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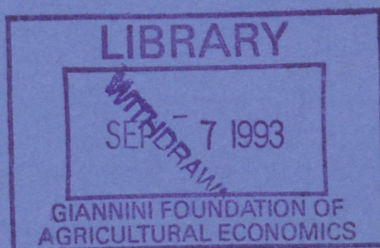
Prerequisites for International Monetary Stability

Barry Eichengreen

Department of Economics
University of California at Berkeley

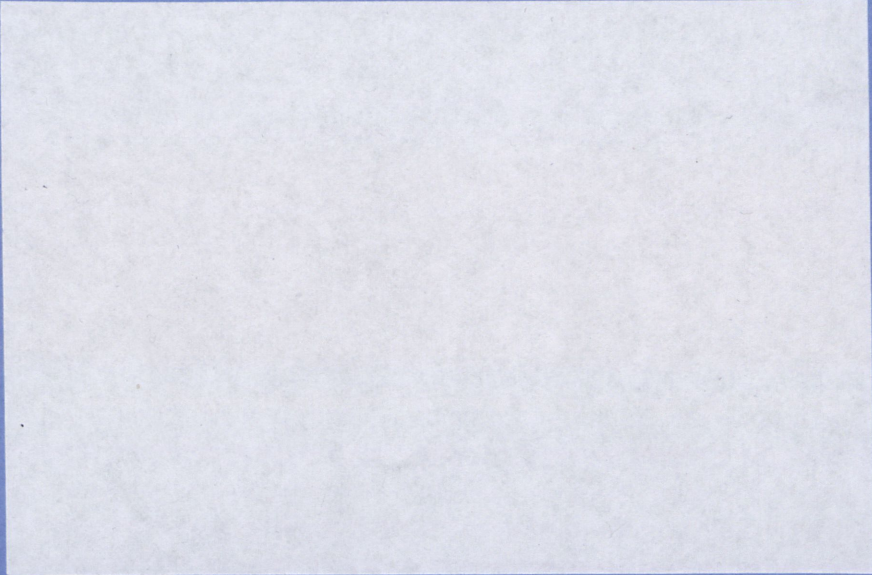
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UNIVERSITY OF CALIFORNIA AT BERKELEY

Department of Economics

Berkeley, California 94720

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Prerequisites for International Monetary Stability¹

Barry Eichengreen
Department of Economics
University of California at Berkeley

The history of international monetary arrangements provides no simple recipe for reform. Since 1945 the international monetary system has evolved unevenly in response to changing external conditions and its own internal dynamics. As Schwartz (1993) emphasizes, no single analytical model can capture the essential characteristics of all the phases through which the system has passed.

Yet from an historical vantage point, certain common attributes of satisfactory international monetary arrangements stand out. All such arrangements share three characteristics: the capacity to undertake price adjustments, adherence by the participants to robust monetary rules, and ability to contain market pressures. Fragile and poorly functioning international monetary arrangements, in contrast, have lacked one or more of these features.

This paper is organized around these three desiderata. Following a brief review of postwar international monetary history, its second section explains what these three necessary conditions for international monetary stability mean. Its third section then uses them as a basis for analyzing the functioning of alternative international monetary arrangements. The paper concludes with some reflections on international monetary reform.

¹ Background paper prepared for the Commission on the Future of the Bretton Woods Institutions, May 1993. For comments and suggestions I thank Peter Kenen, Maurice Obstfeld, Lars Svensson and John Walsh.

1. An Overview of Recent International Monetary History¹

The negotiations that culminated in the Bretton Woods Agreement are too complex and at the same time too familiar to be usefully summarized here. The story is usually told as an intellectual battle between Harry Dexter White and John Maynard Keynes, the lead negotiators for the U.S. and British delegations. Their parry and thrust is portrayed as producing a singularly coherent and durable framework for international monetary affairs from which aspiring architects of international monetary reform would do well to draw inspiration.

In view of the prevalence of this depiction, it is important to recognize that the Bretton Woods Agreement was slow to come into operation and quick to break down. Not until 1959 could it be said that the main provisions of the Articles of Agreement covered the majority of IMF member countries. By the beginning of the 1970s certain of their important elements had already been consigned to the dust bin of history.

Recall what the Articles of Agreement involved. Article IV established gold and the dollar as the dual numeraires of the new international monetary system. All signatories were required to declare par values against gold or the dollar and to maintain the value of their currencies within 2 per cent bands around that par (one per cent on either side). Par values could be changed in the event of a fundamental disequilibrium so long as the initiating country first consulted with the International Monetary Fund. The Fund could not disapprove of changes of less than 10 per cent, however, and was required to respond to requests for larger changes within 72 hours.

Article VIII required countries to make their currencies convertible for

current-account transactions, though it allowed for the continued inconvertibility of foreign balances accumulated as a result of prior current-account transactions. Article VI authorized the retention of capital controls, while Article XIV authorized the retention of controls on current- as well as capital-account transactions for a transitional period not to exceed five years.

With these obligations came privileges. Members were entitled to draw resources from the International Monetary Fund to finance temporary payments deficits. Fund quotas initially totalled about \$9 billion, larger than the figure first proposed by the U.S. but significantly smaller than that foreseen by Keynes and the British team. Initial drawings were unrestricted, but subsequent access was subject to increasingly stringent conditions. Fund resources could be increased at five year intervals, subject to the agreement of a majority of member countries.

