financial Development. Countries with underdeveloped financial markets are likely to experience exceptionally high degrees of exchange rate volatility. If financial markets are shallow, even a temporary disturbance which leads some investors to sell domestic-currency-denominated assets may cause the exchange rate to plummet if liquidity constraints or other financial-market imperfections prevent other investors from purchasing those assets in anticipation of a subsequent recovery in their value. The absence of forward markets similarly renders it difficult for firms and households to hedge exchange risk. Exchange-rate volatility may therefore confer real economic costs.

The common response to this problem is for the government to manage the exchange rate: to serve as purchaser or seller of last resort of the relevant financial assets. The implication is that floating is most costly for countries with the least well developed financial markets.[101]

The Economics of Seigniorage. Seigniorage can account for a significant

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[101] It is noteworthy in this regard that the one developing country which succeeded in floating independently for an extended period was Lebanon prior to its current troubles, a country with an unusually sophisticated financial system.

fraction of government receipts in countries with underdeveloped financial markets. In contrast, it accounts for only a couple of points of GNP in the advanced industrial countries. Such figures may understate the economic benefits of domestic control of the inflation tax, however, insofar as the latter has insurance value in highly indebted countries. Such countries can issue domestic debt at significantly reduced costs if investors know that there exists a purchaser of last resort, namely the central bank, to backstop the market, containing the effects of a debt run (McKinnon 1993b). A credible purchaser of last resort is sure to exist only when the central bank remains under domestic control. In contrast, if investors are unsure of the inclination of a common central bank in a monetary union to contain a debt run affecting one of its jurisdictions, they may demand a significant risk premium to hold its obligations.

Recapitulation. The literature on optimum currency areas points to a limited set of economic characteristics that will shape countries' choices in the 21st century between floating exchange rates and monetary union. Small, open and either unusually specialized or unusually diversified economies are most likely to opt for monetary union. The same will be true of countries with flexible labor market institutions and institutional means of relaxing fiscal constraints. Countries least susceptible to inflationary pressures but vulnerable to asymmetric macroeconomic disturbances, in contrast, may prefer floating.

The Politics of Optimum Currency Areas

The preceding discussion of the literature on optimum currency areas paints the choice between floating rates and monetary union as one that can be based on purely economic considerations. In fact, political as opposed to

narrowly economic considerations often seem to dictate the decision of which tack to pursue. Political objectives that can be attained through the maintenance of a separate currency or by the establishment of a monetary union may dominate any strictly economic calculus of costs and benefits. Moreover, politics as much as the operation of markets shape the economic parameters emphasized in the optimum-currency-area literature.

Money as a Symbol of National Sovereignty. Sovereignty is one of those phenomena whose definition is more difficult to formulate than its importance is to deny. For historical reasons as much as anything, a national currency retains symbolic value as the emblem of sovereignty. In the former Soviet Union, for example, the Baltics and Ukraine, among other new countries, initially wished to replace the ruble with a distinct national currency to symbolize their national autonomy rather than on the basis of any economic costs and benefits.[102] Russia desired to see them remain in the ruble zone to signal that its political influence still extended beyond the borders of the Russian Federation. The German public hesitated to embrace European monetary unification once it realized that this entailed giving up the beloved

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[102] It can be argued that with the rise of Russian inflation these other republics saw an economic logic to detaching themselves from a rapidly depreciating ruble. Even then, however, the symbols of nationalism continued to dominate discussion. Thus, when an Interstate Bank for multilateral clearing between the successor states of the former Soviet Union was under negotiation in the first half of 1992, republics other than Russia resisted on grounds of symbolism proposal that its accounts be denominated in rubles, even though as prospective debtors vis-a-vis the Bank they stood to benefit from an arrangement under which debts would depreciate in nominal terms. See Eichengreen (1993c). Similarly, regions <u>within</u> the Russian Federation striving for autonomy have recently begun to issue their own quasi-currency notes.

deutschmark.[103] Economists may despair that political symbolism dominates rational economic calculus, but they must acknowledge that this is sometimes the case.

The Politics of Seigniorage. Even if, under normal circumstances, seignorage revenues are small, monetary sovereignty still can have significant option value to a government. Sovereignty confers on a political entity the right resist aggression from abroad. National defense in turn requires that the government be able to mobilize resources to resist attack. It follows that certain instruments of taxation, prominent among which is the inflation tax, are normally assigned to the national authorities. Seigniorage, obtained by issuing money, is probably the single most flexible instrument of taxation available to a government. As Goodhart (1993) puts it, it is the revenue of last resort. Money can be printed to pay soldiers, to purchase war materiél and to underwrite the other costs of a war of national defense without having to wait for tax returns to be filed or for a foreign loan to be extended. Thus, governments engaged in a war commonly resort to the inflation tax, letting their currency depreciate and abandoning any commitment to an exchange rate peg.[104] (Figure 6.1 summarizes this relationship for Great Britain.)

Possessing a flexible revenue source of last resort may also be of value when internal upheavals limit a government's ability to raise revenue from

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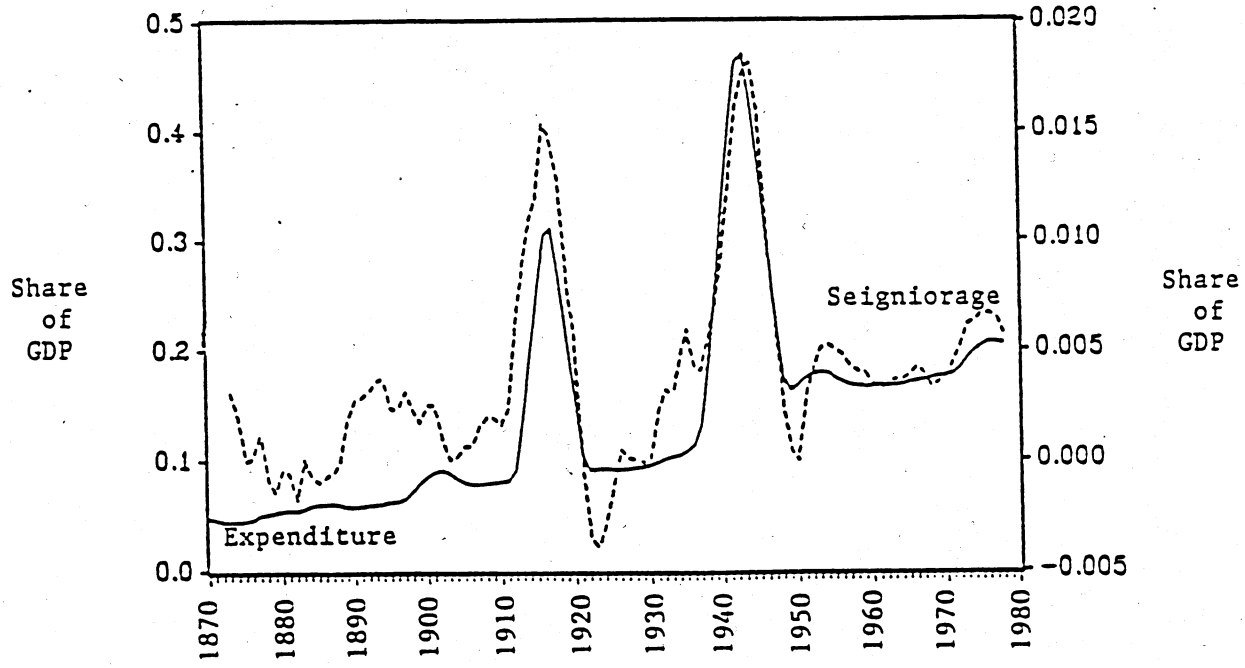
[103] The tendency is not limited to Germany. Goodhart (1993) provides a telling quotation from Dr. George Cary, the Archbishop of Canterbury, speaking in February 1993. "I want the Queen's head on the banknotes. The point about national identity is a very important one. For me being British is deeply important. I don't want to become French or German." And in the German case, hesitancy to give up the deutschmark may involve more than symbolism, as I discuss in Chapter 7 below.

[104] de Kock and Grilli (1989) emphasize the connections between the outbreak of war, exceptional seigniorage needs, and shifts from pegged to floating exchange rates.

FIGURE 6.1

UK Government Expenditure and Seigniorage
(five year moving averages)



other sources. A natural disaster or threat of insurrection, the costs of whose containment cannot be met without delay, may pose a fatal threat to the viability of the government. Abandoning the option value entailed in the right to issue a national currency therefore presents significant risks for a sovereign nation.

For the same reasons, monetary unification may be an effective means for governments seeking to renounce extra-territorial ambitions to establish their credibility. Abandoning national control over seigniorage by joining a monetary union diminishes one's capacity to wage war.[105] This argument holds water, of course, only insofar as monetary unification is irreversible. If countries can reintroduce their national currencies whenever tensions heighten, monetary unification does little to enhance their international political credibility. The question of whether monetary unification is irreversible was raised in Chapter 3 above. The argument there was that establishing a monetary union involves sunk costs which are lost in the event that the union is abandoned subsequently; this in turn serves as a barrier to exit which renders the union more credible than pegged exchange rates between distinct national currencies. But there can still be circumstances under which governments may choose to write off sunk costs. Even where the sunk costs of monetary unification succeed in deterring a government from depreciating its exchange rate in response to a recession, those costs may be inadequate to prevent it from withdrawing from the union in the event of a military conflict. (Witness the case of the former Yugoslavia, for example.)

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[105] Readers inclined to dismiss this argument as far-fetched would do well to reflect on 20th century European history. Memory of two devastating wars between Germany and France contributes to the desire for economic and monetary unification between these two countries.

When the stakes are sufficiently high, monetary unification will not credibly commit them to not initiate such a conflict.

Money as a Political Bargaining Chip. The notion that a country may agree to monetary union not because the economic benefits dominate the costs, but rather because it is compensated for those costs by other, noneconomic benefits, is a specific instance of the general argument that money can serve as a bargaining chip in international negotiations. This would appear to be a way of understanding German support for European monetary unification, for example. As the largest country in Europe economically and the one least susceptible to inflationary pressures (not to mention the EC member state suffering the largest asymmetric economic disturbance, namely German unification), Germany of all EC member states has the least reason to be attracted to European monetary union on purely economic grounds. A popular explanation for its support for EMU is that it offered to trade monetary union, which it would not want in isolation, for an expanded foreign policy role within the context of an EC foreign policy. The implication is that cost/benefit calculations regarding monetary unification and floating rates only make sense when they are extended beyond economic factors narrowly defined.

