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14 The Postwar Institutional Evolution of the International Monetary System

The international monetary system that was designed at the Bretton Woods Conference in 1944 reflected professional views on the defects of the arrangements that had prevailed in the 1930s. Protectionist trade policies, exchange controls, and competitive currency depreciations[1] of the pre–World War II period were the cautionary experiences to be avoided by the postwar world. Removal of controls on trade and payments under a system of fixed exchange rates, with adjustment of parities limited to "fundamental" disequilibrium in the balance of payments, accordingly were the goals of the system created by the delegates to the conference. Exchange rates were to be pegged within narrow margins to the dollar. Countries would buy or sell dollars in the foreign exchange market to keep their currencies from appreciating or depreciating more than 1% from parity. The United States in turn would undertake to convert dollars into gold or the reverse at a fixed price of $35 an ounce. The International Monetary Fund, to which each member subscribed 25% of its quota in gold or 10% of its net official reserves of gold and dollars, whichever was smaller, was established by the terms of the Bretton Woods charter. It was expected that lending facilities of the Fund would be available to supplement the members' gold and foreign exchange reserves to provide them liquidity when their balances-of-payments were temporarily in deficit on current account.

The establishment of par values for currencies was an important item on the Fund's agenda. Of our sample of countries, Canada, France, the Netherlands, the United Kingdom, and the United States declared their par values in December 1946, Germany and Japan in 1953, and Italy not until 1960. Some of these parities were short-lived. An abortive attempt at convertibility of sterling in 1947 ended in September

1949, when the pound was devalued. The Netherlands thereupon devalued the guilder, and France, which had had separate rates for financial and commercial transactions, unified them, depreciating the franc vis-à-vis sterling.

The pegged exchange-rate system that was created collapsed in 1971.[2] Following futile efforts to restore it, in 1973 governments reluctantly turned to managed floating exchange rates. In both regimes, the United States served as the reserve-currency country, other countries primarily holding dollar assets among their international reserves.

Discussion of the institutions of the international monetary system is instructive for all the theoretical channels of international transmission of price change. One of these is completely monetary in nature and is therefore directly affected by the character of the international monetary system; the other three are nonmonetary, or in one instance only partially monetary, and hence may be only indirectly affected. The four channels are (1) international money flows as a result of international payments imbalances that affect the growth of national money supplies and eventually rates of price change; (2) direct effects on national prices and interest rates through international arbitrage of prices of goods and services or of interest rates as a result either of changes in the world quantity of money and prices or of cost factors independent of monetary conditions; (3) shifts in foreign demand for a country's output that affect its prices; (4) effects on prices of changes in international basic commodity supplies. Some comments on each of the channels follow.

1. The money-flow channel was undoubtedly available during the postwar period. For the moment consider only the non-reserve-currency countries in the international monetary system.

Under a pegged exchange-rate system, central banks must buy from or sell to their nationals foreign exchange, according as countries face a surplus or a deficit in the balance of payments. Central banks may also choose to do so under a managed floating exchange-rate regime. Whenever a central bank buys foreign exchange, it issues newly created high-powered money—usable as reserves by banks or currency by the public—just as if it had purchased government securities in an open market operation or bankers' promissory notes through discounting. Conversely, a sale of foreign exchange destroys high-powered money just as does a reduction in the central bank's portfolio of securities or discounts. For this reason, a balance-of-payments surplus is a source of increase, a balance-of-payments deficit a source of decrease in high-powered money in a strictly arithmetic, or accounting, sense. If, however, the central bank offsets (sterilizes) the effect of a balance-of-payments surplus by reducing its portfolio of domestic securities and discounts, or increasing it less than it otherwise would, there is no

effect on the growth rate of high-powered money. The sources of growth in high-powered money then are flows of international reserves and domestic credit creation by the central bank. It was thus possible for a non-reserve-currency country either to accept imported inflation or deflation, or for a time to resist such an outcome by sterilizing under pegged exchange rates.[3] Under floating rates, the country had the additional option of varying its exchange rate to protect its price level.

For the U.S., the reserve-currency country, the effect of deficits in its balance of payments had no necessary contractionary effect on Federal Reserve policies under either exchange system. The acquisition of dollars by foreign central banks did not reduce U.S. high-powered money. Dollars were either credited to the balance of those banks at Federal Reserve banks or else committed to the purchase of U.S. Treasury debt. Until March 1968, the gold requirement to which Federal Reserve notes were subject may have served as a constraint, but once abolished there was no legal limitation on the creation of high-powered money or money-supply growth, even after the 1970s, when the Federal Reserve system began specifying targets for growth rates of money.

Until U.S. monetary policy shifted to an inflationary course in the mid-1960s, deficits in the U.S. balance of payments provided the rest of the world with desired dollars. After the shift occurred, the defense of sterilizing undesired additions to dollar holdings as the U.S. balance of payments deteriorated was eventually overwhelmed by the magnitude of the required operation. Given the commitment to pegged exchange rates that surplus countries were reluctant to break by revaluing, dollars increased their high-powered money stocks and inflation rates. In the absence of such a commitment and the adoption of flexible exchange rates, short-run independence of national high-powered money stocks is increased.[4]

2. The operation of the arbitrage channels of transmission requires a high degree of, and in the extreme perfect, substitutability of goods and financial assets among countries.[5] Applied to the goods markets, the perfect-substitutability view is usually described as the "law of one price level." Another approach stresses the effects of changes in wages, external prices, and productivity on the two sectors of tradable versus nontradable goods which characterize open economies. The law of one price level, or the "goods arbitrage approach," emphasizes the impact of world monetary growth on the rise in prices; the second approach emphasizes "sructural" factors that allow no such role for monetary conditions. Restrictions on international trade and capital flows obviously block the operation of this channel, which denies the degree of autonomy to individual countries attributed to them by the first channel under fixed exchange rates. Even if international equalizing of tradable goods prices is assumed, inflation rates can differ between

countries if relative prices of traded and nontraded goods vary. Under flexible exchange rates, transmission of a different sort may occur because an immediate change in the foreign exchange value of domestic money, as a result of expectations of future domestic monetary policy, will affect domestic money prices of imports and tradable goods and thus the domestic inflation rate.[6] For the alternative approach, exchange-rate changes may provide a signal to price and wage setters of changes in economic conditions.

3. Monetary growth plays no direct role in the operation of this or the following channel. Downward shifts in foreign demand for a country's output lead to declines in prices, output, and incomes, through a contractionary multiplier effect; upwards shifts, to increases in prices, output, and incomes, through an expansionary multiplier effect.[7] This channel may be important under fixed exchange rates for particular countries, for example, the effects of U.S. real income changes on the demand for Canadian exports, or of German real income changes on the demand for Austrian exports, but not necessarily so for the transmission from the U.S. to European countries. Floating exchange rates may decrease the magnitude of the effects through this channel.

4. Transmission through this channel occurs because the rise in prices of basic commodities is viewed as entering either as supply components of products initially unaffected and raising their prices also or by pulling up the prices of substitute domestic inputs. Prices in all countries are affected, the effect depending on the input weights of these commodities in each economy. Some proponents of the importance of this channel also view exchange-rate changes as affecting export and import prices of basic commodities.

Although thus far only the pegged and managed floating exchange-rate regimes have been mentioned, it is useful to distinguish four subperiods in the evolution of the international monetary system from 1955 to date: (1) the preconvertibility phase for nondollar currencies, 1955–58; (2) the heyday of the Bretton Woods dollar-exchange standard, 1959–67; (3) the weakening and ensuing collapse of the Bretton Woods arrangements, 1968–73; (4) the managed floating exchange-rate phase, 1973 to date.

For each of the subperiods we shall summarize developments that relate to the channels of international transmission of price change.

