University of California Berkeley

CENTER FOR INTERNATIONAL AND DEVELOPMENT ECONOMICS RESEARCH
Working Paper No. C94-041

History and Reform of the International Monetary System

Barry Eichengreen

University of California, Berkeley

October 1994

Department of Economics

iber

CIDER

CIDER

CENTER FOR INTERNATIONAL AND DEVELOPMENT ECONOMICS RESEARCH

The Center for International and Development Economics Research is funded by the Ford Foundation. It is a research unit of the Institute of International Studies which works closely with the Department of Economics and the Institute of Business and Economic Research. CIDER is devoted to promoting research on international economic and development issues among Berkeley faculty and students, and to stimulating collaborative interactions between them and scholars from other developed and developing countries.

INSTITUTE OF BUSINESS AND ECONOMIC RESEARCH

Richard Sutch, Director

The Institute of Business and Economic Research is an organized research unit of the University of California at Berkeley. It exists to promote research in business and economics by University faculty. These working papers are issued to disseminate research results to other scholars.

Individual copies of this paper are available through IBER, 156 Barrows Hall, University of California, Berkeley, CA 94720. Phone (510) 642-1922, fax (510) 642-5018.

UNIVERSITY OF CALIFORNIA AT BERKELEY

Department of Economics

Berkeley, California 94720-1922

CENTER FOR INTERNATIONAL AND DEVELOPMENT
ECONOMICS RESEARCH
Working Paper No. C94-041

History and Reform of the International Monetary System

Barry Eichengreen

University of California, Berkeley

October 1994

Key words: exchange rates, international monetary reform, economic history
JEL Classification: N0, F0

Abstract

This paper surveys the history of the international monetary system and considers alternatives for its reform. It first identifies three necessary conditions for international monetary stability. It then uses them as a basis for analyzing the functioning of alternative international monetary arrangements. The paper concludes with reflections on international monetary reform.

History and Reform of the International Monetary System[1]

Barry Eichengreen
University of California at Berkeley

August 1994

"History is what we call our predecessors' mistakes; reform is the name we give to our own."

Henry Wallich

I. Introduction

The history of the international monetary system provides no simple recipe for reform. Since the 19th century, that system has evolved unevenly in response to changing external conditions and its own internal dynamics. As Schwartz (1993) emphasizes, no single model can capture all of the essential characteristics of the phases through which international monetary arrangements have passed.

From an historical vantage point, however, certain common attributes of satisfactory international monetary arrangements stand out. All such arrangements share three characteristics: the capacity to effect relative price adjustments, adherence by the participants to robust monetary rules, and the 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. Its second section explains what is meant by these three conditions for international monetary stability. The third section uses them as a basis for analyzing the functioning of alternative international monetary arrangements. The paper concludes with reflections on international monetary reform.

---

[1] This is an update and extension of a background paper prepared for the Commission on the Future of the Bretton Woods Institutions. In revising it I have drawn on my forthcoming monograph, International Monetary Arrangements for the 21st Century (Washington, D.C.: The Brookings Institution). For comments and suggestions I thank Peter Kenen, Maurice Obstfeld, Lars Svensson and John Walsh.

II. Prequisites for International Monetary Stability

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 idealization of the alternative.[2] In an era of floating, there is a temptation to associate a smoothly functioning international monetary regime with exchange rate stability. And when exchange rates are fixed, there is an analogous temptation to contrast the shortcomings of the prevailing system with an idealization of the alternative: models of smoothly adjusting floating rates. This tendency reflects a simple verity: fixed and flexible rates both have advantages. Fixed rates minimize the disruptions caused by exchange-rate volatility and check the erratic tendencies of policymakers. Flexible rates provide scope for policy initiatives to offset disturbances. Thus, a satisfactory international monetary system is one that incorporates the advantages of both fixed and flexible rates.

It is possible to identify three characteristics of all international monetary arrangements that have combined these advantages. These are the capacity to effect relative price adjustments, adherence by the participants to robust monetary rules, and the ability to contain market pressures.[3] A system with the capacity to undertake relative price adjustments is one able to accomodate shocks. Either the exchange rate system itself provides this capacity or else adequate substitutes exist. A system with this characteristic thus delivers the main advantages of flexible rates. Robust monetary rules and the ability to contain market pressures are means of limiting exchange-rate volatility at an acceptable cost. Thus, a system with these characteristics delivers the main advantages of both fixed and flexible rates.

---

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

[3] In developing this taxonomy I build on Eichengreen and Wyplosz (1993).

A. Capacity to Undertake Relative Price Adjustments

The disturbances most difficult for any economy to accommodate require significant changes in a large number of different prices -- of domestic and foreign goods, of traded and nontraded goods, or of labor and commodities. Events abroad which permanently reduce the demand for a country's exports, for example, require a fall in the relative prices 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 adjustment of a large number of wages and prices. But if some wages and prices adjust sluggishly, output losses and balance-of-payments difficulties can result. Exchange rate changes can in principle avert these losses by altering many prices at once. This is the "daylight-savings time" argument for adjustable rates.

Under variable rates, exchange rate changes alter relative prices directly.[4] Under a system of truly fixed rates (insofar as such a thing is possible), the entire adjustment burden falls on individual domestic-currency prices. Under pegged but adjustable rates, easily accommodated shocks are 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 exchange-rate changes when domestic-currency prices and costs are imperfectly flexible. When prices are sticky 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 will be valuable. An implication is that when disturbances requiring relative price adjustments are frequent and large, the advantages of exchange-rate flexibility will be pronounced.

---

[4] Whether these changes necessarily move relative prices in desirable directions is a disputed question.

That exchange rates can be used to facilitate adjustment to disturbances is most obvious under floating rates. But the same is true of all systems of pegged exchange rates that have prevailed over the last 100 years. All such systems have featured escape clauses permitting "fixed" exchange rates to be changed in the event of exceptional shocks.[5] Even under the classical gold standard, as we shall see. there was provision for suspending gold convertibility temporarily 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 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 will be relatively low. When no exceptional shock justifying a permanent depreciation has been observed, market participants, if they see the currency weakening, will anticipate central bank intervention in its support. Traders will purchase it in advance of those measures, strengthening the rate without the need for actual intervention. 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 prevent countries from reaping the benefits of exchange rate stability.