Money and the Political Economy of Protection. In the same way that there can be horse trading between countries over money and other issues, choices regarding international monetary policy can have significant spillovers into other domestic political arenas. Williamson (1985) and McKinnon (1990) argue, for example, that the choice of international monetary arrangement can have important implications for the political economy of protection. In highly open economies, exchange rate fluctuations, even when

they benefit the nation as a whole, may so injure particular sectors that the latter will succeed in securing the imposition of protectionist measures to insulate them from further shifts. The notion that broadly-based interests that reap diffuse benefits from free trade may find it difficult to counter highly concentrated interest groups that suffer injury is consistent with this view, as is empirical observation. Thus, the U.S. decision to abandon the freely floating dollar for the Plaza and Louvre Accords in the mid-1980s was motivated by the fear that the currency's appreciation was generating protectionist pressure from domestic industries undercut by import competition. Similarly, wide exchange rate swings which lead to import surges may provoke a protectionist backlash threatening the completion of Europe's internal market and the maintenance of historical trade relations between the former-Soviet republics.[106]

Countries and governments which value open markets may therefore opt for monetary unification as a bulwark against protectionism. This argument suggests that openness cannot simply be taken as a parameter upon which to base optimum currency area calculations. Rather, a country's openness is endogenous with respect to the decision between monetary union and floating,

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[106] See Eichengreen (1993) and Havrylyshyn and Williamson (1991), respectively. In the case of Europe, the response to the devaluation of sterling and the lira in September 1992 illustrates the point. The depreciation of the pound was not immediately offset by changes in domestic-currency-denominated labor costs. By February 1993 it had led Hoover Co. to terminate vacuum-cleaner production in France in favor of expanding its operations in Scotland. It had caused Philips Electronics to cease producing cathode tubes in its Dutch plant in favor of Britain. It encouraged S.C. Johnson & Son, a U.S. household-products maker, to shift production from France to plants in Britain. This in turn led EC Commission President Delors to warn the British government that its exchange-rate policies were antagonizing other EC countries in a manner incompatible with the privileges of the single market. Angry French officials threatened Britain with exclusion from the single market if it persisted in its abandonment of the ERM.

insofar as the latter shapes the political economy of protection.

The Politics of Monetary Accountability. The legitimacy of public institutions in a democracy is predicated on their accountability. To earn the respect and therefore the cooperation of the citizenry, such institutions must be seen as taking actions in the long-term interest of the public. To insure that they do so, decision makers must be required to answer to voters or their elected representatives.

Existing national monetary institutions are all accountable in this sense. In the United States, for example, the chairman of the Federal Reserve Board is required to testify to Congress on a regular basis, as a provision of the Humphrey-Hawkins Act which charges the U.S. government, including the Federal Reserve System, with pursuing Congressionally-mandated objectives such as the maintenance of full employment. Other Federal Reserve System officials testify at Congress's request. If U.S. monetary officials fail to justify their actions, their prerogatives may be threatened by bills modifying the statutory independence of the Federal Reserve System.

The situation in other countries is similar. In parliamentary systems, where changes in statute do not require the assent of both directly elected representatives and a separately elected chief executive, changes in statute may be even easier to engineer; the credibility of this threat may enhance the accountability of monetary policymakers.

Accountability is not the same thing as independence. It is possible to both make the monetary authority accountable for the pursuit of certain ultimate objectives (price stability and full employment, for instance) and free to choose its tactics for pursuing them. To return to the previous example, this is the situation in the United States. The Fed is independent

in the sense of enjoying statutory insulation from pressure to alter its tactics (its regulation of interest rates and monetary aggregates) but accountable in the sense that it will be called on the carpet if its tactics consistently fail to achieve desired ends. This can be seen as an institutional solution to the time consistency problem that otherwise afflicts monetary policy, in which politicians with direct control of a discretionary monetary instrument cannot credibility commit to restraint. By appointing an agent (a conservative central banker) to act in the long-term interest of the principal (the polity), this time consistency problem can be overcome.[107] But this solution is politically acceptable and will deliver desirable results only if renegade central bankers are answerable to the political process.

As soon as countries contemplate moving to monetary union, new questions of accountability arise. To which national congress or parliament will the union-wide central bank be answerable? This has long been an issue in systems of pegged but adjustable exchange rates. Such systems are generally based on the policy decisions of an anchor country -- the United States under Bretton Woods, Germany under the EMS, for example. Central bankers formulating policy in the anchor country are not accountable to other participants in the system, who are free to voice their objections, though the recipient of the message is under no obligation to listen. In this case, participating countries have an alternative to voice, namely exit. They can leave the system if they feel that the central bank setting the tone for monetary policy is not pursuing

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[107] Seminal models of this time-consistency problem are Kydland and Prescott (1977) and Barro and Gordon (1983). The principal-agent solution to the problem was first analyzed by Rogoff (1985a).

policies consistent with national objectives.[108]

Assuming that monetary unification succeeds in its objective of creating credible exit barriers, the scope for exit will be limited without necessarily enhancing the scope for voice. Monetary unification involves an international treaty; modifying that treaty to discipline renegade central bankers would therefore require the unanimous consent of the signatories, which would represent a formidable obstacle. Hence countries which feel that the common central bank is not pursuing objectives compatible with its national interest may have little opportunity to exercise either exit or voice.

Politics and the Fiscal Concommitants of Monetary Union. The literature on optimum currency areas suggests that regions within which fiscal federalism is relatively well developed are best positioned to opt for monetary union. Political rather than economic factors may pose the principal obstacle to the development of such arrangements. There is no mystery about how to design the institutions of federalism. The question is whether it is feasible to implement them prior to political unification.

The power to tax and make public spending decisions is the essence of sovereignty. Where the power to issue a national money may have occasional value as a revenue source of last resort, the power to tax and spend is central to a government's ability to pursue any objective. Governments are understandably hesitant to sacrifice their fiscal prerogatives. Symptomatic of this fact is that in the EC, where the need for fiscal federalism as a concomitant of monetary union has long been acknowledged (MacDougall 1977) but

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[108] Britain and Italy's departure from the EMS in the autumn of 1992, in the wake of the German Bundesbank's decision to raise interest rates to counter German inflation rather than to lower them to fight European unemployment, can be interpreted in this light, as can the modification of the EMS in the summer of 1993 to permit greater exchange rate flexibility.

political unification has not kept pace with economic integration, the EC budget barely exceeds 1 per cent of Community GNP. This limits the scope for fiscal federalism at the Community level. So long as separate sovereign jurisdictions remain, they will hesitate to cede their budgetary prerogatives, rendering difficult any attempt to develop the fiscal concommitants of monetary union.

Recapitulation

The literature on optimum currency areas points to a small number of economic variables that can be used to guide countries' choice between floating exchange rates and monetary unification. It also points to market imperfections and forms of market incompleteness that must be corrected by governments seeking to establish a smoothly-functioning monetary union. Ultimately, the binding constraints on solving those problems are more political than economic. The implication is that international monetary options in the 21st century will be shaped as much by political as by economic considerations.

The next two chapters apply these insights to Europe and other parts of the world.

Chapter 7. European Prospects

Readers may regard a choice between monetary union and floating exchange rates as no choice at all. Except for small countries lacking a history of monetary sovereignty, monetary unions between separate sovereign nations have almost never been observed. From this perspective the foreign exchange market crises of 1992-93 that set back efforts to establish a European monetary union should come as no surprise. If, for the reasons detailed in Chapter 5, compromise arrangements like the pegged but adjustable exchange rates of the European Monetary System will no longer be feasible, while for the reasons discussed in the second half of Chapter 6 monetary unification without political unification is not viable, the only alternative that remains is floating.

Recent events in Europe are at least superficially consistent with this view. To determine whether that consistency is more than superficial, this chapter analyzes the prospects for European monetary unification in some detail. It finds more support for one of the two propositions in the preceding paragraph than for the other. Recent European experience unambiguously confirms the lack of viability of intermediate options. It much less definitively establishes the infeasibility of monetary unification.

A Case Study of Hollowing Out

By the beginning of the 1990s European policymakers had grown convinced that there existed a compromise between floating exchange rates and monetary unification -- a compromise sufficiently durable to bridge the transition to monetary union at the end of the decade. This was the European Monetary System of pegged but adjustable exchange rates. Indeed, from early 1987 it became the European Monetary System of pegged exchange rates, as no further

realignments took place from January of that year until the crises starting in the summer of 1992 that affirmed the intrinsic fragility of the EMS.

A Precis of the Crisis. The European foreign exchange market crises of 1992-93 are sufficiently familiar to require only the briefest summary here. The Danish referendum on Maastricht on June 2nd, 1992, in which the treaty suffered a narrow defeat, opened the first episode of instability.[109] The lira, which had joined the narrow band on January 8th, 1990, quickly fell toward its lower limit despite intramarginal intervention, reflecting Italy's large budget deficits and political disarray.[110] The three currencies of the wide band (sterling, the peseta and the escudo) weakened noticeably. This occurred against the backdrop of mounting exchange rate tensions in the Nordic countries, depreciation of the U.S. dollar (which fell by fully 17 per cent against the DM between mid-March and early September), and weakness of the yen against the EMS currencies.

Pressure mounted in August and September with the approach of France's September 20th referendum on the Maastricht Treaty. On August 26th the pound fell to its ERM floor despite intervention. Other ERM members intervened in support of their currencies. On August 28th the ECOFIN Council concluded that

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[109] A longer account would explain how, the EMS crisis was proceeded by exchange-rate turmoil at the fringes of the European Community. In the second half of 1991, Finland had experienced massive capital outflows due to the collapse of its Soviet trade and a domestic banking crisis. The Bank of Finland, which had maintained an ECU peg, was forced on November 14, 1991 to devalue the markka by 12 per cent. Pressure spilled over to Sweden, which exported many of the same products and maintained a similar ECU peg, forcing the Riksbank to raise its marginal lending rate by six points, to 17 1/2 per cent. But notwithstanding these events, there was a striking absence of difficulties in the EC itself toward the beginning of the year.

[110] The narrow band allowed fluctuations of plus or minus 2.25 per cent in participating currencies. Certain junior members were permitted a wider band of plus or minus 6 per cent, although the Maastricht Treaty required candidates for monetary union to bring their currencies into the narrow band.

a realignment of ERM currencies was not appropriate under the circumstances.

On September 8th, the Finnish markka's unilateral ECU link was severed, heightening investors' doubts about other exchange rate pegs. Currency traders turned to the Swedish krona; the Riksbank, to defend its ECU peg, was forced to raise its marginal lending rate to triple digit levels. The Italian lira was the leading target within the ERM. Despite the Bank of Italy's allowing short-term rates to rise to more than 30 per cent and heavy marginal intervention by German, Dutch and Belgian authorities, whose currencies reached their maximum permissible divergence against the lira, a 3.5 per cent devaluation of the lira and 3.5 per cent revaluation of other ERM currencies followed on September 13th.

The first discontinuous realignment in five years removed remaining doubts that changes in EMS exchange rates were still possible, while the small size of the German interest rate cut that followed the Italian action confirmed that the burden of adjustment fell mainly on weak-currency countries. Pressure mounted on Britain, Spain, Portugal and Italy. Despite further interest rate increases and marginal intervention, on September 16th, at the end of the trading day, British ERM membership was suspended and the two interest rate increases taken by the Bank of England earlier in the day were reversed. Italy announced to the EC Monetary Committee that the inadequacy of its reserves in the face of speculative pressure forced it to suspend foreign exchange market intervention and to allow the lira to float; the Committee authorized a 5 per cent devaluation of the peseta.

In the subsequent period, speculative pressure was felt by the French franc, the Danish krone and the Irish pound. France's ratification of the Maastricht Treaty was not enough to dissipate it. The Bank of France raised

interest rates, and fears for the stability of the franc spilled over to Belgian currency markets. Though the French franc remained above its bottom of its band, the Bank of France and the Bundesbank felt impelled to undertake intramarginal interventions.[111] The Spanish authorities reimposed deposit requirements on banks with open foreign exchange positions, while threats to the escudo and the punt induced Portugal and Ireland to tighten the capital controls which they had been permitted to retain under derogations granted them by the provisions of the Single European Act.

