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The Rules of the Game: International Money in Historical Perspective

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NO WORLD CENTRAL BANK issues a separate currency for commerce across national boundaries. Instead, a “system” of national monies works more or less well in providing a medium of exchange and unit of account for current international transactions, as well as a store of value and standard of deferred payment for longer-term borrowing and lending.

How do national governments and banking institutions interact to provide international money for merchants and investors? By necessity, this monetary interaction changes with time, place, political circumstances, and financial technology. To better understand its historical evolution, let us follow Robert Mundell and distinguish between a monetary “system” and a monetary “order”:

A *system* is an aggregation of diverse entities united by regular interaction according to some form of control. When we speak of the international monetary system we are concerned with the mechanisms governing the interactions between trading nations, and in particular the money and credit instruments of national communities in foreign exchange, capital, and commodity markets. The control is exerted through policies at the national level interacting with

one another in that loose form of supervision that we call co-operation.

An *order*, as distinct from a system, represents the framework and setting in which the system operates. It is a framework of laws, conventions, regulations, and mores that establish the setting of the system and the understanding of the environment by the participants in it. A monetary order is to a monetary system somewhat like a constitution is to a political or electoral system. We can think of the monetary system as the *modus operandi* of the monetary order. (Robert Mundell 1972, p. 92)

More informally, an international monetary order is often called “the rules of the game”—terminology initially used in the 1920s to describe accepted rules governing the pre-1914 international gold standard.¹ In contrast, periods of great international turmoil and change—say

¹ The expression “Rules of the Game” is often attributed to J. M. Keynes (Arthur Bloomfield 1959, p. 47; Eichengreen 1985b, p. 14). In his “Economic Consequences of Mr. Churchill” (1925, p. 220), Keynes once referred to the “rules of the gold standard game” that were then forcing the Bank of England to curtail credit. Nevertheless, Keynes did not literally list systematically what he thought the important rules were—nor have subsequent authors using this popular expression.

from 1914 to 1945—defy any such consistent characterization (Eichengreen 1985a). Otherwise, the rules of the game were (are) generally discernable—even when not written down or formally codified.

Mundell's distinction between a monetary system and a monetary order suggests a useful way to focus the scope of this review. Instead of covering the workings of international monetary systems—their success in promoting trade and the efficient allocation of capital, limiting the world business cycle, aligning national prices levels, avoiding inflation or deflation, and so on—I shall confine my main line of analysis to comparing monetary orders. In chronological succession, the main rules of the game for member governments under each monetary order are separated from the ongoing text by a series of seven rule boxes:

1. *The International Gold Standard, 1879–1913*
2. *The Bretton Woods Agreement in 1945: The Spirit of the Treaty*
3. *The Fixed-Rate Dollar Standard, 1950–1970*
4. *The Floating-Rate Dollar Standard, 1973–1984*
5. *The Plaza-Louvre Intervention Accords for the Dollar Exchange Rate, 1985–1992*
6. *The European Monetary System in 1979: The Spirit of the Treaty*
7. *The European Monetary System as a Greater Deutsche Mark Area, 1979–1992*

Building on the ideas of authors writing at the time and subsequently, each box sets out my best assessment of the rules governing exchange rate objectives, official reserve holdings, convertibility commitments, adjustments in domestic monetary policies, the choice of a “nominal anchor” for the price level, and so on,

for its historical period. The boxes are comparably arranged more or less in parallel. For example, in each box the first rule(s) defines exchange rate objectives while the last (or next to last) defines the anchor rule. The reader in a hurry, or one wanting an initial overview of what the paper contains, can simply compare rule boxes on first reading.

But the selection of rules to go into each box is by no means uncontroversial. The accompanying text evaluates the practical robustness of each set of rules within its historical era, and then compares their essential features across regimes down to the present day. From historical contrasts and parallels, the rationale for the international monetary rules prevailing in any one era is more readily understood. Sometimes the rules change as a reaction to how events in an earlier period are interpreted. The Bretton Woods Agreement of 1945 sought to change the basic operating principles of the International Gold Standard (Williamson 1983).

Less obviously, the way in which an international monetary system actually works may differ enormously from the written or intended rules in the treaty on which it is apparently based. The intention to treat all nations symmetrically in the written articles of the Bretton Woods Agreement of 1945 (The “Spirit of the Treaty” in Box 2) was followed by the asymmetrical Fixed-Rate Dollar Standard (McKinnon 1969; C. Fred Bergsten 1975; and Peter Kenen 1983) whose rules are encapsulated in Box 3 below. The formal symmetry of the EMS treaty of 1979 (the “Spirit of the Treaty” in Box 6) was followed by a regime more akin to a Greater Deutsche Mark Area (Massimo Russo and Giuseppe Tullio 1988; Francesco Giavazzi and Alberto Giovannini 1989) as summarized in Rule Box 7. Drawing a distinction between the intended rules incorporated into a found-

ing treaty and the actual rules of the game as it was subsequently played under the cover of that treaty, turns out to be of central analytical importance.

Since 1973, the major blocs—Europe, the United States, and Japan—have, ostensibly, been on a regime of “floating” exchange rates. Yet, in Rule Boxes 4 and 5, we see two distinct sets of governing rules. Early in 1985, there was a major regime change separating the Floating-Rate Dollar Standard from the more recent Plaza-Louvre Accords.

First, however, let us look at the pre-1914 gold standard for which there was no collective “founding treaty” nor major regime changes. Countries opted unilaterally to follow similar rules of the game that proved remarkably robust.

1. *The International Gold Standard, 1879–1913*

Why limit our study of the gold standard to the years 1879–1913? Britain, with a few interruptions, had already been on gold for more than a century. By 1879, however, the gold standard had become *inclusively international*—covering all the major industrial economies, and most smaller agrarian ones. By the mid 1870s, France had abandoned bimetallism in favor of gold; the German Empire discarded a silver-based currency and, by using its indemnity from the Franco-Prussian war of 1871, also adopted gold. In 1879, the U.S. returned to gold after the suspension of gold convertibility in the Civil War. Although threats of inconvertibility recurred from 1879 onwards, Western European countries and the United States maintained their official gold parities without significant interruption for 35 years. But in August 1914, the international gold standard ended abruptly—almost overnight (Gustav Cassel 1936) as the warring European countries declared their curren-

cies inconvertible into gold and into each other.²

Box 1 provides a highly simplified view of the rules of the game for the prewar gold standard. Rules I, II, and III assure the convertibility of domestic currency into gold at a fixed price on the one hand, and, by allowing free international arbitrage, into foreign exchange within a very narrow band—known as the “gold points”—on the other. In the late 19th century, these three rules were generally well understood (Eichengreen 1985b, pp. 3–4), usually had the force of written law in all the participating countries, and were virtually automatic in their day-to-day implementation.

In addition, important *implicit* rules—active and passive—also governed the behavior of central banks and treasuries under the international gold standard.

On the active side, Rules IV and V summarize the most empirically important: the national central bank’s role as a lender of last resort (Bagehot 1873) and the obligation to restore the traditional mint parity “in the long run” should an unforeseen crisis force a (temporary) suspension of gold convertibility. At the national level at least, the gold standard was more of a managed system than is commonly believed.

On the passive side, Rule VI precluded each government from exercising any enduring influence over its own national price level. Notwithstanding the important role of Britain to be discussed below, this passive reliance on the world market for gold to determine the common price level (the nominal anchor) reflects the essential symmetry of the international gold standard. In contrast to the asymmetrical way the game was (is) played in more recent times (Rule Boxes 3, 4, and 7 below), the six rules in Box 1 ap-

²The United States itself remained formally on gold until 1933.

Rule Box 1

THE INTERNATIONAL GOLD STANDARD, 1879–1913

All Countries

- I. Fix an official gold price or “mint parity,” and convert freely between domestic money and gold at that price.
- II. Do not restrict the export or import of gold by private citizens, nor impose any other exchange restrictions on current or capital account transacting.
- III. Back national banknotes and coinage with earmarked gold reserves, and condition long-run growth in deposit money on availability of general gold reserves.
- IV. In short-run liquidity crises from an international gold drain, have the central bank lend freely to domestic banks at higher interest rates (Bagehot’s Rule).
- V. If Rule I is temporarily suspended, restore convertibility at traditional mint parity as soon as practicable—if necessary by deflating the domestic economy.
- VI. Allow the common price level (nominal anchor) to be endogenously determined by the worldwide demand for, and supply of, gold.

plied *symmetrically* to all participating countries.

But how the gold standard game was actually played is not uncontroversial. Hence, it is worthwhile reviewing how well the six rules, hypothesized in Box 1, held in practice.

Gold Points and Gold “Devices”

From the way exchange rates behaved, one can infer whether traditional mint parities were effectively violated, or if governments impeded international gold flows. If Rules I and II hold continuously, triangular arbitrage keeps the exchange rate between any pair of national currencies within a very narrow band, the “gold points.” Consider the algebraic model used by Pablo Spiller and Robert Wood (1988):

X is the uniform dollar price (mint parity) of one ounce of “fine” gold as paid or charged by the U.S. Treasury (20.646 dollars).

Y is the uniform official pound sterling price (mint parity) of one ounce of fine

gold as paid by or charged by the Bank of England (4.252 pounds).

S_t is the cable spot exchange rate in dollars per pound at time t .³

T_{ub} is the total transactions cost per ounce of gold shipped from the United States to Britain.

T_{bu} is the total transactions cost per ounce of gold shipped from Britain to the United States.

It is then profitable to import gold into Great Britain if and only if

$$S_t > \frac{X}{Y - T_{ub}} \quad (1)$$

and to import gold into the United States if and only if

$$S_t < \frac{X - T_{bu}}{Y} \quad (2)$$

³From the development of cable communications in the 1870s, exchange rates in both foreign centers were the same—at least by the late 1890s. In the earlier history of the gold standard, however, the assumption of a unified foreign exchange market need not be appropriate (Maria Cristina Marcuzzo and Analisa Rosselli 1987, 1991).

TABLE 1
BILATERAL FLUCTUATION BANDS FOR EXCHANGE RATES

	Parity	Lower Limit	Upper Limit
<i>Gold Standard (1879–1913)</i>			
Sterling (\$/£)	4.856	4.827	4.890
Franc (FF/\$)	5.183	5.148	5.215
Mark (DM/\$)	4.198	4.168	4.218
<i>Fixed-Rate Dollar Standard (1950–1970)</i>			
Sterling (\$/£)	2.800	2.772	2.828
Franc (FF/\$)	4.937	4.887	4.986
Mark (DM/\$)	4.200	4.158	4.242
Yen (Yen/\$)	360.0	356.4	363.6
<i>European Monetary System (1979–1992)</i>			
Franc (FF/DM)	2.310	2.258	2.362

Source: Giovannini (1989).

Suppose sterling is strong in the foreign exchanges. Then (1) shows that the larger the transactions costs of importing gold into Britain, the further sterling's dollar value can increase above the ratio of mint parities, i.e., above $X/Y = 4.856$ dollars/pound. Similarly, when sterling is weak, (2) shows it can fall below this ratio according to the transactions costs of importing gold into the United States.

But how big was this band of variation between the gold points defined by (1) and (2)? The upper panel of Table 1 shows the implications for exchange rates between pairs of national monies. Because of the higher transport cost for gold, Oskar Morgenstern (1959) estimates that the band was "normally" a little over one percent for the U.S. dollar against any European currency while only 0.5 to one percent within Europe. Although comparable, these bands were smaller than those established in the 1950s and 1960s under Bretton Woods or in the 1980s within the EMS—see Table 1 for a comparison.

But were the gold points defined by (1) and (2) well maintained in practice? For the period 1899–1908, Truman Clark

(1984) claimed that inequalities (1) and (2) were violated quite often—with gold sometimes moving in the "wrong" direction. In contrast, Lawrence Officer (1986) reexamined Clark's data and found that violations were infrequent because the gold points themselves were highly variable. The transactions costs T_{ub} and T_{bu} change through time and differ from each other—depending on varying transport fees for shipping and insurance, the length of a gold voyage (the time a merchant's capital was tied up), and the varying interest rates prevailing in each financial center. Moreover, in order to detect a violation, these stochastic gold points have to be matched exactly in time with the corresponding quotation for S_t .

Just looking at the time-series properties of S_t itself, Spiller and Wood (1988) estimate that gold arbitrage costs were highly variable, as Officer had suggested. More importantly, for the period 1899 to 1908 on which they had detailed data, Spiller and Wood find that S_t was kept within the narrow range of \$4.83750 to \$4.90125 per pound, which was remarkably close to Morgenstern's range of 4.827 to 4.890 for just 1879 (Table 1).

Because the gold-based system itself succeeded in keeping the exchange rate within such a narrow band, the argument over whether or not the gold points were “violated” seems moot.

Nevertheless, “gold devices” were used. To cushion gold losses, governments might temporarily raise their effective buying price for gold—thus violating Rule I. For example,

Throughout 1891, a year in which the Bank [of England] had considerable difficulty in controlling the discount market, the Bank manipulated its prices, both for gold bars and gold coin, to supplement its Bank Rate policy. (W. M. Scammell 1965, p. 112)

Later from 1896 to 1910, Scammell notes that the Bank of England again used such gold devices quite extensively. Even so, the dollar/sterling exchange rate remained within the narrow margins calculated by Spiller and Wood.

The Bank of England manipulated the gold points considerably less than its counterparts on the continent (Bloomfield 1959). Indeed, a few governments were not legally bound to convert at any price: in France, Belgium, and Switzerland, convertibility was at the authorities’ option. And Giovannini (1986) notes that the Reichsbank often dissuaded German commercial banks from exporting gold for profit—a violation of Rule II. Compared to other European central banks, the Bank of England relied more on frequent changes in its official discount rate to protect its gold reserves. Many countries and firms held sterling deposits in London, reflecting Britain’s central role in the world capital market. Thus the Bank of England was more anxious to keep its notes close to their official mint parity.