B. Robust Monetary Rules

---

[5] Another name for a policy regime with an escape clause is a "contingent rule." 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" (Nurkse 1944), in its modern incarnation as the "target-zone honeymoon" (Krugman, 1991). In practice all pegged exchange rate systems feature a narrow fluctuctuation 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).

If the contingencies triggering exceptional exchange rate changes are not readily observable and independently verifiable, however, the escape clause may lack credibility.[7] Market participants will dismiss assurances by the central bank that exchange rate movements are temporary and reversible. They may suspect the authorities of manipulating the exchange rate under cover of their contingent rule. The movement of the rate to the edge of its band therefore may 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] Thus, the problem of private information handicaps efforts to construct hybrid systems combining the advantages of fixed and flexible rates.

A solution is for the government to acquire a reputation for defending the currency peg. Market participants may not be able to verify whether an exceptional disturbance warranting a change in the exchange rate has occurred, but if the government possesses a reputation for defending the rate, 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 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 Dutch government can still realign the guilder against the DM) is thereby reconciled with exchange rate stability.

This reputation (known as the "credibility" of domestic policy) can only be acquired with time. 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

---

[7] This is the private information problem (Canzoneri, 1985).

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

robust monetary rule.

C. Capacity for Containing Market Pressures

Acquiring a reputation for following a robust monetary rule can be costly and time consuming. The economy may be subjected to an extended period of 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 high, for example, high interest rates may so raise the cost of debt service that currency 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 banking system is fragile, traders may anticipate that high interest rates will so weaken the banks that the government will be forced to shift toward a more accomodating 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, of course, if monetary stringency depresses the level of economic activity. Hence, it may not be feasible for a government to unilaterally develop a reputation for following a robust monetary rule.[10]

In such circumstances, foreign support will be required to maintain

---

[9] The destabilizing effects, operating through these four channels, of interest rate policies undertaken in defense of an exchange rate are analyzed in the context of the 1992 ERM crisis by Goldstein et al. (1993) and Eichengreen and Wyplosz (1993).

[10] These possibilities are modelled by, among others, Obstfeld (1994), Ozkan and Sutherland (1994) and Bensaid and Jeanne (1994). It is no coincidence that this proliferation of models followed the 1992-93 ERM crises.

exchange rate stability. 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 is under pressure, allowing that rate to be defended at an acceptable cost. In the short run (while the home country is still trying to acquire a reputation for adhering to a robust monetary rule), the 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 neighbors. Ideally, the process is overseen by an "insurance company" like the Internaional Monetary Fund or the Monetary Committee of the European Union, which uses its conditionality and other devices to minimize the problems of moral hazard that the provision of insurance typically creates. As we shall see, 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 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 impose administrative restrictions on capital movements. Capital controls limit the quantity of funds that can be legally and profitably transferred between currencies over short periods.[11] Controls need not be water-tight. Even if they can be circumvented eventually, in the meantime they can prevent the exhaustion of reserves and abandonment of the exchange rate peg. If they only protect the currency for a few days, this can still provide precious breathing space for organizing an orderly realignment and

---

[11] 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 support the fixed rate regime.

hence for insuring the survival of the system. Capital controls have been used to contain market pressures in many successful international monetary arrangements.[12]

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 eventually be compelled to alter that rate. Neither capital controls nor foreign support can delay the need for adjustment indefinitely. Such measures merely provide the time needed to organize an orderly adjustment and prevent market pressures not grounded in 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 adjustments too large to be easily effected in decentralized markets. Robust monetary policies must be pursued 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.

III. Implications for the Operation of International Monetary Arrangements

I now analyze the history of international monetary arrangements in light of the concepts developed in Section II.

A. The Classical Gold Standard

The gold standard is commonly taken as epitomizing a smoothly functioning international monetary system. Between 1880 and 1913 the leading industrial nations maintained the convertibility of their

---

[12] This point is emphasized by Giovannini (1989).

currencies into gold at a fixed price. Through arbitrage in the gold market, these policies stabilized exchange rates. So long as ~~external~~ convertibility was maintained and no obstacles were placed in the way of 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).[13]

Superficially, the prewar gold standard would seem to have satisfied none of the prerequisites identified above for a smoothly functioning international monetary system. Exchange rates were stabilized for extended periods without recourse to capital controls or international support. Wages were not perfectly flexible: structured labor markets limited the flexibility of wages, 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.[14] Even for the U.S., where early studies suggested increasing nominal wage inertia, subsequent research using micro- and macroeconomic data has cast doubt on this presumption.[15]

Recent research goes a long way toward solving the mystery of how the prewar gold standard worked so well. One strand emphasizes the existence

---

[13] Exchange rates under the gold standard fluctuated, in other words, within a 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, since funds invested in gold did not earn interest for the period the gold was in transit.

[14] See Hatton (1988).

[15] Prominent earlier studies include Cagan (1956) and Sachs (1980). For examples of recent revisionism see Carter and Sutch (1990) and Allen (1992). A recent study of this subject (Obstfeld, 1993) concludes 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." Hanes (1993) helps to reconcile these divergent views by suggesting that there was in fact a decline in the extent of wage flexibility, but that it occurred before the period covered by most historical studies (namely, in the 1880s) and also therefore before much of the period ~~of~~ in which the gold standard prevailed.

and role of escape clauses in the gold standard years.[16] Countries buffeted by exceptional disturbances could temporarily suspend convertibility without sacrificing credibility. The prototypical example of an exceptional disturbance is a war: thus, Britain suspended convertibility during the French wars without undermining the credibility of its commitment to gold, as did the United States during and after its Civil War. The escape clause could also be invoked in response to purely financial disturbances, as illustrated by the 1847 and 1857 suspensions by the Bank of England. Critical to the operation of this mechanism was the fact that suspension was temporary; the authorities remained committed to restoring the old gold parity once the crisis had passed, which minimized capital flight prompted by expectations of persistent depreciation. The exceptional nature of the crisis and the temporary nature 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 the 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 exports was disrupted, but their credibility did not survive intact. The explanation lies in differences, compared to Europe, in the robustness of the monetary regime and the capacity to contain market pressures. In Europe the cornerstone of the gold standard was the priority attached to the maintenance of convertibility.[17] 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 necessary to defend the central bank's gold reserves and maintain the convertibility of the currency. This was the epitome of a

---

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

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

robust monetary rule. Lending it credibility was the fact that the connections between monetary policy and the economy remained incompletely understood. So long as there was no well-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. 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. Typically, the right to vote was 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 object, much less to expel from office the government and central bankers responsible for the policy. 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.[18] For all these reasons, a negative disturbance to the balance of payments did not weaken the exchange rate to the point where painfully large interest rate increases had to be undertaken. Rather, the exchange rate's weakness was offset by capital inflows motivated by the expectation that the authorities would eventually do what was required to stabilize it. This fact limited the distress caused by those necessary steps.