14.1 Preconvertibility, 1955–58

In 1955, when our data begin, postwar recovery in Europe was well under way. Wartime destruction and disruption in Europe and Asia left the countries there with limited productive capacity and swelled the immediate postwar demand for U.S. exports. Restrictions against dol-

lar transactions were widespread, and multiple exchange rates were not unusual. In the postwar years before 1955, important steps had been taken to develop a system of multilateral trade and payments for Western European countries. Of these, the most significant was the establishment in the summer of 1950, with U.S. support, of the European Payments Union (EPU). Before 1950, the conduct of trade and payments among members of the EPU as well as with non-European countries was on a bilateral basis. By contrast, under the EPU, every month the multilateral net debtor-creditor position of each member with respect to other members was determined. The dollar served as the unit of account, and each European currency was pegged at a fixed dollar parity with no band of admissible variation. Receipts and payments were expressed as claims against the clearing union, debtors paying a gradually increasing fraction of their deficits in gold or dollars, with creditor countries extending the balance as a loan to the EPU. Maximum credit lines for debtor countries were imposed, so that creditor countries were assured of eventual payment in gold or dollars.

Paralleling the adoption of the clearing union, a trade liberalization program among members advanced. In trade with the United States, however, European countries applied discriminatory tariff and quota restrictions, which the United States did not protest, in order to enable them to accumulate gold and dollar assets. It was expected that the dollar gap problem, which in 1955 was widely regarded as a long-term one, would thereby be mitigated.

In private gold markets until 1953, the price of gold was at a premium, but the IMF required monetary authorities to refrain from selling gold at premium prices. In March 1954, several months after the premium had been eliminated, reflecting balance of supply and demand, the London gold market reopened. For the rest of the decade the price of gold in private markets remained at $35 an ounce.

Faced with deficits in its current account in 1957–58, France imposed import restrictions, devalued at the end of 1958, and borrowed mainly from the United States, supplemented by EPU and IMF credits, which were conditioned on a ceiling on public expenditures and the budget deficit, as well as restrictive monetary policy by the Banque de France.

Until 1958, all foreign exchange transactions required the approval of central banks, which were the agents under the EPU for arranging settlements. They were thus well positioned to maintain exchange controls and payments restrictions. With the dissolution of the EPU on 24 December 1958, fifteen Western European countries (including the five in our sample) made their currencies convertible for current transactions. It was not until 1961, however, that restrictions against U.S. exports were removed. Most countries maintained strict controls against capital outflows. Only Germany in 1957 authorized its residents to

export capital in any form anywhere in the world and permitted nonresidents to convert the proceeds of capital transactions in D-marks into any other currency.

Japan's recovery from the war was less rapid than that of the Western European countries. Its current account remained in deficit until the mid-1960s, and it continued exchange and capital flow restrictions until 1964.

Canada enjoyed special status in the international system. Although the IMF, in line with the prevailing U.S. view, set fixed exchange rates as the monetary regime par excellence, it tolerated the decision made by Canada in 1950 to float its dollar. Canada did not revert to a fixed rate until 1962. The reason for floating was to resist the inflationary effects that U.S. capital inflows produced under fixed exchange rates.[8]

14.2 The Heyday of the Bretton Woods Dollar-Exchange Standard, 1959–67

With the return of many European currencies to convertibility in 1958, the achievement of the Bretton Woods conception of international monetary normalcy seemed only a matter of time. The outflow of dollars in U.S. official aid, military spending, and private investment, and economic recovery in Europe and Japan had enabled foreigners to add to their holdings of dollars and gold. Apart from the 1950–51 Korean War upsurge, U.S. prices were generally stable until the middle of the 1960s, and their rate of rise generally lower than in the rest of the world (table 14.1). Money supplies in the rest of the world (except in the U.K.) grew at a faster rate than in the U.S. (table 14.2).

Part of the difference between this generally faster monetary growth in the rest of the world than in the United States was not reflected in a difference in inflation rates. Real income growth in general was much more rapid in Europe and Japan, which were still recovering from the war. Furthermore in some of these countries at least the income elas-

Table 14.1 **Quarterly Rates of Change of Consumer Prices at Annual Rates (percent per year)**

Period[a]	CA[b]	FR	GE	IT	JA	NE	UK	US
1955I–58IV	2.02	5.37	2.05	2.01	0.88	3.32	3.75	2.04
1958IV–67IV	2.07	3.54	2.41	3.61	4.99	3.32	2.86	1.73
1967IV–73I	4.13	5.57	4.45	4.58	5.87	6.17	6.86	4.58
1973I–76IV	8.85	10.68	4.89	16.09	13.19	8.92	16.36	7.95

[a]All rates are computed from the first quarter of each period to the quarter which ends the period. Periods mark changes in international monetary institutions.

[b]Throughout this volume the following country mnemonics are used: CA, Canada; FR, France; GE, Germany; IT, Italy; JA, Japan; NE, Netherlands; UK, United Kingdom; US, United States.

Table 14.2 **Quarterly Rates of Change of Money[a] at Annual Rates (percent per year)**

Period[b]	CA	FR	GE	IT	JA	NE	UK	US
1955I–58IV	5.67	8.74	10.52	11.96	17.11	5.27	−0.46	3.34
1958IV–67IV	6.79	12.15	8.01	13.26	17.41	7.90	6.00	5.83
1967IV–73I	10.97	9.40	12.75	14.02	18.11	11.98	11.09	8.09
1973I–76IV	16.21	12.99	5.07	19.29	13.16	15.01	11.52	8.62

[a]Money is defined as currency plus adjusted demand and time deposits held by the public.

[b]All rates of change computed from the first quarter of each subperiod to the quarter which ends the subperiod.

ticity of demand for money was higher than in the U.S. (See Gandolfi and Lothian, 1983, for estimates.) That some difference in inflation was actually maintained over long periods without devaluations may be due to changes in the relative prices of tradable to nontradable goods in these more rapidly growing economies. Differences over shorter periods, particularly during the early 1970s, are explainable in terms of lags in the operation of U.S. reserve flows on monetary growth in the nonreserve countries.

The dollar's status as the reserve currency of the international economy seemed impregnable during these years. Commercial banks and private firms could make foreign payments in their convertible currencies without the approval of central banks. Tariff and quota restrictions on commodity trade among the industrialized countries were eased, and foreign trade grew at a rapid rate during the period. International transfers of capital grew, with New York at the center of the flows and the dollar as the vehicle currency in which the borrowers obtained capital and the investors lent their savings.

The successful operation of the system depended on foreign central banks intervening with their own currencies against the dollar to maintain par values and the United States standing ready to buy or sell gold at $35 per ounce in transactions with foreign monetary authorities. The U.S. balance of payments accordingly was determined by the exchange parities other countries established. In general, other countries desired surpluses that would add to their dollar reserves, and the system tended to produce a steadily weakening U.S. balance of payments and growing doubts about the sustainability of the U.S. gold convertibility commitment.

14.2.1 Gold and the Dollar

A portent of the troubled future of the system was that 1960 was the first year in which U.S. gold reserves declined below the level of its

total liquid liabilities to all foreign holders of assets denominated in dollars (table 14.3).

Until March 1961, the U.S. intervened to maintain the price of gold by selling and buying dollars. Concern over the continuing conversion of dollars in gold led the Treasury to activate the Exchange Stabilization Fund. In its initial operations on 13 March 1961, acting through the Federal Reserve Bank of New York as its agent, the Fund sold forward D-marks to reduce the premium on that currency.[9] On 13 February 1962 the bank was also authorized to buy or sell foreign currencies on behalf of the Federal Open Market Committee in both spot and forward markets. For this purpose a stock of foreign currencies in addition to those acquired from the Stabilization Fund was needed. The Federal Reserve therefore negotiated a network of swap facilities with the central banks of other countries. The swap provided a specified amount of foreign currency in exchange for an equivalent dollar credit for the foreign central bank, with each party protected against loss from a change in the par value of the other party's currency. Invested balances of both parties earned the same rate of interest, foreign balances in special U.S. Treasury certificates, Federal Reserve balances in interest-earning deposits abroad. Balances were available for payments to the other party or for foreign exchange market transactions. The swap was a credit line, usually for three-month periods, renewable at maturity. By drawing on the credit, both parties initially raised their gross reserves. The Federal Reserve normally used the proceeds of a swap to absorb foreign official dollar holdings; these transactions in effect provided forward cover to foreign official dollarholders, reducing their incentive to convert dollars into gold.