The second episode of crisis followed Sweden's decision to abandon its ECU peg on November 19th due to the government's failure to obtain all-party support for fiscal austerity measures.[112] Pressure spread to Denmark, forcing its central bank to raise official interest rates, and to Iberia. Although the krone was successfully defended, it proved necessary to devalue the peseta and escudo by 6 per cent. Having failed to stem the tide, Spain then removed its deposit requirements, Portugal its capital controls. Norway was forced to abandon its unilateral ECU peg on December 10th, and pressure spread to Ireland and France. Though the franc was successfully defended, the punt was not. In the face of Ireland's removal of capital controls on January 1st, 1993 (as mandated by its derogation to the Single European Act) and the continued descent of the pound sterling (fueled by a series of British interest rate cuts), increases in Irish market rates to triple digit levels did not suffice. (Between September 16th and the end of the calendar year,

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[111] A total of 160 billion francs (about $32 billion) was spent in the currency's defense in the week ending on September 23rd. Bank for International Settlements (1993), p.188.

[112] Massive reserve losses were incurred in the six days preceding the devaluation, reportedly amounting to $26 billion or more than ten per cent of Sweden's GNP. Bank for International Settlements (1993), p.188.

sterling declined by 13 per cent against the DM.) The punt was devalued by ten per cent within the ERM on January 30th. The Danish krone and then the Belgian franc came under renewed attack, but this was successfully rebuffed.

The third episode of crisis affected Spain and Portugal in May of 1993. The approach of elections heightened uncertainty about the identity and orientation of the prospective Spanish government. Weakness of the peseta and extensive reserve losses prompted a further 8 per cent devaluation. Although Portugal was subject to no such electoral uncertainty, it felt it necessary (and the Monetary Committee agreed) to devalue the escudo by 6 1/2 per cent to prevent its competitive position from being eroded by the actions of its Spanish neighbor.

The final episode, in July 1993, put an end to Europe's hope of pegging exchange rates within narrow bands. Although French inflation remained several percentage points lower than Germany's and the competitiveness of its exports was not in question, deepening recession in Europe, which pushed French unemployment rates into the double digits, raised questions about the government's resolve. Pressure built for it to reduce interest rates to stimulate demand. Market anticipations of this shift led to massive sales of francs; smaller European countries also suffering from the recession whose export competitiveness would have been significantly undercut by a French devaluation (Belgium, Denmark, Spain, Portugal) saw their currencies fall to their ERM floors. Following a weekend of negotiations at the end of July, at which suspension of the ERM, temporary withdrawal of the German mark from the system and a variety of other options were discussed, EC governments opted for widening the narrow band from 2.25 to 15 per cent. This face-saving step retained the facade of the Exchange Rate Mechanism while acknowledging the

infeasibility of a narrow band.

Explaining the Crisis. It might be argued that the collapse of the narrow band reflected inadequate dedication to the coordination of national economic policies, not the intrinsic fragility of pegged rates. This was the reaction of official bodies to the September 1992 crisis, echoed in academic commentary by Branson (1993), Dornbusch (1993) and others. In this view, certain countries -- most prominently Italy but Spain and the U.K. as well, failed to restrain inflation and maintain the competitiveness required for external balance.

While competitiveness problems are surely part of the story, it is far from clear that the 1992 crisis could have been averted had such countries more faithfully restrained aggregate demand. More restraint would have meant more unemployment, given the imperfect flexibility of labor costs. This would have intensified pressure for governments to relax the stance of policy, even if doing so created exchange rate instability. Anticipations of this inevitability would have provoked a crisis.[113]

This explanation sits uneasily with the observed behavior of forward exchange rates, however. If observers attached a high probability to a shift in policy in a more expansionary direction, why then did the one-year-ahead forward rates of most of the ERM currencies that were attacked starting in the

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[113] The association of exchange-rate tensions with the shifting prospects for ratification of the Maastricht Treaty lends support to this view. If the treaty was not going to be ratified, it no longer paid for countries to bear the burden of unemployment now as a way of demonstrating their commitment to participate in the monetary union later. From this perspective it is no coincidence that exchange market tensions first surfaced when the Danes rejected the Treaty in their June referendum, that they intensified each time an opinion poll was released documenting the extent of opposition to ratification in France, or that they peaked preceding France's September 20th referendum.

second week of September not move outside of their ERM bands in July or August? Of the major ERM currencies, only the Italian lira and the Danish krone (not surprisingly, given that Danish voters had already demonstrated their reservations about the monetary provisions of the treaty) saw their forward rates move significantly outside their fluctuation bands prior to September.

Nor is it clear that simple competitiveness problems provide an adequate explanation for the crisis. Elsewhere, Charles Wyplosz and I (1993) suggest that the root cause may have been precisely the kind of self-fulfilling speculative attack discussed in Chapter 3. Absent an attack, ERM countries -- Britain for example -- would have been willing to maintain the policies of austerity required to defend their ERM pegs indefinitely, enduring the costs of unemployment in return for the benefits of exchange rate stability. Once attacked, however, they were forced to increase interest rates yet further to defend the currency, and this raised the cost/benefit ratio of the policy. Thus, the attack induced them to abandon policies of supporting an exchange rate peg that they would have been more than willing to maintain in the absence of speculative pressure. Aware of these incentives, speculators had a good reason to undertake a self-validating attack. Countries where sensitivity to unemployment was greatest, where banking systems were weakest (implying the greatest risk of bank failures due to increased interest rates) and where debt-to-income ratios were highest (implying the greatest increase in fiscal burdens) were most vulnerable to such self-fulfilling attacks.[114]

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[114] In addition, Wyplosz and I suggest that the provisions of the Maastricht Treaty created scope for precisely such self-fulfilling attacks. The convergence criteria that must be met by countries qualifying for monetary union include one requiring them to keep their exchange rate within the normal, narrow EMS fluctuation band without "severe tensions" for the two

The July 1993 attack on the French franc is consistent with this interpretation. France had low inflation and no problem of export competitiveness. The government did everything in its power to signal that it was prepared to stick with the policies needed to defend the franc fort, notwithstanding Europe's deepening recession and high French unemployment. Absent a speculative attack, the prevailing regime could have been maintained indefinitely. But when an attack came, requiring further interest rate increases and additional unemployment if the franc was to be defended, the government was unable to comply. The Bank of France having raised domestic rates only modestly, intervention exhausted its reserves on the final Friday of July.[115] The subsequent abandonment of the narrow band was rendered inevitable, verifying the intrinsic fragility of systems of pegged exchange rates given limited ability to affect relative price adjustments (in other words, that high interest rates produced unemployment rather than deflation), governments' limited capacity to contain market pressures (the absence of capital controls), and the limited robustness of monetary rules (the inability of monetary policymakers to endure further increases in unemployment).

Prospects for European Monetary Union

The episodes just described clearly revealed fatal flaws in the Maastricht blueprint for completing the transition to monetary union. Can that transition strategy simply be revised (at the already-scheduled

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years preceding entry. Hence, an attack forcing a devaluation might disqualify a country from EMU participation. This in turn would remove the government's incentive to persist with policies whose benefits resided in qualifying the country for EMU. A rational government might shift toward more accommodating policies only if attacked. And knowledge of this fact could provide traders the incentive to undertake it.

[115] In fact, intervention more than exhausted its reserves, as the Bank engaged in extensive foreign borrowing.

Intergovernmental Conference in 1996, for example)? Or is the goal no longer viable?

The goal. The European Community comes closer than many other regional groupings to satisfying the criteria for an optimum currency area. While most EC member states are not the kind of small, highly specialized countries for which floating is prohibitively costly, neither are they the kind of continental economies like the United States for which floating does little to erode the value of money services.[116] Not only are EC countries open, but they trade heavily with one another. In the second half of the 1980s, more than 20 per cent of EC GNP was exported; the comparable figure for the U.S., Canada and Mexico, another potential trading bloc, was less than 10 per cent. 60 per cent of the trade of EC countries is with other Community countries; the comparable figure for the U.S., Canada and Mexico is only about a third. More than half of all foreign investment received by EC member states comes from other Community countries; the analogous figure for the U.S., Canada and Mexico is about 25 per cent.[117] For all these reasons, arguments for a regional monetary grouping based on savings in transactions costs and increases in efficiency are likely to have particular salience in Europe.[118]

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[116] The European Commission shows that currency conversion costs amount to several percentage points of the transaction for individuals and small firms and estimates that these average about 1/2 of one per cent of GDP for the Community as a whole (Emerson et al, 1990).

[117] See Bayoumi and Eichengreen (1993c), Table 4.

[118] An exception to this generalization is inflation vulnerability. Western European nations are plausibly less susceptible to inflationary pressures than many countries of Latin America, Eastern Europe and the former Soviet Union, notwithstanding the impetus that the desire to resist inflation lent to policies of pegging to the deutschmark in the early 1980s. Collins and Giavazzi (1993) document the shift in public attitudes toward inflation that occurred subsequently.

Equally, European experience provides a reminder that many of these variables are endogenous with respect to the choice of international monetary regime. As recently as thirty years ago, trade among today's EC 12 accounted for only 40 per cent of their total trade, not 60 per cent as today. Such variables should not therefore be taken as unalterable constraints on the choice of international monetary arrangement. But European experience also indicates that significant alterations in these magnitudes can only be effected over a period of decades. They remain significant considerations in the short run.

Recall that the greater the prevalence of asymmetric shocks, the higher the option value of monetary policy autonomy. A priori the appropriate characterization of such shocks in Europe is not clear. Both France and Germany possess automotive industries, steel industries and electronics industries. Since the same industries operate in many European countries, sector-specific shocks will affect these countries in similar ways. Moreover, since the degree of sectoral specialization in EC countries is no higher than that characterizing different U.S. regions (Krugman 1993, Bini Smaghi and Vori 1993), insofar as regional specialization connotes region-specific shocks, it does not obviously represent a prohibitive barrier to European monetary integration.[119]

Sectoral specialization is not a sufficient statistic for the incidence of shocks, of course. Bayoumi and Eichengreen (1992b) compare the correlations of the GDP growth rates of other EC members with Germany's growth

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[119] Here I follow the practice of the literature which takes as a metric the United States, where the incidence of shocks and the extent of labor flexibility and fiscal integration are consistent with the operation of a viable monetary union.

rate over the last 30 years, along with the correlations of the growth rates of other U.S. regions with that for the Mid-East. The latter averages 0.68, the former a somewhat smaller 0.58. Though the U.S. figure is higher, the differential is not large; it does not suggest that asymmetric shocks will be an insurmountable problem for Europe.[120]

But output movements are not the same as disturbances: the former conflate information on shocks and responses to them. Bayoumi and Eichengreen (1992d,e) use a technique of Blanchard and Quah (1989) to recover disturbances and responses from time series of output and prices.[121] The correlations of other EC countries' permanent disturbances with Germany's averages only 0.33, compared to 0.46 in the United States, while the correlations of the other EC countries' temporary disturbances with Germany's averages only 0.18, compared to 0.37 in the United States. In contrast to analyses of the raw data, then, this suggests that asymmetric disturbances are more pervasive in Europe than within the United States.

