

# U.S. Foreign Exchange Operations

By Kristina Jacobson

The volume of U.S. official foreign exchange operations has grown substantially in recent years. In 1989, the total volume of U.S. transactions in the exchange market was over \$20 billion, the highest ever. At the same time, because recent U.S. operations have usually involved the purchase of foreign currency, U.S. foreign currency balances have grown to record levels, reaching nearly \$45 billion in December 1989.<sup>1</sup>

Such changes in U.S. foreign exchange operations reflect the evolving nature of U.S. exchange rate policy over the postwar period. During the Bretton Woods system of fixed exchange rates, which lasted from 1947 to 1973, the primary goal of U.S. operations was to maintain the dollar price of gold, chiefly through official transactions with foreign authorities. With the shift to floating exchange rates in the

early 1970s, the focus of U.S. operations has been to counter disorderly conditions, primarily through direct intervention in the market.

This article describes how the goals and methods of U.S. foreign exchange operations have changed over time. The first section reviews the institutional framework for U.S. foreign exchange operations. The second section discusses the role of the United States in the Bretton Woods system of fixed exchange rates and U.S. exchange rate policy goals and methods during that time. The third section discusses the goals and methods of U.S. operations during the floating-rate regime.

## I. Framework for Operations

The U.S. Treasury and the Federal Reserve System cooperate in formulating and implementing U.S. exchange rate policy. In a broad sense, because foreign economic policy falls under the Treasury's domain, the Treasury is ultimately responsible for exchange rate policy. However, the Fed consults with the Treasury on deciding

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exchange rate policy and directly implements that policy.

The foreign exchange desk at the Federal Reserve Bank of New York conducts all U.S. foreign exchange operations, using Treasury and Federal Reserve funds. Since 1978, the Fed and the Treasury have generally shared equally in financing operations. The Treasury pays for its portion of operations with its Exchange Stabilization Fund (ESF).<sup>2</sup> The Federal Reserve System pays for its operations with an account owned by all 12 Federal Reserve banks. The Federal Open Market Committee (FOMC), the Fed's principal policymaking body, regulates operations for the Fed's foreign exchange account.<sup>3</sup>

The Treasury reports the U.S. foreign exchange policy goal in general terms to the International Monetary Fund (IMF). The IMF is an international organization designed to promote cooperation in international monetary and payment issues. Currently, the goal of U.S. foreign exchange operations as reported to the IMF is to counter disorderly market conditions or to act when "otherwise deemed appropriate" (International Monetary Fund 1986). The Federal Reserve recognizes the Treasury's goal and ensures that operations for the System foreign exchange account will follow the Treasury's commitment to the IMF.

The FOMC manages the System account through three formal documents: the Foreign Currency Directive, the Authorization for Foreign Currency Operations, and the Procedural Instructions. These documents require that Fed operations be "conducted in close and continuous consultation and cooperation with the United States Treasury" (Board of Governors 1989). The documents also provide guidelines on financing arrangements between the Fed and foreign authorities or the U.S. Treasury. The FOMC also formally and informally monitors the size of System foreign currency balances. For any operations not falling within the guidelines, the foreign desk must seek approval from the

entire FOMC or a delegated subcommittee of the members.

Each day, the foreign desk must decide whether and how to intervene within the guidelines agreed upon with the Treasury. To provide the desk with up-to-the-minute information, staff members at the New York Fed continuously watch the 24-hour, worldwide foreign exchange market and convey significant developments to the Treasury and the Fed's Board of Governors in Washington, D.C. Treasury and Board staffs also study the market, but the New York Fed follows developments most closely. Each morning, New York staff members call various commercial banks to obtain the latest exchange rate quotes and to get a "feel" for the market. New York staff members may also call foreign central banks to coordinate foreign exchange operations. If the desk plans to conduct operations, the manager of the foreign desk determines exactly when and how to act. In making intervention decisions, the manager consults officials at the Treasury and the Board.

The rest of this article reviews the goals and methods of U.S. foreign exchange operations, first during the fixed-rate regime and then during the floating-rate regime.