One could argue that the gold devices actually improved the acceptability of the gold standard by keeping the domains of national monetary circulation somewhat segregated—thus giving national

authorities greater flexibility in dealing with short-run banking crises. Otherwise falling transport costs—and more rapid transit—for gold would have narrowed the range of variation for S_t far below the one percent that Morgenstern observed for 1879—and of course further below what Spiller and Wood actually found for the period 1899–1908. If the gold devices had not already existed, they likely would have had to be invented.

I suggest that the difference between a central bank’s buying and selling prices for gold be made somewhat greater than hitherto, say 2 percent, so there would be this difference between the gold points irrespective of the actual costs of transporting gold. (Keynes 1930, p. 291)

Keynes’ two percent band was indeed adopted in Bretton Woods Articles in 1945—albeit in a slightly different format as we shall see.

In conclusion, government gold devices did not significantly undermine Rules I and II—contrary to what was sometimes alleged. True, gold devices slightly widened the band of experienced exchange-rate variation. This permitted greater—although still modest—short-term interest-rate differentials across countries. Provided that nations adhered to Rule V, however, the (minor) use of gold devices made it easier for governments to defend their gold stocks, stay “close to” their traditional mint parities, and maintain virtually fixed exchange rates from 1879 to 1914.

Credibility in the Short Run and in the Long Run: The Restoration Rule

In contrast to the rules governing the Bretton Woods Agreement after World War II, the outstanding characteristic of the pre-1914 gold standard was the commitment to exchange stability in the long run. This is incorporated in Rule V in Box 1, what I shall call the *restoration rule*. When any country’s mint parity had

to be suspended—either in a minor way through the use of gold devices or through periods of outright inconvertibility when the government withdrew from the gold market altogether—the presumption was that full gold convertibility would eventually be restored at the traditional (pre-trouble) parity.

Following each of the British suspensions of convertibility in 1847, 1857, and 1866, the traditional mint parity was restored shortly thereafter (Michael Bordo 1984a and 1984b). Even with interruptions from major wars, this ethic usually prevailed. After the Napoleonic wars, the British government finally restored its traditional mint parity in 1821. Following a 17-year suspension during the American Civil War and its aftermath, the U.S. went back to gold in 1879 at its traditional mint parity.

Because of Rule V, a government could more easily maintain the gold cover for its currency—i.e., implement Rule III—without having to contract the domestic money supply. If a government increased its buying price for gold, international investors anticipated that this increase would be temporary—and that gold's future price would be lower and closer to the traditional mint parity. Short of a major crisis such as a full-scale war, they did not extrapolate further increases in the price of gold. Thus the government could easily attract gold bullion from domestic or foreign residents with modest manipulations of the gold points.

Similarly, if domestic interest rates increased because of gold losses, international investors would see little exchange risk in increasing their holdings of marketable securities denominated in that currency—at least for the industrialized countries at the center of the system. For given foreign interest rates, small increases in short-term domestic interest rates could easily attract financial inflows to cover an incipient payments deficit be-

cause of the high degree of credibility of the gold points.

Although exchange rates stayed within a remarkably narrow band from 1879 to 1913, precisely how credible were these gold points in the minds of international investors? Giovannini (forthcoming) provides an ingenious test by looking at the boundedness of short-term interest rates that is implied by the gold points. Suppose the spot exchange rate S_t (dollars/pounds sterling) was credibly confined within the bounds defined by inequalities (1) and (2)—based on Officer's (1986) data on the transactions costs of shipping gold between the United States and Britain. If the observed gold export point from the United States, \bar{S} , is widely held to be the maximum value that the exchange rate can take over the maturity of a short-term financial instrument—say a 90-day prime commercial bill denominated in dollars—and if other sources of risk are small, then the American interest rate can never exceed:

$$\bar{R}_t = (1 + R_t^*) (\bar{S}/S_t) - 1 \quad (3)$$

where R_t^* is the interest rate on an equivalent 90-day sterling bill. Similarly, the American interest rate could not fall below

$$\underline{R}_t = (1 + R_t^*) (\underline{S}/S_t) - 1 \quad (4)$$

where \underline{S} is the gold import point for the United States. Using (3) and (4), Giovannini calculated continuous interest rate bounds \bar{R}_t and \underline{R}_t from 1889 to 1899, and then checked whether or not the U.S. short-term interest rate fell within these bounds, i.e., whether or not $\underline{R}_t < R_t < \bar{R}_t$. He found that the dollar rate of interest almost always stayed within its credibility bounds. Equally interesting, if the calculation is repeated comparing French or German commercial bills against sterling, the franc and Reichsmark interest rates almost always stayed within their credibility bounds—even in periods

when short-term interest rates were quite volatile. (In addition, Giovannini found substantial positive comovement in short-term interest rates internationally.)

Because of this high degree of credibility under the pre-1914 gold standard, short-term capital flows, more than gold flows themselves, became the key swing variable for balancing international payments while keeping exchange rates stable. For example, if any one country developed a substantial trade deficit which was not matched by a sufficient inflow of long-term capital, a modest increase in its short-term interest rate vis-à-vis sterling would generate a balancing inflow of short-term capital. In contrast, the relatively modest gold flows that did occur responded to shifts in the demand for money relative to the availability of new gold supplies in different parts of the financially integrated world economy (Donald McCloskey and J. Richard Zecher 1976).

Rule V of the classical gold standard was essential for the regressive exchange-rate expectations that generated stabilizing short-term capital flows. When future exchange rates became less certain in the interwar period, and in the 1970s and 1980s under floating exchange rates, short-term capital flows became destabilizing "hot" money. But the literature does not always recognize the importance of the long-term commitment embodied in Rule V. In his scathing criticism of Winston Churchill for returning Britain to gold in 1925 at her traditional mint parity, Keynes (1925) did not concede that Churchill was following a well-defined tradition.⁴

⁴ Keynes' criticism, that the traditional British mint parity overvalued sterling relative to the dollar, was enormously influential—probably inducing the interwar gold standard to abort somewhat sooner than it would have otherwise. More importantly, the ethic contained in Rule V was abandoned in the Bretton

Bagehot on Central Banks

In *Lombard Street* (1873), Walter Bagehot persuasively described how central banks should act as lender-of-last-resort under an international gold standard—a principle that subsequently became generally accepted.⁵ Bagehot's dictum is summarized as Rule IV in Box 1. In pursuing this role as the lender of last resort, either the central bank could maintain an excess gold reserve above that legally necessary to back its current note issue (practiced more by continental European countries) or resort more quickly to changing the official discount rate (practiced more by Britain) without violating the rules (Richard Sayers 1957). Indeed, central banks felt no compunction about sterilizing gold inflows in order to build up "excess" reserves.

Continuing increases in their reserve ratios were . . . usually followed by reductions in discount rates, but such reductions appear to have reflected, not the awareness by central banks that such action might help other countries, and thus indirectly their own, to maintain stable exchange rates, but rather such considerations as to minimize holdings of a nonincome-earning asset like gold or to maintain contact with the money market for technical reasons. Indeed, I can find no clear-cut evidence that any central bank ever lowered its discount rate following gold inflows from abroad because of an explicit desire to play, or even because of an awareness of, the "rules of the game." (Bloomfield 1959, pp. 23–24)

Asymmetrically, interest rates were increased quickly in response to a sharp

Woods Articles drafted in 1943–45—and in most subsequent proposals for reducing variance in exchange rates. Although the articles aimed to rein in short-run exchange volatility, countries remained free to adjust their exchange parities in the longer run.

⁵ See Bordo (1984b) for a nice discussion of Bagehot's ideas. Unlike the major European countries which had established central banks prior to 1879, the United States had no central bank until 1913. But the United States also suffered more financial stress—bank panics and more volatile short-term interest rates—from 1879 to 1913.

gold outflow. But in the case of *both* an external and an internal drain,

We must look first to the foreign drain, and raise the rate of interest as high as may be necessary. Unless you stop the foreign export, you cannot allay the domestic alarm. The Bank will get poorer and poorer, and its poverty will protect or renew the apprehension. And at the rate of interest so raised, the holder . . . of the final bank reserve must lend freely. Very large loans at very high interest rates are the best remedy for the worst malady of the money market when a foreign drain is added to a domestic drain. (Bagehot 1873, pp. 27–28)

In such a crisis, this extension of large loans to British commercial banks meant that the domestic assets of the Bank of England were actually increasing as its gold reserve declined: the impact of the gold loss on domestic stocks of circulating bank notes or deposits was (partially) offset or sterilized—as per Rule IV. Fluctuations in the national money supply were thereby smoothed. More generally during 1880 to 1914, Bloomfield (1959) provides striking evidence that European central banks' foreign assets (gold, foreign exchange, and silver) and domestic assets (discounts, advances, and securities) usually moved in opposite directions—as Bagehot's rule would suggest.

In the case of *every* central bank the year-to-year changes in international and domestic assets were more often in the *opposite* direction (60 percent of the time) than in the same direction (34 percent of the time). (Bloomfield 1959, pp. 48–50)

In interpreting the breakdown of the short-lived gold standard in the interwar period, an influential study by the League of Nations (Ragnar Nurske 1944) claimed that the principal countries broke the rules of the game by at least partially sterilizing gold flows. To support this contention, Nurske showed that domestic and foreign assets moved in opposite directions during the brief return to the gold standard in the interwar period. Whereas he claimed that the understood

rule during the pre-1914 classical period was that central banks *reinforce* the effects of international gold flows on the domestic money stock: changes in their domestic assets were positively correlated with changes in official gold stocks. And some authors (Giovannini 1986) have continued to analyze whether Nurske's nonsterilization rule—or its stronger version inclusive of a reinforcement effect—was followed during the classical period.

But Nurske's supposed "rule" conflicts directly with Bagehot's well-established operating principle, and conflicts with Bloomfield's data on how central banks actually behaved in the late 19th century. Thus *no implicit or explicit rule against sterilizing gold inflows existed under the classical gold standard*—as long as the traditional mint parity itself was not undermined. In fact, central banks operated in the international and domestic capital markets, sometimes borrowing or lending directly from each other (Bloomfield 1959), to *mitigate* or smooth the effects of gold flows on domestic money stocks.

To be sure, in noncrisis times, one would not expect sterilization to take place. In the financially integrated world economy of the late 19th century, suppose an (ongoing) increase in the demand for the domestic money—distributed between notes and deposits—in any one country. Then under Rule III, the increase in note issue would be met by a corresponding increase in the central bank's gold reserves from inflows through the balance of payments; whereas the increase in deposit money would, at least in part, be met by an expansion of the central bank's domestic assets. Nurske's positive association between the domestic and foreign assets of the central bank would hold. But this positive association is not itself a "rule" reflecting conscious policy by the central

bank to reinforce the effect of international gold flows on the domestic money supply. Rather, it is an endogenous response to an increase in the domestic demand for money.⁶

In summary, the popular textbook view of the classical gold standard as an automatic, self-equilibrating balance-of-payments adjustment mechanism is correct only if one narrowly interprets Rules I, II, and III. But from Rules IV and V, we understand that the classical system was *managed*. Diverse countries, which were not always on good terms politically, adhered to the rules remarkably well—but from the rather limited perspective of national monetary management linked to a common external standard. National central bank and Treasury authorities continually undertook discretionary action—subject to the overriding consideration that gold convertibility be maintained in the long term.

Discretionary judgment and action were an integral part of central banking policy before 1914, even if monetary management was not oriented toward stabilization of economic activity and prices in the broader modern sense. (Bloomfield 1959, p. 26)

The Endogenous Nominal Anchor

I have drawn up the six rules in Box 1 as if they applied *symmetrically* to all countries on the classical gold standard. True, the British capital market, “managed” by the Bank of England, was of great value in providing essential finance that helped individual countries better maintain their gold parities. From Rule VI, however, the common price level was still autonomously or automatically de-

⁶ The fact that Bloomfield’s data are annual, spanning several crisis periods, may well account for the negative correlation between domestic and foreign assets that he observed, whereas, within shorter time periods within which there was no crisis, one would expect a positive association. I am indebted to an anonymous outside referee for this important distinction.

termined by the worldwide supply of and demand for gold.

Apart from the essential randomness of major new gold discoveries, on the supply side there was a systematic tendency for the common price level—what gold would buy in terms of a broad basket of other goods and services—to be equilibrated in the long run. During times of general deflation in the world economy, new (marginal) gold mines would find it profitable to increase production and gold would be attracted away from nonmonetary uses—such as jewelry. Similarly, as long as countries maintained their official gold parities, there was a natural brake on worldwide inflation as marginal gold mines were driven out of production and nonmonetary uses became more attractive. This supply-side tendency toward equilibration of the common price level was well known to classical authors such as John Stuart Mill (1848), and has been more fully articulated by Robert Barro (1979). Barro showed formally that the common price level would tend toward complete stability in the long run only if the price of gold relative to a basket of all other commodities was constant.

On the demand side, major shocks occurred continually. In the 1870s and 1880s when countries rushed to (re)join the gold standard, the increased demand for monetary gold caused deflationary pressure in the world economy (Robert Barsky and J. Bradford De Long 1991). Against this, throughout the 19th century up to 1914, the demand for monetary gold was continually reduced by the rapid growth of deposit money on top of an ever-narrowing gold base (Robert Triffin 1964).

But no national monetary authority, not even Britain, took responsibility for monitoring worldwide growth of this deposit money in order to stabilize the common price level. British monetary policy did not determine the nominal anchor

for the system as a whole. Indeed, the common price level was surprisingly variable in the short and intermediate runs (Richard Cooper 1982)—although without any discernable trend in the long run (Jastram 1977). Thus, Keynes' vivid metaphor,

During the latter half of the 19th century the influence of London on credit conditions throughout the world was so predominant that the Bank of England could almost have claimed to be the conductor of the international orchestra (Keynes 1930, p. 274),

seems overdrawn (Eichengreen 1987). Without demoting the Bank of England to the role of a triangle player in the international orchestra, as McCloskey and Zecher (1976) playfully did, in the main the British abided by the same monetary rules—including Rule VI—as did other industrial countries.