The emphasis the optimum-currency-area literature places on labor market flexibility provides additional grounds for caution. Wages are widely held to be less flexible in Europe than in North America: a recent OECD study (1989) concluded that the elasticity of wages with respect to unemployment was lower in every one of eight EC countries than in the United States or Canada.

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[120] Similarly, Cohen and Wyplosz (1989) transform real GDP data for France and Germany into sums and differences, interpreting movements in the sums as symmetric disturbances, movements in the differences as asymmetric disturbances. They find that symmetric shocks are much larger than asymmetric shocks. Weber (1990) applies their approach to other EC countries, reaching similar conclusions.

[121] This involves transforming the residuals from regressions of growth and inflation rates on lagged values of themselves, subject to the assumption that permanent disturbances affect both output and price levels in the long run but temporary disturbances have no long-run output effect.

Observed rates of migration, between European countries and within them, are lower than between regions of the United States, while econometric studies report that European migration is less responsive to wage and unemployment differentials.[122]

A final cause for caution is the absence in Europe of institutional mechanisms for providing fiscal coinsurance. Studies of the U.S. and Canada show that monetary union in both federations is supported by systems of fiscal federalism that offset about 20 per cent of a cyclical shortfall in regional income (relative to income in the rest of the federation). Most of this transfer takes place through a decline in regional tax payments to the federal center when local incomes fall, a smaller portion through a rise in federal spending locally.[123]

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[122] I report such evidence for the U.K. and Italy in Eichengreen (1992c). A recent study by Antolin and Bover (1993) provides evidence for Spain again consistent with the hypothesis of less inter-regional labor mobility in Europe.

[123] The first empirical analysis, that of Sala-i-Martin and Sachs (1992), used data for U.S. census regions to relate tax and transfer payments to movements in pretax personal income, both measured relative to the national average. They found that federal tax liabilities decline by roughly 25 cents for every dollar by which regional income falls short of national income and that inward transfers rise by roughly 10 cents. Bayoumi and Masson (1991) consider both the U.S. and Canadian fiscal systems. They first regress each region's per capita income net of taxes and transfers on its per capita personal income inclusive of taxes and transfers. This equation measures the relationship between personal income before and after federal fiscal flows, with the slope coefficient capturing the size of the offset. For the United States, their coefficient of 0.78 indicates that, on average, federal fiscal flows reduce regional income inequalities by 22 cents on the dollar. They then estimate the same regression after differencing the variables to remove the equalization effect. Regressions on the differenced data produce a coefficient of 0.69, suggesting that the stabilization of short-term fluctuations (31 cents on the dollar) is even stronger than the overall effect. For Canada, Bayoumi and Masson find evidence of a substantial equalization effect: nearly 40 cents on each dollar. Their estimate of the insurance effect, while slightly smaller than for the U.S., is nonetheless substantial.

If the case for fiscal federalism is granted, then does the EC have the capacity to undertake it? The Community's budget is little more than 1 per cent of EC GNP, as noted above, the largest share of which is devoted to the Common Agricultural Policy, leaving it unavailable for other purposes. Much of the remainder is allocated to the Structural Funds, which are targeted at low-income regions within the Community and hence provide more equalization than insurance. Gordon (1991) estimates that a $1 fall in a member state's per capita income increases its Structural Fund receipts by at most 1 U.S. cent. At Maastricht a coalition of four low-income countries led by Spain received assurances that these funds would be increased. But proposals to significantly increase the size of the Community budget, a prerequisite for such a step, ran into resistance subsequently. And the Structural Funds would have to be increased by an order of magnitude to provide regional coinsurance on the U.S. or Canadian scale. Thus, the absence of institutional arrangements for providing fiscal coinsurance suggest that monetary union in Europe will be characterized by more pervasive regional problems.

To what extent will these obstacles to monetary unification change over time? Empirical analysis of the incidence of shocks is necessarily based on historical correlations. Yet the structure generating those correlations may change with the completion of the single market and monetary union. Country-specific demand shocks caused by national monetary policies will necessarily be eliminated by EMU. Bayoumi and Eichengreen suggest that temporary disturbances attributable to demand-management policy are likely to become more symmetric following EMU, while permanent, or supply, disturbances will have less tendency to change.

In addition, European countries may become more specialized in

production. The government subsidies and import barriers that have supported the existence of an automobile industry in every large European country, for example, will be eroded by integration. Sectors characterized by strong agglomeration economies will have an incentive to consolidate production. This, it is argued, will magnify country-specific shocks. But completion of the internal market will also encourage intra-industry trade. In sectors characterized by scale economies and product differentiation, different varieties of the same product may be produced in a growing number of European countries. Completion of the internal market, by encouraging intra-industry trade, may lead to an even greater duplication of industries across EC countries (Emerson et al. 1990, Gros and Thygesen 1992, Bini Smaghi and Vori, 1992), damping region-specific shocks.

Real wages in Europe may conceivably become more flexible with monetary union (see e.g. Horn and Persson 1988); Italy's abolition of the scala mobile in the summer of 1992 as part of its effort to qualify for participation in EMU may be indicative of this tendency, although most observers would be skeptical that real wages will quickly come to exhibit the flexibility characteristic of American labor markets.[124] And while European integration will enhance both the incentive and capacity to migrate, the question is to what extent. Linguistic and cultural differences will remain. It is far-fetched to assume that European labor mobility will rise to American levels.

What about the scope for fiscal coinsurance? Italianer and Pisani-Ferry (1992) propose a system of transfers from the Community to member states as a function of national GDP and relative unemployment rates. As a country's

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[124] Blanchard and Muet (1992), for example, find that the growing credibility of France's commitment to pegging the franc to the deutschemark has been accompanied by little increase in real wage flexibility.

unemployment rose relative to the Community average, so would its transfer receipts. The program would provide regional coinsurance on a scale comparable to that which exists in Canada (where about 20 per cent of a decline in a region's relative income is offset). Assuming that transfers are capped once the change unemployment differentials reaches two percentage points, this system would require adding to the Community's budget no more than 0.25 per cent of EC GDP (assuming that the historical relationship between national unemployment rates continues to prevail). Seemingly, regional coinsurance could be provided without a revolution in European fiscal relations so long as a specific program is dedicated to the task.

The real obstacles to such a program are political, not economic. Large-scale fiscal federalism (the transfer of most revenue-raising capacity to the central authority) is only feasible with political integration. Residents of member countries lack a European Parliament with meaningful powers to hold accountable the technocrats who oversee the Community's budget. True, many budgetary decisions are made by a committee comprised of national finance ministers who are accountable to their constituents, but residents of any one Community country may find their elected representative, if he remains isolated, unable to influence decisionmaking. The same is true of some dissenting regions within existing federations, of course, but these can be compensated by concessions in other issue areas. The Community's limited hegemony in Europe's legal, cultural and foreign policies limits the scope for such. All this renders unlikely the large-scale transfer of national fiscal functions to Brussels prior to the establishment of significant direct democracy.

A modest program targeted directly at the coinsurance problem is more

realistic politically. The EC has, after all, agreed to the creation of a Common Agricultural Policy, in which some 3/4 of one per cent of its GDP is spent on a system of agricultural transfers that redistribute income across sectors and countries. The Structural Funds are similarly a transfer program. Spending 0.25 per cent of EC GDP on a program of fiscal coinsurance does not seem totally unrealistic in this light. But there exist well-defined constituencies for the CAP (Europe's farmers) and for the Structural Funds (low-income countries and regions sensitive to immigration). Potential beneficiaries of regional coinsurance are more diffuse. Countries with extensive systems of fiscal federalism did not set these up with regional coinsurance in mind; rather, their fiscal structures evolved in that direction with the growth of the federal government, a concomitant of political unification and centralization. For Europe to create a system which provided the insurance effects of fiscal federalism prior to forming a monetary union would be unprecedented.

The political constraints on EMU are equally evident when one considers the governance of the European Central Bank (ECB). In the ECB as constituted under the Maastricht Treaty, "the Europeans have created an instrument that would greatly widen the already large democratic gap. The Maastricht agreement would create a powerful body of Platonic guardians to look after monetary affairs, effectively accountable to no one, yet with strong influence on the course of economic affairs" (Cooper, 1992, p.15). While its officials may be required to testify before the European Parliament, that institution has little power to hold it accountable. The ECB's independence could be modified, for example, not by the European Parliament but only by amending an international treaty, subject to veto by any of 12 signatories.

These problems clearly underlie skepticism in Germany, a critical participant in plans for EMU, about the case for a European Central Bank. History renders Germany hyper-sensitive to inflation. While the central bank statute embedded in the Maastricht Treaty insulates the ECB from political pressure as effectively as the Bundesbank Law insulates the German central bank, and while the treaty singles out price stability as the paramount goal of monetary policy, lack of accountability provides little recourse in the event that the ECB fails to pursue that goal with sufficient dedication. Here again political constraints are the binding ones: monetary union without political union to provide accountability and safeguards leaves Germans in the street hesitant to give up their deutschmarks for ECUs.

That political constraints are the binding ones does not mean that they are insurmountable. Some political pressures cut in the opposite direction. Money as a symbol of sovereignty and a source of seigniorage, while not irrelevant, figures less prominently in Western Europe than in other parts of the world. For both negative and positive reasons (memories of two 20th century wars and the rapid progress of the EC, respectively), war between Community countries borders on the inconceivable. Insofar as the capacity to raise seigniorage retains option value, that value resides in Europe's relations with the rest of the world; hence vesting responsibility for controlling it in a European central bank poses scant problem. All this is a way of saying that peaceful relations among EC member states make monetary union a more realistic short-run possibility in Europe than in most other parts of the world.

The existence of the European Community also creates political momentum for monetary union by widening the scope for tradeoffs across issue areas.

For historical reasons Germany is unable to play a significant foreign policy role unilaterally; the growth of the Community, including limited steps in the direction of political integration, makes it possible to contemplate an EC foreign policy, within the context of which Germany could regain a foreign policy role.[125] Other countries more interested in monetary union could offer to trade this to Germany in return for concessions on EMU.[126]

The scope for tradeoffs across issue areas is also evident in the economic sphere, where EC member states are pursuing initiatives on everything from barriers to commodity and factor flows to technical standards and immigration policy. The issue boils down to whether monetary union is necessary for the political feasibility of economic union. Completion of the Single Market in commodities and factors of production, virtually all economists agree, will deliver significant efficiency gains. Even if the majority of those gains are technically obtainable despite the maintenance of separate national currencies, a single currency may be required to suppress the political resistance that economic integration would otherwise provoke. The argument to this effect runs as follows. The more integrated are national markets, the larger are the import surges that accompany exchange-rate induced shifts in relative prices, and the greater is the pain experienced by the impacted firms and workers. The complaints over competitive depreciation and exchange dumping that followed the departure of sterling and the lira from the

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125 Similarly, growing pessimism in Germany about the scope for creating a coherent EC foreign policy following the Community's failure to create a common front for dealing with the Balkan crisis can be seen as contributing to the more recent decline in German support for monetary union.