The political and economic forces enhancing the credibility of the commitment to convertibility operated most powerfully at the system's European core. 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 as a result of universal male suffrage. Throughout Latin

---

[18] Fishlow (1989) draws the analogy with another modern external constraint: IMF conditionality.

America, as in the United States, depreciation was welcomed by landowners with fixed mortgage obligations and exporters wishing to enhance their competitive position. As in the U.S., the two groups were often one and the same. And as in the U.S., their ranks were swelled by mining interests that favored the coinage of silver. For all these reasons, robust monetary rules did not enjoy overwhelming political support, and the credibility of the authorities' commitment to the prevailing exchange rate was not beyond question. Latin American countries were repeatedly forced to abandon the gold standard 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.[19] 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 the periphery their absence disrupted its operation.

The gold standard also required means of containing market pressures. These pressures could be intense: prior to 1914 the volume of international capital flows -- both long- and short-term -- reached impressive heights.[20] 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. 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 that a capital outflow weakened the

---

[19] 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.

[20] Bloomfield (1963a,b) remains the classic reference on these matters.

exchange rate. Central banks might raise the buying and selling price for gold bars or redeem notes only for worn and clipped gold coin.[21] They could 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 depreciation.

The other means of coping with market pressures was international cooperation between central banks and governments. Cooperation was episodic, but it occurred in precisely those instances ~~where~~ when 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 episode 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.[22] In 1893, 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 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.

---

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

[22] 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, though this was not an episode of intense crisis.

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

B. Interwar Arrangements

International monetary arrangements between the wars are notorious for their poor performance. The experience with floating exchange rates in the the 1920s created an aversion to floating that lingered for half a century. That experience is explained by the absence of robust monetary rules. The forces that had facilitated their pursuit before 1914 were 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 lent the connections between monetary policy and unemployment politicized the decisions of central bankers. The postwar years were dominated by disputes over economic policy generally, one casualty of which was consistent monetary policies. 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 currency.

Eventually, this disastrous experience bred its own solution. Financial chaos broke down resistance to fiscal compromise, and high inflation weakened opposition to central bank independence. In the second half of the 1920s, the gold standard was revived. For predictable reasons, however, it proved less hardy than its prewar predecessor. Monetary policy was still politicized, especially so long as unemployment rates remained lodged at double digits. Central banks that raised interest rates in order to defend their exchange rates came under 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, producing a rigid and brittle pegged rate system.

Containing market pressures was more difficult as well. International support for weak exchange rates proved difficult to arrange: domestic political constraints, international political disputes and incompatible conceptual frameworks stood in the way.[23] Interest groups that might be hurt by cooperative adjustments of economic policies were able to stave them off. International disputes 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 solution.

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. Speculative capital moved in destabilizing directions. Efforts to cooperate in containing market pressures rarely amounted to much. While the 1936 Tripartite Agreement marked a first tentative step toward constructing a viable international monetary system, real progress only occurred after World War II.

C. The Bretton Woods System

The Bretton Woods Conference was a clear attempt to reestablish the preconditions for a viable international monetary system. To provide the capacity to undertake relative price adjustments, the Bretton Woods Agreement featured 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 a "fundamental disequilibrium."

---

[23] The remainder of this paragraph is drawn from Eichengreen (1992).

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 an attempt to guarantee that the disturbances in response to which exchange rate changes were taken were independently verifiable and not of the authorities' own making.[24] But in practice, countries did not always obtain authorization from the Fund in advance of devaluation. The IMF treated only one exchange rate change as unauthorized, that of France in 1948.

The failure of these procedures to assure the markets 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 doing so would undermine the credibility of their monetary policies.[25] From this point of view, it is no surprise that exchange rate changes by industrial-country participants during the Bretton Woods years were few and far between.

Despite this reluctance to resort to exchange rate changes, capital did not always flow in stabilizing directions. This reflected the limited robustness of the prevailing policy rules. 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 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

---

[24] In an analysis paralleling this one, Dominguez (1993) emphasizes the monitoring and informational roles of the IMF.

[25] It is argued that Britain's unilateral devaluation in 1949 had had just such a credibility-damaging effect. See Harrod (1952) and, for further discussion, Obstfeld (1993).

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 -- 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.[26] Thus, that success which the Bretton Woods System enjoyed was partly due to the robustness, limited but significant, of national 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 remained weak, and attempts to use monetary policy to manipulate output and employment were few. With their economies growing rapidly, governments felt little need to engage in discretionary monetary and fiscal policies. In these circumstances, voters were relatively undisturbed by the costs of misaligned currencies. The political insulation thus conferred on governments enhanced the credibility of their commitment to pegged rates. In addition, memories 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 manipulate monetary policy and risk destabilizing exchange rates.

Perhaps the most significant changes in international monetary arrangements achieved at Bretton Woods were measures for containing market pressures. The founding fathers created the International Monetary Fund as

---

[26] Bordo (1993) and Eichenbaum and Evans (1993) report various measures of the magnitude of monetary policy shocks during the Bretton Woods years, 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 is one important contributor, finding 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.

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 without restriction, and borrow further from the Fund subject to conditions. Standby arrangements, whereby countries could obtain financial assistance from the Fund in advance of difficulties, were introduced in the 1950s. This was not the kind of unlimited support needed to support a currency indefinitely, but it provided an additional source of ammunition for countries seeking to rebuff a speculative attack.