Compared to the marked asymmetry of the rules governing the postwar dollar standard, the symmetry of the pre-1914 gold standard's monetary order increased its political appeal as an exchange mechanism at the micro level. Insofar as all countries remained symmetrically tied to gold, with the common price level determined endogenously, no one country had to be the nominal anchor. (In effect, relying on gold resolved the "Nth country" or "redundancy problem" to be analyzed in our discussion of the Fixed-Rate Dollar Standard below.) Whence the great macroeconomic advantage of the international gold standard. By limiting the discretionary power of each national monetary authority to inflate its own or the common price level, or to accommodate external inflationary shocks, the problem of time inconsistency in macroeconomic policies was neatly resolved (Bordo and Finn Kydland 1990; George Alogoskoufis and Ron Smith 1991; Alogoskoufis 1992).

But this great advantage of the gold standard was also its weakness. Because no government took discretionary action

to offset random changes in the demand for, or supply of, monetary gold, the system was prone to sharp (worldwide) liquidity squeezes; and the common price level was much more volatile in the short and intermediate runs than, say, under the Fixed-Rate Dollar Standard discussed below (Cooper 1982).

Even so, the depth of the London capital market, and the unilateral British commitment to free trade in the late 19th century, were essential to the overall success of the classical gold standard in integrating the world economy. Under "permanently" fixed exchange rates and a virtually common monetary policy, the prices of tradable commodities were about as well aligned internationally as they were within any one country (McCloskey and Zecher 1976; Charles Calomiris and Robert Hubbard 1987). When measured by wholesale price indices, purchasing power parity across national currencies generally prevailed (McKinnon 1988b). Except for very small but increasing risk premia as one moved further outward from the center of the world capital market in London, nominal interest rates tended toward equality on a worldwide basis. Thus, from 1879 to 1914, "real" rates of interest across highly diverse industrial and raw materials producing countries were effectively equalized (Lance Davis and Robert Huttenbach 1986) to a degree not seen before or since.⁷

2. *Bretton Woods in 1945: the Quest for National Macroeconomic Autonomy*

From 1943 to 1945, American and British negotiators, among whom J. M. Keynes was the dominant intellectual in-

⁷ Purchasing power parity, and thus the equalization of "real" interest rates, held only when measured in terms of wholesale (tradable) price indices. Otherwise different rates of productivity growth could lead to international differences in price movements when measured in terms of consumer or other price indices with nontradable components.

fluence, worked continuously to draw up a new postwar monetary order. Not only did they all seek to escape from the tyranny of gold *per se*, but Keynes also wanted to prevent the reestablishment of *any* common international monetary standard that would again limit the autonomy of national governments to determine their own monetary policies.

There should be the least possible interference with internal national policies, and the plan should not wander from the international "terrain." (Keynes 1943, p. 19)

What caused this major philosophical change? The abortive British attempt to reestablish an international gold standard from 1925 to 1931 was widely seen as having aggravated the Great Depression. Anticipating Britain's return to her prewar parity, the pound appreciated about 10 percent real (15 percent nominal) vis-à-vis the dollar from 1924 to 1925. Keynes guessed that this left sterling 10 percent overvalued, and that the British policy of tight money necessary to maintain this external parity was responsible for the industrial depression which Britain suffered in the remainder of the 1920s.

Unwilling to deflate further to maintain high interest rates in the face of heavy unemployment, Britain devalued sharply in September 1931 after a run on her slender gold stock—and discontinued any official gold parity. Undervaluing the pound then put greater pressure on those countries still on gold to deflate in order to keep their legally required gold covers for domestic note issue. The U.S. finally devalued in 1933, France three years later. In each case, delay in trying to defend official gold parities *before* devaluing greatly aggravated the mounting deflationary and protectionist pressure in the world economy.

The external constraint was binding in significantly more instances than the standard ac-

counts of the period allow. . . . Stemming a run on banks would have required intervention by the lender of last resort. Only by affirming its willingness to provide emergency liquidity to the banking system, and backing words with deeds, could central banks have contained bank runs. But a rapid increase in domestic credit threatened to produce a loss of international reserves. For central banks whose reserves were at the statutory minimum, this would have represented a breach of the gold standard statutes and a fatal blow to confidence in the exchange rate [gold parity]. (Eichengreen 1990, pp. 106 and 108)

As is well known, through deflation and protectionism the international economy collapsed. By 1933 foreign trade had fallen to one-third its 1929 level, and controls on international capital flows had proliferated. Runs on banks were transmitted around the world—with the most severe banking crises first in Germany and then in the United States. The world capitalist system could not mount a sustained peacetime economic recovery for the remainder of the 1930s.

The economic debacle of the 1930s gave birth to the doctrine (Keynes 1936) that each country should have free rein to manage its own macroeconomy. Rather than submitting to some international standard, exchange rates were to be sufficiently flexible to support nationally selected inflation and employment objectives (James Meade 1951). But to prevent a recurrence of the beggar-thy-neighbor policies of the 1930s, exchange rates were to be sufficiently stable to permit the resumption of normal world trade. Thus did the need for some form of controlled flexibility in exchange rates dominate the Bretton Woods negotiations.

The Bretton Woods system of fixed but adjustable par values was intended to provide exchange stability without the rigidity of the gold standard. (Edward Bernstein 1989, p. 29)

I have endeavored to encapsulate the 20-odd articles of Bretton Woods in 1945,

Rule Box 2

THE BRETTON WOODS AGREEMENT IN 1945: THE SPIRIT OF THE TREATY

All Countries

- I. Fix a foreign par value for the domestic currency by using gold, or a currency tied to gold, as the numeraire; otherwise demonetize gold in all private transacting.
- II. In the short run, keep the exchange rate within one percent of its par value; but leave its long-run par value unilaterally adjustable if the International Monetary Fund (IMF) concurs.
- III. Free currency convertibility for current-account payments; use capital controls to dampen currency speculation.
- IV. Use national monies symmetrically in foreign transacting, including dealings with the IMF.
- V. Buffer short-run payments imbalances by drawing on official exchange reserves and IMF credits; sterilize the domestic monetary impact of exchange-market interventions.
- VI. National macroeconomic autonomy: each member government to pursue its own price level and employment objectives unconstrained by a common nominal anchor or price rule.

and “the spirit of the treaty,” into the six rules contained in Box 2.

Unlike the other five rules in Box 2, Rule VI promising national macroeconomic autonomy has no precise counterpart in the written Bretton Woods articles. Yet, national macroeconomic autonomy is central to what the negotiators wanted (Williamson 1983). Indeed, Rule II supports this autonomy by binding a country to maintain its par value only in the short run, leaving open the possibility that exchange rates could change substantially in the long run. In effect, the “restoration” rule of the classical gold standard (Rule V in Box 1), with its strong(er) commitment to long-term exchange stability, was reversed. But this reversal is logically consistent with retaining exchange controls on capital account—as per Rule III in Box 2—to isolate national financial markets. Indeed, Keynes intended to extend the British wartime system of exchange controls to other countries after the war.

There is no country which can, in future, safely allow the flight of funds for political reasons or to evade domestic taxation or in anticipation of the owner turning refugee. Equally, there is no country that can safely receive fugitive funds, which constitute an unwarranted import of capital, yet cannot safely be used for fixed investment. For these reasons it is widely held that control of capital movements, both inward and outward, should be a permanent feature of the postwar system. (Keynes 1943, p. 31)

Against this, the United States wanted to keep its capital market open to foreigners—with private banks taking the major role in clearing international payments. Thus Keynes had to back down from the idea of maintaining generalized exchange controls. Nevertheless, under the IMF’s Article VIII as finally negotiated (incorporated as part of Rule III in Box 2), he did persuade the Americans to limit each member’s official obligation to maintain a convertible currency to *current* transactions—understood to include normal trade credit:

No member shall, without the approval of the Fund, impose restrictions on the making of payments and transfer for current international transactions. (IMF, Article VIII, July 22, 1944)

For a given distribution of the world's capital stock, the international monetary order was intended to sustain allocative efficiency in (multilateral) trade in goods (Williamson 1983). However, the negotiators did not support microeconomic liberalism to the extent of envisaging a reintegration of the world's capital markets as they had been in the late 19th century. Keeping national capital markets segmented was seen as necessary for pursuing the overriding principle of national macroeconomic autonomy.

The Buffer Stock Approach to Exchange Reserves

Counterfactually, suppose that tight restrictions over international capital movements had been retained in the postwar, and nations had pursued autonomous macroeconomic policies where the domestic monetary consequences of international payments imbalances were sterilized (Rule V in Box 2). How did the Bretton Woods negotiators in 1945 imagine international payments would get balanced in the short run when exchange rates remained fixed?

Seasonal, cyclical, or any unusual shortfall in a country's net export earnings would be covered out of its official exchange reserves supplemented by that country's access to short- and intermediate-term official credits from the International Monetary Fund. Thus evolved the buffer stock rationale—Rule V in Box 2—for the management of official exchange reserves.

The use of liquid reserves as a buffer for temporary discrepancies in the balance of payments should be the normal operation of the international monetary system from day to day, or rather from year to year, exchange rates being thus held stable in the short run. That is the

general function of what we may call "international liquidity," including in this term not only gold and exchange reserves but also the drawing facilities (quotas) provided by the Fund. . . . When the liquid reserves of some particular country or countries are depleted, then—and only then—is the time to take measures to correct the balance of payments. Measures of (internal) inflation or deflation are excluded for this purpose, unless they happened to be required for domestic stability. We are then left with . . . commercial policy in the wide sense on the one hand, and exchange rate adjustments on the other. (Nurske 1947, pp. 80 and 81)

This remarkable shift from the 19th century "monetary backing" view of exchange reserves (Rule III of the International Gold Standard) to the modern "buffer stock" approach (Rule V of Bretton Woods) had, by 1945, become accepted by virtually all writers on the subject.⁸ It paralleled the shift away from accepting a common external monetary standard, where the national money supply was endogenous and the national price level was determined in common with that of other countries. It also presupposed that short-term private capital flows would no longer be the stabilizing swing variable in international payments.

Symmetry in the Choice of Par Values

Note that our six rules in Box 2, like the written articles themselves, are intended to apply symmetrically to all nations signing the Bretton Woods treaty—including the determination of exchange-rate par values as summarized by Rule I.

According to Article IV of the Bretton Woods Agreement, exchange rates were to be maintained within one percent of their par values. However, a member country with a payments imbalance could change its official parity to correct a "fundamental disequilibrium" in its balance

⁸ Between the wars, this buffer stock view of international reserves had already become widely accepted by Keynes and others. See Eichengreen (1990a and 1990b, ch. 10) for references.

of payments. Unlike the European Monetary System after 1979, the country in question could *unilaterally* apply to the IMF to change its par value (Rule II in Box 2) without having to negotiate directly with other member countries. And it was imagined that the IMF, representing the collective interest of all other countries, would readily acquiesce if some disequilibrium existed and the country in question was not trying to gain an unfair competitive advantage over its neighbors.

But what was to be the numeraire against which such controlled exchange rate changes were to be measured? Although gold was no longer the fundamental asset behind the issue of national monies, it—rather than the U.S. dollar—was intended to be the official numeraire in which par values were defined in the 1945 agreement. Article IV, Section I(a) reads

Expression of par values. The par value of the currency of each member country shall be expressed in terms of gold as a common denominator or in terms of the United States dollar of the weight and fineness in effect on July 1, 1944.

The importance of gold as the numeraire was later obscured when virtually all countries except the United States chose to define their par values in terms of U.S. dollars. However, John Williamson interprets Article IV to mean that a dollar devaluation or appreciation

(a) was legally possible; (b) did *not* automatically change the par value of any other currency in terms of gold; and (c) did change the parities of other currencies in terms of the dollar. (Williamson 1977, p. 4)

Williamson suggests that the neutral gold numeraire was chosen to give the United States the symmetrical option to change its exchange rate along with other countries. This symmetry is also captured in Box 2's Rule IV by which all

national currencies were, pro forma, treated more or less equally in defining contributions to, or drawing resources from, the newly created International Monetary Fund. Although gold was chosen as a conveniently neutral numeraire for defining par values for exchange rates, because these rates themselves were to be adjustable, gold was not seen as the fundamental asset restraining national money issue and determining the common price level in the late 19th century sense. Nor, in 1945, was any one national money supposed to become a dominant "key" currency in the system as a whole.

3. *The "Fixed-Rate" Dollar Standard, 1950–1970*

Despite the fact that the articles of the 1945 Bretton Woods Agreement were not significantly amended until the mid 1970s, the world monetary system had, by 1950, evolved into a Fixed-Rate Dollar Standard. For 20 years after 1949, very few adjustments in exchange par values occurred: France twice in 1957–58, Germany in 1961, Britain in 1967, Germany and France in 1969—all very modest changes by modern standards. For Japan, its par value remained unchanged at 360 yen/dollar from 1949 to 1971! In effect, virtually fixed exchange rates and a common price level for tradable goods were reimposed; and the macroeconomic autonomy of each participating country was again constrained by an international monetary standard. Thus, the spirit of the largely unwritten rules on how the game was actually played from 1950 to 1970 differed enormously from what the negotiators had intended in 1945.

Instead of treating all nations symmetrically—as embodied in the rules for the pre-1914 gold standard (Box 1) and envisaged in the 1945 Bretton Woods treaty (Box 2)—the inherent asymmetry

Rule Box 3

THE FIXED-RATE DOLLAR STANDARD, 1950–1970

Industrial Countries Other Than the United States

- I. Fix a par value for the national currency with the U.S. dollar as the numeraire, and keep exchange rate within one percent of this par value indefinitely.
- II. Free currency convertibility for current-account payments; use capital controls to insulate domestic financial markets, but begin liberalization.
- III. Use the dollar as the intervention currency, and keep active official exchange reserves in U.S. Treasury Bonds.
- IV. Subordinate long-run growth in the domestic money supply to the fixed exchange rate and to the prevailing rate of price inflation (in tradable goods) in the United States.
- V. Offset substantial short-run losses in exchange reserves by having the central bank purchase domestic assets to partially restore the liquidity of domestic banks and the money supply (Bagehot's Rule).
- VI. Limit current account imbalances by adjusting national fiscal policy (government net saving) to offset any divergences between private saving and investment.