Repayments of short-term swap credits meant a corresponding decline in gross reserves. For the U.S. this could entail a loss of gold. To deter this eventuality, the U.S. began issuing nonmarketable bonds, with maturities of fifteen months to two years, denominated in the holder's currency, to fund outstanding swap debt. The bonds were, however, convertible into Treasury bills on demand.[10]

A further indication of U.S. concern about gold was the prohibition after mid-1961 on the holding of gold outside the U.S. by U.S. firms and households, and on 3 March 1965 the abolition of gold reserve requirements against Federal Reserve deposits.

A focus of pressure on the U.S. dollar was the London gold market. In March 1960, the price rose above $35 an ounce, as European central banks and private investors bought gold for dollars. The Bank of England sold gold to stabilize the price, but the U.S. Treasury initially was not willing to restore the bank's holdings. Hence, when a rise in the price of gold occurred in October, the bank did not intervene. On 27 October, with the price reaching $40 an ounce, the Treasury agreed

Table 14.3 **United States Monetary Gold Stock and Liquid Liabilities to Foreigners (millions of dollars)**

End of Year (1)	Total Monetary Gold Stock[a] (2)	Total Liquid Liabilities to All Foreigners[b] (3)
1954	21,793	12,454
1955	21,753	13,524
1956	22,058	15,291
1957	22,857	15,825
1958	20,582	16,845
1959	19,507	19,428
1960	17,804	20,994 21,027
1961	16,947	22,853 22,936
1962	16,057	24,068
1963	15,596	26,361 26,322
1964	15,471	28,951 29,002
1965	13,806[c]	29,115
1966	13,235	29,904 29,779
1967	12,065	33,271 33,119
1968	10,892	33,828 33,614
1969	11,859	41,735 41,894
1970	11,072	43,291 43,242
1971	10,206	64,166 64,223
1972	10,487[d]	78,680
1973	11,652[e]	87,620
1974	11,652	120,325[f]
1975	11,599	127,432[f]
1976	11,598	152,468[f]

Sources:

Col. (2), *Treasury Bulletin*, December 1965, IFS-1; July 1975, IFS-1; February 1982, IFS-1.

Col. (3), *Treasury Bulletin*, July 1975, IFS-2; February 1982, IFS-2.

[a]The stock includes gold sold to the U.S. by the IMF with the right of repurchase, and gold deposited by the IMF to mitigate the impact on the U.S. of foreign purchases for the purpose of making gold subscriptions to the IMF under quota increases.

[b]The total includes small amounts due to the IMF arising from gold transactions, amounts due to official institutions, commercial banks abroad, to other foreigners, and to non-monetary and regional organizations. Nonliquid liabilities to official institutions included in the source beginning 1962 through 1973 have been deducted. Years for which two entries are shown show differences because of changes in reporting coverage. Figures

Table 14.3 (continued)

on the first line are comparable to figures for preceding dates; figures on the second line are comparable to those for the following dates.

[c]The figure excludes $259 million gold subscription to the IMF in June 1965 for a U.S. quota increase that became effective 23 February 1966.

[d]Change in par value of dollar on 8 May 1972 increased the value of the total gold stock by $822 million.

[e]Change in par value of dollar on 18 October 1973 increased the value of the gold stock by $1,165 million.

[f]Includes categories of liabilities previously classified as nonliquid.

to sell gold to the bank, reserving for the bank the decision on intervention in the market. European central banks soon after agreed to refrain from buying gold in the London market for monetary purposes whenever the price rose above $35.20, the U.S. price plus shipping costs. When the price fell below that level in 1961, the central banks returned to the market. However, in October 1961, when the price again was reacting to heightened demand, an agreement to create a "gold pool" was reached among the U.S. and seven European governments. Each member undertook to supply an agreed portion of net gold sales to stabilize the market, as the Bank of England as agent of the group determined to be appropriate. The members of the pool subsequently agreed not to buy gold individually on the market, but to give the Bank of England the right to buy on their joint account when gold supply exceeded demand, the amount purchased to be distributed in proportion to each country's contribution to the pool. The pool functioned until the end of 1967, when a surge of buying led to the suspension of the agreement in March 1968. During the period of the pool's operation, the participants sold a net of $2.5 billion of gold on the London market, of which $1.6 billion was provided by the United States.

14.2.2 The Dollar's Performance

A key development for the international monetary system that was not perceived as such at the time was the acceleration of the U.S. monetary growth rate and the subsequent acceleration of the U.S. inflation rate in the final years of this subperiod. What was perceived was the cumulative growth of deficits in the U.S. balance of payments. Assets denominated in dollars grew in excess of the demand for them by the rest of the world. Their conversion into gold, by shrinking U.S. gold reserves, threatened one of the basic underpinnings of the Bretton Woods structure, namely, convertibility of dollars into gold.

One measure the U.S. authorities might have taken was a raise in the dollar price of gold, thus increasing the value of the stock and the flow of reserve assets. If other countries did not follow suit by adopting

a proportional increase in the price of gold in their currencies, the U.S. in this way might have obtained a devaluation of the dollar that the Bretton Woods system otherwise ruled out. Had the price of gold risen, the gold demands of other countries might have been satisfied without the rundown in U.S. reserve assets. Some countries might also have revalued because of the inflationary consequences of their payments surplus, given the gold-based increase in their asset holdings.

The U.S., however, resolutely opposed a change in the monetary price of gold. Such action would have required an Act of Congress which would have produced a long and unsettling debate in the two Houses, during which time the foreign exchange markets would have been disturbed. Moreover, there was no assurance that other countries would not make corresponding changes in their own par values, and it was feared that confidence in the stability of the monetary system would be seriously impaired by a change in the official dollar price of gold. Given the fixed price of gold when national price levels were rising, gold became an undervalued asset with a resulting gold shortage.

The Bretton Woods system might have been able to survive an end of gold convertibility. It could not survive inflationary monetary policy in the center country that characterized the decade from the mid-1960s on. Crisis management by the IMF and the central banks of the leading industrialized countries became the hallmark of the international monetary system during the heyday of Bretton Woods.[11] The chief currency under pressure, apart from the dollar, was sterling. Persistent or recurring U.K. balance-of-payments deficits impaired the credibility of sterling's external value, already insecure by reason of the size of sterling balances held worldwide relative to U.K. gold and foreign exchange reserves. Private agents displayed lack of confidence in the dollar and sterling by shifting to currencies whose external values were regarded as stable or likely to appreciate (during this period, the D-mark and guilder). Repeated rescue operations to support the exchange value of sterling were overwhelmed in November 1967. Sterling, however, was a sideshow. The main act was the dollar's performance.

A variety of measures, adopted in countries with over- or undervalued currencies to stave off devaluation or revaluation, affected the channels of international transmission of price change.[12] Surplus countries tried to avoid price increases, deficit countries price declines, both as external consequences of their balance-of-payments positions. Intermittently, depending on cyclical conditions, countries in both categories took steps to right payments imbalances.

14.2.3 Growth of World Foreign Reserves

Since palliatives to improve the balance of payments proved ineffective, deficits had to be financed either by drawing down reserves or seeking external credit or borrowing facilities, while surpluses ob-

viously increased net reserve accumulations. During the heyday of the Bretton Woods system, despite the growth of dollar assets, the adequacy of international liquidity, in the sense of the quantity of international monetary reserves, was widely debated. Discussions during this period growing out of misplaced concern for the supply of reserves ultimately led to the creation of SDRs by the IMF, but that development belongs in the account of the breakdown of the system.[13] Until the end of 1967, international reserves were limited to gold, convertible foreign exchange, and reserve positions in the IMF.

Contrary to the design of Bretton Woods, financing of payments imbalances for the most part was arranged through credits governments extended on a bilateral basis and through international borrowing and lending activities of commercial banks. Thus, to restore depleted reserves of countries with persistent deficits, facilities for borrowing were created in addition to drawings from the IMF.

Official dollar reserves of the surplus countries were augmented at times by actions those countries took in the Eurodollar market. Dollars acquired by their central banks and deposited in the Eurodollar market either directly or through the Bank for International Settlements would usually be re-lent to private borrowers who could resell the dollars to the central banks.