Though the IMF was established in March of 1947, its members hesitated to adhere to the provisions of the Articles of Agreement. Most industrial countries did not complete the process of restoring current-account convertibility, for example, before the end of the 1950s. Many countries of Europe had emerged from World War II with their international reserves depleted. Their economies continued to be characterized by persistent excess demands for imports from other continents. Together these circumstances produced the postwar "dollar shortage," in which countries contained their dollar deficits through the use of import quotas, foreign exchange licenses and bilateral agreements.

Within Europe, where multilateral settlements were of special importance but postwar dislocations were especially severe, bilateralism was stifling; in 1950

the continent's bilateral agreements were therefore replaced by the European Payments Union (EPU). The EPU was a mechanism for liberalizing intra-European trade while circumventing the requirements of the IMF Articles of Agreement. It allowed participating countries to use their bilateral surpluses vis-a-vis one member to finance bilateral deficits with another. This effectively created a zone of current-account convertibility within Europe. For transactions outside Europe, however, EPU currencies remained essentially inconvertible. (Exceptions included certain overseas territories of the participating countries and portions of the British Commonwealth which were covered by the EPU mechanism.) The conditions under which European countries could use surpluses accumulated with other EPU members to finance deficits with countries like the United States were gradually liberalized over the nine years that the EPU operated (1950-58), but current-account inconvertibility, in violation of Article VIII, prevailed through the end of 1958.

Little role was played by the Bretton Woods institutions during this era of inconvertibility. Finance for postwar structural adjustment and reconstruction was provided by the Marshall Plan and other forms of U.S. aid, not by the Fund and only to a modest extent by the World Bank. France, which devalued unilaterally in 1948 and adopted multiple exchange rates in violation of Article IV of the Articles of Agreement, was denied access to Fund resources until 1952; owing to the provision of Marshall aid, however, Fund sanction had little effect. Britain, which devalued sterling by more than 10 per cent in 1949, gave the Fund only 24 hours notice, again in violation of Article IV. Canada floated its dollar from 1950 through 1961, also in violation of Article IV. The EPU was operated under the

aegeis of the Organisation for European Economic Cooperation (subsequently the OECD), not the IMF, and housed at the Bank for International Settlements in Basle, not in Washington, D.C.

The Bretton Woods System finally came into operation on December 31st, 1958, when current-account convertibility was restored in Europe and the EPU was dissolved. (Even then, Canada continued to float its dollar, and Japan delayed the restoration of convertibility.) But the operation of the Bretton Woods System continued to differ from the mechanism foreseen by the signatories of the Articles of Agreement. Rather than a symmetrical system in which all countries had the same obligations and prerogatives and all currencies were treated alike, the dollar and sterling emerged as key currencies. Central banks held reserves not just in gold but in these currencies, allowing the countries issuing them to run balance-of-payments deficits. Britain and the U.S. were able to do, of course, only so long as other nations remained willing to acquire additional assets denominated in their currencies. In the case of sterling, reserve-currency status was a legacy of history and a corollary of London's links with the financial markets of the Commonwealth and sterling area. London's ability to retain this captive market eroded rapidly. The dollar emerged as the dominant reserve currency of the Bretton Woods System.

Just as the symmetrical system envisaged at Bretton Woods lost much of its symmetry, the adjustable peg system lost much of its adjustability. The only changes in parities undertaken by industrial countries following the general realignment of 1949 were two French devaluations in 1957 and 1958, minor revaluations by Germany and the Netherlands in 1961, and major devaluations by

Britain and France in 1967 and 1969. Though parity changes were more frequent in the developing world, it is nevertheless striking that so few industrial countries adjusted their adjustable pegs between the removal of controls on current-account transactions at the end of 1958 and the breakdown of the System in 1971. Rather than an adjustable peg, the Bretton Woods System increasingly resembled a fixed-exchange-rate arrangement.

The demise of Bretton Woods reflected forces that had been unfolding for a period of years. One was the mounting balance-of-payments deficits of the United States. In part these were a product of expansionary U.S. monetary and fiscal policies. U.S. inflation and money growth accelerated after 1967, coincident with the budget deficits associated with pursuit of the Vietnam War. This made the dollar a less desirable reserve asset, rendering foreign central banks and governments hesitant to hold dollar-denominated assets. Rising unit labor costs weakened the U.S. trade account, creating yet another channel through which reserve losses could occur.

In addition to these "push factors" there was a "pull," as inelastic gold supplies in conjunction with growing demands for international reserves left other countries no choice but to accumulate dollar balances. This gave rise to the so-called Triffin Dilemma: other countries demanded dollars and therefore financed U.S. balance-of-payments deficits at any point in time, but as their dollar holdings came to swamp the limited gold stocks of the United States, the ability of the U.S. to honor its commitment to convert the dollar into gold at \$35 an ounce inevitably came into question. The creation of Special Drawing Rights (SDRs) slowed the operation of this mechanism. SDRs were allocated to countries on

the basis of existing quotas starting in September 1967. But conflict between developed and developing countries over the international distribution of SDRs and France's hesitancy to endorse what it saw as a scheme to prop up the dollar constrained the rate at which they were issued.

Given the manifest inability of the Bretton Woods institutions to cope with these problems, the industrial countries resorted to expedients outside the framework of the Articles of Agreement. They established the London gold pool, an arrangement designed to prevent the market price of gold from rising above \$35 an ounce and threatening to deplete U.S. gold reserves. Their central banks negotiated swap arrangements to replenish the international reserves of countries suffering temporary balance-of-payments problems but not wishing to subject themselves to IMF conditionality. In March 1968 a two-tier gold market was created, under which the leading central banks agreed to buy and sell gold to one another at \$35 an ounce even if gold commanded a higher price on private markets. Other central banks were discouraged from asking the Federal Reserve to convert their dollars into gold by moral suasion and by the fact that the gold price was artificially depressed.