The United States

- VII. Remain passive in the foreign exchanges; practice free trade with neither a balance-of-payments nor an exchange-rate target. Do not hold significant official reserves of foreign exchange.
- VIII. Keep U.S. capital markets open to foreign governments and private residents as borrowers or depositors.
- IX. Maintain position as a net international creditor (in dollar-denominated assets) and limit fiscal deficits.
- X. Anchor the dollar (world) price level for tradable goods by an independently chosen American monetary policy.

of the Fixed-Rate Dollar Standard requires writing down one set of rules for countries other than the United States, and a different set for the United States itself. Recognizing this inherent asymmetry, Box 3 summarizes the essential rules of the Fixed-Rate Dollar Standard according to two criteria. First, it portrays how, in the main, the game was actually played from 1950 to 1970 before the commitment to fixed exchange rates broke down. Second, Box 3 also reflects those rules which would have been necessary and sufficient for the Fixed-Rate

Dollar Standard to have continued indefinitely after 1970. (Thus Box 3 omits any rule requiring the dollar to be convertible into gold—a necessary omission for the dollar standard to continue indefinitely; Triffin 1960; McKinnon 1969.) Each of the 10 rules in Box 3 endeavors to satisfy both criteria.

Let us first develop a conceptual rationale for the asymmetrical role of the United States. In the lower panel of Box 3, Rules VII through X resolved what Mundell called the “redundancy” problem:

Only $N-1$ independent balance of payments instruments are needed in an N -country world because equilibrium in the balances of $N-1$ countries implies equilibrium in the balance of the N th country. The *redundancy problem* is the problem of deciding how to utilize the extra degree of freedom. (Mundell 1968, p. 195)

Because of the demonetization of gold in all private transacting, and its virtual demonetization in official transacting, the redundancy problem arose in a strong form after World War II. All N currencies in the system were *potentially* independent national fiat monies. The amount of each fiat money in circulation was no longer automatically determined by its base of monetary gold, nor were exchange rates tied down by traditional gold parities. Thus gold was no longer the “ N th” currency whose purchasing power—based on the endogenous supply of, and demand for, gold—determined the common price level: the nominal anchor as per Rule VI in Box 1.

In the absence of a purely international money like gold, the redundancy problem could be resolved neatly by designating one country’s money to be the N th currency. The N th country would then eschew exchange rate and other balance-of-payments objectives, but it alone could exercise monetary independence in order to provide a nominal anchor for the system as whole—i.e., as per American adherence to Rule X in Box 3.

For the Fixed-Rate Dollar Standard to be compatible with the incentives of the other $N-1$ countries, however, the United States had to behave correctly as the N th country—not only in providing a stable nominal anchor (to be discussed more fully later on), but also by being suitably passive in other dimensions.

Rules VII and VIII in Box 3 reflect the passive side: as the N th country, the United States had to allow the other $N-1$ countries freedom of action to deter-

mine various facets of their balance of payments—exchange rates, official holdings of (dollar) reserves, net current-account surpluses, and so on.

In setting par values for exchange rates, all other countries chose the dollar as numeraire—as per Rule I in Box 3. Insofar as each country intervened to preserve its one percent exchange margins (two percent band), only the dollar was used as the intervention currency (Rule III). Thus, in order to prevent conflict in the selection of exchange rate targets, the United States remained passive in the foreign exchange markets—as per Rules VII and VIII. Once $N-1$ independent exchange rates were chosen against the N th currency, triangular arbitrage in open exchange markets would determine the complete constellation of $N(N-1)/2$ cross rates—including the effective exchange rate of the N th country (McKinnon 1979, ch. 2). This principle that the U.S. not have an independent exchange rate policy was respected until, in 1971, President Nixon insisted that the dollar be devalued. Although Nixon acted according to the spirit of Bretton Woods Articles that permitted exchange-rate flexibility (Williamson 1977), dollar devaluation violated the unwritten rules of the game of the Fixed-Rate Dollar Standard.

Dollar Exchange Reserves: A Soft Buffer

Beyond the setting of exchange rates, which remained largely fixed anyway, American passivity also extended to the balance of payments. Other countries controlled their individual balances of payments—and consequential buildup of dollar reserves—by the ease or tightness of their domestic monetary policies. Although constrained by the fixed exchange rate obligation under Rule I, Rule V still permitted plenty of latitude for each country to adjust its foreign reserve posi-

tion by altering its domestic monetary policy.

For example, from 1950 to 1967, Japan kept its exchange reserves at modest levels—less than \$2 billion with a negligible gold component—by allowing domestic credit expansion by the central bank to satisfy virtually all the growing demand for money in Japan's extremely high-growth economy (McKinnon 1974). In contrast, the Bundesbank maintained a much tighter rein on domestic central bank credit in Germany—thus inducing a more rapid buildup of foreign exchange reserves to over \$8 billion by 1967—with a significant gold component. Indeed, Donald Mathieson (1971) calculates that virtually the whole of the secular increase in the German monetary base in the 1950s and 1960s can be accounted for by German official purchases of U.S. dollars, which were then either held as reserves or paid out as official German capital transfers abroad.

Thus, under Rule VII in Box 3, the center country was to remain passive no matter what the foreign "demand" for dollar exchange reserves might be—whether modest as in the Japanese case or high as in the German. Under the classical gold standard, the supply of international reserves in the form of gold or its close substitutes determined the world price level because such reserves were backing for the issue of domestic money. In contrast, in a pure key-currency regime,⁹ the center country could and should allow other countries' official

claims in that currency to be demand-determined to *any* level. Because such reserves were no longer closely related to domestic money issue in the center country or the periphery, they did not determine the rate of inflation or deflation for the system as a whole. Instead, official dollar reserves were better viewed as a soft buffer—or simply as a residual.

In a widely discussed article, "The Dollar and World Liquidity: A Minority View," published in *The Economist* in 1966, Emile Despres, Charles Kindleberger, and Walter Salant argued more generally that the open American capital market (as per Rule VIII) was a giant financial intermediary providing liquidity services *both* to foreign governments—mainly through their "voluntary" holdings of U.S. Treasury bonds and bills—and to individuals and firms through their buildup of dollar bank deposits. Despres, Kindleberger, and Salant criticized the U.S. Department of Commerce (worried about potential American gold losses) for treating this buildup of liquid dollar claims owned by foreigners as an American balance-of-payments "deficit"—thus incorrectly connoting a disequilibrium in need of correction.

That the supply of dollar reserve assets is *demand* determined was implicit within the Despres, Kindleberger, and Salant view of the U.S.A.'s role as an international financial intermediary. This is a major claim in favour of the dollar standard, provided that the U.S. pursues a policy of monetary stability—an argument first put forward by McKinnon (1969) . . .

It should be clear that the stability of the world price level, under the pegged rate dollar standard extant until Spring 1973, required stability of the internal value of the dollar. A stable U.S. price level would provide the link between the monetary and real spheres, much as gold was supposed to have done so under the gold standard. But with the dollar standard, and given a stable U.S. price level, it was the stable prices of *all* U.S. traded goods and services which governed the world price level. (Paul

⁹The (limited) American commitment to convert officially held dollar balances into gold meant that the postwar monetary regime was more complicated, and more fragile, than the pure Fixed-Rate Dollar Standard portrayed in Box 3. Indeed, the authorities worried about the unrestricted build up of official dollar reserves, and various substitute arrangements for creating reserve assets were tried or proposed—but generally proved unsuccessful in displacing the dollar (Hans Genberg and Alexander Swoboda, forthcoming).

Hallwood and Ronald MacDonald 1986, pp. 165–66)

Indeterminateness in the postwar buildup of dollar exchange reserves would be benign—i.e., would minimize financial stress in the system as a whole—as long as the world price level was pinned down by Rule X in Box 3. The United States *actively* exercised “the extra degree of freedom” associated with Mundell’s redundancy problem to stabilize the purchasing power of the dollar in terms of a broad basket of tradable goods and services.

American Monetary Independence

Unlike the Bank of England, which could not control the common price level under the pre-1914 gold standard, the U.S. Federal Reserve System had sufficient freedom of action to anchor the common price level under the postwar dollar standard. It could follow Rule X in Box 3 if it so chose. First, unlike all other countries, the U.S. government was not obligated to intervene directly in the foreign exchange markets; thus it did not need continually to adjust its domestic monetary base to support such interventions. Second, other industrial countries held their official reserves mainly in U.S. Treasury bonds—thus satisfying Rule III—which, in practice, was a fairly well-established convention. These demand-determined reserves could then grow to any level without threatening a run on the U.S. gold stock, whose official price was fixed at \$35 per ounce—a (nominal) obligation under the Bretton Woods Agreement but *not* one of the 10 rules for a successful Fixed-Rate Dollar Standard outlined in Box 3.

(In the 1960s, intense schizophrenia afflicted the managers of the system. They were uncertain whether to follow Rule Box 2 or Rule Box 3, or to respect the residual dollar-gold convertibility

constraint that fitted neither set of rules. The historical origins of this schizophrenia and the associated “Triffin Dilemma” are analyzed below.)

But Rule III has a further important aspect. The accumulation or decumulation of dollar exchange reserves by foreign central banks would not affect the American monetary base. Only foreign holdings of “nonmonetary” U.S. Treasury bonds would change. Therefore, exchange interventions by foreign central banks were “passively” or automatically sterilized from changing the American money supply (Swoboda 1978; McKinnon 1982). Foreign money supplies definitely were affected by exchange intervention by foreign governments, but the American money supply was not.

Even if the Fed had unhindered control over the U.S. money supply, was the demand for it fairly predictable? As long as exchange rates were not expected to change collectively against the dollar (Rule I), international currency substitution for or against the dollar would not be a problem—and was not in the 1950s and 1960s (McKinnon 1984 and 1988a). In the absence of institutional changes within the United States itself, i.e., “financial innovations,” the effective demand for narrow money in the form of U.S. M1 was fairly stable.

In summary, by controlling the supply of base money in dollars and by being able to estimate the demand for it without reference to what was going on in the foreign exchanges or in other countries, the U.S. Federal Reserve was unique among central banks in being able to *unilaterally* stabilize its own price level—inclusive of tradable goods as approximated by the American producer price index. In the other industrial countries, by contrast, trends in money growth were endogenously determined according to Rule IV.

The schematic diagram in Figure 1

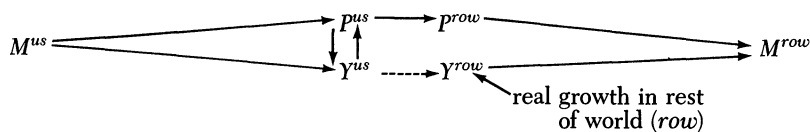


Figure 1: The Fixed-Rate Dollar Standard

summarizes how the Fixed-Rate Dollar Standard fitted together to determine trends in aggregate money growth and inflation in the world economy. For the U.S. on the one hand and the rest of the industrial world (*ROW*) on the other, the arrows show the direction of causation as established in a series of Granger statistical tests performed by Kong-Yam Tan (1984).

In the system portrayed in Figure 1, the American money supply, M^{us} , is the dominant control variable. The joint interaction with Y^{us} (American real output) and M^{us} determines the American price level for tradable goods—as denoted by P^{us} . Through the fixed exchange rate, the price level for tradables in the rest of the world, P^{row} is determined at a common level with the United States. Much weaker is the direct link from Y^{us} to Y^{row} . Instead, foreign real output is dominated by domestic supply-side determinants of growth in postwar Europe and Japan (Ohno 1987). As *ROW*'s output increases at the common price level anchored by the United States, the demand for *ROW* money also increases causing (incipient) balance-of-payments surpluses abroad. Finally, in this chain of causation, M^{row} increases endogenously to accommodate the increased demand for it.

Official Schizophrenia: Exchange-Rate Rigidity and the Dollar Price of Gold

In order to preserve national macroeconomic autonomy, the designers of the Bretton Woods Agreement intended, in 1945, to retain exchange rate flexibility in the long run—as per Rule II in Box

2. If so, why did exchange rates among the principal industrial countries remain so rigid in practice from 1950 to 1970—as per Rule I in Box 3?

First, after a one-time round of European devaluations in 1949 to offset greater wartime and postwar inflation vis-à-vis the United States, there was more or less successful macroeconomic stabilization in Europe under the Marshall Plan. By September 1950, the Marshall Plan's most important progeny—the European Payments Union (EPU)—was established for clearing payments multilaterally within Europe by using the U.S. dollar as both the unit of account and the means of settlement. Thus, each European central bank found it convenient to maintain an exactly fixed dollar exchange parity—without even a narrow band¹⁰—in settling its net EPU payments imbalances every month (Jacob Kaplan and Günther Schleiminger 1989). More importantly, the greater financial stability and openness of the United States compared favorably to the relative lack of confidence in the finances of the other industrial economies.

In Japan in 1949–50, there was a similar dollar-based price-level stabilization under the Dodge Plan. Thus, the Euro-

¹⁰ As long as central banks clear international payments directly, exact dollar parities are both feasible and convenient. Only when exchange markets become more open is a narrow band necessary to devolve the business of clearing international payments to commercial banks (McKinnon 1979). Within Europe, this devolution was not fully completed until December 1958 when the EPU was finally abolished; only then did European countries adopt the two-percent bands around their dollar parities associated with the Bretton Woods Agreement.

pean countries and Japan wanted fixed dollar exchange rates to help anchor their national monetary policies and price levels. To secure more efficient disinflation with less unemployment, they found it convenient to lean on the superior financial reputation of the United States throughout the 1950s.

(Much later, after the Fixed-Rate Dollar Standard collapsed into the high inflation of the 1970s, this process was again replicated within Europe. After the formation of the European Monetary System (EMS) in 1979, those European countries with higher inflation leaned on Germany—and the by-then-superior reputation of the Bundesbank—to provide a nominal anchor for their price levels as shown in Rule Box 7 below.)