With the exception of the U.K. and the U.S., all the countries in our sample increased their holdings of international reserves. In sum, world reserves grew during the period, leaving greater scope for the direct monetary channel of transmission of inflation to operate (table 14.4).

14.3 Weakening and Collapse of Bretton Woods, 1968–73

The devaluation of sterling in November 1967 was not regarded as the prelude to changes in the par values of other currencies, the devaluation of the dollar in terms of gold, the realignment of exchange-rate relations among the major currencies, and the substitution of a short-lived regime of central rates for the par value system—all of which took place between November 1967 and December 1971. Instead, it was hoped that balance in the U.S. and U.K. external payments was finally on the point of achievement, and that the creation of a special drawing rights facility in the IMF would replace reserve assets that dollar and sterling deficits had provided.

The hope was belied. The pattern of deficits and surpluses persisted and worsened in 1970 and 1971. The U.S. current account surplus dwindled, and the U.S. capital account deficit grew dramatically, producing current account surpluses and capital inflows in other countries. The activation of SDRs in 1970–72 provided additions to already massive acquisitions of dollar reserve assets.[14]

Table 14.4 **Average Quarterly Change at Annual Rates and Variance in the Level of International Reserves (millions of U.S. dollars)**

	CA	FR	GE	IT	JA	NE	UK	US
1953–58IV	8	−301	797	307	−45	56	163	−297
	(9)	(824)	(831)	(126)	(238)	(92)	(522)	(1,879)
1958IV–67IV	40	766	219	199	102	90	−26	−694
	(325)	(265)	(1,471)	(364)	(118)	(76)	(936)	(1,100)
1967IV–73I	477	619	4,504	323	3,059	538	366	−339
	(1,026)	(11,638)	(68,212)	(1,359)	(22,856)	(826)	(4,642)	(13,719)
1973I–76IV	−248	−563	195	1,202	−664	406	118	537
	(638)	(20,341)	(152,624)	(44,234)	(2,005)	(743)	(3,647)	(1,523)

Note: Variances are shown in parentheses beneath the change figures.

As in the heyday of the Bretton Woods system, disbelief of market participants in the pegged external values of currencies precipitated eruptions of turbulence in foreign exchange and gold markets, but the heart of the problem affecting the international monetary system was the performance of the dollar. The failure of the U.S. to maintain price stability led to institutional change in 1968, repegging in 1971, and finally the total collapse of fixed exchange-rate parities in 1973.

14.3.1 Foreign Exchange Turbulence

In May 1968, student riots in France touched off strikes and lockouts throughout the country. The settlement raised hourly wage rates by 11%, shortened the work week, and provoked a flight of capital, primarily into D-marks but also into gold. Rumors of a revaluation of the mark encouraged further shifts of funds. France imposed tighter price controls, restricted imports and some external payments, introduced subsidies for exports, and imposed exchange controls. These measures were revoked in September, and credit restrictions substituted. In November, the flight from francs to marks intensified, and on 20 November, major European exchange markets were shut down. Between April and November 1968, official French foreign exchange reserves declined by $2.9 billion. France resisted advice to devalue, Germany advice to revalue. Germany imposed a temporary export tax and an import subsidy, and in December a 100% reserve requirement on increases in nonresident deposits in German banks, but almost immediately relaxed the measure as funds flowed out. France in turn restored exchange and credit controls, the former having only been fully relaxed a year earlier, cut public spending and increased indirect taxes, and imposed ceilings on commercial bank lending and raised interest rates.

The deficit in the French current account grew in the first two quarters of 1969, and capital that flowed to Germany not only from France but also from the U.K. and other countries totaled $4.4 billion in May. Again, Germany adopted measures to deter the inflow: a 50% reserve requirement for nonresident deposits received before 15 April and 15% on resident deposits. The French tightened restrictions on bank credit and raised minimum requirements for hire purchase. In July funds for public investment programs were frozen. When the drain on French reserves continued and short-term debts of $2.3 billion had been incurred, France finally gave in and devalued by 11.11% as of 10 August. Currencies linked to the French franc followed suit.

Thanks to increased monetary growth in the U.S. and the resultant higher balance-of-payments deficit, France rapidly moved from $1.7 billion deficit on current account in 1969 to a small surplus in 1970, an overall balance-of-payments surplus of $2 billion in that year and of $3.4 billion in 1971. Official reserves grew correspondingly.

The perception that the D-mark was undervalued in relation to the dollar, now that the French franc had been devalued, led to a further flow of funds to Germany. A few days before German elections in October 1969, the Bundesbank closed the exchange market, and a day after reopening it, permitted the D-mark to float. The spot rate against the dollar appreciated, and on 26 October, a revaluation of 9.29% was announced. Although there was a capital outflow in the last quarter of 1969, by 1970 there were large inflows of foreign funds and official reserves increased substantially. Domestic inflation in Germany was thereby eventually worsened.

The persistent outflow of funds from the U.S. overwhelmed foreign exchange markets in the first few days of May 1971. On 5 May seven European countries closed their foreign exchange markets, and five other countries on several continents withdrew their support for the dollar and suspended dealings in D-marks, guilders, and Swiss francs. On 9 May, both Germany and the Netherlands announced that their currencies would float, since they could not maintain exchange rates within the established margins.

14.3.2 Gold and the Dollar

The gold market was the second market in which participants expressed lack of confidence in the dollar-based international monetary system. After the devaluation of sterling in November 1967, the vulnerability of the dollar took center stage. In the winter of 1967–68, a surge of demand for gold threatened both the London Gold Pool and the statutory backing for Federal Reserve notes that then amounted to $10 billion. On 12 March 1968 the U.S. gold reserve requirement was abolished. Ostensibly, the gold stock was then available for conversion of dollars held by foreign central banks. On 17 March, however, the London gold market was closed to avoid further U.S. gold losses. The members of the gold pool announced that they would no longer supply gold to the London or any other gold market or buy gold from the market. Official transactions between central banks were to be conducted at the unchanged official price of $35 an ounce, but the gold price for private transactions was to be determined in the market. Central banks were still free de jure to buy U.S. Treasury gold for dollars but in fact refrained from doing so. Germany had explicitly forsworn converting its dollar holdings into gold in May 1967.

In March 1971, before the panic of the foreign exchange market, there was a request from several European countries for conversion of officially held dollars into gold to enable them to pay for an increase in their IMF quotas. The payout reduced the U.S. gold stock to the lowest level since 1936. The dollar outflow meanwhile accelerated, leading, as noted, to the floating of European currencies. The deval-

uation of the dollar vis-à-vis the D-mark as the result of the float left unsolved the dollar's exchange rate vis-à-vis the yen. Japan's capital controls were proof against the dollar flows that inundated European foreign exchange markets, but not against the large deficit in U.S. trade with Japan. That bilateral trade imbalance was a provocation, over and above the imbalance between U.S. reserves and outstanding dollar liabilities, for the changes the U.S. introduced on 15 August 1971 to achieve a dollar devaluation. Chief among them (besides a price and wage freeze, tax increases, and federal government spending cuts) was a 10% import surcharge on 50% of total U.S. imports. The convertibility of the dollar into gold was formally suspended, as was the use of the swap network through which dollars could be exchanged with central banks for other currencies. The effect was to oblige other countries to hold dollars or to trade them for a price determined in the market and so to revalue their currencies. Foreign exchange markets abroad, except in Japan, shut down. The Japanese initial attempt to maintain the pegged rate of the yen compelled them to purchase $4 billion in the two weeks after 15 August. The yen was then freed to float upward; other currencies floated when exchange markets were reopened on 23 August. France introduced a dual exchange market, with trade and government exchange dealings based on the par value, financial exchange dealings at a floating rate. Restoration of a repegged system of exchange rates, however, remained the goal of the U.S. and its partners.

After much negotiation, a readjustment of currency parities was arranged at a meeting at the Smithsonian Institution in Washington on 17–18 December 1971. In return the U.S. agreed to withdraw the import surcharge. The currencies of six of the countries in our sample (plus those of nonsample ones) were revalued by percentages ranging from 2¾% (the Netherlands) to 7.7% (Japan) with the proviso that 2¼% margins of fluctuation (replacing the former 1% margin) above and below the so-called central exchange rates were permissible. The Canadian dollar continued to float. The Smithsonian agreement also specified that the official dollar price of gold would henceforth be $38, a concession by the U.S. for appearance' sake only, since the dollar remained inconvertible. The new price of gold implied a depreciation of 7.9% of the gold value of the dollar rather than an appreciation of the dollar value of other currencies.