The industrial countries provided one another with additional support. In 1961 central banks initialled the Basle Agreement committing them to hold each other's currencies and to engage in reciprocal lending. 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 additional credit lines. This was followed by the General Agreements to Borrow, Special Drawing Rights, 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 particular instances.[27]

Thus, the extent of international cooperation in the provision of exchange-rate support was one of the hallmarks distinguishing Bretton Woods from immediately-preceding international monetary arrangements. And much of the cooperation that supported the system's key currencies was provided outside the channels of the IMF.

Also important for containing market pressures 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, doing so was costly,

---

[27] An example is the March 1964 multilateral credit facility which permitted Italy to avoid having to devalue.

leaving governments time to adjust policy in stabilizing directions before the exchange rate collapsed or to arrange an orderly exchange rate adjustment.[28]

The literature on the decline and fall of Bretton Woods has traditionally emphasized the System's structural flaws.[29] Another perspective views 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 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 vaccilate 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 appeal to a contingent rule, governments sought to buttress the credibility of their commitment to the prevailing exchange rate by resisting all pressure 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

---

[28] Indeed, before 1959 most countries controlled foreign-exchange transactions on current as well as capital account. 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).

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

stability of the dollar.[30] Meanwhile, the growing porousness of capital controls weakened the defenses that countries might erect unilaterally to contain market pressures.[31] The collapse of the Bretton Woods System of pegged but adjustable exchange rates was a predictable consequence.

D. Post-Bretton Woods Arrangements

International monetary management since the collapse of Bretton Woods has oscillated between unilateral efforts at exchange rate stabilization and ad hoc attempts at cooperation like the Louvre and Plaza Accords. Only in Europe have more systematic efforts been pursued.

Three post-Bretton Woods initiatives are worth considering for the light they shed on the prerequisites for international monetary stability. The first is the unsuccessful attempt at exchange-rate stabilization undertaken by European countries in the years when the Bretton Woods System drew 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. Gros and Thygesen (1992) emphasize two explanations for the failure of this initiative. One is overly expansionary monetary and fiscal policies. The quadrupling of

---

[30] From this perspective, the dissolution of the gold pool in 1968 comes as no surprise.

[31] 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."

oil prices in the final quarter of 1973 and the recessions that followed induced governments to adopt countercyclical policies with inflationary consequences. By early 1976, inflation in Italy and the U.K. had accelerated to more than 20 per cent and long since driven both countries out of the snake. Inflation rates were a third to a half lower in the most inflationary countries of the snake and significantly lower still in the anchor country, Germany. In 1975, in response to a deepening recession, France embarked on more expansionary fiscal policies, driving the franc out of the snake for a second time. Gros and Thygesen also blame inadequate coordination of policies across countries, due to the unwillingness of governments to compromise domestic economic objectives or to delegate adequate authority to the Committee of Central Bank Governors and the European Monetary Cooperation Fund. In the language of Section II, the commitment to robust monetary rules was inadequate, while international cooperation did not suffice to contain market pressures.

A second notable post-Bretton Woods initiative was the Plaza-Louvre accords initialled by finance ministers of the Group of Five countries in the mid-1980s. The three major industrial-country currencies -- the dollar, the deutschemark and the yen -- had been left to float against one another 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, eliciting protectionist pressures in the U.S. Congress. At the Plaza Hotel in New York in September 1985, the G-5 countries agreed to adjust their monetary and fiscal policies with the aim of depreciating the dollar. By February 1987, having concluded that dollar depreciation had gone far enough, they negotiated at the Louvre an exchange rate stabilization agreement designed to hold currencies within narrow bands.

Official purchases of dollars were larger in the months following the Louvre Accord than at any other time following the collapse of the Bretton Woods System. Depreciation of the dollar was stemmed temporarily, and the

dollar was held within its 2 1/2 per cent band. But the Accord was supported by neither the overriding commitment to exchange-rate targeting nor the cooperation needed for a durable exchange-rate stabilization agreement. The United States took no steps to address the yawning current account deficit that was undermining confidence in the dollar. In October 1987 the Bundesbank increased a key interest rate in response to a mild indication of domestic inflation, which raised new questions about whether its commitment to dollar stabilization was any stronger than that of the United States; the Reagan Administration was quick to criticize the German central bank. The U.S. stock market crashed the following Monday, leading the Fed to reduce interest rates and make credit available to the market irrespective of the implications for the exchange rate. Germany and Japan refused to support the dollar further unless the U.S. took steps to reduce its budget deficit. Thus, both inadequate international cooperation and hesitation to pursue robust monetary rules attaching a priority to exchange rate stability led to the Louvre Accord's demise.

The only initiative that might be held out as a serious experiment in international reform is the European Monetary System (EMS). 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 trials and tribulations. 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). The band could be shifted in the event of persistent disequilibria. From the inception of the EMS through January 1987 there were 11 realignments. That governments resorted to realignment only in the event of shocks not of their own making is questionable, however. Many countries hardly followed robust monetary rules; typically, realignment was prompted not by exogenous shocks but by persistent

inflation. Nonetheless, the EMS requirement that a country wishing to change its parity first obtain the agreement of its partners prevented significant abuses of the system.

That the EMS not only survived but prospered 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. (In 1987 the Basle-Nyborg Agreement 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. Together 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 insure the survival of the system.

The changing balance between these elements in the period leading up to the September 1992 EMS crisis sheds light on 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. 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. With the increasing rigidity of the exchange-rate system, strong-currency countries like Germany lost confidence that realignments by weak-currency countries

would limit intervention obligations to acceptable levels; unlimited intervention threatened domestic price stability, something that they were unwilling to countenance. At the same time balance-of-payments pressures were building, the traditional means of containing them were weakened or removed. Thus, the events of 1992 culminated in a crisis that drove two currencies out of the ERM and weakened confidence in the EMS.