Second, in the 1960s, after the EPU was terminated and after financial recovery in Europe and Japan, capital-account transactions were progressively liberalized—as per Rule II in Box 3. This openness inhibited governments from even considering any change in their (dollar) par values for fear of provoking large anticipatory capital flows. Similarly, governments other than the American could not conduct independent monetary policies without provoking large offsetting capital movements (Pentti Kouri and Michael Porter 1973). In effect, foreign central banks had to adjust growth in their national money supplies to support exchange intervention—i.e., in the long run, intervention had to be nonsterilized to be effective (*Jurgensen Report* 1983). Thus, willy-nilly, governments continued to follow rule IV in Box 3 in the 1960s—even after doubts arose about the efficacy of relying on American monetary policy as the nominal anchor for the system as a whole.

Official schizophrenia over exchange rate flexibility carried over to America's residual but still vexing link to gold: the commitment to convert dollar balances

held by foreign central banks and treasuries at \$35 per ounce. This “rule” fitted into neither Box 2 nor Box 3. Instead it was an unanticipated outcome of using gold as a passive numeraire in setting exchange par values under Article IV of the 1945 Bretton Woods Agreement (Rule I, Box 2). Once all other countries formally specified their par values in terms of dollars, the United States accidentally found itself as the only major country with a pro forma commitment to convert its currency into gold.

Residual or not, was this gold link a constraint on American monetary independence? In the 1950s by and large, the answer was no. U.S. gold stocks were large relative to outstanding official dollar claims. Because of the strong financial reputation of the United States and the dollar's special role in the EPU, foreign central banks preferred, on average, to build up interest-bearing dollar claims rather than converting them into (sterile) gold.

By the early 1960s, however, we have the emergence of the famous “Triffin Dilemma” (Triffin 1960). Even when American monetary policy remained perfectly satisfactory in anchoring the common price level of tradable goods through the mid 1960s, the rapid voluntary build up of foreign dollar claims relative to the limited American gold stock gave speculators a one-way bet: the U.S. would always put a dollar floor under the price of gold but could not prevent a collective run on the dollar from forcing a price increase. No problem existed as long as there was no run on the dollar, but the threat of a run artificially increased the demand for gold vis-à-vis dollars in such a way that a run could be precipitated. Indeed, some Europeans like Charles de Gaulle actively used official gold conversions to try to drive the world off the de facto dollar standard. Whence the Triffin Dilemma, and why this dollar-

gold link does not fit into a consistent set of rules (Box 3) for the Fixed-Rate Dollar Standard.¹¹

In the 1960s, this ambiguity in the rules of the game kept American politicians like Presidents Kennedy and Johnson awake at night worrying about American gold losses (Robert Solomon 1977). For a brief window of time in the early 1960s, it had the perhaps salutary effect of making American monetary policy more conservative, i.e., less inflationary, than many academic economists wanted. By 1968, however, the U.S. had made it progressively more awkward for foreign central banks to convert their dollar assets into gold. More negatively, concern for continued gold losses induced the United States to impose mild restrictions on capital outflows—such as the interest rate equalization tax—contrary to Rule VIII in Box 3. Although these capital-account restrictions were sufficiently porous so as not to undermine the overall integrity of the dollar standard, clearly the managers of the system had become very schizophrenic.

Adjusting to Cyclical Fluctuations in International Payments

Although foreign money growth was largely endogenous in the longer run (Figure 1), how did governments in Europe and Japan adjust to cyclical imbalances in international payments given the “unexpected” rigidity in exchange rates? For the years 1950 to 1967, Michael Michaely (1971) studied the reac-

tion of eight industrial countries¹² to cyclical changes in their gross official reserve positions—i.e., dollar holdings, gold, and net positions with the International Monetary Fund. Outside of the United States, he found overall compliance of domestic monetary policy to the exchange rate—as per Rule IV in Box 3. The domestic money supply moved in the same direction—or the discount rate moved in the opposite direction—as the change in official exchange reserves.

In a further remarkable parallel with Bloomfield’s 1959 analysis of the classical gold standard, Michaely also found for the dollar standard that

Countries tend to regard as their external target not so much the attainment of balance-of-payments equilibrium as the avoidance of deficits . . . The loss of reserves is viewed with concern, but their accumulation . . . is viewed with satisfaction or indifference. (Michaely 1971, pp. 63–64)

Fortunately, the accumulation of “excess” exchange reserves by countries with balance-of-payments surpluses could be easily accommodated under a pure dollar standard if they held non-monetary U.S. Treasury Bonds (Rule III), which was largely true in practice. In contrast, the excessive accumulation of gold reserves by one or more countries under an international gold standard could lead to worldwide deflation that was particularly noticeable in the 1880s and early 1890s—not to mention the deflationary debacle that occurred later from 1929 to 1933 as discussed above. Thus, the Fixed-Rate Dollar Standard was inherently less subject to liquidity crises than the classical gold standard—

¹¹ In the early 1960s, at least one prescient commentator argued strongly for demonetizing gold so as to open up the possibility that its market price could fall as well as increase. See *Collected Papers of Emile Despres*, edited by Gerald Meier (1973). That of course would have resolved the Triffin Dilemma and eliminated this particularly ambiguity in the Fixed-Rate Dollar Standard—although the “problem” of unintended rigidity in exchange rates would have remained.

¹² Belgium, France, Germany, Japan, Netherlands, Sweden, and the U.K. Michaely also analyzes the United States and finds that the Fed did not systematically react to America’s balance-of-payments position—unlike the other countries, which did react to their balance of payments.

and thus was much less prone to cyclical variations in the common price level (Cooper 1982). As long as the United States prevented the common price level from falling irrespective of the buildup of dollar reserves by foreign governments, deflation was not a problem.

Bagehot's rule, i.e., Rule V in Box 3, was also followed by Europe and Japan in the 1950s and 1960s.

The central bank's domestic assets do show, in most countries, a clear tendency to rise with a fall in the country's external reserves, and vice versa. (Michaely 1971, p. 40)

When the European and Japanese governments intervened to buy and sell dollars to maintain their dollar exchange rates, in the short run national central banks partially sterilized the domestic monetary consequences of these (cyclical) imbalances in international payments. Michaely found that, rather than letting the domestic money supply contract fully by the amount of some "external drain" (in Bagehot's terminology), the central bank would lend to commercial banks to partially offset the effect of a balance-of-payments deficit on the domestic money supply. By keeping the central bank's discount window open, albeit for lending at a penalty rate, this procedure was virtually automatic (McKinnon 1979, ch. 10). If the commercial banks lost reserves in the foreign exchanges, they automatically appeared at the window for (partial) replenishment.

Internal Versus External Balance

What about the potential conflicts between "internal" balance—the level of employment, output, and so on—and "external" balance in international payments? Following James Meade's seminal extension of Keynesian macroeconomics to open economies in 1951, textbooks down to the present day emphasize the importance of exchange-rate flexibility as

a separate policy instrument for controlling international payments—thus freeing demand management to take care of domestic output and employment—presumably at a stable price level.¹³ If the government was handicapped by a fixed exchange rate, Mundell (1962) analyzed the further need to assign monetary policy to external balance while fiscal policy was assigned to balance aggregate demand in the domestic macroeconomy.

In his detailed empirical study of the 1950s and 1960s, however, Michaely found that such textbook conflicts seldom occurred.

The requirements of external and internal balance tended much more often to provide policy indications in the same direction, or at least not to contradict each other, rather than to point in opposite directions. As a result of this, and the general lack of enthusiasm to employ budgetary policy, the use of the much discussed "policy mix," which would assign monetary policy to balance-of-payments adjustment and fiscal policy to achieve high employment (where the two targets call for policies in opposite directions), is a rarity rather than a common phenomenon. (Michaely 1971, p. 63)

During the 1950s and 1960s when the theory behind the standard textbook dilemma of how best to maintain internal and external balance simultaneously was developed (Harry Johnson 1958; W. E. G. Salter 1959), the empirical issue was largely moot! This theorizing on the need for more exchange rate flexibility was prompted by numerous sterling crises in the 1950s and 1960s—which reflected attempts by the British government, under the strong influence of British Keynesians, to be more inflationary than the confines of the dollar standard allowed. But Britain was not typical. Most countries, such as Japan, willingly accepted the subordination of national monetary policy to an international standard be-

¹³ This extensive literature was previously reviewed for the *Journal of Economic Literature* (McKinnon 1981a).

cause of the absence of any conflict between external and internal balance.

Until 1967–68, Japan's postwar monetary policy was able to pursue simultaneously three policy goals—stable prices, full employment, and balance of payments equilibrium—because there were no trade offs among these goals. It may be that, of the three, balance of payments equilibrium was given the highest priority (but . . . there was no contradiction between this and the other two goals. (Yoshio Suzuki 1986, p. 119)

This lack of conflict between domestic and foreign balance under the Fixed-Rate Dollar Standard is superficially puzzling. True, monetary policies in countries other than the United States were subordinated to maintaining the exchange rate—as per Rule IV. Unlike the classical gold standard, however, exchange controls on capital flows were still quite restrictive in Japan and in many European countries in the 1950s and 1960s—as permitted under Rule II. Thus, unlike the gold standard, there was no “automatic” private finance for persistent current account deficits or surpluses. If investment tended to be greater than saving in Country A, this would eventually result in an uncovered current account deficit which, under the Fixed-Rate Dollar Standard, could not be eliminated by exchange depreciation. (Under the pre-1914 gold standard, countries could cover large trade surpluses or deficits by offsetting flows of private capital.)

In the 1950s and 1960s, the matter was essentially resolved by each country maintaining a rough balance between aggregate national saving and investment. After the end of the Marshall Plan in 1952, persistent net capital transfers—and thus trade imbalances—among the industrial economies remained very small well into the 1970s. Fluctuations in investment and saving were highly positively correlated *within* countries

(Martin Feldstein and Charles Horioka 1980; Frankel 1986)—unlike the late 19th century and unlike the 1980s to follow.

But what was the mechanism by which intracountry savings and investment remained roughly balanced? In a major empirical study, Tamin Bayoumi (1990) shows that *private* saving and investment within each country were not well correlated in the 1960s into the early 1970s. (When net international capital transfers were very large under the pre-1914 gold standard, private saving and investment were similarly uncorrelated.) However, Bayoumi also showed that government fiscal surpluses, i.e., net government saving, were inversely related to the private saving-investment gap in each country. Therefore, to complete the rules of the game for the Fixed-Rate Dollar Standard, Box 3 incorporates this fiscal offset into Rule VI for countries other than the United States, and into Rule IX for the United States itself. In the 1950s and 1960s, fiscal policy was actively adjusted to keep each country's current account surplus (deficit) small—which obviated the need for large capital transfers from one country to another. This, in turn, made the system consistent with the retention of (modest) capital controls (Rule II) by countries other than the United States.

After the Fall: The Failure to Agree on New Rules for Setting Par Values, 1971–1974

The calamitous events ending the worldwide commitment to maintain par values in exchange rates have been well chronicled by the Federal Reserve's Robert Solomon (1977). Following the advice of economists throughout the United States who were worried about America's loss of international competitiveness, President Nixon insisted in August 1971 that the dollar be devalued—and im-

posed a temporary import surcharge of 10 percent until, at the Smithsonian Institution in December 1971, new exchange parities were declared to value the dollar some 10 to 20 percent less against other important currencies.¹⁴ But the always tenuous Smithsonian par values broke down completely in early 1973, and the currencies of the major industrial blocs of North America, Europe, and Japan have been floating against each other ever since.

In 1973 and 1974, finance ministries and central banks—convened under the auspices of the so-called Committee of Twenty (C-20)—entered into strenuous negotiations to consider monetary reforms leading to a new set of par values. Under its terms of reference, the C-20 was to propose a new world monetary order that was more symmetrical (not dollar based) and which permitted more exchange rate “flexibility” for individual countries including the United States than the apparent rigidity of the old Fixed-Rate Dollar Standard. But these terms of reference proved impossible to negotiate—as John Williamson (1977) analyzed comprehensively in *The Failure of World Monetary Reform, 1971–74*. In effect, in reasserting the principles of international symmetry and greater national macroeconomic autonomy while still trying to establish par values for exchange rates, the C-20 was renegotiating in the original spirit of the Bretton Woods articles—as summarized by our six rules in Box 2. Still under the sway of Keynes’ views as of 1943–44, officials and academic economists in 1973–74 had

¹⁴ In that fateful August, President Nixon also ended the commitment of the U.S. Treasury to redeem dollar assets owned by foreign governments in terms of gold. Since 1968, however, foreign pressure to request conversion had been diminished by the development of a two-tier market in gold that insulated official transactions at \$35 per ounce from the private market where higher prices had begun to prevail (Kenneth Dam 1982).

not really changed their mindset for 30 years.

But the same problems that prevented the flexible and symmetrical monetary order contained in Box 2 from being effective after 1945, to be replaced by the rigid and asymmetrical Fixed-Rate Dollar Standard contained in Box 3, were even more apparent by the early 1970s.

First, there was the “hot” money problem. Having exchange rates stable in the short run at some given par value could not be reconciled with having them adjustable in the long run in order to allow national macroeconomic autonomy. As long as world financial markets remained (modestly) open, speculative hot money flows would tend to anticipate any discrete change in official par values.¹⁵ And, certainly by 1973–74, the negotiators did not want a return to the draconian exchange controls that Keynes had in mind in 1943.

Second, the negotiators refused to recognize the nature of Mundell’s redundancy problem. In an N country world without any generally accepted purely international money such as gold, there can only be $N-1$ independent official targets for the exchange rate, balance of trade, balance of payments, and so on. Symmetry, in the sense of each of the N countries choosing its targets independently, is simply impossible.