14.3.3 European Economic Community Snake

The notion of a European monetary union had been the subject of discussion for years. Implementing the notion had been scheduled for a start in June 1971. The floating of the D-mark in May delayed the introduction of the plan to keep fluctuations between EEC–country

currencies within narrower limits than those vis-à-vis the dollar. The activation of the snake came in April 1972 in response to the 2¼% margin above and below the central rate that the Smithsonian agreement set. In relation to the dollar a European currency could fluctuate by 4½% from floor to ceiling, but in relation to another European currency the relative fluctuation could be as much as 9% if one rose from floor to ceiling and the other fell from ceiling to floor. The motivation for the snake was to narrow margins of fluctuation between EEC currencies by a convergence of economic and monetary policies so that exchange parities among them would be fixed.

Operationally, if an EEC currency premium over its central rate plus the discount on the central rate of another EEC currency reached 2¼% (half the amount permitted by the Smithsonian agreement), the weak currency was to be bought by the strong currency. The purchase could be made by the weak-currency country, by the strong-currency country, or by both. A monthly settlement was provided, so the creditor country could exchange the weak currency acquired for a desired reserve asset and obtain repayment for its short-term credit facility if it had lent its currency to the debtor. Debtors were to make settlement in a prescribed mix of reserve assets.

Six countries (France, Germany, Italy, Belgium, Luxemburg, the Netherlands) originally joined the snake; three others joined in May 1972 but left in June (U.K., Denmark, Eire). Denmark rejoined in October 1972, Italy left in December 1972. France left in January 1974, rejoined in July 1975, and left again in March 1976. Sweden and Norway, non–EEC countries, joined in May 1972. Sweden left in August 1977.[15]

The feasibility of the snake was dubious in the absence of consensus by the national governments to yield to the union direct monetary autonomy and control over exchange-rate changes, and to seek convergence of economic policies.

14.3.4 The End of the Sterling Area

Within weeks after joining the snake, sterling came under pressure in foreign exchange markets. The central banks of the EEC countries supported sterling, but on the next settlement day the U.K. would have had to repay them. On 22 June 1972 the bank rate was raised by 1%, and on the following day the exchange rate was floated. The float marked the end of the sterling area. Capital flows to overseas sterling areas were made subject to the same exchange controls as other areas, and Bank of England approval was required for official foreign exchange for direct investment in the overseas sterling area. Only a few small countries of the sixty-five that had formerly pegged their currencies on sterling continued to do so after sterling floated.

14.3.5 The End of the Convertible Dollar Standard

The central rates established at the Smithsonian meeting crumbled during the nine months following the floating of sterling. Once again, the disbelief of market participants in those rates was revealed in the gold and foreign exchange markets. The London free market price of gold rose with few reversals. Money growth and inflation rates continued to rise in the U.S., and both the balance of trade and the U.S. balance-of-payments deficit soared, with a corresponding surge in dollar holdings of the industrialized European countries and Japan. Capital controls were imposed in 1972 by the Netherlands and Japan before sterling was floated, and Germany followed suit afterward. On 10 February 1973 Japan closed its foreign exchange market and suspended support of the dollar. New central values were set in a hurried round of negotiations, although the lira, yen, Canadian dollar, U.K. and Irish pounds, and Swiss franc all floated. Again, the official price of gold was raised (this time to $42.22), leaving unchanged the gold value of other currencies. The new central rates did not staunch the flow of dollars abroad, and a further crisis erupted in March 1973. This time the major industrial countries discontinued pegging their exchange rates to the dollar. The EEC countries in the snake plus Sweden and Norway agreed to a joint float, with Germany revaluing by 3% (in terms of SDRs) in relation to the other members. Canada, Japan, and Switzerland floated individually, as did a handful of other countries. Though a large group of nonindustrialized countries pegged to the dollar, the dollar currency area worldwide contracted; smaller groups of countries pegged to the French franc or to the pound.

Market forces had triumphed.

14.4 Managed Floating Exchange Rates

When pegged rates were abandoned in March 1973, it was initially assumed that floating was a temporary expedient to be succeeded by a reformed par value system. The U.S. took the lead in opposing the return to such a system. The dispersion of inflation rates among the industrialized countries and the higher variability of rates of inflation since the late 1960s enforced more frequent changes of exchange rates. Under the earlier system, changes in par values were delayed until foreign exchange market crises were provoked. The lesson since the shift in March 1973 was that floating provided more flexibility. The U.S. view prevailed. With the suspension of official gold convertibility, and widespread departures from the IMF's par value provisions, negotiations were held to codify, in the form of amendments to the IMF Articles, the international monetary arrangements that had evolved in practice.

Under the amendments to the IMF Articles agreed on in early 1976 and implemented in April 1978, gold was formally removed from its previous central role in the IMF and IMF par value obligations were eliminated. The official IMF gold price was abolished, as were also gold convertibility and maintenance of gold value obligations. Gold was eliminated as a significant instrument in IMF transactions with members, and the IMF was empowered to dispose of its large gold holdings. Although the amended IMF Articles provide for the future possibility of establishing a system of stable but adjustable par values, such a decision by the Fund would require an 85% affirmative vote by the members, thus giving the United States an effective veto. The provisions in the amended IMF Articles relating to the establishment of par values specify that the common denominator of the system shall not be gold or a currency.

It is useful to examine the manner in which various aspects of the international monetary system have been affected by the shift from the pegged to the managed floating exchange-rate system. These aspects include (*a*) the role of reserve assets and of dollar assets; (*b*) the role of gold; (*c*) the role of central bank intervention in foreign exchange markets; (*d*) the variability of exchange rates; (*e*) the role of monetary policy.

14.4.1 Role of Reserve Assets and of Dollar Assets

It was widely believed that the stock of reserve assets would contract in a world of floating exchange rates compared to a world of pegged rates. In fact, (nominal) official holdings of reserve assets have increased every year since the float. From 1950 to 1969, on average, world reserves including gold rose by less than 3% per year, the foreign exchange component by 5% per year. From the end of 1969 to the end of 1972, the average annual rate of increase of foreign currency reserves was 43%. Since 1973, the average annual rate of increase has been 15%. The main source of growth of foreign currency reserves since 1973, as in earlier years, has been in the form of dollars.[16] The demand for reserves has increased even under floating rates because the system is substantially managed.[17]

A significant change in the distribution of foreign exchange reserves has occurred since October 1973 as a result of the rise in the price of oil. Total foreign exchange reserves of industrial oil-importing countries have increased at a slightly slower pace than reserves of all countries, which sextupled since 1970, but the major oil-exporting countries, which in 1970 held only about 8% of total world foreign exchange reserves, by the end of the decade held about one-quarter of the total. The motivations of oil-exporting countries for holding foreign-currency denominated assets are, however, clearly quite different from those of industrial countries.

Although other currencies have increased their role as reserve currencies in recent years, the dollar has continued to serve as the main reserve currency, accounting for about 80% of the world's official foreign exchange reserves. To the extent of intervention, as under pegged rates, the U.S. has settled its payments deficits in dollars, which foreigners willingly add to their asset holdings and use in payments to other countries. The dollar also remains the main official intervention currency in foreign exchange markets and serves as a common vehicle currency in the interbank market for foreign exchange. In effect, the world has adopted an inconvertible dollar standard.

One change in the international reserve profile was the creation on 13 March 1979 of the European Monetary System—replacing the "smaller" size European joint float—by nine European countries (Belgium, Denmark, France, Germany, Eire, Italy, Luxembourg, and the Netherlands; the U.K. is a member but does not participate in intervention arrangements). The center of the system is the European Currency Unit (a basket of all nine currencies), issued by the European Monetary Cooperation Fund in an amount equal to a deposit of 20% of gold and dollar reserves of participating countries, to be used for settlement of intervention debts (see below). ECUs now included in foreign exchange holdings of the participating countries, except for revaluation changes, do not increase world monetary reserves.[18]

With gold valued at market price, gold reserves at the end of 1979 were larger than foreign exchange reserves. The U.S., however, values its own gold assets at the official price of $42.22 per ounce, despite the abolition of an official IMF price for gold.