4. Implications for International Monetary Reform

The increasingly structured nature of labor markets, the politicization of economic policy, and the growing difficulty of containing market pressures all heighten the difficulty of satisfying the prerequisites for international monetary stability. Recent events in Europe have underscored the problems these factors create for pegged but adjustable exchange rates. The rigidity of European labor markets compounds the difficulty of adjusting to shocks in the absence of the exchange rate instrument. The limited independence of central banks heightens their susceptibility to political pressures and casts doubt over their commitment to robust monetary rules.[32] The growth of international financial transactions, reputed to exceed $1 trillion a day, limits the effectiveness of capital controls.

One response to this problem is to learn live with floating exchange rates. In this conclusion I ask whether there exist alternatives at the global level.

A. A Single World Currency

A first option is to make exchange rates truly inflexible and unadjustable -- irrevocably fixed, as is true within the United States,

---

[32] Measures to buttress central bank independence, undertaken in conjunction with Stage II of the monetary unification process set out in the Maastricht Treaty, have helped to ameliorate this problem in Europe, but the independence of major European central banks, in the U.K. and France for example, remains incomplete.

Canada, and other federations -- by creating a single world currency.[33] By eliminating the exchange rate, monetary unification eliminates exchange rate fluctuations. This is the path that the European Union has opted to follow. But a clear lesson of the Maastricht process is that political solidarity and economic convergence are prerequisites for monetary unification. Europe has been trodding this path for nearly half a century, as anyone familiar with the history of the EEC can attest. It is unrealistic to hope that the major industrial countries can make comparable strides toward political unificiation in our lifetimes.

B. Currency Boards

A currency board is expressly designed to minimize uncertainty about the authorities' commitment to defending their exchange rate peg. Statute prohibits the authorities from issuing currency except when they acquire foreign exchange reserves adequate to convert that currency at a fixed rate. For every dollar's worth of domestic currency they issue, for example, they must possess a dollar's worth of reserves. Credibility should be complete, and speculators should have no incentive to test the resolve of the monetary authorities.

Or should they? The best way of answering this question is to consider the operation of a specific currency board arrangement. A good example is that of Estonia. The Estonian currency board statute separates the Bank of Estonia into Issue and Banking Departments and requires the former to peg the exchange rate against the deutschemark and to issue currency only upon acquiring DM reserves.[34] But although the Bank of

---

[33] For arguments to this effect, see Cooper (1990) and Bergsten (1993).

[34] Under the law passed by the Estonian Parliament in May 1992, the currency (the kroon) must be fully backed by gold and foreign exchange. The Bank of Estonia can alter the quantity of notes and coin in circulation only by acquiring additional gold and foreign reserves. The Bank stands ready to convert kroons into deutschemarks for most current account transactions. The exchange rate is pegged to the deutschemark at the rate of 1 DM = 8 EEK, with allowable fluctuations of plus or minus three per cent. See Hanke, Jonung and Schuler (1993).

Estonia is independent of the government, nothing prevents the parliament from changing the relevant law. Though the central bank currently has no discretion over the level of the exchange-rate peg, there remains the possibility that the currency board law will someday be changed. It could be revoked or modified by Parliament in response to changing economic or political conditions. Lainela and Sutela (1993) argue that Estonian officials in fact understand their currency board to be a transitional arrangement to be abandoned in the not-too-distant future. For speculators, solving backward, this raises questions about the credibility of the peg.

The implication is that a currency board statute provides less than complete insulation against speculative attacks. Requiring an act of parliament before the exchange rate peg can be abandoned would presumably compel the Bank of Estonia, in the event of an attack, to maintain the interest rate defense for longer, irrespective of the domestic consequences of high interest rates, than if it was authorized to unilaterally abandon the peg. But then the political fallout from high interest rates would simply be deflected onto the parliament. Though significant political costs might be incurred when revising the statute prohibiting changes in the exchange rate, nothing else would insulate the parliament from pressures to do so. The knowledge that there may come a point where it has the incentive to change the currency board statute could provide speculators the incentive to mount an attack.

C. Target Zones

In Williamson's original proposal for a target zone system for the industrial countries, participants preannounce bands for their real effective exchange rates, specifying a central rate surrounded by a 10 per cent margin on either side.[35] Given relative national inflation rates, this implies at any point in time a central parity for the nominal exchange

[35] Williamson (1985). The proposal is generalized in Williamson and Miller (1987). Later variants propose setting the central rate bilaterally against a reference currency such as the U.S. dollar.

rate and a corresponding band. Governments would manage their nominal exchange rates using foreign exchange market intervention and monetary policy so as to keep them in the band. Periodic realignments, to be undertaken before the edges of the band are reached, would avert the danger of speculative attacks. In this respect, the arrangement would resemble a system of crawling pegs (surrounded by bands), in which the rate of crawl is governed by relative national inflation rates. The system would feature "soft buffers" which would allow the rate to move outside the band under exceptional circumstances.

It is worth considering the contrasts between this proposal and the European Monetary System, since the latter arrangement proved so problematic in the early 1990s. Like the Williamson proposal, the EMS specifies central rates and bands for each participating currency vis-a-vis baskets of other European currencies. It allows intervention by governments and central banks to keep currencies within their bands and mandates intervention when the edge of the band was reached. It allows for periodic realignments of the central rate. But the Williamson proposal differs from the EMS in the width of its bands (wider than the 2 1/4 per cent bands of the pre-1993 EMS, narrower than the 15 per cent bands of the subsequent system). It differs in requiring the bands to be shifted before their edges are reached if the weakness of an exchange rate reflects an underlying competitiveness problem. It differs in allowing commitments to intervene to be suspended when that weakness reflects speculation not prompted by underlying competitive difficulties.

These features are attractive in many ways. The provision requiring the bands to be shifted before their edges are reached would prevent a build-up of competitiveness problems when the bottom of the band was approached from offering speculators a one-way bet and prompting them to attack. The soft-buffer provision allowing the band to be disregarded in the event of an attack not prompted by fundamentals would allow the authorities to let the rate depreciate rather than raising domestic

interest rates, ensuring the survival of the system. Once it became clear to speculators that the authorities were not inclined to alter the policies governing the evolution of fundamentals in response to the attack, the exchange rate should recover and move back into the band.

The question is whether such a system would differ significantly from floating. The advantage of target zones is the "bias in the band," the fact that a credible commitment to defense of a target zone reduces the amount of exchange rate variability associated with given fundamentals, creating a "target zone honeymoon." Less monetary policy intervention will therefore be needed to stabilize the rate. Hence, the tradeoff between exchange rate stability and domestic monetary policy autonomy is relaxed.