Roughly speaking, two approaches can resolve this redundancy problem. One is to require detailed negotiations among all N countries for each of the $N-1$ targets in each category—something that only a close-knit group like the European Monetary System temporarily achieved in the limited sphere of setting par values for

¹⁵ Even if par values adjust smoothly according to some version of the crawling peg (Williamson 1965), an open economy without capital controls could well suffer from greater dynamic instability if it allowed its exchange parity to crawl according to commonly accepted indicator rules (McKinnon 1981b).

exchange rates before September 1992 (see Boxes 6 and 7 below). But even the EMS does not negotiate over other balance-of-payments targets. Among countries that were more loosely related politically, a monetary order requiring continual mutual negotiations on a worldwide basis is neither possible nor desirable.

The alternative solution to the redundancy problem is both simple and elegant. If a natural candidate exists, assign one of the N countries to be the passive N th country, and leave the other $N-1$ countries responsible for setting their par values and balance-of-payments targets independently. That corresponds precisely to the 10 rules for the Fixed-Rate Dollar Standard from 1950 to 1970 (Box 3). But this was the monetary order from which the United States was trying to escape! Thus, the C-20 negotiations collapsed in 1974 for essentially the same reason that prompted President Nixon to devalue the dollar in 1971.

Concern for the "overvalued" American exchange rate from about 1968 onward reflected the slipping American resolve to continue anchoring the common price level (Rule X, Box 3). By caving in to domestic political pressure to be more "expansionary," the U.S. Federal Reserve allowed the American producer index to begin increasing at about 3.5 per cent per year from 1968 to 1972, whereas from 1951 to 1967 inflation had averaged closer to only one percent per year. Other countries, notably Germany, were thereby induced to violate Rule IV by attempting a sufficiently tight money policy to reduce their inflation rates below that prevailing in the United States. Whence the cumulative "overvaluation" of the dollar which so concerned President Nixon and his advisors. Anticipating dollar devaluation, "hot" money flowed out of the United States in 1970–71. The result was an excessive buildup of dollar

exchange reserves and money growth abroad that further hastened the collapse of the fixed exchange rate regime.

But this collapse of dollar-based par values was hardly inevitable. If the U.S. Federal Reserve System had continued to anchor the common price level, and if the Americans had not asserted their legal right to adjust the dollar exchange rate as promised by the Bretton Woods Articles, the fixed dollar exchange parities could have continued indefinitely once the residual commitment to gold convertibility was terminated. Clearly, the discrepancy between the unwritten rules in Box 3 and the legal obligations in Box 2 eventually proved lethal for the par value system.

4. *The Floating-Rate Dollar Standard, 1973–1984*

But not lethal for the dollar standard itself! Even the traumatic breakdown of fixed exchange rates in 1971–73 did surprisingly little subsequently to disturb the conventions for using the dollar as international money for official and private purposes (McKinnon 1979). Under floating (as well as fixed) exchange rates, economies of scale are such that "the use of a currency as (international) money itself reinforces that currency's usefulness" (Paul Krugman 1984). This reinforcing circularity makes displacement unlikely short of war, exchange controls, or massive inflation in the center country.¹⁶

Table 2, adapted from Kenen (1983) and Krugman (1984), conveniently identifies six international monetary roles for the dollar—depending on whether it is used for private or official purposes. For compactness of discussion, the dollar's useful-

¹⁶ Because of disruptions from World Wars I and II, the dollar eventually displaced sterling's similarly entrenched international role (Benjamin Cohen 1971)—but not without fomenting disorganization in the international economy (Kindleberger 1973). Now, however, no natural "successor" to the dollar is in the offing.

TABLE 2
ROLES OF AN INTERNATIONAL CURRENCY

	Private	Official
Medium of exchange	Vehicle	Intervention
Unit of account	Invoice	Peg
Store of value	Banking	Reserve

ness as “a standard of deferred payment”—so important for the operation of long-term capital markets (Kindleberger 1972)—is combined with the discussions of its unit-of-account and store-of-value roles.

As an international *medium of exchange*, the dollar has remained the dominant vehicle currency for interbank clearing for more than 90 percent of spot and forward transactions in the private foreign exchange markets (Kenen 1983). Today, if a Swedish bank wants to buy sterling with marks, it must first buy dollars with marks, and then sterling with dollars.

Such indirect exchange arises because of the great economies of scale (Swoboda 1968; K. Alec Chrystal 1977) involved in interbank trading. Parallel to our earlier analysis of official interventions in terms of Mundell’s redundancy problem, suppose there are N national currencies to be traded in purely private foreign exchange markets. Then symmetrical trading in any pair of them would involve organizing and maintaining $N(N-1)/2$ foreign exchange markets at every term to maturity. However, if all trading takes place against a single reference or N th currency, the number of such markets can be reduced to $N-1$. This economy of scale is particularly pronounced in using the dollar as the vehicle for organizing *forward* exchange (and option) markets where trading naturally thins out quickly for more distant maturities.

Forward markets, in particular, are universally structured with the dollar as the settlement

medium. The vast bulk of trade in spot markets is also done through the dollar, although here a number of cross markets do exist between major currencies, notably within Europe (including Japan). (Chrystal 1987, p. 131)

Because of the dollar’s dominance as a private vehicle currency, it is still commonly used for official *intervention*. Central banks, other than the U.S. Federal Reserve System, often act to smooth or otherwise directly influence the foreign exchange value of their own monies in terms of dollars. Even without any officially announced dollar peg, direct official intervention in the foreign exchanges has been about as extensive since 1973 as it was under the old system of fixed parities (Williamson 1976; Esther Suss 1976). But the United States typically remained relatively passive—although after February 1985, the U.S. Federal Reserve System did occasionally intervene in concert with other central banks under the Plaza-Louvre Accords (Rule Box 5 below).

In the various attempts to smooth exchange fluctuations within Europe—the “snake-in-the-tunnel” of the 1970s and within the European Monetary System after 1979, the U.S. dollar was often the intervention currency. Although the dollar had been supplanted largely by the Deutsche Mark as the principal intervention currency within Europe in the 1990s (Rule Box 7), it still remains the dominant currency for official transactions elsewhere.

Aside from this interbank transacting, however, how prevalent is the dollar as an international *unit of account* for invoicing commodity trade among the industrial countries? The prices of homogeneous commodities can be quickly arbitrated across international boundaries and are immediately flexible on an hour-to-hour basis. Thus their worldwide (dollar) price is registered at a centralized basing point or commodity exchange—

TABLE 3
THE DOLLAR AS AN INTERNATIONAL STORE OF VALUE
(dollar percentage shares)

	1965	1970	1975	1980	1985	1990
Private interbank money: cross-border claims in the Eurocurrency market ¹	83.5	77.1	73.7	67.9	69.4	60.1 ³
Official reserves of foreign exchange ²	66.4	77.2	79.5	68.6	65.0	56.4 ⁴

Sources: ¹ Bank for International Settlements (BIS), *Annual Report(s)*.

² IMF *International Financial Statistics* (1983 supplement on reserves) and *Annual Report(s)*.

³ For 1988 only, which was the last year the BIS provided currency of denomination for claims in the Eurocurrency market.

⁴ For 1990, the dollar share of foreign exchange reserves would fall to 49.6% if official holdings of European Currency Units (ECUs) are treated as a separate reserve asset.

such as the spot market for oil in Rotterdam, or the futures markets in metals and basic foodstuffs in Chicago or New York. Because of this natural centralization of the trading mechanism for auction-market goods, much like the centralization of the foreign exchange interbank market itself, the U.S. dollar is the invoice currency of choice.¹⁷

Finally, the dollar's role as an international *store of value* arises naturally out of its convenience for official intervention, as a private vehicle currency generally accepted in interbank transacting, as the prevailing currency of denomination for primary commodities, and from its generalized use as a standard of deferred payment in international debt transactions.¹⁸ Table 3 shows that the bulk of

the world's "active" exchange reserves are still U.S. dollar claims held by foreign central banks or treasuries. Similarly, private gross claims in the Eurocurrency markets by banks in Europe are still largely in dollars—although Table 3 also shows that the dollar's share in the late 1980s is somewhat less than during the "high" dollar standard before 1971. Despite Japan's rise to prominence as the world's dominant net creditor with large current-account surpluses after 1980, and also as an international financial intermediary borrowing short in order to further increase its long-term lending in the late 1980s, George Tavlas and Yuzuru Ozeki (1992) show that the yen remained surprisingly little used in these transactions. For example, they show that Japanese short-term liquid liabilities to the rest of the world remain largely dollar denominated.

What then was the upshot of this entrenched role of the dollar in private markets for the behavior of national governments once the commitment to the par value system broke down? Although March 1973 is commonly referred to as the period of "floating" exchange rates, this terminology is deceptive. Not only

¹⁷ However, "brand-name" manufactures from industrial countries are typically invoiced in the currency of the exporter (Sven Grassman 1973, 1976; McKinnon 1979).

¹⁸ The buildup of LDC debt in the 1970s was largely in the form of dollar-denominated syndicated loans from the Eurocurrency market. In the 1980s and 1990s, the spectacular buildup of American net debt to the rest of the world is denominated in dollars. The "privilege" of going into international debt so heavily in your own currency is one that is open only to the center, or Nth currency, country.

Rule Box 4

THE FLOATING-RATE DOLLAR STANDARD, 1973–1984

Industrial Countries other than the United States

- I. Smooth near-term fluctuations in dollar exchange rate without committing to a par value or to long-term exchange stability.
- II. Free currency convertibility for current payments, while eventually eliminating remaining restrictions on capital account.
- III. Use the dollar as the intervention currency (except for some transactions to stabilize intra-European exchange rates), and keep official exchange reserves mainly in U.S. Treasury bonds.
- IV. Partially adjust short-run growth in the national money supply to support major exchange interventions: reduce when the national money is weak against the dollar and expand when it is strong.
- V. Set long-run growth in the national price level and money supply independently of the United States, and allow corresponding secular adjustments in dollar exchange rate.

The United States

- VI. Remain passive in the foreign exchanges: free trade with neither a balance of payments nor exchange rate target. Do not hold significant official reserves of foreign exchange.
- VII. Keep U.S. capital markets open to foreign governments and private residents as borrowers or depositors.
- VIII. Pursue monetary policies independent of the foreign exchange value of the dollar and of the rate of money growth in other industrial countries—without trying to anchor any common price level.

did official interventions continue, but they exhibited systematic rules or patterns. These are set out in Rule Box 4—“The Floating-Rate Dollar Standard, 1973–1984”—and, after a significant regime change, in “The Plaza-Louvre Intervention Accords for the Dollar Exchange Rate, 1985–1992” in Rule Box 5 below.

From March 1973 to February 1985, governments followed rules of the game surprisingly similar to what they had been before—as one can readily see by comparing Box 3 for the Fixed-Rate Dollar Standard to Box 4 for the Floating-Rate Dollar Standard. The United States

continued as the relatively passive center country, while the other (industrial) countries remained actively interventionist in the foreign exchanges. In effect, the continued importance of the dollar as international money induced foreign governments to “have a view” of what an appropriate dollar exchange rate should be in terms of their own currencies while, for the most part, the United States conducted its monetary policies independently of what was going on in the foreign exchanges.

The upper panel of Box 4 gives the rules governing countries other than the United States after 1973. In contrast to

Box 3, however, Rule I in Box 4 only commits the foreign government to smoothing short-run fluctuations in its dollar exchange rate—with no well-defined commitment to some longer-term par value. As per Rule V, the “target” for the dollar exchange rate can drift indefinitely such that the long-run path of other countries’ domestic price levels now diverges from that of the United States. But without any credible commitment to a par value, immediate pressure on the domestic currency to move sharply against the dollar in the foreign exchanges can be enormous. Whence Rule IV. If its national currency weakens sharply against the dollar, the foreign government responds by temporarily contracting its domestic money supply—and vice versa.

What were the macroeconomic consequences of this nonsterilization policy? After 1970 the dollar tended to be either weak or strong against the currencies of most other industrial countries simultaneously. Because of the attempt to smooth these fluctuations by foreign central banks, the collective “world” money supply became highly variable. From 1971 through early 1985, world money tended to increase when the dollar was weak, and then fall below its trend when the dollar was strong (McKinnon 1982, 1984, 1988a; Paul de Grauwe 1989). This collective monetary response to fluctuations in the dollar exchange rate explains why the world business cycle was more synchronized and so pronounced from 1971 to the mid 1980s (Ohno 1987; Matti Viren 1992). Apart from the effects of oil shocks, the two worldwide inflations of the 1970s were caused by prior expansions in “world” money associated with dollar weakness; and worldwide output contracted sharply in 1981–82 because of the sudden fall in foreign money growth associated with the dollar’s sur-

prising strength (McKinnon 1984; Jeffrey Sachs 1985).

How could this unfortunate cyclical behavior in “world” money from (incipient) fluctuations in the dollar exchange rate have been dampened? Suppose, contrary to Rule VI, Box 4, after 1971 the United States behaved more symmetrically with respect to other countries in stabilizing the dollar exchange rate—as advocated by McKinnon (1974, 1984, 1990). Then, the American money supply would have contracted when the dollar was weak to offset the expansion in foreign money supplies—and vice versa. Fluctuations in the aggregate money supply, in world prices and output, and in the dollar exchange rate, would thereby have been dampened. In the event, the regime change that occurred differed from this guideline in important respects—although American behavior did indeed become more “symmetrical” after 1984.