126 The point in the text is illustrated by the crisis in the former Yugoslavia. The Community's failure to develop a coherent response to the crisis undoubtedly cooled German leaders' enthusiasm for an EC foreign policy, which in turn strengthened their resistance to monetary union.

EMS in 1992 illustrate the point. Monetary union that prevents "capricious" exchange rate swings, thereby ruling out the associated costs, may be necessary to prevent impacted sectors from lobbying against economic integration and to insure the political viability of the process.[127] Thus, the fact that the European Community has both made more progress and has future ambitions on the economic integration front provides a political logic for its continued pursuit of monetary union.

The transition strategy. For the Community to complete this voyage, it must know not just the destination but also the route. From the beginning, considerable skepticism was voiced about the viability of map sketched in the Maastricht Treaty. The foreign exchange market crises of 1992-93 underscore its problems.

The Maastricht Treaty on Economic Union specified a transition to occur in stages. Stage I was to be marked by the removal of capital controls, the reduction of international inflation and interest rate differentials, and the increasing stability of intra-European exchange rates. Stage II, starting at the beginning of 1994, is to be characterized by the further convergence of national economic policies and by the creation of a temporary entity, the European Monetary Institute (EMI), to coordinate member-country monetary policies in the final phases of the transition and to study the logistics of moving to monetary union. If during Stage II the Council of Ministers, made up of ministers of economics or finance from each national government, decides

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[127] This is not to deny that shifts in relative prices can also adversely affect sector- and region-specific factors of production in a monetary union. But Figures 2.1 and 2.2 highlight the additional dislocations that can occur between different monetary areas. And with the passage of time, economic and monetary integration can lead to the growth of portfolio diversification across regions which diminish the welfare effects.

that the relevant number of member countries meet the preconditions for monetary union, it may recommend that the Council of Heads of State vote on whether to inaugurate Stage III --monetary union -- establishing an independent European central bank and transferring to it responsibility for the conduct of monetary policy.[128]

The treaty requires the EC Heads of State or Government to meet no later than December 31st, 1996 to assess whether a majority of EC member countries satisfy the conditions for monetary union, in which case they may set a date for the beginning of Stage III. If no date has been set by the end of 1997, Stage III will begin on January 1st, 1999, so long as at least two countries qualify. In the event that fewer than two countries qualify, Stage II presumably will continue.

The conditions that participating countries must meet include interest rate stability, price stability, budget balance and -- critically for present purposes -- exchange rate stability. To qualify for participation, countries must hold their exchange rates within the normal EMS fluctuation bands without "severe tensions" for two years prior to the Council of Ministers' decision. Thus, the Maastricht Treaty envisaged an extended period of at least two years but perhaps longer over which exchange rates were pegged, capital controls were absent and the potential for independent national monetary policies remained. This is precisely what the central argument of this study suggests is problematic. That the European Monetary System was shattered by a foreign exchange crisis in 1992, barely two years after the final removal of capital controls, and that a second such crisis less than a year later forced the abandonment of the narrow EMS band is no coincidence from this point of view.

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128 An introduction to these provisions of the treaty is Kenen (1992).

Must the Maastricht strategy therefore be altered? One response is to say that the problem was solved in July 1993 when the narrow EMS band (2 1/4 per cent on either side of the central parity) was widened to 15 per cent on either side of the central rate. Such a wide target zone is tantamount to floating, the argument runs. Since the target zone commitment is unlikely to be tested, it creates no problems of sustainability. And countries can claim to satisfy that Maastricht preconditions for monetary union insofar as 30 per cent is now the width of the normal EMS band. Nothing prevents countries from leaping from a system of exchange rates free to fluctuate within broad target zones directly to monetary union.

But European policymakers are likely to resist this option. As they did at Maastricht, they still see an extended period during which exchange rates are pegged within narrow bands as a necessary prelude to monetary union -- as a needed opportunity for potential participants to demonstrate their commitment to the consequences for policy of monetary union. But if they move to restore the narrow bands of the pre-1993 EMS without otherwise altering the financial environment, they are likely to confront the same problem of instability as before.

If the EC instead sticks with wide bands and significant exchange rate swings result, the latter may be corrosive of the Single Market project. With countries complaining of competitive depreciation and exchange dumping, progress toward completing the Single Market will slow. Insofar as EC countries prefer monetary union over floating mainly because the former is necessary politically to sustain the creation of an integrated European market, were the integration process to be halted or reversed the main motivation to shift from floating to monetary union would be removed.

The other option is to more quickly stabilize exchange rates and drive the Single Market project to completion, while at the same time taking other steps to enhance the sustainability of pegged rates. It might be possible to simulate the insulating effects of capital controls by, for example, placing a transactions tax on purchases and sales of foreign currency or requiring non-interest-bearing deposits of all financial institutions taking open positions in foreign exchange.[129] A one per cent transactions tax (two per cent on a roundtrip) would prevent speculators from acting on the expectation of a two per cent devaluation over the coming weekend, despite the fact that over that horizon such a devaluation implies triple-digit annualized capital gains. This would make it possible to repel otherwise self-fulfilling speculative attacks.

For all the reasons explained in Chapter 5, the scope for evading transactions taxes of this sort increases with economic integration. But to provide insulation it would only be necessary that evading them is costly. However, in the prevailing European view (particularly in central banking circles), a foreign exchange transactions tax or deposit requirements would be inconsistent with the desire for financial liberalization and integration.

However valid these reservations, the problem of viable alternatives remains. If the premise of this study is correct, the EC possesses only two second-best options for completing the transition: leaping from floating (presumably within wide bands) directly to monetary union; or undertaking a more gradual transition under cover of deposit requirements or a foreign exchange transactions tax. A rational choice between them should hinge on

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[129] Details on these options are provided by Eichengreen and Wyplosz (1993).

which option is viewed as less corrosive to completing Europe's internal market.

Chapter 8. Options for the Rest of the World

As economic integration proceeds, other parts of the world will face the same pressures as Western Europe. The dilemma confronting countries that are small, open, specialized and inflation prone will be particularly stark. In times past many of them have attempted to peg their exchange rates, as predicted by the literature on optimum currency areas. The viability of those pegs has been sustained by exchange controls and other impediments to international financial flows. As changes in technology, politics and markets render such controls increasingly problematic, their exchange rate pegs will grow fragile and vulnerable to speculative pressures. These countries will then confront choice with which the European Community is already faced: wider floating versus monetary unification.

But the political prerequisites for a monetary unification are less well advanced in other parts of the world. The time required to develop them should not be overstated: Western Europe moved in two generations from open warfare to political conditions that make monetary unification conceivable. Given more favorable starting points, other parts of the world may be able to progress more quickly. But where political conflict today is as intense as it was in Western Europe at mid-century, history cautions against anticipating monetary unification before the middle of the next century.

If monetary unification is not viable in the medium term, what will countries averse to floating exchange rates do? In response to the increasing difficulty of sustaining impediments to international capital flows, many are likely to experiment with credibility-enhancing arrangements like the currency boards of Argentina and Estonia. For how long they will succeed (that is, for how long they will be able to resist modifying their rigid currency board laws

in response domestic politics and speculative pressures) only time will tell. Other countries may allow their currencies to float but shadow that of a major trading partner, as Canada does with the United States.

If the literature on optimum currency areas is any guide, large, diversified and relatively closed economies like the U.S., Japan and the EC may well continue to float against one another. The political preconditions for an alternative as radical as monetary unification are not likely to develop in the foreseeable future. And all the factors that render exchange rate pegs and narrow target zones infeasible in the EC would have an equally corrosive effect on attempts to tightly stabilize exchange rates between the yen, the dollar and the ecu.

Consequently, smaller countries opting for an Argentina-like solution will be faced with a further decision, namely which of the three major currencies to follow. Assuming the continued maintenance of price stability in the countries issuing the three potential anchor currencies, capital- and commodity-market links are likely to govern the choices of smaller countries. This scenario points in an obvious sense to a growing prevalence of dollar pegs in the Western Hemisphere, of ecu, deutchmark pegs or dollar in Central and Eastern Europe, and of a continued variety of different arrangements in Asia. Less obviously, these medium-term solutions may themselves set in motion a process leading to the creation of two or three regional monetary unions sometime in the 21st century.

Optimum Currency Area Considerations

A first cut at considerations likely to shape countries' choice of exchange rate arrangement can be derived from Mundell's criteria for optimum currency areas. Bayoumi and Eichengreen (1993f) have applied Blanchard and

Quah's methodology for estimating supply and demand disturbances to data for 39 countries. Cross-country correlations of these disturbances are summarized in Tables 8.1 and 8.2. Shaded entries indicate significant correlations.

Consider first the supply disturbances in Table 8.1, on the grounds that these are less likely to change over time. The singular performance of the EC member countries identified in Chapter 7 as the best candidates for monetary union (Germany, France, Belgium, the Netherlands and Denmark) stands out all the more clearly when juxtaposed against a large number of other countries. No other region of comparable size as successfully satisfies this criterion for monetary union. But Austria and Switzerland, neither of which is an EC member at the time of writing (although the former is certain to be in the next cohort), clearly belong in this group as well.[130] These results suggest that the most likely way that an EC monetary union will be expanded beyond the Northern European "hard core" is by expanding the Community itself.

In Asia, two sets of correlations are evident: between Japan, Taiwan and Korea, and between Singapore, Indonesia and Malaysia. In the Western Hemisphere, in contrast, no country's supply disturbances are significantly correlated with those of the United States; indeed, the majority of such correlations are negative, despite the existence of close economic ties (between the U.S. and Canada, for example, and increasingly between the U.S. and Mexico).

Finally, it is worth noting that the correlation of the disturbances for the U.S., Japan and Germany were uniformly small and insignificant, supporting the notion that these countries may have reason to continue floating against

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[130] A similar case could conceivably be made for Sweden. See Bayoumi and Eichengreen (1993e).