The end of Bretton Woods came in 1971, when the U.S. trade balance moved into deficit for the first time in the postwar period and France and Britain made known their intention of converting their dollar balances into gold. Germany and the Netherlands allowed their currencies to float upward. Switzerland and Austria revalued. On 15 August 1971, confronted by the imminent exhaustion of U.S. gold reserves, President Richard M. Nixon suspended the convertibility of the dollar into gold and imposed a temporary 10

per cent import surcharge designed to support the dollar. Interbank foreign exchange markets were closed for a week, and when they reopened the major currencies were allowed to float.

In this environment an international monetary conference was convened at the Smithsonian Institute on December 17-18. The U.S. removed the 10 per cent import surcharge in return for other countries agreeing to revalue against the dollar by an average of 10 per cent. Fluctuation bands were widened from one to 2.25 per cent.

Thus, the adjustable-peg system was temporarily reestablished, although exchange rates, never freely adjustable, were now not even firmly pegged. In June of 1972 the U.K. was forced to allow sterling to float downward. The following February the markets turned their attention to the dollar; U.S. reserve losses prompted a second dollar devaluation, this time by 11 per cent, and floating on the part of Canada, Italy, Japan and Switzerland. Even these extraordinary measures proved inadequate to stabilize parities, and those industrial countries still pegging to the dollar abandoned the policy within a month.

The transition to generalized floating was given official sanction at the 1975 monetary summit at Rambouillet and the 1976 Interim Committee meeting at Jamaica, which led to the ratification of the Second Amendment to the IMF Articles of Agreement. This amendment, which came into force on April 1st, 1978, authorized the exchange-rate arrangements already in place. Rather than specifying what kind of exchange-rate arrangements were unacceptable, however, the amendment vested the IMF with unspecified responsibilities for surveillance

of member countries' international monetary policies.

Some countries like the United States allowed their currencies to float subject to only sporadic intervention. Others like Japan spent much of the 1970s leaning against the wind. In Europe, where memories of exchange rate instability in the 1930s were especially vivid, intra-regional trade was extensive and economic integration initiatives were already underway, the interlude of floating was brief. 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 were forced to leave temporarily, others permanently. Only Germany and a few of its small Northern European neighbors adhered faithfully to the system.

No truly European arrangement could succeed without the participation of France. This reality prompted the Franco-German initiative that culminated in 1979 in the establishment of the European Monetary System (EMS). Reflecting the intellectual influence of the Bretton Woods Agreement, countries participating in its Exchange Rate Mechanism (ERM) agreed to declare what are in effect par values for their currencies (denominated in ECU rather than gold or dollars) and to keep their currencies within 2.25 per cent of those pegs (a la the Smithsonian Agreement). Italy was initially authorized to maintain a wider, 6 per cent band, as were certain subsequent entrants to the system. The VSTF was

carried over, and the EMS Act of Foundation promised countries unlimited foreign support for their efforts to maintain exchange rate stability. In further echoes of the Bretton Woods Agreement, participating countries were required to negotiate all parity changes with the Monetary Committee of the European Community, and the retention of capital controls was authorized.

The EMS has been the only successful effort at multilateral exchange rate stabilization since the demise of Bretton Woods. (Other countries have pegged their currencies to a neighbor's for various periods of time, but these have been unilateral initiatives.) Until recently the EMS was all-but-universally hailed as a success. It has been the closest approximation in the post-World War II period to the ideal of a pegged-but-adjustable-rate system. From 1979, EMS currencies were pegged for extended periods but still realigned periodically. All in all, there were 11 realignments in the system's first decade of operation. New countries joined -- Spain in 1989, the U.K. in 1990, Portugal in 1992 -- and, in contrast to the experience of the Snake, no participating country was forced to withdraw.

As readers of this paper will be painfully aware, Europe's monetary affairs took a turn for the worse in 1992. The September 1992 crisis drove Britain and Italy out of the ERM. This marked the end of a period over which the EMS had displayed the same signs of growing rigidity that had characterized Bretton Woods before it: no further realignments of EMS currencies occurred in the five years preceding the outbreak of the crisis. It is as if there exists an inevitable tendency for systems of pegged but adjustable exchange rates to lose their adjustability and to collapse under their own weight.

The remainder of this paper considers what may lie behind this tendency,

and whether it is inevitable.

1. Preconditions for Viable International Monetary Arrangements

What is meant by a satisfactory, or successful, or viable international monetary system? In addressing this question, it is important to beware of the tendency to contrast the perceived shortcomings of the prevailing regime with an idealized version of the alternative.² 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. This tendency reflects 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 tendencies of policymakers. Flexible rates provide scope for policy initiatives to insulate the economy from disturbances. Thus, a satisfactory international monetary system is one that incorporates in desirable proportions the advantages of both fixed and flexible rates.

It is possible to distinguish three characteristics of all international monetary arrangements that have succeeded in combining these advantages. These are the capacity to undertake relative price adjustments, adherence by the participants to robust monetary rules, and ability to contain market pressures.³ A system with the capacity to undertake relative price adjustments is one able to accommodate disturbances. Either the exchange rate system provides this adjustment capacity, or else substitutes exist for this function of exchange rate

changes. A system with this characteristic thus delivers the main advantages of flexible rates. Robust monetary rules and ability to contain market pressures are means of limiting exchange-rate volatility at an acceptable cost. A system with these characteristics thus delivers the main advantages of fixed as well as flexible rates.