5. The Plaza-Louvre Intervention Accords for the Dollar Exchange Rate, 1985–1992

The rapid appreciation of the dollar in 1981–84, particularly against the mark (Figure 2a) and the EMS bloc, was widely characterized as a “bubble” (Krugman 1985; Frankel 1985)—but was no less disruptive to American foreign trade for all that. By February 1985, the dollar’s last upward fling of about 20 percent from June 1984 finally provoked the U.S. government to cast aside its previous hands-off foreign exchange policy. The other industrial countries, particularly the Europeans, were distressed by again being forced separately into an unduly tight monetary policy in order to dampen upward pressure on the dollar (Rule IV, Box 4). This depressing influence on their economies contributed to what was then called “eurosclerosis.” Hence, the stage was set for the “Plaza

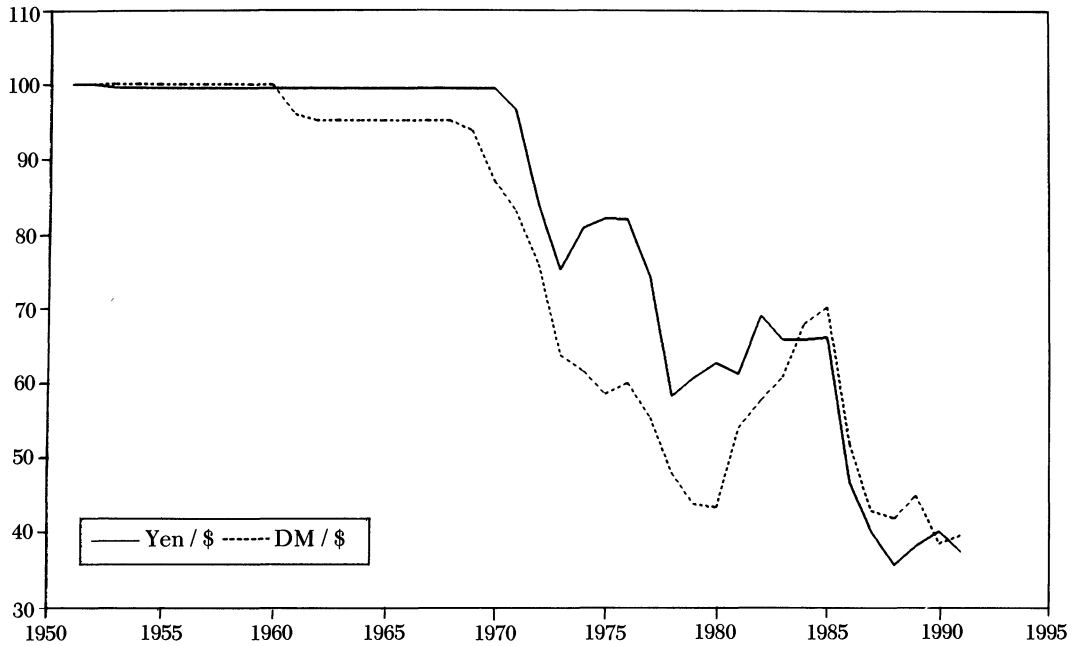


Figure 2a. Nominal Exchange Rate, 1951 = 100
(annual data)

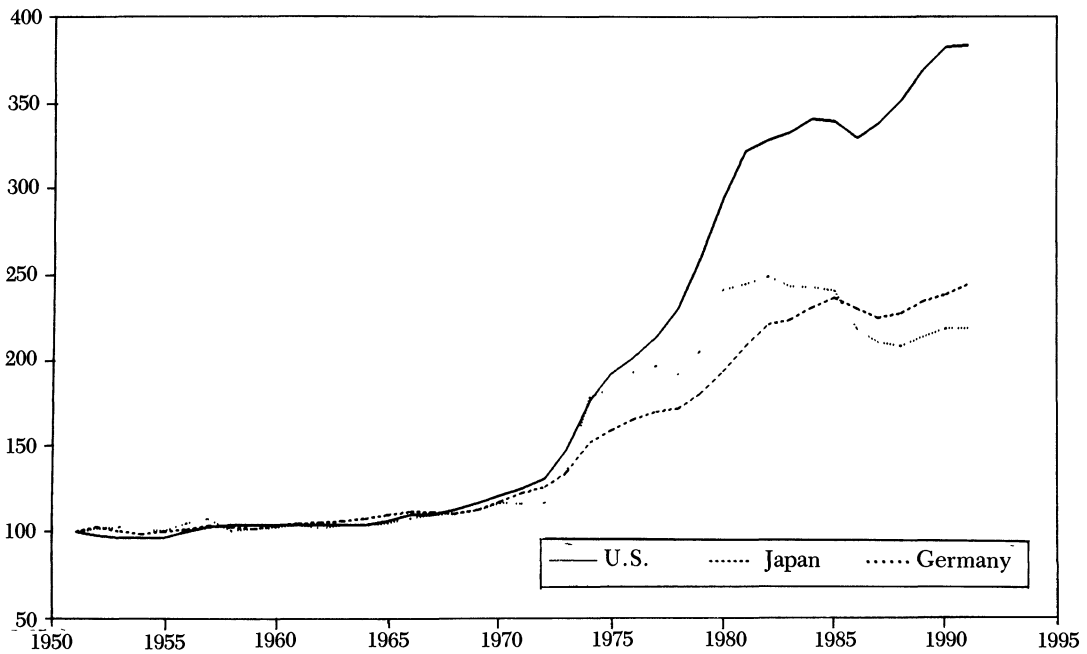


Figure 2b. Wholesale Price Indices, 1951 = 100
(annual data)

Source: IMF *International Financial Statistics*

Rule Box 5THE PLAZA-LOUVRE INTERVENTION ACCORDS FOR THE DOLLAR
EXCHANGE RATE, 1985-1992*Germany, Japan, and the United States (G-3)*

- I. Set broad target zones for the mark/dollar and yen/dollar exchange rates of ± 12 percent. Do not announce the agreed-on central rates, and leave zonal boundaries flexible.
- II. If disparities in economic "fundamentals" among the G-3 change substantially, adjust the (implicit) central rates.
- III. Intervene in concert, but infrequently, to reverse short-run trends in the dollar exchange rate that threaten to pierce zonal boundaries. Signal the collective intent by not disguising these concerted interventions.
- IV. Hold foreign exchange reserves symmetrically in each other's currencies: U.S. government to begin building up reserves in marks, yen, and possibly other convertible currencies.
- V. Sterilize the immediate monetary impact of interventions by not adjusting short-term interest rates.
- VI. In the long run, aim each country's monetary policy toward stabilizing the national price level in tradable goods—thus indirectly anchoring the world price level and limiting drift in the position of the (unannounced) target zones.

Other Industrial Countries

- VII. Support, or not oppose, interventions by G-3 to keep the dollar within designated mark and yen zones. Buy dollars with the national currency when the dollar is weak—and vice versa.

Sea-Change of 1985" (Kathryn Dominguez and Frankel, forthcoming a).

The Switch to Concerted, Discrete Interventions

The dominant characteristics of the new regime, which I have dubbed "The Plaza-Louvre Intervention Accords for the Dollar Exchange Rate, 1985-1992" in Rule Box 5, did not emerge all at once. Still, even as early as February 1985, there were abrupt breaks from the old regime. First, the American government ended its passivity in the foreign exchanges and actively intervened not only to stop the dollar's sharp rise, but to engineer a major devaluation. Second, foreign governments, instead of inter-

vening singly or piecemeal to sell dollars according to conditions in their own foreign exchange markets, now coordinated their interventions with the U.S. Federal Reserve System in a way that was obvious to all market participants. The common direction and intent of this official intervention *in dollars*, with the dollar's exchange rates against yen and marks being the benchmarks, was clearly signaled. The principle of concerted, open intervention as per Rule III in Box 5 was established at the outset.

Using hitherto confidential and extraordinarily detailed daily data from the central banks themselves, Piero Catte, Giampaolo Galli, and Salvatore Rebecchini (1992 and forthcoming) studied the

magnitude and timing of official interventions by 16 governments from February 1985 through the end of 1991. They found that:

- (1) "Interventions by the G-3 were rare and concentrated in time."
- (2) "The three countries never pursued conflicting intervention policies vis-à-vis the dollar. Whenever one of the three was in the market to, say, support the dollar, the other two were either doing the same thing or nothing."
- (3) "The timing of the (intervention) clusters were almost always coincident for two of the three countries (in the G-3)."

From this general pattern, they then define a discrete episode of concerted intervention to be when (i) at least two of the G-3 central banks start to intervene together, and (ii) at least one of these two central banks continues to intervene with interruptions lasting no more than five working days. Of the 17 concerted interventions from 1985 to 1991, 16 were "leaning against the wind" in the sense of trying to reverse sharp trends in the dollar exchange rate. Nevertheless, these episodes were infrequent: a whole year could be missed, e.g., 1986; and, outside the authors' sample, only one occurred in 1992—from July 20 to August 11 when 13 central banks intervened massively to support the dollar (*New York Times*, July 21 and Aug. 12, 1992).

How successful were these concerted interventions? For their 17 episodes from 1985 to 1991, Catte, Galli, and Rebcchini conclude:

Interventions were successful in the sense that they always reversed the trend of the dollar relative to the yen and the DM, although in four cases, for only a few weeks. Eight of the nine major turning points of the dollar in the period coincided exactly with periods of concerted intervention. (forthcoming, p. i)

Our last recorded episode, in the summer of 1992, seems to have been moderately successful. By November, the mark, at 1.58 to the dollar, was trading well above its late-summer (and all-time) high of 1.40; and the yen, at 123 to the dollar was trading modestly above its late summer high of 119—which had also been briefly touched in late 1988.

Thus the evidence showing the existence of open, concerted intervention—as encapsulated in Rules III and VII in Box 5—seems persuasive for 1985–92. The changed behavior of the United States is further substantiated by the American buildup of foreign exchange reserves—as per Rule IV. From 1978 through 1984, U.S. reserves ranged between \$6 billion and \$10 billion; but by 1989–92 they had been built up to between \$45 billion and \$50 billion (IMF 1992). Perhaps because the Plaza-Louvre regime of foreign exchange intervention was more symmetrical than the Floating-Rate Dollar Standard that preceded it, business cycles were less highly synchronized across countries after 1984 (Ohno 1992).

Do Target Zones Exist?

In Box 5, however, the evidence supporting the existence of Rules I, II, and V is more problematic. Whether unannounced target zones are operative (Rules I and II), and whether exchange interventions are effectively sterilized (Rule V), is less clear. Informed insiders may disagree over the robustness of these three rules and whether or not they are a good representation of official behavior over the 1985–92 period.

Certainly, in February 1985, the main concern was to get the overvalued dollar down—rather than coming to any understanding to maintain informal target zones in the future (I. Mac Destler and C. Randall Henning 1989). Moreover,

with the dollar so far out of alignment in February 1985, participating governments subsequently adjusted their monetary policies to help engineer dollar devaluation. Throughout 1985, U.S. money growth was high compared to that in Germany and Japan. Thus, in 1985 and perhaps 1986, Rule V of Box 5 was not followed: the concerted interventions to sell dollars for yen and marks were not effectively sterilized. At the Plaza Hotel meeting on September 22, 1985, in New York, finance ministers simply ratified what had already happened the previous February. The U.S. government would continue to intervene in concert with the European and Japanese governments to drive the dollar down further—which they did again in October. U.S. monetary policy remained easier, and the dollar continued to drift down through 1986.

In February 1987, the meeting of the G-7 finance ministers in the Louvre in Paris provided the first substantial indications of an official attempt to establish target zones. Because of growing concern with a possible run on the dollar, the official communique agreed that the dollar should be stabilized around “current levels” (Dominguez and Frankel, forthcoming a). Only much later was it revealed (Yoichi Funabashi 1988, pp. 183–87) that the Louvre participants had after all set a “reference range” of five percent around then current levels of 1.825 marks/dollar and 153.5 yen/dollar. But then, over the next five years, continual “rebasings” of even these targets seems to have occurred. Almost immediately in April 1987, the yen fell below its Louvre range and was rebased at 146 yen/dollar (Dominguez and Frankel, forthcoming a); these authors nicely summarize the ebb and flow of the dollar exchange rate and official interactions from 1985 to 1991. In 1992, Germany’s extraordinarily tight monetary policy, and the high inter-

est rates associated with the fiscal problems of unification, marked a change in a “fundamental” (in the sense of Rule II, Box V) that apparently induced the G-3 to accept a stronger mark. The mark rose to 147 to the dollar before provoking the concerted defense of the dollar in the summer of 1992.

In summary, for Rule I in Box 5, I have simply adopted C. Fred Bergsten’s suggestion (forthcoming) that the G-3 are behaving as if they had a target of ± 12 percent for the mark/dollar and yen/dollar exchange rates. And Rule II, Box 5, suggests that even this relatively modest objective is subject to “rebasings” should there be a change in macroeconomic “fundamentals.” Modest and flimsy though they may be, these target zones seem to have kept the dollar’s exchange rates within narrower ranges from 1987 through 1992—compared to the more volatile experience of the preceding 14 years after 1973. Dare one hope that this Plaza-Louvre regime has also suppressed the dollar’s long-run tendency to depreciate? (Since 1971, the dollar has fallen from 4 to about 1.58 marks, and from 360 to about 123 yen, in late 1992.) If so, stabilizing the world price level—in the sense of Rule VI, Box 5—may now be feasible.

The Sterilization Issue

Of great analytical interest is the remaining loose end in Box 5: How robust empirically is Rule V—the sterilization rule? In the absence of explicit international coordination of the G-3’s domestic monetary policies, sterilization of exchange interventions is a necessary condition for being able to implement Rule VI (the anchor rule): the ability of each of the G-3 countries *individually* to orient each domestic monetary policy toward long-run price stability while still keeping exchange rate within a narrow range.

During concerted interventions Catta, Galli, and Rebecchini (forthcoming) could find no systematic evidence of supporting changes in interest rates: “. . . in several cases, interest rate differential did not change or changed in the wrong direction” (p. 28). Similarly, in the last massive concerted intervention in July–August 1992 to support the dollar, the Bundesbank if anything seemed to behave perversely by tightening further while the Federal Reserve System retained its easy money stance.

Yet, this effectiveness of sterilized interventions seems quite contrary to what economists (including your reviewer) had previously believed. Before 1985, it was thought that effective intervention in the foreign exchanges had to be conducted in concert with monetary policy with supporting interest rate adjustments. As long as international capital flows were unrestricted, the exchange rate was not itself seen as an independent policy instrument. And this theoretical consensus was officially recognized in an empirical study commissioned by the G-7 at the Versailles economic summit in 1982. The resulting *Jurgensen Report* (Mar. 1983) found that the effect of sterilized intervention was at most small and transitory—a result also found by Kenneth Rogoff (1984), Dale Henderson and Stephanie Samson (1983), and other authors using pre-1985 data.