Will the Williamson proposal create a target zone honeymoon? If bands are shifted as soon as a differential develops between domestic and foreign interest rates, there is no reason for the markets to anticipate that the band will be defended, and there will be no bias in the band. Indeed, this is precisely the circumstance in which the target zone honeymoon may give way to Bertola and Caballero's target zone divorce: an acceleration in inflation which increases expectations of realignment can increase the exchange rate volatility associated with given fundamentals within the band.[36] A more complicated set of monetary-policy intervention rules might give rise to more complex dynamics, but the resulting exchange rate behavior would not be obviously superior to that which would result from the kind of managed floating that would exist in the absence of target zones.

If, on the other hand, policymakers resist pressures to shift the band, allowing its boundaries to be reached and then intervening to prevent the rate from moving further, then they expose themselves to the kind of

---

[36] Bertola and Caballero (1991). Here "an acceleration in inflation" is used as shorthand for any development that would undermine the international competitiveness of a country. Soft buffers, which allow the edges of the band to be breached even in the absence of an acceleration in inflation, may provide motivation for speculators to mount an attack even when there is no inflationary event to prompt them.

crises that upset the narrow-band EMS in 1993. In order to produce the bias in the band, they will have to raise interest rates to defend the band's edges. In an environment of virtually unlimited market liquidity and no capital controls, the requisite interest rate increases, as in Europe in the summer of 1993, may prove infeasible.[37] Defending the band may only produce crises and no target zone honeymoon.

D. A Tobin Tax

A final option is to tax foreign currency transactions as a way of mimicking some of the effects of capital controls.[38] This would enhance policymakers' ability to contain market pressures, allow them to repel self-fulfilling attacks, and provide the breathing space needed to organize orderly realignments.

This proposal has two obvious limitations. While it would enhance the authorities' capacity to contain market pressures, it would not provide the other two prerequisites for international monetary stability: ability to effect relative price adjustments and commitment to robust monetary rules. The other problem is that, to be effective, this policy would have to be implemented globally. The tax would have to apply to all jurisdictions, and the rate would have to be equalized across markets. Were it imposed unilaterally by one country, that country's foreign exchange market would simply move offshore. If the tax was only applied by France, for example, French banks could ship francs to their foreign branches, where they would be sold for foreign currency free of tax.

Thus, the policy would have to be universal. Its implementation and coordination would have to be the responsibility of a multilateral agency

---

[37] 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.

[38] The original proposal is Tobin (1978). It is updated and discussed in Eichengreen, Tobin and Wyplosz (1994).

like the Bank for International Settlements or the International Monetary Fund, which would have to possess enforcement capabilities. The IMF or BIS might be authorized to set the size of the tax within limits. That organization have to possess sanctions to be levied on countries that fail to comply with the the measure. This is not something that will occur overnight. The question is whether in the intermediate term it is more or less unrealistic than the other options mooted above.

E. Conclusion

In the short run, then, much of the world will have no choice but to learn to live with floating exchange rates. Aspiring international monetary reformers are best advised to concentrate their efforts on the medium term.

References

Allen, Steven (1992), "Changes in the Cyclical Sensitivity of Wages in the United States, 1891-1987," American Economic Review 82, pp.122-140.

Bergsten, C. Fred (1993), "The Rationale for a Rosy View: What a Global Economy Will Look Like," The Economist (11 September): 57-59.

Bensaid, Bernard and Olivier Jeanne (1994), "The Instability of Fixed Exchange Rate Systems When Raising the Nominal Interest Rate is Costly," unpublished manuscript, ENPC.

Bertola, G. and R. J. Caballero (1991), "Target Zones and Realignments," CEPR Discussion Paper No. 398.

Bloomfield, Arthur I. (1963a), "Short-Term Capital Movements Under the Pre-1914 Gold Standard," Princeton Studies in International Finance no. 11, Princeton: International Finance Section, Department of Economics.

Bloomfield, Arthur I. (1963b), "Patterns of Flcutuation in International Investment Before 1914," Princeton Studies in International Finance no. 21, Princeton: International Finance Section, Department of Economics.

Bordo, Michael D. (1993), "The Bretton Woods International Monetary System: An Historical Overview," in Michael D. Bordo and Barry Eichengreen (eds), A Retrospective on the Bretton Woods System, Chicago: University of Chicago Press, pp.3-108.

Bordo, Michael D. and Finn Kydland (1992), "The Gold Standard as a Rule," Explorations in Economic History (forthcoming).

Cagan, Philip (1975), "Changes in the Recession Behavior of Wholesale Prices in the 1920s and Post-World War II," Explorations in Economic Research 2, pp.54-104.

Canzoneri, Matthew (1985), "Monetary Policy Games and the Role of Private Information," American Economic Review 75, pp.1056-1070.

Carter, Susan and Richard Sutch (1990), "The Labour Market in the 1890s: Evidence from Connecticut Manufacturing," in Eric Aerts and Barry Eichengreen (eds), Unemployment and Underemployment in Historical Perspective, Leuven: Leuven University Press, pp.15-24.

Cooper, Richard (1990), "What Future for the International Monetary System?" in Yoshi Suzuki, Junichi Miyake and Mitsuaki Okabe (eds), The Evolution of the International Monetary System: How Can Efficiency and Stability be Attained?, Tokyo: University of Tokyo Press, pp.277-300.

Dam, Kenneth (1982), The Rules of the Game, Chicago: University of Chicago Press.

De Kock, Gabriel and Vittorio Grilli (1989), "Endogenous Exchange Rate Regime Switches," NBER Working Paper No. 3066.

Dominguez, Kathryn M. (1993), "The Role of International Organizations in the Bretton Woods System," in Michael Bordo and Barry Eichengreen (eds), A Retrospective on the Bretton Woods System, Chicago: University of Chicago Press, pp.357-404.

Eichenbaum, Martin and Charles Evans (1993), "Some Empirical Evidence on the Effects of Monetary Policy Shocks on Exchange Rates," NBER Working Paper No. 4271.