A. Capacity to Undertake Relative Price Adjustments

The disturbances most difficult for any economy to accommodate require significant changes in a large number of individual prices -- those of domestic and foreign goods, of traded and nontraded goods, or of labor and commodities. Events abroad which permanently reduce the demand for U.S. exports, for example, generally require a fall in the relative price of the goods the U.S. exports in order to sustain the demand for them and prevent the emergence of unemployment and balance-of-payments problems. When exchange-rate changes are not permitted, this response must occur through the synchronous adjustment of a large number of wages and prices. But if some wages and prices adjust sluggishly, output losses and balance-of-payments difficulties may result. Exchange rate changes can in principle avert these losses by altering many prices at once. This is the "daylight-savings time" argument for exchange rate adjustments.

Under floating rates, exchange rate changes alter relative prices continuously (although whether these changes always move relative prices in desirable directions is a controversial issue, to put the point mildly). Under a system of truly fixed rates (insofar as such a thing is possible short of monetary unification), the entire adjustment burden falls on individual domestic-currency

prices.⁴ Under pegged but adjustable rates, easily accommodated shocks will be absorbed through adjustments in domestic prices, while exceptional ones may occasion changes in the exchange-rate peg.

This perspective suggests that a satisfactory international monetary system requires a high degree of exchange-rate flexibility when domestic-currency prices and costs are relatively inflexible. When prices are inflexible downward, a negative demand disturbance will produce unemployment rather than deflation, and an exchange rate change which allows the authorities to pursue demand-management policies which offset the disturbance may be exceptionally valuable. An implication is that when disturbances requiring relative price adjustments are frequent and large, the advantages of exchange-rate flexibility will be enhanced.

That exchange rates can be used to facilitate adjustment to disturbances is most obvious under regimes of floating rates. But the same is true even of the systems of "fixed" exchange rates that have prevailed over the last 100 years. All such systems have featured escape clauses permitting "fixed" rates to be changed in the event of exceptional shocks.⁵ (Another name for a policy regime with an escape clause is a "contingent rule.") Even under the classical gold standard, as we shall see below, there was provision for suspending gold convertibility temporarily and allowing the exchange rate to depreciate in the event of exceptional disturbances.

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 a stable exchange rate under normal circumstances are relatively low. When no exceptional shock justifying a permanent depreciation has been observed, market participants, if they see the exchange rate weakening, should anticipate that the authorities will intervene in its support. Traders will purchase the currency in anticipation of those measures of support, strengthening the rate without the need for the official intervention itself. Hence, the costs to the government of stabilizing the exchange rate will be minimized.⁶ 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.

B. Robust Monetary Rules

If the contingencies triggering exceptional exchange rate changes are not readily observable and independently verifiable, the escape clause may lack credibility.⁷ Market participants may dismiss assurances by the central bank that most exchange rate changes are temporary and reversible. They may suspect that the authorities are manipulating the exchange rate under cover of their contingent rule. In this case the movement of the rate to the edge of its fluctuation band will not elicit stabilizing speculation. In the limit, this problem renders the escape clause and exchange rate stability incompatible, requiring the authorities to choose between them.⁸ In this way, the private-information problem handicaps efforts to construct hybrid systems combining the main advantages of fixed and flexible rates.

A way around this problem is for the government to acquire a reputation

for defending the exchange rate peg. Market participants may not be able to verify whether an exceptional disturbance warranting an exchange rate adjustment has occurred, but if the government has a firmly-established reputation for defending the rate, it will pay for foreign exchange traders to bet that this is what the authorities will do when the exchange rate weakens. Market participants may not share 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 its currency to Germany's suffices to induce traders to speculate in stabilizing ways. The fact that the escape clause still exists (that the Netherlands can still in principle alter the guilder price of the DM) is thereby reconciled with exchange rate stability.

This reputation (sometimes referred to as the "credibility" of domestic policy) can only be acquired through long experience. 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. This is what is meant by a robust monetary rule.

C. Capacity for Containing Market Pressures

Acquiring a reputation for following a robust monetary rule can be costly. The economy may be subjected to an extended period of painfully high interest rates while the authorities establish the credibility of their commitment to defending the exchange rate. Those high interest rates may have negative effects on the level of investment, on the housing market, on the cost of servicing the public debt, and on the stability of commercial banks.⁹ Any one of these effects

can defeat the attempt to acquire a reputation for pursuing a robust monetary rule. If the ratio of public debt to national income is sufficiently large, for example, high interest rates may so raise the cost of debt service that foreign exchange traders have reason to anticipate that the authorities will inevitably abandon their policies of monetary stringency once the debt burden rises to unsustainable heights. If the condition of the commercial banks is sufficiently fragile, traders may anticipate that high interest rates will so weaken the banks that the government will be inevitably forced to shift toward a more inflationary policy to prevent a banking collapse. If high interest rates have a sufficiently depressing impact on the housing market, traders have reason to anticipate that political pressures will be applied to the monetary authorities to shift toward a more permissive regime. The same argument applies if monetary stringency depresses the level of economic activity. It thus may not be feasible for a government to unilaterally develop a reputation for following a robust monetary rule.

Under such circumstances, foreign support will be required to stabilize the exchange rate. Foreign countries that have already succeeded in acquiring a reputation for adhering to a robust monetary rule can intervene in support of the country whose exchange rate evinces signs of instability, in which case that rate can be stabilized at an acceptable cost. Thus, in the short run, while the home country is still trying to acquire a reputation for adhering to a robust monetary rule, the transitional costs are lowered to bearable levels by foreign support. In the long run, international cooperation serves as insurance: each country pays insurance premia by contributing to collective support of other currencies; when

its own currency evinces signs of instability, it receives the support of its foreign counterparts. As we shall see below, cooperation in support of a particular nation's exchange rate, 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 arrangements.