In an econometric study of sterilized intervention with two structural equations, Dominguez and Frankel (forthcoming b) distinguish between portfolio and expectations effects. If domestic money supplies do not change, net purchases of dollars in a concerted intervention will tend to withdraw U.S. government bonds from private circulation and increase foreign bonds: the portfolio effect. But then the very announcement of a concerted intervention might well induce people to believe that the (mone-

etary) fundamentals will be different in the future: the expectations effect. While both effects are positive, the authors find the expectations effect to be much more important than the portfolio effect. And they found that the impact of “news” regarding official intentions became much more pronounced in influencing exchange rates after 1984.

In conclusion, the switch to concerted, open intervention—which is well telegraphed to the exchange markets—seems to be the key to the modest “success” of the Plaza-Louvre regime from 1985 through 1992. In a world of great exchange rate uncertainty, where traders’ knowledge of future fundamentals of the economic policies of each participating country is incomplete and perhaps ill-formed, infrequent but concerted interventions can play a useful signaling role—even when sterilized. But without more direct coordination of national monetary policies, the range of exchange rate fluctuations is likely to remain uncomfortably large.

6. *The EMS, the Marshall Plan, and the Postwar Dollar Standard: Resolving a Historical Puzzle*

This review has focused on *worldwide* international monetary orders: “frameworks of laws, conventions, and regulations” (Mundell 1972) that establish alternative settings in which international monetary systems worked themselves out from the late 19th century to the present day. However, a complete evaluation of the strengths and weaknesses of the corresponding international monetary systems for promoting trade, integrating world capital markets, containing business cycles, securing price stability, and so on, would require a book-length manuscript. Going beyond the rules of the game per se is beyond the scope of

Rule Box 6

THE EUROPEAN MONETARY SYSTEM (EMS) IN 1979: THE SPIRIT OF THE TREATY

All Member Countries

- I. Fix a par value for the exchange rate in terms of the European Currency Unit, a basket of EMS currencies weighted according to country size.
- II. Keep par value stable in the short run by symmetrically limiting range of variation in each bilateral exchange rate to 2.25 percent on either side of its central rate.
- III. When an exchange rate threatens to breach its bilateral limit, the strong-currency central bank must lend freely to the weak-currency central bank to support the rate.
- IV. Adjust par values in the intermediate term if necessary to realign national price levels—but only by collective agreement within the EMS.
- V. Work symmetrically toward convergence of national macroeconomic policies and unchanging long-run par values for exchange rates.
- VI. Keep free convertibility for current-account payments.
- VII. Hold reserves mainly as European Currency Units with the European Fund for Monetary Cooperation, and reduce dollar reserves. Avoid holding substantial reserves in other EMS currencies.
- VIII. Repay central bank debts quickly from exchange reserves, or by borrowing from the European Fund for Monetary Cooperation within strict longer-term credit limits.
- IX. No member country's money to be a reserve currency, nor its national monetary policy to be (asymmetrically) the nominal anchor for the group.

this review, and a story for another time.¹⁹

To secure exchange stability and freer trade on a more limited basis, monetary orders can also be established for purely *regional* country groupings. Without explanatory text, Boxes 6 and 7 outline the rules of the game for the European Monetary System.²⁰ The symmetry of

the treaty setting up the EMS in 1979 (Box 6), which evolved into a greater Deutsche Mark area (Box 7), so closely parallels the symmetry of the 1945 Bretton Woods Agreement (Box 2), which evolved into the Fixed-Rate Dollar Standard (Box 3), that interested readers can provide their own textual explanation! Even so, the operating rules of the EMS remain closer in spirit to the 1979 treaty (at least up to September of 1992) than did the operating rules of the dollar standard in the 1950s and 1960s adhere to the spirit of Bretton Woods in 1945. Indeed, for the EMS, the first five rules in each of Boxes 6 and 7 are the same—

¹⁹ There is an interesting alternative to the purely historical approach of analyzing how international monetary systems work. For alternative sets of monetary rules of the game, how the corresponding international monetary system would respond to realistically formulated economic shocks can be simulated on a computer—see Warwick McKibbin and Jeffrey Sachs (1991).

²⁰ In setting up the rules of the game for the EMS, I have been greatly helped by the advice of Bernhard Herz of the University of Tübingen and his paper

(coauthored with Werner Roger) "The EMS Is a Greater Deutschemark Area" (1992).

Rule Box 7THE EUROPEAN MONETARY SYSTEM AS A GREATER DEUTSCHE MARK AREA,
1979–1992*All Member Countries*

- I. though V. Same as in EMS “Spirit of the Treaty” (Box 6).
VI. Avoid using the credit facilities of the European Fund for Monetary Cooperation.

Member Countries Except Germany

- VII. Intervene intramarginally, within formal bilateral parity limits, to stabilize the national exchange rate vis-à-vis the DM. Increasingly intervene in DM rather than dollars.
VIII. Keep active exchange reserves in interest-bearing DM open-market instruments such as Euromark deposits, as well as in dollar Treasury bonds.
IX. Adjust short-term national money growth and/or short-term interest rates to support exchange market interventions—whether intramarginal or at the bilateral parity limits.
X. Keep adjusting long-term money growth so that domestic price inflation (in tradable goods) converges to, or remains the same as, price inflation in Germany.
XI. Progressively liberalize capital controls.

Germany

- XII. Remain passive in the foreign exchange markets with other European (EMS) countries: free trade with neither a balance of payments nor an intramarginal exchange-rate target.
XIII. Keep German capital markets open to foreign governments or private residents as borrowers or depositors.
XIV. Sterilize (perhaps passively) the effects of German or other EMS countries’ official interventions in the European foreign exchange markets on the German monetary base.
XV. Anchor the DM (EMS) price level for tradable goods by an independently chosen German monetary policy.

although the continuing German predominance in providing the nominal anchor may not have been intended by the EMS negotiators in 1979.²¹

²¹ Although the predominance of Germany as the anchor country is accepted by almost all commentators on the subject, a few question the strength of this asymmetry (de Grauwe 1991; Michele Fratianni and Jürgen von Hagen 1990). Any doubts on this score, however, must have been dispelled by the events of September 1992 where the Bundesbank refused to acquiesce to partner requests to ease what in retrospect looks like excessively tight German

This parallel highlights what, for the author, was a major historical puzzle. Between 1945 and 1950, what caused such a dramatic shift away from the spirit of the original Bretton Woods Agreement? How did the influential politicians and economists, who in 1945 fully intended to maintain long-term exchange flexi-

monetary policy. This forced Britain and Italy to devalue and float their currencies, thus violating rules I and II of Box 7.

bility and national macroeconomic autonomy, manage to put the world on to a Fixed-Rate Dollar Standard by 1950—and one that successfully anchored the common world price level for almost 20 years? Figure 2b shows that inflation rates in the WPIs (our best measure of tradable goods prices) of the United States, Germany, and Japan, were very low and virtually the same until 1971.

True, a key-currency system based on the most economically important country—if that country maintains an open capital market and a fully convertible currency—is a convenient way of solving the redundancy problem and providing a medium of exchange, unit of account, and store of value for international transacting (Table 2 above). But at least the first two of these monetary functions could have been satisfied if the system had evolved directly to some form of a “flexible-rate” dollar standard as approximated by Box 4.

Something more was required: a major historical-institutional event—one that the Bretton Woods negotiators did not anticipate in 1945—to give the industrial economies a tremendous if unintended push toward the Fixed-Rate Dollar Standard. The Marshall Plan was formally begun in April 1948 with the express purpose of using American financial assistance to restore intra-European trade and financial stability—both of which were in great disarray (Herbert Mayer 1969; Alan Milward 1984). But not until September 1950 was the monetary centerpiece of this great effort, The European Payments Union (EPU), finally completed (Kaplan and Schleiminger 1989) for 16 European countries.

As described above in the text on the Fixed-Rate Dollar Standard, the EPU restored multilateral current-account convertibility among Western European currencies by enthroning the dollar as a unit of account for calculating debit and

credit balances for each member, and as the fundamental means of settlement. Thus, after 1949, European countries (and Japan) preferred to keep their dollar exchange parities fixed in order to

- (1) simplify bookkeeping in actually clearing international payments; and
- (2) improve the credibility of their still-fragile domestic anti-inflation policies by relying on an external nominal anchor.

To maintain these dollar parities indefinitely, each European country had to subordinate its domestic monetary policy to the fixed exchange rate. More by accident than design, therefore, in 1950 the United States suddenly found itself to be the only major country with an independent monetary policy. As the more financially stable “outsider,” the U.S. alone had the monetary independence to provide a nominal anchor for the group—which it managed to do successfully for almost 20 years (Figure 2b).

In the extreme, one could argue (McKinnon, forthcoming) that the original Bretton Woods Articles of 1945 never came into effect! In 1946–48, the International Monetary Fund did virtually nothing to alleviate the great postwar financial crises in Europe or Japan (Kindleberger 1987, p. 57). Unbridled inflation and severe currency inconvertibility led to bilateralism and disruption in trade within Western Europe, and by late 1947 many felt that the postwar recovery might prove abortive (Peter Coffey and John Presley 1971). Superseding anything the IMF was doing, the Marshall Plan began in April 1948 with the definite objective (conditionality) of restoring macroeconomic stability and multilateral payments convertibility—more or less in that order—in Europe. Thus it was the Marshall Plan, particularly the monetary institutions of the EPU, that cast the die for the rules of the game for the Fixed-

Rate Dollar Standard outlined in Box 3.

But this historical accident, which provided the monetary underpinning for the unprecedented trade-led growth in world GNP in the 1950s and 1960s (Angus Maddison 1989), eventually proved insufficient. Although enormously successful in practice, the unwritten rules of the game necessary to keep the Fixed-Rate Dollar Standard going differed too much in spirit from its legal cover, i.e., the 1945 Bretton Woods Articles. In 1970–71 facing the clamor for dollar devaluation and greater exchange flexibility, the schizophrenic American government would not disinflate the American economy in order to defend the most successful international monetary regime the world has ever seen.

Suppose some latter-day Walter Bagehot had fully articulated the rules for the Fixed-Rate Dollar Standard, much as Bagehot himself articulated coherent rules for the Bank of England to follow in maintaining the 19th century gold standard. Further suppose that our modern Bagehot convinced the American government it was in its own best interest to maintain price-level stability—as per the anchor rule (Rule X, Box 3)—while demonetizing gold. Conceivably, the remarkable monetary and exchange stability of the 1950s and 1960s could have continued indefinitely. Understanding what the rules actually are, and the obligations of the various players, can be extremely important.

Although not suffering nearly the same degree of schizophrenia as the Fixed-Rate Dollar Standard, the European Monetary System has a similar potential weakness: dependence on the monetary policy of just one country to provide the nominal anchor for the system as a whole. This flaw seemed to be particularly noticeable in the summer and fall of 1992 when excessively tight German monetary policy not only forced Britain and Italy to suspend par values for their exchange

rates, but also unduly depressed the whole European economy including Germany's. Absent any agreement on a common currency, making the EMS more symmetrical with a common price rule, while keeping nominal exchange rates within narrow bands, might well be preferred (McKinnon 1992).

Similarly, to rescue multilateralism in the GATT and prevent the world from devolving into regional trading blocs, restoring global exchange stability among the major industrial countries is imperative. The still fragile Plaza-Louvre Accords could be a good beginning—provided that the rules, as provisionally laid out in Box 5, are well understood.

7. Symmetry and the Anchor Rule: A Concluding Note

Assigning the anchoring job to just one national monetary authority—as with the successful EMS of the 1980s, or the highly successful postwar Fixed-Rate Dollar Standard of the 1950s and 1960s—can be remarkably effective in particular historical circumstances. If the anchor country's economic predominance is combined with greater financial stability, other countries will then voluntarily stabilize their exchange rates against the anchor currency. But such "natural" asymmetry need not persist indefinitely. Besides future financial upheavals beyond the control of the central bank in the anchor country, it may fail to play by the (appropriate) rules—and, to the great detriment of the other members, abuse its extra degree of freedom.

However, more symmetrical rules of the game for coordinating national monetary policies still require a stable nominal anchor. Agreements that narrow the range of exchange rate variation without, at the same time, pinning down the common price level are unsatisfactory. Vaguely specified international monetary obligations could undermine the ability

of national monetary authorities to stabilize their own price levels individually. Worse, informally targeting exchange rates asymmetrically could, inadvertently, generate business cycles which are synchronized across countries—as per the analysis of the Floating-Rate Dollar Standard, 1973–1984.

By taking the anchoring mechanism out of the hands of any one country or national central bank, the International Gold Standard before 1914 was more symmetrical. The common price level was determined by the relative price of gold vis-à-vis a broad price index of all other goods and services—which proved (accidentally?) to be remarkably stable valued in the very long run. In the short and intermediate runs, however, sharp worldwide liquidity squeezes made the common price level uncomfortably variable cyclically. Lacking discretionary control over the monetary base for the gold standard as a whole, national monetary authorities were virtually helpless in avoiding sharp cyclical fluctuations in worldwide economic activity.

Without making the nominal anchor the responsibility of either one country or nobody, can we do better in some new, and more symmetrical, international monetary order? Participating countries could define a common price index whose stabilization is the domestic objective of each national central bank; and if that objective was roughly achieved, the central banks could also maintain fixed par values for their exchange rates. Among industrial countries, empirical evidence (McKinnon and Ohno 1989) suggests that producer price indices tend to satisfy these dual criteria—but consumer price indices or GNP deflators need not. That is, when nominal exchange rates remain fixed (within narrow bands) for long periods of time—as under the International Gold and Fixed-Rate Dollar Standards—producer (or wholesale) price indices align themselves

across countries remarkably well. But new rules of the game, based on a common producer price index as the nominal anchor, are a story for another time.²²

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²² The case for a common price rule and more symmetry in fixing nominal exchange rates is contained in McKinnon (1984, 1988c, and 1990). In such a multiple-currency regime, an ingenious way of not having to rely on a single anchor country is suggested by Peter Bofinger and Christina Gerberding (1988).

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