If a high rate of growth of world foreign exchange reserves provides evidence of an international transmission process at work, it is apparent that no change in behavior in the aggregate has occurred in that regard since 1973.

14.4.2 The Role of Gold

After the float, the U.S. took the position that gold should be demonetized. An opposing view was promoted principally by France. Developments reflect the extent to which one or the other dominated international decisions. At issue was the use of gold in official transactions at the free market price, and the substitution of gold for the dollar in inter–central bank settlements at a fixed but higher official price.

The prescription against official transactions in the gold market that had been adopted in March 1968 was terminated in November 1973, but the official price of $42.22 posted in February 1973 was so far below the private market price that central banks were unwilling to buy and sell gold among themselves at the official price. The central

banks were equally reluctant to sell gold on the private market in view of the possible depressive effect of sales on the market price or in anticipation of the opportunity to sell in the future at a higher price. In December 1973 the IMF terminated arrangements made four years earlier, under which it had been prepared to purchase gold from South Africa.

In June 1974 countries in the Group of Ten (the U.S., the U.K., Germany, France, Italy, Japan, Canada, the Netherlands, Belgium, and Sweden) agreed that gold could be used as collateral for intercentral bank loans at a price other than the official gold price, and in September Italy obtained a loan from Germany on the pledge of Italian gold valued at a mutually agreed price. In December the U.S. and France agreed that central banks were at liberty in valuing gold holdings for balance sheet purposes to use the market price, which the Bank of France proceeded to do.

Early in 1975 the countries in the Group of Ten and Switzerland agreed for a two-year period not to increase the sum of their and the IMF's gold holdings and to contribute no support to the price of gold in the free market. In August 1975 agreement was reached by an IMF committee that[19]

the official price of gold would be abolished;

members would not be obliged to use gold in transactions with the Fund;

a part of the Fund's gold holdings would be sold at auction for the benefit of developing countries, and another part would be returned to member countries in proportion to their quotas.

The first public auction of part of the Fund's gold holdings was held in June 1976. A four-year sales program was scheduled. In the first two years, sixteen auctions were held approximately every six weeks, with aggregate sales of 12.5 million ounces. The balance of 12.5 million ounces was sold mainly in twenty-four auction lots through May 1980, and a small amount in noncompetitive sales. Restitution of 25 million ounces to member countries over a four-year period was completed in December 1979/January 1980.

The U.S. repealed the prohibition against gold holding by U.S. residents as of 31 December 1974 and empowered the Treasury to offset any increase in market price as a result of this increment to private demand by offering gold at auction. The first auctions were held in January and June 1975, when the Treasury disposed of 13 million ounces. No auctions were held in 1976 and 1977. They were resumed in 1978 and 1979, when the Treasury sold 4.0 and 11.8 million ounces, respectively, motivated both by the desire to reduce the U.S. balance-of-payments deficit on current account and by the belief "that neither

gold nor any other commodity provides a suitable base for monetary arrangements."[20] Since 1979 the Treasury has sold no gold bullion.[21]

Members no longer define the exchange value of their currency in terms of gold and trade in and account for gold at any price consistent with their domestic laws. Gold is no longer the *numéraire* of the international monetary system. The introduction of SDRs (valued in terms of a basket of national currencies, as of July 1974, rather than in terms of gold) was intended to replace both the dollar and gold in the international monetary system.

The market price of gold has increased more rapidly since the float than the prices of most other durable assets.[22] The future role of gold in the international monetary system as a reserve asset and as a determinant of the world's price level may depend on the performance of the dollar. If the performance of the dollar improves, gold may be dethroned even if its use as a reserve asset continues. Failure of the dollar to perform in a stable fashion in the future leaves open the possibility of a restoration of a significant role for gold.

14.4.3 Role of Central Bank Intervention

Direct official intervention to maintain the open market price of currencies within narrow limits has not lessened under floating rates compared with the pegged parity system. Intervention in some countries is assigned to nationalized industries that borrow foreign currency in order to buy their own currency on the foreign exchange market, in Italy and the U.K. with government provision of insurance against foreign exchange loss, in France with no such provision. In Japan and sometimes in France, dollar deposits held by the government at commercial banks are used for intervention. Italian and French commercial banks intervene at the government's behest. Central bank intervention may thus be conducted by a variety of institutions at the direction of the monetary authorities.

The pattern of intervention since the float by the U.S. and its trading partners is to buy dollars both when the dollar depreciates relative to a particular foreign currency and when one foreign currency appreciates relative to another. Countries with weak currencies sell dollars. When the supply of dollars increases in foreign exchange markets, managed floaters may buy up some of the additional dollars or may permit the price of dollars to fall in terms of their own currencies. Buying up dollars has negative consequences for domestic monetary control; permitting the price of dollars to rise can have negative consequences for oil-importing countries.

There was apparently little intervention during the four months following the float in February 1973. The progressive decline in the weighted exchange rate of the dollar between February and July 1973 vis-à-vis

a group of major currencies led to a decision by the governors of the central banks of the Group of Ten to support the dollar. In July 1973 the Federal Reserve Bank of New York began to intervene in the New York spot exchange market to avoid "disorderly market conditions." Intervention was effected with the Federal Reserve's own small holdings of foreign currency or by activating the much larger total of foreign currency loans through swap agreements.

Concerted exchange intervention was agreed to by the Federal Reserve, the Bundesbank, and the Swiss National Bank in May 1974, after several months of dollar depreciation. The dollar strengthened until September, when renewed weakness developed through March 1975. The explanation given by the Board of Governors was:[23]

> Contributing to this decline in the dollar's exchange value was the asymmetry in intervention policies between countries with weaker currencies and those with strengthening currencies. Intervention sales of dollars by countries supporting weaker currencies exceeded purchases of dollars by countries resisting the appreciation of their currencies. The net effect of these operations was to add to the market supply of dollars, depressing the dollar's average exchange rate.

Explicit approval of management of floating exchange rates was expressed by the IMF in six guidelines it issued in June 1974.[24] Acceptance of intervention as desirable policy was reiterated in a November 1975 meeting that preceded the revision of the IMF's Articles of Agreement in 1976.

The dollar showed little weakness in 1976, and the Federal Reserve intervened to sell dollars on behalf of other currencies. In January the Italian lira came under pressure. The decline in its exchange value weakened the French franc within the European currency snake, leading to substantial French intervention. Massive intervention to support sterling, which declined from $2.00 in March to $1.77 in mid-September, was provided by a $5.3 billion stand-by credit arranged by the Group of Ten countries, Switzerland, and the Bank for International Settlements. Sterling's further decline later in the year led to an IMF drawing, further borrowing, and a facility to reduce official sterling balances. Interventions were also engaged in to moderate appreciations of the D-mark, the Swiss franc, and the yen.

Renewed weakness of the dollar in early 1977 was masked by large intervention purchases of dollars by the Bank of England and the Bank of Italy undertaken to limit the appreciation of their currencies and to rebuild their reserve positions. The Federal Reserve intervened only occasionally during the first three quarters. When the Bank of England ended its large purchases of dollars, the dollar dropped sharply. The Federal Reserve increased the scale of intervention and in January 1978

was joined by the U.S. Treasury Exchange Stabilization Fund, which negotiated a new swap facility with the Bundesbank.