Another way of containing market pressures is to resort to administrative restrictions on capital movements. Capital controls limit the quantity of funds that can be legally and profitably transferred between currencies over short periods.¹⁰ Controls may be circumvented eventually but in the meantime prevent the exhaustion of foreign reserves and abandonment of an exchange rate peg. Even if they protect the rate for only a few days, this can provide precious scope for organizing an orderly exchange rate adjustment and hence for insuring the survival of the system. Capital controls have been used as a way of temporarily containing market pressures in many -- but not all -- successful international monetary arrangements.¹¹

Of course, not all market pressures should be resisted. Countries that persist in running monetary and fiscal policies inconsistent with their exchange rate peg will be forced sooner or later to alter that pegged rate. Neither capital controls nor foreign support can delay the need for adjustment indefinitely. Such measures merely provide the time and room for maneuver needed to organize an orderly adjustment and prevent market pressures not grounded in underlying economic fundamentals from provoking a self-fulfilling balance of payments crisis.

4. Recapitulation

For an international monetary system to survive in a world of disturbances, three conditions must be met. Even if exchange rates are normally stabilized, there must be allowance for them to change in response to disturbances requiring relative price changes too large to be easily accommodated by decentralized markets. Robust monetary rules must be adopted to lend credibility to the rates that prevail in the absence of exceptional disturbances. And 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.

3. Implications for the Operation of International Monetary Arrangements

I now analyze the operation of alternative monetary arrangements in light of the concepts developed in Section 2. The first part of the narrative recounts pre-Bretton Woods arrangements (the classical gold standard and those of the interwar period), while the second considers post-1945 developments.

3.A. Before Bretton Woods

3.A.i. The Classical Gold Standard

The classical gold standard is commonly taken as epitomizing a smoothly functioning international monetary system. Between 1880 and 1913 the leading industrial nations all maintained the free convertibility of domestic currency into gold at a fixed price. Through arbitrage in the international gold market, these domestic policies stabilized exchange rates. So long as external convertibility was maintained and no obstacles were placed in the way of 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).¹²

Superficially, the classical gold standard would seem to have satisfied none of the prerequisites identified in Section 2 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; indeed, recent historical work provides little support for the notion that the 19th century was an era of perfect market flexibility. 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.¹³ Even for the U.S., where early studies suggested a decline in wage flexibility over time, subsequent research using micro- and macroeconomic data 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.¹⁴

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 the mystery. One strand emphasizes the existence and role of escape clauses in the gold standard years.¹⁵ 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 and immediately after its Civil War. The escape clause could also be invoked in response to purely financial disturbances, like the 1847 and 1857 suspensions by the Bank of England. Critical to the operation of this mechanism was the fact that the suspension was temporary; the authorities remained fully committed to restoring the old gold parity once the crisis had passed, which minimized flight from the currency in anticipation of persistent depreciation. 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.

Latin American countries also suspended convertibility and allowed their exchange rates to depreciate when the supply of foreign capital or the demand for domestic exports was disrupted, but their credibility did not survive unscathed. The explanation lies in differences, compared to Europe, in the robustness of the monetary regime and the capacity for containing market pressures. In Europe the cornerstone of the gold standard was the priority attached by governments to the maintenance of convertibility.¹⁶ 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. This was the epitome of a robust monetary rule. Lending it 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 reasonably disagree about whether the level of interest rates was aggravating unemployment. The credibility of governments' commitment to convertibility was enhanced by the fact that those who suffered most directly from unemployment were in no position to make their objections felt. In most countries, the right to vote was still limited to men of property. Labor parties representing working men (women still being denied the vote virtually everywhere) were still 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. Finally, potential foreign lenders took adherence to the gold standard as a signal of financial probity, conditioning developing countries' access to international capital markets on their adherence to the gold standard.¹⁷ For all these reasons, then, a negative disturbance to a country's balance of payments did not typically weaken the exchange rate to the point where painfully large interest rate increases had to be undertaken. Rather, the exchange rate's incipient weakness was offset by capital inflows motivated by the expectation that the authorities would eventually do what was required to stabilize it. This very fact limited the distress caused by those necessary steps.

The political and economic forces enhancing the credibility of the commitment to gold convertibility operated most powerfully at the system's European center. In the United States, in contrast, agricultural debtors and silver-mining interests formed a powerful coalition opposed to deflation and

favoring 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 as a result of universal male suffrage. Throughout Latin America, as in the United States, depreciation was welcomed 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. As in the United States, their ranks were swelled by mining interests which favored the coinage of silver. For this combination of political reasons, most countries of the Western Hemisphere did not have unblemished records of obeying robust monetary rules. Consequently, the credibility of their commitment to the prevailing exchange rate was not beyond question. The countries of Latin America were repeatedly forced 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.¹⁸ 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 capital flows -- both long- and short-term -- reached impressive heights even by late 20th century standards.¹⁹ 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 the fluctuation band for exchange rates under the gold standard was given by the gold points (the wedge created for gold-market arbitrage by costs of shipping and insurance). Measures widening this band could therefore 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 the buying and selling price for gold bars or redeem notes only for worn and clipped gold coin, measures tantamount to depreciation.²⁰ 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 inferior to their face value, another practice tantamount to depreciation.