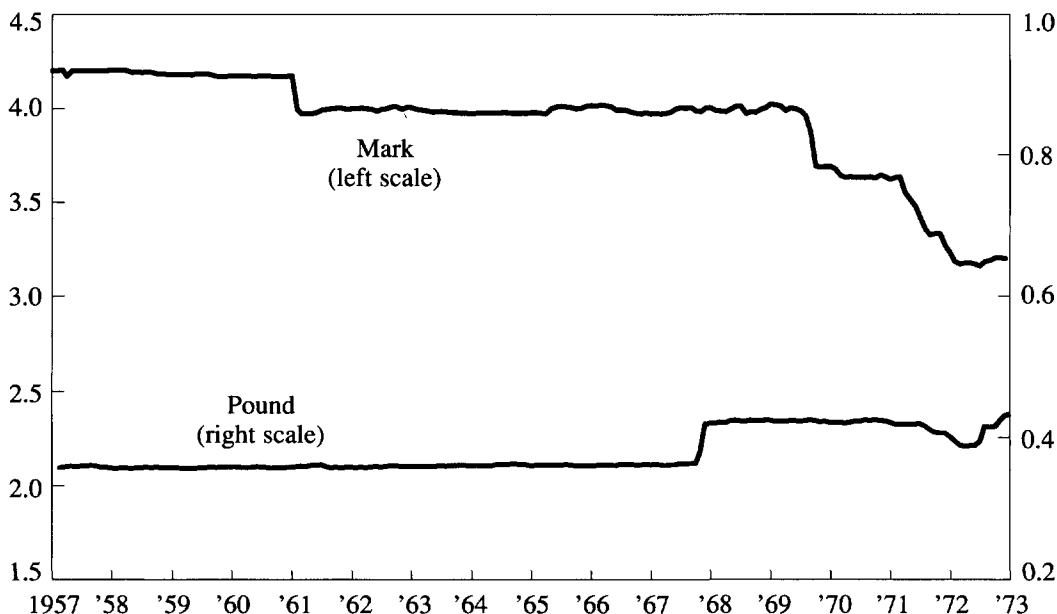
## **II. Fixed-Rate Regime: Goals and Methods**

The Bretton Woods system of fixed exchange rates lasted from 1947 to March 1973. The U.S. dollar was the center of the system and the value to which other countries pegged their currencies. The role of foreign authorities was to intervene in the foreign exchange market to maintain the value of their currency relative to the dollar. For example, if it was deemed necessary to cause the pound to rise against the dollar, British authorities bought pounds, increasing the demand for the pound and pushing up its price. Alternatively, to cause the pound to fall against the dollar, British authorities sold pounds,

Chart 1

### The Bretton Woods Period: Foreign Exchange Value of the Dollar

(Foreign currency units per dollar)



Source: *Federal Reserve Bulletin*, various issues.

increasing the supply of pounds and pushing down the pound's price.

In contrast to the role of foreign authorities, the role of the United States was to maintain the dollar price of gold at \$35 an ounce. The United States stood ready to sell gold to foreign authorities who wished to convert dollars acquired through foreign exchange operations. The annual U.S. notification of its exchange rate goal to the IMF stated this commitment.<sup>4</sup>

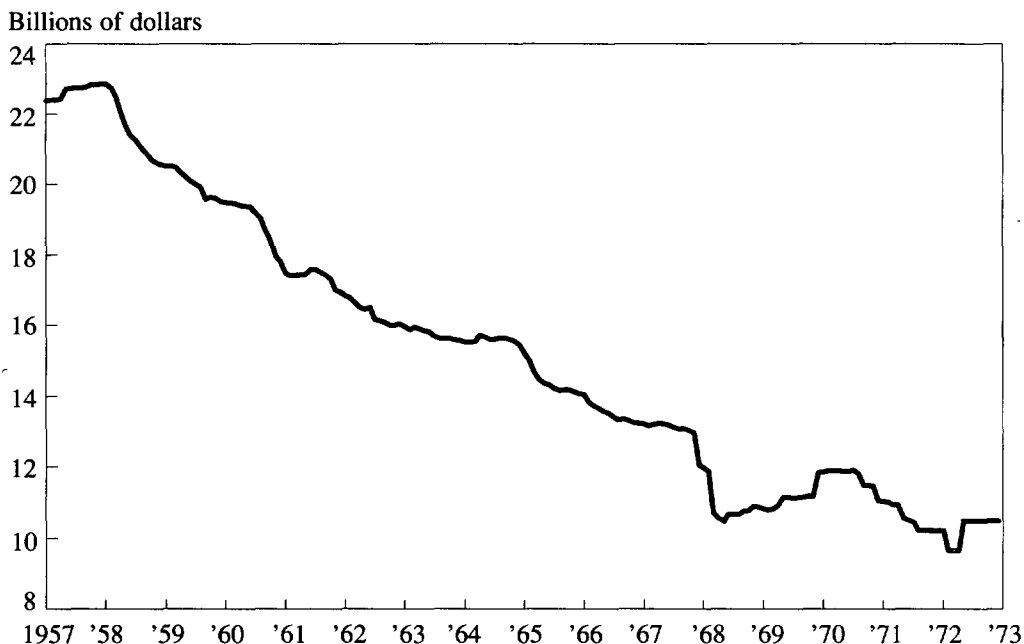
The allowable limits of exchange rate fluctuation were small during the fixed-rate regime, except for occasional currency devaluations or revaluations.<sup>5</sup> For example, in the mid-1960s, the pound was frequently under downward pressure in part because of a large British trade

deficit. The downward pressure continued despite efforts of global monetary authorities to maintain the currency's value. Consequently, in 1967, British authorities devalued the pound (Chart 1).