The decline in the weighted average exchange value of the dollar accelerated in 1978 through the end of October.[25] An anti-inflation program announced on 24 October (contractionary fiscal and monetary policy, voluntary wage and price standards, and a reduction in the cost of regulatory actions) had no effect on the exchange market. On 1 November, the administration and the Federal Reserve took further action. A $30 billion intervention package was arranged with Germany, Japan, and Switzerland. The Federal Reserve raised the discount rate from 8½% to 9½% and imposed a 2% supplementary reserve requirement on large time deposits. During the last two months of 1978, U.S. support operations for the dollar totaled $6.7 billion, including sales of Treasury securities denominated in foreign currencies and significant purchases of dollars by Germany, Japan, and Switzerland. By June 1979 the dollar's value (measured on a trade-weighted basis) had risen from its 1978 low by about 10%, and U.S. authorities had repurchased a greater sum of foreign currency than had been sold in the last two months of 1978. The dollar then began to weaken, and U.S. intervention sales of foreign currencies, chiefly D-marks, resumed. Gross sales amounted to $9½ billion equivalent between mid-June and early October. In addition, the Federal Reserve raised the discount rate to 11% in September.

On 6 October 1979 the Federal Reserve announced a wide-ranging set of measures to tighten monetary control (a shift in operating procedures to place less emphasis upon control of the Federal Funds rate and more emphasis upon control of bank reserves; an increase in the discount rate to 12%; a marginal reserve requirement on banks' managed liabilities), and the dollar began to appreciate. After April 1980, however, the dollar began to decline, a movement that was reversed in September. From October 1979 on, the U.S. intervened frequently, operating on both sides of the market. When the dollar was in demand, it acquired foreign currencies in the market and from correspondents to repay earlier debt and to build up balances. The Federal Reserve was a buyer from February to March. From late March to early April and beyond, it sold D-marks, Swiss francs, and French francs. By the end of July, the U.S. was again accumulating currencies. Both the Treasury and the Federal Reserve Trading Desk made net purchases of D-marks and lesser amounts of Swiss francs and French francs on days when the dollar was strong, selling on days when the dollar weakened. By the end of 1980, the U.S. was intervening in the foreign exchange markets virtually on a day-to-day basis. For 1980 as a whole, U.S. authorities were net buyers of foreign currencies in an amount of $8.7 billion equivalent.

The Reagan administration soon after taking office announced its intention to reduce the scale of intervention, to discontinue the policy of building up currency reserves, and to cut back its short-term swap arrangements with foreign countries. The reason for the shift in policy is the administration's view that intervention is both costly and ineffectual and that the way to restore exchange-rate stability is by the creation of more stable domestic economic conditions. Many foreign central banks do not share the Reagan administration's views and continue to intervene to affect the exchange value of their currencies. This raises a question whether the degree of control U.S. authorities can exercise over the effective exchange rate for the dollar under a floating rate system is any greater than under a pegged exchange-rate system.

The rationale for central bank intervention under floating rates is that the market does not move exchange rates smoothly to equilibrium levels, produces "disorderly conditions," and sets rates at variance with underlying economic conditions. It is assumed that central banks can determine better than markets the correct level of exchange rates and the proper degree of variability. A policy of leaning against the wind is justified by advocates of intervention as slowing the movement of exchange rates in either direction.

To stabilize foreign exchange markets central banks should buy their currencies when prices are low to drive them up and sell their currencies when prices are high to drive them down. Such operations should net the central banks a profit. Buying at high but falling prices and selling at low but rising prices are defended as needed to achieve "orderly" markets. By resisting a gradual movement in exchange rates, central banks lose reserves and money until they abandon the support operation, with a resulting sudden large movement in exchange rates.

If the purpose of intervention were to reduce deviations of the market exchange rate from the equilibrium exchange rate, central bank operations would net profits but might not reduce the variance of exchange-rate movements. If the equilibrium exchange rate shifts as a result of an economic shock, leaning against the wind may lower the variance of the exchange rate but will increase the size of the deviation of the exchange rate from its equilibrium level. In addition, the central bank will lose money on the operation. If there is no intervention, the variance will be larger, the central bank will not lose money, and the exchange rate will reflect the new equilibrium value sooner, thus allowing the rate to transmit undistorted information.

The central banks as a group have not been conducting a profitable exercise by intervening in foreign exchange markets. An estimate for nine countries puts the loss for central bank intervention since the beginning of the float at $10 to $12 billion, far in excess of losses sustained by nationalized industries although for selected time periods

a country may record a profit.[26] The evidence is that central banks have been suffering from an anachronistic behavior, resisting exchange-rate changes under nominally floating rates much as they did under pegged rates. Central banks have no way of knowing when there is a change in the fundamental equilibrium level of exchange rates.[27] By assuming the absence of a change in the equilibrium exchange rate and intervening to hold the exchange rate, they lose substantial amounts of money and ultimately have no choice but to permit the exchange rate to move.

14.4.4 Variability of Exchange Rates

One major change since the float has been the increased variability of exchange rates of the major industrial countries (table 14.5). Critics of the floating regime argue that the variability has been excessive. Much of the movement, it is said, is unrelated to underlying economic and financial conditions which are not themselves likely to undergo rapid changes. Injury to international trade through exchange-rate fluctuation is claimed. The exchange rate is regarded as contributing to inflation, strong currencies not experiencing a reduction in exports as a result of appreciation, and weak currencies not experiencing a reduction in imports as a result of depreciation. The widening of bid-ask spreads or increase of transactions costs and the failure of forward rates to predict future spot prices as well in the 1970s as in the 1960s are offered as evidence that speculators destabilize foreign exchange markets. The impact of floating rates is said to increase uncertainty.

The negative assessment of the behavior of exchange rates since the float omits a crucial factor: the market's expectations with respect to inflation rates, monetary and fiscal policy, and general economic conditions. Unstable domestic policies contribute to unstable exchange rates.[28] Exchange-rate changes are dominated by speculation about these underlying economic factors. If, despite appreciation, strong-currency countries experience growth in exports and, despite depreciation, weak-currency countries experience growth in imports, the explanation is that costs of production in the former remain favorable if policies in the latter permit inflationary expansion of demand, wage hikes, and increase in strike activity. It is uncertainty about domestic policies that produces higher transactions costs in foreign exchange markets. With respect to the failure of forward rates to predict future spot rates, the predictions have not been biased. Despite the volatility of exchange rates, no major disruptions to trade and capital flows have occurred since the float. In fact, floating exchange rates permitted the elimination of some capital controls. Capital controls introduced since the float are associated with the snake, where rates of exchange among the bloc were relatively fixed and moved in relation to one another

Table 14.5 **Average Quarterly Change at Annual Rates and the Variance of the Exchange Rate**

	CA	FR	GE	IT	JA	NE	UK
1955I–58IV	−.21	6.30	−.14	−.01	0	−.19	−.16
	(1.58)	(2.27)	(.39)	(.001)	(0)	(1.68)	(1.82)
1958IV–67IV	1.18	1.12	−.54	−.03	.07	−.51	1.12
	(1.31)	(.46)	(9.18)	(0.27)	(1.42)	(7.58)	(39.26)
1967IV–73I	−1.45	−.43	−6.54	−.144	−4.96	−3.17	.66
	(16.41)	(121.49)	(161.53)	(13.90)	(89.18)	(55.04)	(87.44)
1973I–76IV	−.13	1.05	−4.53	10.69	1.40	−5.15	10.59
	(33.)	(499.)	(560)	(413)	(141)	(403)	(401)

Note: The table understates the variability of exchange rates for individual countries before 1973I. For a correct measure for the individual countries, the subperiods would be chosen for each country to correspond with dates for stable or changing exchange rates. Variances are shown in parentheses beneath the change figures.

only within relatively narrow bands.[29] The balance-of-payments motive for tariffs is also defused by floating rates. If protectionism is perceived as on the rise since the float, it is related to stagflation rather than exchange-rate developments.

A final point with respect to exchange rates relates to experience within the European Monetary System. The initial year after the activation of the exchange-rate mechanism of the European Monetary System in 1979 reduced the range of movements of the participant currencies against the D-mark compared to the range in the preceding year. Nevertheless, two realignments of exchange rates were required as a result of divergencies in economic performance and in inflation experience (Germany, September 1979; Denmark, November 1979). Large-scale interventions were undertaken to preserve the former exchange rates but to no avail. The continued existence of large inflation differentials among the countries in the EMS suggests the fragility of the arrangement is not less than it was for the predecessor snake. Countries that inflate at a faster rate than their trading partners cannot avoid depreciation of their currencies. As markets have become more insistent on allowing for expected future price movements in setting nominal interest rates, wider swings in interest-rate differentials among countries are also likely to contribute to exchange-rate instability.