The other means of coping with market pressures was international cooperation between central banks and governments. Cooperation was episodic, but those episodes on which it occurred were precisely ones in which the system's major exchange rates 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 Baring Crisis of 1890, 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 borrowed L3 million of gold from the Bank of France and obtained a pledge of L1.5 million of gold coin from Russia.²¹ This kind of cooperation was repeated subsequently. In 1895, a consortium of European banks, with the encouragement of their governments, lent support to the defense of 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 with another financial crisis, again obtained support from the Bank of France and, in addition, from the Reichsbank. The Russian State Bank in turn 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.

Thus, the success of the classical gold standard at its European center is readily explicable in terms of the prerequisites for a viable international monetary system identified in Section 1 above. The absence of those prerequisites and the consequent instability of the gold standard at the periphery is further proof by counterexample.

3.A.ii. Interwar Arrangements

International monetary arrangements between the wars are notorious for their poor performance. The experience with floating exchange rates in the first half of the 1920s 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 weakened over the course of World War I. Central banks were subordinated to ministries of finance and budget, limiting monetary independence. Universal male suffrage, the rise of parliamentary labor parties, and the prominence lent the connections between monetary policy and unemployment politicized the policy decisions of central bankers. 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 expenditure programs should be cut ended up in the lap of the monetary authorities, who were forced to create money and credit to reconcile the incompatible claims irrespective of the consequences for the exchange rate.

This disastrous experience bred its own solution. Financial chaos ultimately broke down resistance to fiscal compromise. High inflation weakened opposition to central bank independence. By 1925-6 the gold standard was revived. But for predictable reasons this new gold standard proved less hardy than its prewar predecessor. Monetary policy remained politicized, especially so long as official unemployment rates were lodged at double-digit levels. Central banks that raised interest rates in order to defend their exchange rates came under intense 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. And this rendered problematic recourse to the escape clause feature of the prewar system.

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 all stood in the way.²² Domestic interest groups that might be hurt by cooperative adjustments of economic policies were able to stave them off. The international dispute over war debts and reparations obstructed efforts to cooperate. And the competing conceptual frameworks employed in different countries prevented

policymakers from reaching a common understanding of their economic problems and agreeing on a response.

The managed float of the 1930s featured none of the prerequisites for a smoothly functioning international monetary system. Governments shifted erratically from one policy rule to another, repeatedly casting doubt on their commitment to the prevailing system of exchange rates. More often than not, speculative capital 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. But real progress in this direction only occurred after World War II.

3.B. The International Monetary System Since 1945

3.B.i. Bretton Woods

The Bretton Woods Agreement was a clear attempt to reestablish the three preconditions for a viable international monetary system. To provide the capacity to undertake relative price adjustments, the Bretton Woods Agreement included an escape clause. Though required to declare a par value 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 of the Bretton Woods Agreement 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 have to resort to this escape clause caused them to leave the term undefined. That countries were supposed to consult with the International Monetary Fund and to 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.²³ But in practice, countries did not always obtain authorization from the Fund in advance of devaluation. The IMF treated an exchange rate change as unauthorized on only one occasion, that of France in 1948. 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 the 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 undermine the credibility of their monetary policies. It was argued that Britain's unilateral devaluation in 1949 had had just such a credibility-damaging effect.²⁴ From this point of view, it is no surprise that exchange rate changes by industrial-country participants in the Bretton Woods System were few and far between. 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.

Despite this reluctance to resort to exchange rate changes, capital did not always flow in stabilizing directions. This reflected the limited robustness of the policy rules followed by monetary authorities in the participating countries. This statement is relative, of course. The robustness of prevailing monetary rules may have compared unfavorably with the gold standard era, when central banks'

commitment to exchange rate stability dominated all other peacetime objectives and their 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 moderate the business cycle on the other. At the same time, however, the stability of monetary policy -- that is, the robustness of prevailing monetary rules -- was impressive compared to either the immediately preceding period (the 1920s and 1930s) or the years following the breakdown Bretton Woods System. Recent research on the Bretton Woods era suggests that erratic shifts in monetary policy were relatively uncommon, especially following the restoration of current account convertibility at the end of 1958.²⁵ That success which the Bretton Woods System enjoyed was partly due to the robustness, limited but still significant, that characterized monetary policies.

What accounts for the relative 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 relatively few. Memory of the disadvantages of volatile exchange rate changes in the first half of the 1920s and of beggar-thy-neighbor devaluations in the 1930s left governments reluctant to tamper with monetary policy at the cost of exchange rate instability.

Perhaps the most significant changes in international monetary arrangements achieved at Bretton Woods were measures for containing market

pressures. Creation of the International Monetary Fund provided a vehicle for supporting currencies in distress. In the event of balance-of-payments difficulties, countries could draw on the initial tranche of their IMF quotas (the "gold tranche") without restriction, and borrow further from the Fund subject to conditions. Standby arrangements, whereby member 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 support a weak currency indefinitely, but it provided a significant source of ammunition for countries seeking to rebuff a speculative attack.

The industrial countries provided one another additional external support through ad hoc channels. In 1961 the leading central banks initialled the Basle Agreement committing them to hold one another's currencies and to lend to one another. Later that year the London gold pool was established to help 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, the creation of Special Drawing Rights, and other devices for increasing the external resources that could be made available to central banks in distress. Again, this was not unlimited external support; even the sum of these resources did not automatically suffice to repel the speculative pressures that global financial markets could bring to bear. But they could be very important in particular instances: an example is the March 1964 multilateral credit facility which permitted Italy to avoid having to devalue the lira.

Two implications follow for those seeking to understand 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 immediately-preceding international monetary arrangements. Second, much of the cooperation that supported the system's key currencies was provided outside the official channels of the IMF.