Eichengreen, Barry (1992), Golden Fetters: The Gold Standard and the Great Depression 1919-1939, New York: Oxford University Press.

Eichengreen, Barry (1993a), "The Endogeneity of Exchange Rate Regimes," in Peter B. Kenen (ed.), Understanding Interdependence, Princeton: Princeton University Press (forthcoming).

Eichengreen, Barry (1993b), "Epilogue: Three Perspectives on the Bretton Woods System," in Michael D. Bordo and Barry Eichengreen (eds), A Retrospective on the Bretton Woods System, Chicago: University of Chicago Press, pp.621-658.

Eichengreen, Barry (1993c), "A Payments Mechanism for the Former Soviet Union: Is the EPU a Relevant Precedent?" Economic Policy 17, pp.310-353.

Eichengreen, Barry (1994), International Monetary Arrangements for the 21st Century, Washington, D.C.: Brookings Institution (forthcoming).

Eichengreen, Barry, James Tobin and Charles Wyplosz (1994), "Two Cases for Sand in the Wheels of International Finance," Economic Journal (forthcoming).

Eichengreen, Barry and Charles Wyplosz (1993), "The Unstable EMS," Brookings Papers on Economic Activity 1, pp.51-143.

Fishlow, Albert (1989), "Conditionality and Willingness to Pay: Some Parallels from the 1890s," in Barry Eichengreen and Peter H. Lindert (eds), The International Debt Crisis in Historical Perspective, Cambridge: MIT Press, pp.86-105.

Flood, Robert and Peter Isard (1989), "Monetary Policy Strategies," IMF Staff Papers 36, pp.612-632.

Garber, Peter (1993), "The Collapse of the Bretton Woods Fixed Exchange Rate System," in Michael Bordo and Barry Eichengreen (eds), A Retrospective on the Bretton Woods System, Chicago: University of Chicago Press, pp.461-494.

Giovannini, Alberto (1989), "How Do Fixed Exchange Rate Systems Work: The Gold Standard, Bretton Woods and the EMS," in Marcus Miller, Barry Eichengreen and Richard Portes (eds), Blueprints for Exchange Rate Management, New York: Academic Press, pp.13-42.

Giovannini, Alberto (1993), "Bretton Woods and its Precursors: Rules Versus Discretion in the History of International Monetary Regimes," in Michael Bordo and Barry Eichengreen (eds), A Retrospective on the Bretton Woods System, Chicago: University of Chicago Press, pp.109-154.

Goldstein, Morris et al. (1993), International Capital Markets, Part I: Exchange Rate Management and International Capital Flows, Washington, D.C.: IMF.

Gros, Daniel and Niels Thygesen (1992), European Monetary Integration, London: Macmillan.

Grossman, Herschel and John van Huyck (1988), "Sovereign Debt as a Contingent Claim: Excusable Default, Repudiation and Reputation," American Economic Review 78, pp.1088-1097.

Hanes, Christopher (1993), "The Development of Nominal Wage Rigidity in the Late 19th Century," American Economic Review 83, pp.732-756.

Hanke, S. H., L. Jonung and K. Schuler (1993), Monetary Reform for a Free Estonia, Stockholm, SNS Norlag.

Harrod, Roy (1952), "The Pound Sterling," Princeton Essays in International Finance no. 13, International Finance Section, Department of Economics, Princeton University.

Hatton, T.J. (1988), "Institutional Change and Wage Rigidity in the U.K., 1880-1985," Oxford Review of Economic Policy 4, pp.74-86.

Kenen, Peter B. (1988), Managing Exchange Rates, London: Royal Institute of International Affairs.

Krugman, Paul (1991), "Target Zones and Exchange Rate Dynamics," Quarterly Journal of Economics 56, pp.669-682.

Krugman, Paul (1992), Has the Adjustment Process Worked? Policy Studies in International Economics, Washington, D.C.: Institute for International Economics.

Lainela, Seija and Pekka Sutela (1993), "Escaping from the Ruble Zone: Estonia and Latvia Compared," unpublished manuscript, Bank of Finland.

Morgenstern, Oskar (1959), International Financial Transactions and Business Cycles, Princeton: Princeton University Press.

Nurkse, Ragnar (1944), International Currency Experience, Geneva: League of Nations.

Obstfeld, Maurice (1992), "Destabilizing Effects of Exchange Rate Escape Clauses," NBER Working Paper No. 3606.

Obstfeld, Maurice (1993), "The Adjustment Mechanism," in Michael D. Bordo and Barry Eichengreen (eds), A Retrospective on the Bretton Woods System, Chicago: University of Chicago Press, pp.201-268.

Obstfeld, Maurice (1994), "The Logic of Currency Crises," NBER Working Paper No. 4640.

Ozkan, F. Gulcin and Alan Sutherland (1993), "A Model of the ERM Crisis," unpublished manuscript, University of York.

Rose, Andrew K. and Lars E.O. Svensson (1991), "Expected and Predicted Realignments: The FF/DM Exchange Rate During the EMS," Stockholm: Institute of International Economic Studies, Seminar Paper no. 485.

Sachs, Jeffrey (1980), "The Changing Cyclical Behavior of Wages and Prices, 1890-1976," American Economic Review 70, pp.78-90.

Schwartz, Anna (1993), "Comment on Giovannini," in Michael D. Bordo and Barry Eichengreen (eds), A Retrospective on the Bretton Woods System, Chicago: University of Chicago Press, pp.157-160.

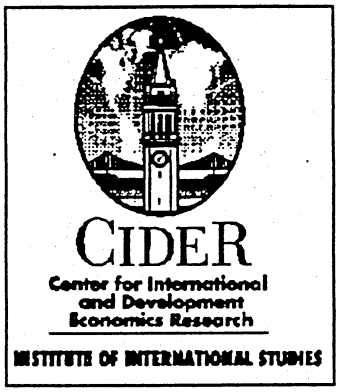
Tobin, James (1978), "A Proposal for International Monetary Reform," Eastern Economic Journal 4, pp.153-159.

Triffin, Robert (1957), Europe and the Money Muddle, New Haven: Yale University Press.