Although exchange rate fluctuations were generally small during the fixed-rate period, exchange rate pressures surfaced in other ways. Because authorities used their reserves to intervene in the market to maintain fixed exchange rates, pressure on exchange rates was evident through changes in the size of official reserves, such as dollar holdings of foreign officials and the U.S. gold stock. For example, the U.S. gold stock dropped substantially during the 1960s, as the United States upheld its obligation to sell gold

Chart 2

## The Bretton Woods Period: U.S. Gold Stock



Source: Data Resources, Inc.

for dollars obtained by foreign authorities through their foreign exchange operations (Chart 2). In addition, as a result of exchange rate pressures, governments sometimes changed monetary and fiscal policy.<sup>6</sup>

### Operations to protect the U.S. gold stock

The convertibility of dollars into gold was the foundation of the Bretton Woods regime. Foreign authorities were willing to hold dollars because the United States assured their convertibility into gold at a fixed price. During the 1960s, however, the fixed-rate system showed signs of strain. The dollar was under downward pressure, largely because of the U.S. current account deficit. To counter downward pressure on the dollar, foreign authorities bought dollars

in the market and consequently built up large dollar reserves. As foreign authorities exchanged their excess dollar balances for gold and the U.S. gold stock fell, concern grew about whether the United States could continue to convert dollars into gold. Early in the decade, with downward pressure on the dollar intensifying, the United States began to act to protect its gold stock and the global monetary system. Four basic methods were used in this effort.

First, the United States borrowed foreign currency through a swap network. The swap network is a mechanism through which U.S. and foreign authorities may temporarily exchange domestic and foreign currency. The swap network consists of a series of reciprocal credit agreements between U.S. and foreign authorities.<sup>7</sup> In effect, each country agrees to exchange

its currency for foreign currency on demand, up to an agreed-amount. The country initiating the exchange is the borrower; the other country is the creditor. The borrower purchases foreign currency from the creditor and agrees to sell the currency back at the same exchange rate on a specified date, usually in three months. The borrower may extend the swap if both parties agree.<sup>8</sup>

During the fixed-rate regime, the United States borrowed through the swap network primarily to relieve exchange rate risk on dollars held by foreign authorities. Because the dollar was frequently under downward pressure, foreign authorities holding large amounts of their reserves in dollars were at risk that the dollar would be devalued, causing their reserves to lose value. Through the swap network, the United States borrowed foreign currency to purchase a portion of the dollars held by foreign authorities, decreasing the dollar holdings of the foreign authorities. In this way, U.S. authorities hoped to limit the amount of dollars foreign authorities converted into gold. By absorbing some of the dollars foreign authorities did not want, the United States hoped to buy time for exchange market conditions to stabilize.

The United States also loaned dollars to foreign authorities through the swap network. For example, with the pound under downward pressure in the mid-1960s, the United States loaned dollars to the Bank of England so it could intervene to maintain the pound's value.

A second method U.S. authorities used during the fixed-rate regime was to sell foreign-currency-denominated bonds, called "Roosa bonds," to foreign authorities.<sup>9</sup> These bonds served as a source of foreign currency to purchase the dollar reserves of foreign authorities and to repay swap debt. For example, in May 1963, the United States sold \$30 million equivalent of Belgian-franc-denominated bonds to the Belgian authorities and used the proceeds to buy surplus dollars held by the Belgian authorities. Also, in August 1963, the United

States sold a \$50 million two-year mark bond to the West German authorities and used the proceeds to repay earlier U.S. borrowing of marks through the swap network. In this way, the United States limited how long a swap remained outstanding (Coombs 1963).

The third method used to protect the gold stock involved drawing on the U.S. reserve position in the IMF. The United States and other IMF members pay quotas, or membership fees, to the IMF. These quotas provide most of the resources the IMF lends to member countries in pursuit of its goals. The United States drew down from its reserve position at various times during the Bretton Woods period. For example, in 1965, the United States drew foreign currency to buy excess dollars from foreign authorities and to pay off swap borrowing. Paying off swap borrowing by drawing from the IMF provided another way to limit how long a swap was outstanding.

Finally, as a fourth method to protect the U.S. gold stock, U.S. and foreign authorities cooperated to keep the market price of gold from rising above the official \$35 rate. The United States was concerned that a high market price for gold would induce foreign authorities to exchange their dollar reserves at the U.S. gold window. To keep the market price of gold from rising above the official price, the United States and other nations formed an organization called the gold pool, which sold gold in the London market from 1961 to 1968. However, this effort met with limited success.