Equally important for containing market pressures under Bretton Woods was the retention of capital controls. Controls of various sorts on the movement of financial capital were maintained by most countries throughout the Bretton Woods years. Although controls could be circumvented eventually, doing so was costly, leaving governments some space for adjusting policy in stabilizing directions before the exchange rate collapsed or for arranging for an orderly exchange rate adjustment. Indeed, before 1959 most countries controlled foreign-exchange transactions on current as well as capital account.²⁶

The literature on the decline and fall of the Bretton Woods System has traditionally emphasized the System's structural flaws.²⁷ A complementary approach would frame its collapse in terms of the concepts developed in Section 2. The late 1960s saw a decline in the robustness of monetary rules in the United States, where the imperative of monetary stability and defense of the \$35 gold price were subordinated to the pursuit of the Vietnam War, and also in Europe, where Euro-Keynesianism was a growing fashion. Britain's susceptibility to 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 at the expense of a consistent policy line. On the decline in the robustness of domestic monetary policy rules followed a

predictable increase in the rigidity of the exchange rate system. Unable to convincingly appeal to a contingent rule, governments sought to buttress the credibility of their commitment to the prevailing 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 vocal criticisms of the United States' "exorbitant privilege" and worries about the stability of the dollar.²⁸ Meanwhile, the increasing porousness of capital controls weakened the defenses countries might erect unilaterally to contain market pressures.²⁹ The collapse of the Bretton Woods System of pegged but adjustable exchange rates in 1971 was a predictable consequence.

3.B.ii. 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 management over the last two decades has oscillated between unilateral efforts at exchange rate stabilization and ad hoc attempts at international cooperation like the Louvre and Plaza Accords. The only initiative that might be held out as a serious experiment in international monetary reform is the European Monetary System (EMS). The EMS has evolved over time into an increasingly cohesive and ambitious exchange-rate arrangement. Prior to the September 1992 crisis, the EMS was widely regarded as a success, and 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 paper shed light on both the post-1979 solidification of the EMS and its recent difficulties. The EMS as initially implemented made provision for accomodating disturbances and containing market pressures. Currencies of countries participating in its Exchange Rate Mechanism (ERM) 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. That governments resorted to realignment only in the event of shocks not of their own making is a dubious proposition, however. Many participating countries hardly followed what could be characterized as robust monetary rules; typically, realignment was provoked not by exogenous shocks but by persistent domestic inflation. 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-robust monetary policies in several participating countries 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 in order to defend their exchange rates. According to the EMS Act of Foundation, when a bilateral exchange rate reaches the maximum permissible distance from its declared central parity, both

central banks concerned are required to intervene. (The Basle-Nyborg Agreement of 1987 made allowance for intra-marginal interventions as well.) 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, they squared the circle. The knowledge that weak-currency countries would ultimately realign reassured their strong-currency counterparts that intervention obligations would be limited. Capital controls, though porous, provided sufficient insulation to arrange orderly realignments and thus insure 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 really indispensable to the system's operation. Adherence to robust monetary rules, though still far from perfect, grew more rather than less common as tensions mounted. What grew less prevalent was resort to the escape-clause feature of the system. From February 1987 until the September 1992 crisis, no realignments took place. This shift in strategy 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. The removal of controls made orderly realignments more difficult to arrange. 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, at

the same time balance-of-payments pressures were building, the EMS's traditional means of containing them were weakened or removed. That the events of 1992 culminated in a crisis that drove two currencies out of the ERM and weakened confidence in the EMS comes as no surprise.

4. Implications for International Monetary Reform

What are the implications for international monetary reform? A fundamental point emerging clearly from this analysis is that a necessary prerequisite for a satisfactory, or successful, or viable international monetary system is consistent national monetary policies. Economists and politicians can tinker all they want with exchange rate arrangements, but in the absence of monetary policies dedicated to the maintenance of an orderly exchange rate system, their efforts to enhance exchange rate stability will be unavailing.

There is an element of simultaneity here, of course; establishing institutions designed to support the maintenance of an orderly exchange rate system may encourage national policymakers to reorient their policies in directions more consistent with such a system. An international agreement can serve as a focal point, concentrating attention on the need to formulate policy in a manner consistent with exchange rate stability. Having already sunk the costs of establishing that system, policymakers may be loath to see their investment lost due to the pursuit of policies that undermine its survival. At the end of the day, however, nothing but the preference of governments and nations for an orderly, smoothly functioning exchange rate system can ensure that the monetary policies pursued are consistent with this goal.

The realization that the credibility they will enjoy once the markets are convinced of their commitment to robust monetary rules will reduce the economic and political costs of sustaining the exchange rate system should strengthen governments' dedication to the task. Once the markets are convinced, capital will flow in stabilizing rather than destabilizing directions, minimizing the adaptations of domestic policy needed to support the exchange rate and thereby ameliorating potential conflicts with other policy goals. But governments must be willing to pay the short-term costs of reaping these long-term benefits. Some determinants of their willingness are not under the control of potential international monetary reformers: durable, long-lived governments have more reason to accept this tradeoff than their more ephemeral counterparts, for example.³⁰

In addition, governments are more likely to find this tradeoff attractive when international monetary arrangements provide scope for undertaking relative price adjustments and means of coping with market pressures. Rules specifying clearly the conditions under which it is permissible to resort to exceptional exchange rate changes are indispensable for the viability of an exchange-rate escape clause. This implies doing better than the "fundamental disequilibrium" provision of the Bretton Woods Agreement. Institutions to monitor compliance and impose sanctions in the event of violations of this contingent rule are essential to lend it credibility. This implies the need for strengthening the oversight role of the IMF. Also essential are adequate resources to provide foreign support for currencies deemed worthy of it. This implies augmenting the resources of the Fund or kindred institutions and clarifying the conditions under which they will be made available.