Williamson, John (1985), The Exchange Rate System, Policy Analyses in International Economics No. 5, Washington, DC: Institute for International Economics, revised edn (first edn 1983).

Williamson, John and Marcus Miller (1987), Targets and Indicators: A Blueprint for the International Coordination of Economic Policy, Policy Analyses in International Economics No. 22, Washington, DC: Institute for International Economics.

Wyplosz, Charles (1986), "Capital Controls and Balance of Payments Crises," Journal of International Money and Finance 5, pp.167-180.



University of California, Berkeley

Center for International and Development Economics Research

Working Paper Series

The Center for International and Development Economics Research at the University of California, Berkeley is funded by the Ford Foundation. It is a research unit of the Institute of International Studies which works closely with the Department of Economics and the Institute of Business and Economic Research (IBER). All requests for papers in this series should be directed to IBER, 156 Barrows Hall, University of California at Berkeley, Berkeley CA 94720-1922, (510) 642-1922, email bagdon@haas.berkeley.edu.

C92-003 "Arbitration in International Trade." Alessandra Casella. December 1992.

C92-004 "The Political Economy of Fiscal Policy After EMU." Barry Eichengreen. December 1992.

C92-005 "Financial and Currency Integration in the European Monetary System: The Statistical Record." Jeff Frankel, Steve Phillips, and Menzie Chinn. December 1992.

C93-006 "Macroeconomic Adjustment under Bretton Woods and the Post-Bretton-Woods Float: An Impulse-Response Analysis." Tamim Bayoumi and Barry Eichengreen. January 1993.

C93-007 "Is Japan Creating a Yen Bloc in East Asia and the Pacific?" Jeffrey A. Frankel. January 1993.

C93-008 "Foreign Exchange Policy, Monetary Policy and Capital Market Liberalization in Korea." Jeffrey A. Frankel. January 1993.

C93-009 "Patterns in Exchange Rate Forecasts for 25 Currencies." Menzie Chinn and Jeffrey Frankel. January 1993.

C93-010 "A Marshall Plan for the East: Options for 1993." Barry Eichengreen. February 1993.

C93-011 "Model Trending Real Exchange Rates." Maurice Obstfeld. February 1993.

C93-012 "Trade as Engine of Political Change: A Parable." Alessandra Casella. February 1993.

C93-013 "Three Comments on Exchange Rate Stabilization and European Monetary Union." Jeffrey Frankel. March 1993.

C93-014 "Are Industrial-Country Consumption Risks Globally Diversified?" Maurice Obstfeld. March 1993.

C93-015 "Rational Fools and Cooperation in a Poor Hydraulic Economy." Pranab Bardhan. May 1993.

C93-016 "Risk-Taking, Global Diversification, and Growth." Maurice Obstfeld. July 1993.

C93-017 "Disparity in Wages but not in Returns to Capital between Rich and Poor Countries." Pranab Bardhan. July 1993.

C93-018 "Prerequisites for International Monetary Stability." Barry Eichengreen. July 1993.

C93-019 "Thinking about Migration: Notes on European Migration Pressures at the Dawn of the Next Millennium." Barry Eichengreen. July 1993.

C93-020 "The Political Economy of Fiscal Restrictions: Implications for Europe from the United States." Barry Eichengreen and Tamim Bayoumi. September 1993.

C93-021 "International Monetary Arrangements for the 21st Century." Barry Eichengreen. September 1993.

C93-022 "The Crisis in the EMS and the Transition to EMU: An Interim Assessment." Barry Eichengreen. September 1993.

C93-023 "Financial Links around the Pacific Rim: 1982-1992." Menzie David Chinn and Jeffrey A. Frankel. October 1993.

C93-024 "Sterilization of Money Inflows: Difficult (Calvo) or Easy (Reisen)?" Jeffrey A. Frankel. October 1993.

C93-025 "Is There a Currency Bloc in the Pacific?" Jeffrey A. Frankel and Shang-Jin Wei. October 1993.

C93-026 "Emerging Currency Blocs." Jeffrey A. Frankel and Shang-Jin Wei. October 1993.

C93-027 "The Implications of New Growth Theory for Trade and Development: An Overview." Pranab Bardhan. October 1993.

C93-028 "The Reconstruction of the International Economy, 1945-1960." Barry Eichengreen. November 1993.

C93-029 "International Economics and Domestic Politics: Notes on the 1920s." Barry Eichengreen and Beth Simmons. November 1993.

C93-030 "One Money or Many? On Analyzing the Prospects for Monetary Unification in Various Parts of the World." Tamim Bayoumi and Barry Eichengreen. November 1993.

C93-031 "Recent Changes in the Financial Systems of Asian and Pacific Countries." Jeffrey A. Frankel. December 1993.

C94-032 "Deja Vu All Over Again: Lessons from the Gold Standard for European Monetary Unification." Barry Eichengreen. January 1994.

C94-033 "The Internationalization of Equity Markets: Introduction." Jeffrey A. Frankel. April 1994.

C94-034 "Trading Blocs: The Natural, the Unnatural, and the Super-Natural." Jeffrey Frankel, Ernesto Stein and Shang-jin Wei. April 1994.

C94-035 "A Two-Country Analysis of International Targeting of Nominal GNP." Jeffrey A. Frankel and Norbert Funke. April 1994.

C94-036 "Monetary Regime Choices for a Semi-Open Country." Jeffrey A. Frankel. April 1994.

C94-037 "International Capital Mobility in the 1990s." Maurice Obstfeld. May 1994.

C94-038 "The Contributions of Endogenous Growth Theory to the Analysis of Development Problems: An Assessment." Pranab Bardhan. July 1994.

C94-039 "Political Stabilization Cycles in High Inflation Economies." Ernesto Stein and Jorge Streb. August 1994.

C94-040 "The Stability of the Gold Standard and the Evolution of the International Monetary System." Tamim Bayoumi and Barry Eichengreen. October 1994.

C94-041 "History and Reform of the International Monetary System." Barry Eichengreen. October 1994.

C94-042 "The Geography of the Gold Standard." Barry Eichengreen and Marc Flandreau. October 1994.

C94-043 "The Bretton Woods System: Paradise Lost?" Barry Eichengreen. October 1994.