14.4.5 Role of Monetary Policy

The Bretton Woods system broke down essentially because non-reserve-currency countries were unwilling as a group to adopt the policy of inflationary monetary growth the reserve-currency country was pursuing. To achieve independent monetary policy, the only workable exchange-rate system was floating. It was hoped that flexible exchange rates would permit a country to choose its desired long-run trend rate of monetary growth and of inflation, independent of other countries' choices.

Even when autonomy exists, monetary policy may perform badly. It is in this context that the movement in a number of countries during the 1970s toward the improvement of monetary control must be viewed.

Central banks have typically used short-term interest rates as the instruments to control monetary growth. Under noninflationary conditions, this conduct produced a procyclical movement in monetary growth. Under the gathering inflationary conditions since the mid-1960s, the inflation premium that became embedded in interest rates made the instrument unreliable as an indicator of restriction or ease. Reliance on it contributed to a secular rise in the rate of monetary growth. Central banks in a number of countries, some more willingly than others, in the 1970s adopted targets for monetary growth without necessarily abandoning their desire to hold down interest rates or exchange rates,

so that successful targeting has not invariably been the result. If it was hoped that public announcement of targets for monetary growth would itself reduce expectations of inflation, the failure time after time to achieve the targets has diluted any possible effect on the formation of expectations.

14.5 Summary

By the end of 1958, the idealized Bretton Woods regime of exchange rates pegged within relatively narrow bounds seemed on the point of achievement. Problems arose in the 1960s when individual countries resorted to restrictions on trade and commodities in order to contain balance-of-payments deficits which would have otherwise required lower rates of monetary growth and inflation. The United States, the reserve-currency country, was the prime destabilizer of the system. Because countries were unwilling to subordinate domestic monetary policies to the requirements of a fixed exchange-rate system, recurring financial crises led to occasionally large devaluations and to some revaluations of individual currencies. In the end, the system broke down and countries were free after 1973 to float their currencies or to adopt regional pegged currency schemes that floated against the dollar. Since the float has been a managed system, with substantial official intervention to prevent or slow exchange-rate movements, countries have continued to hold foreign exchange reserves and internal monetary policy independence has not invariably produced noninflationary monetary growth.

Notes

1. We share the view of Harry G. Johnson (1978) expressed in *Exchange Rate Flexibility:* "It is not clear, actually, that there was much competitive devaluation even in the 1930's."

2. Foreshadowing that breakdown were the revaluations of the deutsche mark in October 1969 and the return to floating, albeit of a heavily manged sort, of the Canadian dollar in May 1970.

3. Laskar in chapter 11 of Darby et al. (1983) provides a particularly thorough econometric investigation of this sterilization question. Cassese and Lothian in chapter 4 and Darby and Stockman in chapter 6 of the same volume also present evidence relevant to this issue.

4. Some, however, view currency substitution and asset substitution as limiting national monetary independence even under floating exchange rates. See, for instance, Miles (1978) and Brittain (1981). The Darby and Stockman investigation of this question in chapter 6, however, lends considerably less support to these propositions.

5. See section 17.2 of Darby et al. (1983, pp. 498–505) for a summary of the evidence on the arbitrage channel contained in various papers in that volume.

6. Frenkel and Mussa (1981) discuss this and other channels.

7. The deterioration in the U.S. current account in 1971 has been identified by Harry G. Johnson (1972) as a source of increased demand by U.S. residents for foreign goods and services that raised their prices.

8. See Paul Wonnacott (1965) for a discussion of the Canadian float during this period.

9. See "Treasury and Federal Reserve Foreign Exchange Operations," in the September 1962 *Federal Reserve Bulletin* (pp. 1138–53), for a discussion of the system's role in the gold market during this period.

10. In addition, the United States issued nonmarketable bonds, starting in 1963.

11. Margaret de Vries (1976).

12. For a description of the controls that were imposed, see the various editions of the IMF *Annual Report on Exchange Restrictions*.

13. Underlying the emphasis upon international liquidity during this period and the subsequent introduction of SDRs, as Lance Girton (1974) has pointed out, was the real-bills doctrine, in this instance applied to the international realm rather than to its preferred habitat, the domestic.

14. By the end of the fourth quarter of 1972, the value of SDRs was slightly over $9.4 billion, or 6% of total world international reserves as reported by the IMF (*International Financial Statistics*, July 1974).

15. Many changes in exchange rates within the snake were made. On four occasions between March 1973 and October 1978, the mark was revalued within the system. The guilder and the Norwegian krone were each revalued once. Countries other than Germany devalued in October 1976. The Swedish krona was subsequently devalued again, as was the Danish krone, and the Norwegian krone several times. For a table on these changes, see Major (1979, pp. 212–13).

16. Although in December 1978 the IMF resumed the allocation of SDRs to member countries at a rate of 4 billion SDR per year (to be continued for a period of three years), the action had no immediate effect on the growth of reserves. The reason is that an increase in quotas, of which one-fourth was payable in SDRs, took effect in 1979. Accordingly, about 5 billion SDRs reverted to the IMF in that year.

17. Frenkel (1978), using time series of cross section data, provides evidence of substantial similarities in the demand for international reserves between exchange-rate regimes.

18. The ECUs issued value gold on the basis of either the average market price of the six preceding months or the average market price on the day before issue, whichever was lower.

19. IMF *Annual Report*, 1975, p. 44.

20. See *Annual Report of the Secretary of the Treasury on the State of the Finances*, 1979, p. 491, Exhibit 60, a press release on the increase in the amount of gold sales, announced 22 August 1978 ("The sales will make an important contribution toward reducing the U.S. balance of payments deficit on current account"), and Exhibit 61, a statement by Assistant Secretary Bergsten before the Senate Committee on Banking, Housing, and Urban Affairs, in which the quotation in the text appears.

21. The Reagan administration announced that its position on the proper role of gold in the international monetary system would not be formulated until the congressionally mandated gold commission issued its report in March 1982.

Testimony of Beryl W. Sprinkel, under secretary for monetary affairs, Treasury Department, at hearings of the Joint Economic Committee, 4 May 1981.

22. The price of gold from the end of 1973 to the end of 1980 increased at an average annual rate of 20.7%. By comparison the total returns on common stock and on long-term government bonds (computed according to Ibbotson and Sinquefield 1977) increased at average annual rates of 7.2% and 4.0%, respectively. The U.S. CPI over this period increased at a rate of 7.8% per year on average, and the *London Economist's* world commodity price index in dollars at a 9.5% rate.

23. Board of Governors of the Federal Reserve System, *61st Annual Report,* 1974, pp. 65–66.

24. The first guideline stated: "A member with a floating exchange rate should intervene on the foreign exchange market as necessary to prevent or moderate sharp and disruptive fluctuations from day to day and from week to week in the exchange value of the currency." A second guideline encouraged intervention to moderate movements from month to month and quarter to quarter "where factors recognized to be temporary are at work." A third guideline suggested consultation with the Fund if a country sought to move its exchange rate "to some target zone of rates." A fourth guideline dealt with the size of a country's reserve relative to planned intervention; a fifth, with avoiding restrictions for balance-of-payments purposes; a sixth, with the interests of other countries than the intervening one. IMF *Annual Report,* 1974, pp. 112–16.

25. The index of weighted average exchange values of the dollar against the Group of Ten countries plus Switzerland (March 1973 = 100) declined at an average annual rate of 9.3% between January and November 1978. From January 1976 to January 1978 it had declined at a 3.3% annual rate.

26. For the source of the estimate on losses and an illuminating discussion of intervention, see Taylor (1982).

27. Darby et al. (1983, chap. 15) presents evidence relevant to this issue. He shows that growth rates of the dollar exchange rates of the countries in our sample tend on average to a purchasing-power parity relation but that the levels of exchange rates become unpredictable.

28. Frenkel and Mussa (1980) present a particularly concise statement of this position.

29. The D-mark was revalued by 5½% relative to other snake currencies on 20 June 1973, and simultaneously controls on capital inflow were tightened to defend the new rate.