The most difficult question is whether, even in the event that such reforms take place, it will be possible to maintain a system of pegged but adjustable exchange rates or target zones in the absence of capital controls. The skeptical argument that this will not be possible runs as follows. Unless governments are willing to compromise their sovereignty by delegating their national monetary policies to international control (as the EC member states that have signed the Maastricht Treaty ultimately propose to do), the commitment to subordinate other goals of monetary policy to exchange rate stability will never be fully credible. Without such a compromise of sovereignty, potential strong-currency countries will never agree to provide unlimited support for their weaker counterparts. Frequent realignments of pegged rates (equivalently, changing the central rate in narrow target zones) are not feasible, since the markets will learn to anticipate them and force the authorities' hand by provoking a crisis. Wide target zones ameliorate this problem (insofar as they permit the band and the central rate to be shifted without requiring a discrete change in the market rate) but create another -- inadequate credibility -- since it will not be transparent to observers whether the movement of the exchange rate toward the edge of the band will be offset or validated.

If this skepticism is warranted, then architects of future international monetary arrangements have only two choices: monetary unification like that being pursued by the European Community on the one hand, or some form of continued floating on the other. A cautious forecaster would predict that we should see developments in both directions. Where compromises of sovereignty are palatable, the move will be toward monetary unification; the tendency already

evident in the EC may surface eventually in other areas where commercial and political links deepen (most plausibly, North America or parts of South America). Where such compromises remain inconceivable, the tendency will be toward continued reliance on floating rates instead.

Footnotes

1. For further details on the events and developments summarized in this section, the reader might consult Bordo (1993) and Dam (1982).
2. This point is emphasized by Kenen (1988).
3. In developing this taxonomy I build on Eichengreen (1994) and Eichengreen and Wyplosz (1993).
4. I return in the conclusion to this issue of whether true fixity of exchange rates is feasible short of monetary unification.
5. Thus, "fixed rate" systems might more accurately be called systems of pegged exchange rates. On the theory of escape clauses, see Grossman and van Huyck (1988), De Kock and Grilli (1989), Flood and Isard (1989) and Giovannini (1993).
6. This phenomenon is known in the older literature as "stabilizing speculation," in its modern counterpart as the "target-zone honeymoon" (Krugman, 1991). In practice all pegged exchange rate systems feature a narrow fluctuation band within which the rate can float without compelling official intervention. See Giovannini (1989). This "target zone honeymoon" can still exist in the presence of realignments so long as certain additional conditions are met. For details, see Rose and Svensson (1991).
7. This is known as the private information problem (Canzoneri, 1985).
8. This is an implication of the model developed by Obstfeld (1992).
9. The destabilizing effects, operating through these four channels, of interest rate policies undertaken in defense of an exchange rate are analyzed in Eichengreen and Wyplosz (1993).
10. This is formally analyzed in Wyplosz (1986). With capital controls a speculative attack is of bounded size per unit of time. Hence, there exists a volume of foreign exchange reserves (possibly augmented by foreign loans) sufficient to uphold the fixed rate regime.
11. This point is emphasized by Giovannini (1989).
12. In other words, exchange rates under the gold standard fluctuated 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 -- in other words, funds invested in gold did not earn interest for the period the gold was in transit.
13. See Hatton (1988).
14. Prominent earlier studies include Cagan (1956) and Sachs (1980). 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."

15. See in particular Giovannini (1993). The model of Bordo and Kydland (1992) is also consistent with this view.

16. This point is emphasized by both Eichengreen (1992) and Bordo and Kydland (1992).

17. See Fishlow (1989).

18. Details on this electoral campaign and its implications for the U.S. gold standard may be found in Eichengreen (1993a). In comparing the dollar exchange rate with those of the German mark and the French franc, Giovannini (1993) shows that capital showed less of a tendency to flow in stabilizing directions in the U.S. case.

19. See Bloomfield (1963a,b).

20. For details, see Morgenstern (1959), p.441.

21. The action was not unprecedented. The Bank of England had borrowed gold from the Bank of France in 1839, with the intermediation -- ironically enough -- 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, though this was not an episode of intense crisis.

22. The remainder of this paragraph is drawn from Eichengreen (1992).

23. In an analysis paralleling mine, Dominguez (1993) emphasizes the monitoring and informational roles of the IMF.

24. See Harrod (1952) and, for further discussion, Obstfeld (1993).

25. Bordo (1993) and Eichenbaum and Evans (1993) report various measures of the magnitude of monetary policy shocks during these years, both concluding that these were smaller than in surrounding periods. In Eichengreen (1993b) I use a different methodology to derive estimates of aggregate demand disturbances, to which monetary policy disturbances are one contributor, and find that these were smaller between 1959-70 than in surrounding periods. I also show that inflationary monetary policy disturbances were much less persistent than after 1971.

26. Prominent exceptions were the United States, Canada and a few Latin American countries. In Europe, exchange rates were regulated in this period 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 in this paper. For details, see Triffin (1957) and Eichengreen (1993c).

27. This is the approach taken in Section 2 above, for example. A comprehensive review of the literature on the collapse of Bretton Woods is provided by Garber (1993).

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

29. 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."

30. Evidence from the 1920s supporting this conjecture is provided by Eichengreen (1993a).

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