TABLE 8.1

Correlations of Supply Disturbances Across Different Geographic Regions

Western Europe

	GER	FRA	NTH	BEL	DEN	AUT	SWI	ITA	UNK	SPA	POR	IRE	SWE	NOR	FIN
GER	1.00														
FRA	0.52	1.00													
NTH	0.54	0.36	1.00												
BEL	0.62	0.48	0.56	1.00											
DEN	0.63	0.54	0.56	0.37	1.00										
AUT	0.41	0.28	0.38	0.47	0.39	1.00									
SWI	0.39	0.25	0.58	0.47	0.36	0.39	1.00								
ITA	0.21	0.28	0.99	−0.00	0.15	0.06	−0.04	1.00							
UNK	0.12	0.12	0.13	0.12	−0.05	−0.25	0.16	0.28	1.00						
SPA	0.33	0.21	0.17	0.23	0.22	0.25	0.07	0.20	0.01	1.00					
POR	0.21	0.33	0.11	0.40	−0.04	−0.03	0.13	0.22	0.27	0.58	1.00				
IRE	−0.00	−0.21	0.11	−0.02	−0.32	0.08	0.08	0.14	0.05	−0.15	0.01	1.00			
SWE	0.31	0.30	0.43	0.06	0.35	0.01	0.44	0.46	0.41	0.20	0.39	0.10	1.00		
NOR	−0.27	−0.11	−0.39	−0.26	−0.37	−0.21	−0.18	0.01	0.27	−0.09	0.26	0.08	0.10	1.00	
FIN	0.22	0.12	−0.25	0.06	0.30	0.11	0.06	−0.32	−0.04	0.07	−0.13	−0.23	−0.10	−0.08	1.00

East Asia

	JAP	TAI	KOR	THA	HKG	SGP	MAL	INO	PHL	AUS	NZL
JAP	1.00										
TAI	0.61	1.00									
KOR	0.46	0.54	1.00								
THA	0.32	0.59	0.36	1.00							
HKG	0.29	0.28	0.05	0.31	1.00						
SGP	−0.10	0.25	0.02	0.29	0.53	1.00					
MAL	−0.02	0.06	−0.03	0.35	0.47	0.71	1.00				
INO	0.14	−0.03	−0.10	0.13	0.53	0.55	0.52	1.00			
PHL	0.10	0.37	−0.11	−0.06	0.05	0.05	−0.03	0.03	1.00		
AUS	0.12	0.21	0.19	0.14	−0.16	−0.22	0.03	0.09	0.23	1.00	
NZL	0.01	0.19	−0.25	0.15	−0.12	0.13	−0.11	0.01	−0.06	−0.41	1.00

The Americas

	USA	CAN	MEX	COL	VEN	ECU	PER	BRA	BOL	PAR	URY	ARG	CHL
USA	1.00												
CAN	−0.47	1.00											
MEX	−0.59	0.35	1.00										
COL	−0.02	0.05	0.25	1.00									
VEN	0.09	0.34	−0.42	0.15	1.00								
ECU	−0.02	0.37	0.27	0.20	0.36	1.00							
PER	−0.40	0.05	0.37	0.07	0.10	0.28	1.00						
BRA	0.24	0.13	−0.08	0.07	0.13	0.40	0.38	1.00					
BOL	−0.65	0.72	0.65	0.18	0.00	0.29	0.54	0.17	1.00				
PAR	−0.34	0.45	0.37	0.06	0.12	−0.07	0.16	0.22	0.39	1.00			
URY	0.27	−0.31	−0.26	−0.35	0.05	−0.21	0.01	−0.06	−0.20	−0.08	1.00		
ARG	−0.30	0.08	−0.18	0.10	0.27	−0.01	0.36	0.34	0.06	0.06	−0.48	1.00	
CHL	−0.18	0.03	0.23	0.09	−0.33	−0.41	0.19	−0.23	0.17	0.21	−0.33	0.21	1.00

TABLE 8.2

Correlations of Demand Disturbances Across Different Geographic Regions

Western Europe

	GER	FRA	NTH	BEL	DEN	AUT	SWI	ITA	UNK	SPA	POR	IRE	SWE	NOR	FIN
GER	1.00														
FRA	0.30	1.00													
NTH	0.21	0.34	1.00												
BEL	0.36	0.53	0.52	1.00											
DEN	0.34	0.32	0.20	0.30	1.00										
AUT	0.32	0.50	0.29	0.56	0.30	1.00									
SWI	0.18	0.42	0.37	0.28	0.22	0.45	1.00								
ITA	0.22	0.62	0.24	0.49	0.06	0.44	0.32	1.00							
UNK	0.09	0.20	−0.05	−0.03	−0.00	−0.15	−0.08	0.05	1.00						
SPA	−0.10	0.53	0.11	0.26	0.25	0.30	0.04	0.43	0.23	1.00					
POR	0.24	0.47	0.05	0.45	0.30	0.60	0.36	0.63	0.24	0.32	1.00				
IRE	0.06	0.09	0.54	0.00	0.34	−0.12	0.19	−0.08	0.25	0.02	−0.01	1.00			
SWE	0.10	0.18	0.29	0.36	0.18	0.02	−0.07	0.25	0.18	−0.01	0.08	0.30	1.00		
NOR	−0.24	0.01	−0.14	−0.24	−0.11	−0.16	−0.11	−0.30	0.13	0.14	−0.19	−0.20	−0.11	1.00	
FIN	0.10	0.37	0.32	0.60	0.36	0.53	0.30	0.65	0.16	0.40	0.54	0.17	0.33	−0.21	1.00

East Asia

	JAP	TAI	KOR	THA	HKG	SGP	MAL	INO	PHL	AUS	NZL
JAP	1.00										
TAI	−0.01	1.00									
KOR	0.19	0.33	1.00								
THA	−0.04	0.54	0.32	1.00							
HKG	0.23	0.22	0.05	0.43	1.00						
SGP	−0.09	0.44	0.27	0.70	0.37	1.00					
MAL	0.12	0.41	0.43	0.58	0.54	0.67	1.00				
INO	0.16	0.17	0.17	0.36	0.62	0.64	0.58	1.00			
PHL	0.29	0.09	0.16	0.15	−0.19	−0.05	−0.11	0.04	1.00		
AUS	0.22	0.20	0.35	0.32	0.32	0.34	0.50	0.05	−0.01	1.00	
NZL	0.00	−0.39	−0.41	0.10	0.43	0.13	0.06	0.09	−0.06	0.21	1.00

The Americas

	USA	CAN	MEX	COL	VEN	ECU	PER	BRA	BOL	PAR	URY	ARG	CHL
USA	1.00												
CAN	0.30	1.00											
MEX	−0.12	0.37	1.00										
COL	0.07	−0.09	−0.27	1.00									
VEN	0.06	0.47	0.20	0.29	1.00								
ECU	0.19	0.28	−0.21	0.24	0.61	1.00							
PER	0.20	0.27	0.50	−0.33	0.05	−0.09	1.00						
BRA	0.03	0.59	0.27	0.08	0.70	0.52	0.35	1.00					
BOL	0.09	0.07	0.06	−0.02	−0.20	−0.19	0.18	0.02	1.00				
PAR	0.11	0.50	0.23	0.39	0.51	0.13	−0.04	0.38	−0.18	1.00			
URY	0.35	0.04	−0.01	0.07	−0.26	−0.45	0.25	0.24	−0.13	0.08	1.00		
ARG	0.08	0.07	0.08	−0.08	0.35	0.29	0.35	0.15	0.01	0.33	−0.41	1.00	
CHL	0.50	0.68	0.06	0.21	0.37	0.37	−0.26	0.11	0.26	0.37	−0.24	0.05	1.00

one another.[131]

Since the demand disturbances are dominated by monetary and fiscal policies, they are more of historical interest than a guide for future options. There are a large number of significant positive correlations in Western Europe, but given the variety of different international monetary regimes through which the region has passed these show no clear regional pattern. The same can be said of the Western Hemisphere. Only in Asia is there evidence of a cohesive group of countries with highly correlated demand disturbances, namely Hong Kong, Singapore, Malaysia, Indonesia and Thailand, which is similar to one of the groupings of supply disturbances.

Greater Europe

This section considers in more detail the prospects for European countries that are not members of the EC. Since these include Central and Eastern Europe countries halfway between the Community and the former Soviet Union, it makes sense to define Europe broadly (as including both West-Central Europe and the former USSR), to consider the likely evolution of international monetary arrangements in these two areas, and then to analyze the options of Eastern Europe given the likely development of arrangements to both its east and west.

EFTA. Austria's membership in the EC and in any prospective European Monetary Union is virtually a fait accompli; it comes closer than any present Community member but Luxembourg and possibly Holland to satisfying the conditions that the Maastricht Treaty sets down for participation. Other EFTA

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[131] Similarly, simulations of empirically-based macroeconomic models (Taylor 1986, Frenkel, Goldstein and Masson 1989) suggest that fixing exchange rates among the U.S., Japan and Germany would actually increase the variance of macroeconomic variables.

members have both political and economic obstacles to overcome. Switzerland and the Scandinavian countries hesitate to compromise their sovereignty because of traditions of political neutrality and social distinctiveness. Political neutrality is less of an issue with the end of the Cold War, and distinctive socio-political traditions like the Swedish welfare state, which such governments have long feared might be threatened by EC membership, may have to be scaled back by the intensification of global competition in any case. Still, resistance to EC membership on social and political grounds has nonetheless proven remarkably durable in these countries.

Even if political obstacles diminish, economic ones remain. Though Iceland, Finland and Norway are small and open, which should attract them to a European monetary union, they remain specialized in the products of the primary sector (fish, timber and energy, respectively). They consequently experience very different supply shocks than the industrial economies of the EC. Compared to Sweden and Switzerland, where politically-based opposition is likely to be the most serious obstacle, in Iceland, Finland and Norway, monetary unification would pose greater economic difficulties. Such highly specialized economies might well wish to peg to the ecu or the deutschmark, since to float (to de facto peg the value of the national currency in terms of their primary export commodity) will subject households to severe fluctuations in their purchasing power; but a unilateral peg is likely to be especially difficult to maintain in the face of asymmetric disturbances, as Finland's experience in 1991-92 underscores. Even more than elsewhere in Europe, membership in a European monetary union may give rise to serious regional problems, namely unusually high concentrations of unemployment in response to region-specific supply shocks, if not accompanied by a system of fiscal

federalism.

The Former Soviet Union. The situation in the former Soviet Union is of a different sort. A high degree of openness and extensive intra-Republican trade provide an obvious rationale for a single currency for Russia and other former-Soviet republics on grounds of minimizing transactions costs. (See Figure 8.1.) Many republics share the characteristics (small size, sectoral specialization, underdeveloped financial markets) of market economies that have traditionally pegged their currencies to that of a major trading partner. That many of these new nations have not yet established well-functioning, independent central banks provides another rationale for delegating national monetary functions to an outside monetary authority. Factors such as these provided at least some justification for attempting in 1991-92 to hold together the ruble zone (a monetary union in which former-Soviet republics all used the Russian ruble as means of payment, unit of account and store of value).

1993 nonetheless saw the disintegration of the ruble zone, as one republic after another issued coupons and even currencies to supplement and replace the ruble.[132] High inflation in Russia, fueled by monetization of the Russian budget deficit and enterprise debts, implied high inflation for republics using its currency. Any argument for the ruble zone as a means of minimizing transactions costs was vitiated by hyperinflation. Republics seeking to stabilize had a clear incentive to leave the currency area.

Russia itself has an equally strong incentive to terminate the ruble zone. (The Central Bank of Russia's decision to withdraw all pre-1993

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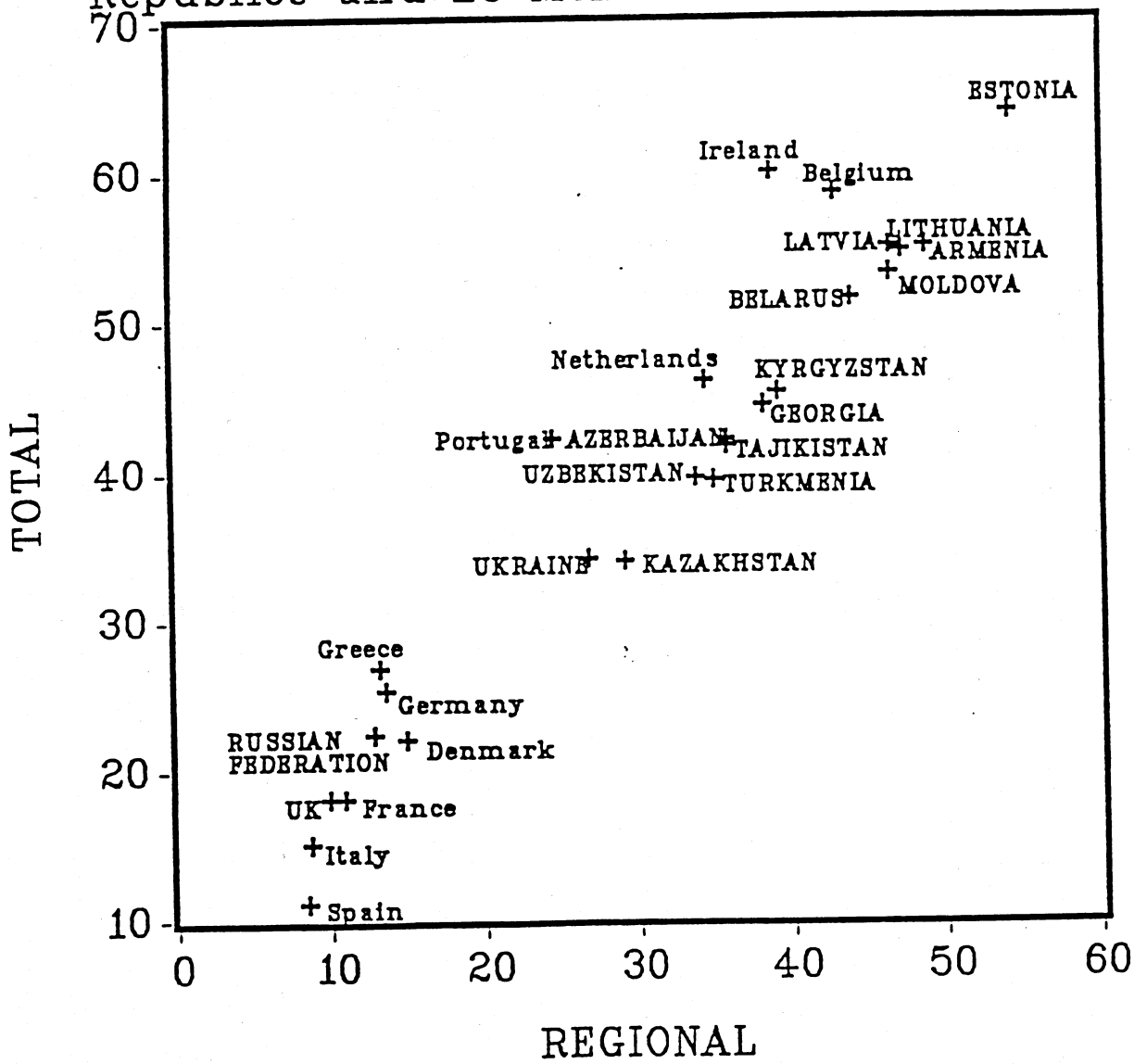
[132] By the end of the summer, only the three Baltic republics and Kyrgyzstan had introduced their own full-fledged currencies, however, while Turkmenistan and Azerbaijan had announced their intention of doing so.

FIGURE 8.1

Total and Intraregional Foreign Trade as a Percentage of GNP (1991*), Former Soviet Republics and EC Members.



Sources: IMF, EC Commission.
*Data for Greece, Ireland, and Portugal are of 1990.

banknotes from circulation can be seen as an effort to push this process along.) So long as other republics can create rubles, set interest rates on central bank credit and determine reserve requirements on commercial bank deposit liabilities independently, a free-rider problem arises which exacerbates the difficulty of taming Russian inflation.[133] While only the Central Bank of Russia can print ruble banknotes, newly-created central banks in other republics can extend credit to their governments and domestic enterprises by creating "bank" or "credit" rubles existing only on the balance sheets of banks, by drawing on credit lines with the Central Bank of Russia, and by issuing coupons. In effect, each monetary authority can add directly to the monetary base; since the resulting inflation spills over to the entire currency union, each issuing authority attempts to increase its share of seigniorage revenues while exporting inflation to other ruble zone members.[134] The result is a bias toward inflation. The only solutions to this problem are dissolving the ruble zone or centralizing control over fiscal and financial policies. Thus, in 1993 the Russian Government, which previously sought to hold together the ruble zone for reasons of both economic efficiency and prestige, began to demand that other republics either abandon the ruble as their currency or subscribe to common budgetary, financial and monetary policies dictated by Moscow.

Seeking to establish its authority over breakaway regions within the

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[133] This problem was identified early on by Buiter and Eaton (1983). It is explored further by Miller (1993).

[134] The details are more complicated than this, since some sellers of commodities hesitate to accept a republic's bank rubles, on the grounds that they may not be accepted in other republics. Bank rubles issued in republics other than Russia consequently trade at discounts to paper rubles that fluctuate with supply and demand. But this fact does not ameliorate the free-rider problem created by decentralized issuance.

Russian republic striving for autonomy, Moscow will surely hesitate to give other republics a seat on the board of the Central Bank of Russia, for fear that regions within the Russian Federation will demand the same. Remaining in the ruble zone on these terms represents a clear compromise of sovereignty, something most former-Soviet republics will hesitate to do given pervasive popular reaction against Moscow's hegemony. Thus, even if the economic conditions for a currency union met, for political reasons separate national currencies will proliferate.

The only exceptions are very small republics with especially severe economic and political problems. The national defense argument for a separate currency as a revenue source of last resort holds less water for republics that cannot realistically aspire to defend their borders against an immensely larger neighbor. In the same way Luxembourg does with Belgium, they may prefer to delegate control over their monetary affairs. Belarus has gone the furthest toward committing to maintaining its currency union with Russia.[135] A small country of 11 million people whose GDP is barely 5 per cent of Russia's, 70 per cent of Belarus's imports, including 90 per cent of its energy, come from Russia. As a producer of little energy of its own, economic and budgetary conditions in Belarus are more dire than in Russia. Credit rubles issued by Belarus have been depreciating in value even faster than the Russian ruble, while the value of coupons issued in Belarus in response to the shortage of ruble banknotes has also been falling in terms of paper rubles. Thus, by delegating budgetary, financial and monetary control to Russia, Belarus may sacrifice little, especially if it secures a wider economic union

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[135] In fact, there remains considerable internal dissent from this policy, most notably on the part of Belarus' central bank.

with Russia as part of this bargain.[136]

The vast majority of former Soviet republics aspire to defend their borders and control their destinies; they will therefore establish national currencies. So long as they limit and control capital account transactions as part of their strategy for completing the transition to the market, pegging to other currencies, including the ruble, will remain feasible, given some harmonization of policies. Once liberalization extends to capital account transactions, as it will if these economies become deeply integrated into the world economy, they will be confronted with the familiar dilemma of whether to float or to resume discussions, presumably with Russia, over the establishment of a monetary union.

Eastern Europe. The transition economies of Eastern Europe moved quickly to eliminate restrictions on current account convertibility while maintaining tight controls on capital account transactions. They meanwhile adopted a variety of different exchange arrangements. Czechoslovakia pegged its exchange rate. Poland adopted a fixed peg against the U.S. dollar in 1990, shifting in October 1991 to a crawling basket peg with a preannounced schedule of daily adjustments. Hungary has used an adjustable crawling peg, under which the exchange rate can be changed unexpectedly. Bulgaria and, more recently, Roumania have allowed their currencies to float. The Bulgarian float has been relatively free of central bank intervention in the foreign exchange market. Roumania, in contrast, initially adopted a dual exchange rate system and managed the rate heavily once it was unified in November 1991.

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[136] In addition, at the end of August, Kazakhstan and Uzbekistan reportedly agreed to harmonize their tax and customs rates, limit the provision of credit to enterprise and delegate their monetary policies to Russia in order to remain in the ruble zone.

Slovenia's central bank has gradually relaxed exchange restrictions and intervened periodically in the foreign exchange market to manage the tolar.[137]

The very different exchange arrangements of two Baltic states, Estonia and Latvia, point up the contrasting choices of the transition economies. Along with Lithuania, these were the first former Soviet republics to leave the ruble zone. Estonia moved quickly to establish current account convertibility, pegging its exchange rate to the deutschmark under a currency board system.[138] Latvia also moved quickly to establish convertibility but allows its ruble to float against other convertible currencies and the Russian ruble. Although the exchange rate is officially said to float freely (Repse 1993), observers (e.g. Lainela and Sutela 1993) infer that extensive central bank intervention in the foreign exchange market has actually taken place.

This contrast suggests that a variety of different exchange arrangements are in principle compatible with the transition to the market. The advantage of a rigid peg like that of Estonia lies in providing a nominal anchor useful for buttressing stabilization, as described in Chapter 2 above. The strength of a float, whether relatively free as in Bulgaria and Slovenia or more heavily managed as in Roumania and Latvia, is that the exchange rate can be adjusted in response to changing balance-of-payments conditions. Both imperatives are pressing in Eastern Europe, where stabilizations are fragile and balance-of-payments positions are dislocated by the process of

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[137] For details, see Mencinger (1993). A useful review of Eastern European experiences is Borensztein and Masson (1993).

[138] Note that fairly stringent controls on capital account transactions have been retained, which according to the argument of previous chapters greatly reduces the fragility of the peg. See Bennett (1993).

transformation. There is much merit to the argument (e.g. Borensztein and Masson 1993) that stabilization must first be completed before other forms of adjustment can follow, but that once stabilization is locked in the nominal anchor function of a pegged rate becomes less important; this is an argument for emulating Poland's strategy of first pegging the exchange rate to maximize credibility but subsequently introducing greater flexibility to meet balance-of-payments considerations.

This suggests that Eastern European countries will gravitate over time toward greater exchange rate flexibility. Working in the other direction is their desire for admission to the European Community. Pegging to the deutschmark, a la Estonia, is a way to signal the seriousness of this intent. Countries whose political systems allow the government to trade off the short-term balance-of-payments costs of a peg against the long-term benefits of prospective EC membership and those for which the prospects of such membership are best will therefore be most inclined to maintain some form of peg until membership in the Community and its prospective monetary union is achieved; others will be inclined to float. If post-EMU Europe turns inward and throws up barriers against all but its immediate neighbors to the east, as Mundell (1993) predicts, this will encourage the rest of Eastern Europe and much of the former-USSR to contemplate dollar-based currency board arrangements or a Canadian-style policy of loosely shadowing the U.S. currency.

Africa. Even more than Eastern Europe, Africa is characterized by a wide variety of international monetary arrangements, ranging from inconvertibility, dual exchange rates and regional clearhouses on the one hand

to convertibility and monetary union on the other.[139] Many African countries peg to another currency (the French franc, the U.S. dollar, the South African rand or the SDR).[140] Assuming that they eventually relax capital controls, they too will be faced with the decision of whether to introduce more flexibility into their currency link (as Sierra Leone, Zambia, Burundi, Guinea and Guinea-Bissau have already done) or to contemplate some form of monetary union.

That the region already features two of the only full-fledged monetary unions in existence suggests that this latter possibility, whether achieved through replication or expansion, is not unrealistic. But the special historical circumstances that have sustained the Central African Monetary Union (CAMU) and West African Monetary Union (WAMU) raise doubts about the feasibility of replication elsewhere in Africa.

The CAMU and WAMU both grew out of the financial arrangements used by France to administer her colonies.[141] Prior to gaining independence, France's African colonies used CFA francs ("francs des Colonies Francaises d'Afrique"), fully convertible at the rate of 0.5 CFA francs per French franc. In the 1970s they formed two monetary unions, each with a common central bank issuing its own currency. The exchange rate between the currencies of the CFA franc (since the mid-1970s, the "franc de la Communaute financiere d'Afrique" and the "franc de la Cooperation financiere en Afrique centrale") and the

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139 Space limitations prevent a thorough analysis of these arrangements. For details, see Hugon, Cerruti and Collignon (1992).

140 Franc peggers include not only members of the CFA franc zone; Comoros has an independent currency which is pegged directly to the franc.

141 For additional details on matters discussed in the following paragraphs see Boughton (1991).

French franc has now been firmly fixed for more than 40 years.

What holds the two African monetary unions together and sustains their pegs to the French franc? Significantly, the two central banks provide services that simulate the effects of fiscal federalism in countries like the U.S. and Canada. Participating countries are allowed to borrow from their central bank to finance budgetary shortfalls. To prevent free riding, three qualifications apply. First, borrowing cannot exceed 20 per cent of the previous year's fiscal revenue. Second, interest is charged on borrowings (and paid on credits). Third, if borrowing by the participating countries drives the central bank's operations account balances below specified levels, threatening inflation and endangering the stability of the French franc peg, the central bank is required to restrict credit expansion, allocating the restrictions across participating countries according to preassigned quotas.

Thus, the two monetary unions are supported not merely by a system of financial transfers but also by an independent central bank operating under rules designed to enhance price and exchange rate stability. Supporters of the Maastricht Treaty should take comfort in these precedents. But in contrast to the European central bank envisaged under the Maastricht Treaty, countries can borrow at the central bank to finance budget deficits. And they retain full autonomy over their budgetary policies; they are not required to coordinate fiscal policies (except insofar as such coordination is implicit in the provisions that come into effect when the central bank's operations account balances fall below target levels), nor are they subject to sanctions if they fail to do so.

The stability of the exchange rate against the French franc is underwritten by the French Treasury. France provides unlimited foreign

support to maintain the convertibility of the CFA franc at par. In return, the CFA franc countries deposit 65 per cent of their international reserves with the French Treasury and give French officials seats on the boards of their two central banks.

This arangement has delivered a remarkable record of price stability: inflation in the CFA franc zone has roughly matched French inflation (in the low single digits), in contrast with the much higher inflation rates of many neighboring African countries. Less clear is whether the inability to use the exchange rate as an instrument of adjustment confers real economic costs. The participating countries experience very different terms of trade shocks, since some specialize in the production and export of minerals, others in agricultural products, and still others in petroleum. Labor mobility across participating countries is at best moderate. All this points to the fact that inability to adjust the exchange rate in response to shocks has had real economic costs. Devarajan and Rodrick (1991) conclude that the CFA franc countries would have been better off had they forsaken monetary union for exchange rate flexibility and policy autonomy. They would have benefitted from a superior capacity to adjust.

This conclusion is predicated on the assumption that the exchange rate instrument would have been sensibly used rather than being misused by the countries in question. The rather negative experience of other African countries with exchange rate flexibility suggests caution in recommending that they move to the other extreme.

What is the scope for expanding these arrangements? Virtually all the participating countries were former French colonies which therefore receive preferential treatment from the French Treasury and possess long experience in

conducting commercial and financial business in Paris. Other parts of Africa could not automatically expect to receive the same treatment. But insofar as the CFA franc zone comprises a region monetary stability, other African countries without such ties may wish to join. That Equatorial Guinea, a small country contiguous to the CAMU countries but without colonial or even close economic ties to France, did so in 1985 confirms that this is not a mere hypothetical.

Countries not in a position to join one of the two existing African monetary unions will face the familiar dilemma of whether to experiment with a currency board system or shadow one of the three major currencies. Mundell (1993) suggests that, notwithstanding their colonial links to Europe, African countries outside the CFA zone are likely to build such arrangements on the dollar.

Western Hemisphere. The currencies of Canada and Mexico continue to float against the US dollar, notwithstanding the dramatic steps underway to complete a North American free trade area. If economic integration in Western Europe intensifies the dislocations caused by exchange rate swings and therefore requires a single currency to support a truly integrated internal market, is the same not true of the U.S., Canada and Mexico? Why, in other words, have NAFTA negotiations not given rise to pressure for exchange rate stabilization which, according to the logic of this study, will lead in turn to monetary union?

Compared to Europe, the tensions caused in North America by exchange-rate swings are attenuated by the small size of the Canadian and Mexican economies relative to the United States. So long as Mexico is only five per cent the economic size of the U.S., the dislocations caused by a change in the

peso-dollar rate will be small compared to those experienced by Germany when its exchange rate changes vis-a-vis France. In addition, the degree of integration promised by NAFTA will remain limited for some time to come: many of the reductions in tariffs and investment restraints are scheduled to be phased in only gradually over a period of 10 to 15 years.

Still, one can imagine that the pressure for exchange rate stabilization will grow. To reassure U.S. labor worried about the loss of jobs in labor-intensive sectors, Mexican President Salinas recently announced that the Mexican minimum wage would be raised in line with labor productivity. A large exchange rate swing which reduced Mexican minimum wages in dollars by 10 or 20 per cent would clearly do much to fan U.S. labor's opposition to liberalization.

If, with the removal of all remaining capital controls, pegging the peso to the dollar grows increasingly problematic, this will leave the Mexican government with few viable options. Forming a monetary union with the United States would have to overcome both U.S. opposition to making Mexico a Federal Reserve District and the great weight Mexico attaches to its sovereignty. Such a scenario cannot be ruled out, but it is not a short-run possibility: in Europe 40 years of economic integration have not sufficed to guarantee an analogous outcome, and in North America the process has only just begun. A currency board arrangement a la Argentina is conceivable, although it will prove increasingly difficult to sustain once democratization introduces the prospect of significant changes in the composition of the government. Thus, there may be no practical alternative but emulate Canada: to allow the currency rate to float subject to central bank management, in the hope that the market pressures limiting the Mexican central bank's ability to hold the

rate within an implicit band do not imply exchange rate fluctuations on an order that antagonize powerful special interest groups in its trading partner to the north.

Other Latin American countries face essentially the same options. Chile and Argentina both peg to the dollar (the former less rigidly than the latter); both aspire to follow Mexico into the U.S.-Canada free trade area. Still other Latin American nations are likely to follow in their train. Countries with recent histories of high inflation, most prominently Brazil, are likely to experiment with an Argentine-style currency-board solution, while others may choose the Chilean option of a relatively wide target zone. Insofar as these countries, compared to Mexico, are further away geographically and trade less heavily with the United States, pressure to stabilize the exchange rate as a condition for market access should be correspondingly less intense.

In the long term it is at least conceivable that a Latin American monetary union could grow out of a regional trade arrangement like Mercosur. Countries such as Argentina, which have successfully stabilized, already complain loudly about exchange dumping and unfair import competition from countries like Brazil, which have not. Again, for political economy reasons, it might only be possible to bring a regional free trade arrangement like Mercosur to fruition if this source of tension is eliminated. It is possible that countries like Brazil with persistent inflation problems could regard a regional monetary union hooked to a regional free trade agreement as a way of credibly committing to the pursuit of policies of price stability. The problem is that their neighbors like Argentina might find it more attractive to look northward to free trade with the United States, and attach higher

priority to a stable dollar link than to a monetary union with a Brazil whose resiliency in the face of inflation is likely to remain inferior to their own currency board solution.

Thus, while the development of a Latin American monetary union is conceivable, momentum to create one is likely to be undercut by the desire for closer trade relations with the U.S., and therefore for a stable dollar link.

Asia. Regional integration has been proceeding more slowly in Asia than in other parts of the world, reflecting traditional enmity between Japan and potential partner countries in conjunction with the absence of an institutional initiative like the EC to smooth over these tensions. ASEAN (the Association of South East Asian Nations) has endorsed the creation of an ASEAN Free Trade Association, but little concrete progress has occurred to date. While the share of Pacific Asian countries' trade which remains within the region rose from 20 to nearly 30 per cent between 1980 and 1990, most of the increase reflected income growth and proximity rather than differential policies (Frankel and Wei 1993). And 30 per cent is still a low number by the standards of, say, the European Community.

Most countries in the region allow their currencies to float, reflecting the dual importance of the U.S. and Japanese markets. One exception is Hong Kong, which pegs to the U.S. dollar using a currency board scheme. Frankel and Wei find that the currencies of Thailand, Korea and China tend to follow the dollar quite closely, the other East Asian currencies less so. Only for Singapore is there a statistically significant role for the yen in local exchange rate determination.

With the passage of time, intra-Asian trade and financial links should continue to grow. But insofar as trade and investment links with the U.S.

will also remain important, a rigid link with the yen will be less attractive. Basket pegs have been used by Thailand and, for periods, certain other East Asian countries, but rigid versions will become increasingly difficult to support with the relaxation of the region's still stringent capital controls. As elsewhere, the choices will be floating versus monetary unification. Other than Hong Kong and Singapore, the countries of this region are not the type of small economies for which a distinct national currency imposes insuperable costs. For this reason and because of slow progress in building the relevant international institutions, floating is likely to remain more attractive than monetary unification in the medium term.

Conclusion

As the middle ground of pegged-but-adjustable rates and narrow target zones is hollowed out and policymakers are confronted with an increasingly stark choice between floating and monetary unification, large and small countries in different parts of the world will respond in different ways. Large, well-diversified economies like the U.S., Japan, and Germany face the lowest costs of continuing to float against one another.[142] The political preconditions for the only viable alternative, monetary unification between them, remain remote. Some smaller countries, of which the Netherlands, Belgium and Belarus are examples, may be drawn toward monetary unification with a larger partner. Monetary unification over a wider area is likely to founder on the political preconditions; only in Western Europe are these well advanced.

Small countries like Hong Kong for which the transactions costs of a

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[142] One may want to add Russia to this list once stabilization and liberalization are complete and steady growth resumes.

separate, floating currency are high and inflation-prone countries like Argentina for which the discipline of a hard-currency peg is valuable will seek ways of finessing the dilemma of choosing between the unacceptable political sacrifices of monetary union and the unacceptable economic sacrifices of floating. Currency board arrangements of the sort utilized by the two aforementioned countries are one interim solution and as such are likely to proliferate. Countries contemplating currency boards will immediately face the decision of the anchor currency to which to peg. In Eastern Europe this will be the deutschmark or its EC successor, unless the EC turns into a Fortress Europe, restricting market access for all but the first tier of Eastern European currencies and encouraging others to link their fortunes to the more open U.S. market by tying their currencies to the dollar. In any case, a dollar link is the most plausible option in the Western Hemisphere.

One can imagine that these arrangements, in conjunction with the expansion of regional trade initiatives, could evolve into larger monetary unions in both Europe and in the Western Hemisphere in the far distant future. In East Asia and the former Soviet Union, in contrast, the economic interests of countries are more varied, and the legacy of political enmity remains more intense. There, a wide variety of exchange arrangements should continue to prevail.

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