### **Operations in the foreign exchange market**

Although the chief role of the United States during the fixed-rate period was to maintain the fixed price of gold, U.S. authorities also on rare instances intervened directly in the foreign exchange market. At times, the intervention was undertaken to reduce pressure on foreign authorities to buy dollars—by limiting the

number of dollars bought and held by foreign authorities, the United States hoped to decrease the amount of gold it would have to sell. At other times, the intervention was undertaken to calm financial markets. For example, after the assassination of President Kennedy in 1963, U.S. authorities entered the exchange market to counter speculative pressures and provide assurance that U.S. international financial policy had not changed. Two other notable episodes of U.S. intervention came in 1965 and in 1967, both in response to downward pressure on the British pound. In these episodes, the United States purchased pounds to help British authorities maintain the value of the pound.

Although U.S. intervention was infrequent during the fixed-rate period, U.S. authorities did undertake various types of intervention. In conducting its direct intervention, the desk had several choices on how to approach the market, depending on exchange market conditions and the goal of the intervention. For example, the desk at times dealt directly with a commercial bank. The commercial bank in turn was free to inform other market participants as it saw fit. The market may have interpreted such operations as a signal about how U.S. officials viewed exchange rates.

At other times, the desk preferred to approach the market indirectly by asking a commercial bank to act on its behalf. The commercial bank would act just as it would act for any other customer and would be precluded from revealing on whose behalf it was acting. Also, the desk on occasion chose to act passively, responding to an offer privately placed in the market rather than initiating an operation at a certain rate. The desk might have used this approach when trading was thin in order to restrain the impact that an aggressively pursued transaction might have had on the market.

Intervention by the foreign desk, no matter what the approach, has had implications for the operations of the domestic desk at the Federal Reserve Bank of New York. The domestic desk

automatically offsets, or sterilizes, the effect of any U.S. exchange market intervention on the U.S. money supply. It does so by buying or selling U.S. Treasury securities as part of its "open market operations."<sup>10</sup> For example, when the foreign desk sells dollars for foreign currency to counter upward pressure on the dollar, the U.S. money supply increases as the dollars enter the U.S. banking system. To offset this intervention, the domestic desk sells Treasury securities to drain the dollars created by the intervention.

Because the United States sterilizes all of its intervention, the end result of a U.S. exchange market intervention is a change in the relative supplies of U.S. and foreign bonds held by the public. In the above example, the domestic desk's sale of Treasury securities adds to the supply of Treasury securities held by the public; hence, the relative supply of U.S. Treasury securities increases as a result of the sterilized intervention.

Sterilized intervention is generally thought to affect exchange rates less than nonsterilized intervention does. Nonsterilized intervention changes the size of the U.S. money supply because no offsetting purchase or sale of Treasury securities occurs. A change in the U.S. money supply directly affects the exchange rate because the supply of dollars relative to foreign currency changes. Also, a change in the U.S. money supply may influence U.S. interest rates and U.S. economic activity, which in turn may affect the exchange rate. Sterilized intervention, on the other hand, does not change the size of the U.S. money supply. However, to the extent investors regard foreign and domestic bonds as imperfect substitutes, the change in relative bond supplies may cause some exchange rate adjustment. In addition, sterilized intervention may influence the exchange rate by signaling a change in U.S. economic policy.<sup>11</sup> Nevertheless, most research suggests that sterilized intervention—in the absence of a fundamental change in U.S. economic policy—probably does not have a lasting effect on the foreign exchange value of the dollar.<sup>12</sup>

### **III. Floating-Rate Regime: Goals and Methods**

Despite efforts by U.S. and foreign authorities, the Bretton Woods system remained under pressure in the 1960s and early 1970s. This pressure resulted mainly from imbalances in international payments positions of several countries. Concern about U.S. ability to maintain convertibility of the dollar also persisted. In 1971, the U.S. Treasury suspended converting dollars into gold and foreign currency. Although efforts to maintain the Bretton Woods regime continued over the next two years, the fixed-rate system collapsed by March 1973. Fixed exchange rates between the dollar and most major currencies no longer were in effect, and exchange rates moved in response to market forces.<sup>13</sup>

During the floating-rate regime, from March 1973 to the present, the United States has conducted foreign exchange operations primarily to counter disorderly markets. The U.S. report to the IMF has reflected this goal.<sup>14</sup> At times, U.S. authorities have interpreted the objective narrowly, focusing market operations on efforts to counter short-term market disorder. At other times, U.S. authorities have interpreted the objective more broadly, acting to adjust exchange rates considered out of line with economic fundamentals. In 1985, the United States officially broadened its foreign exchange market goal to include both countering disorderly markets and entering the market when “otherwise deemed appropriate” (International Monetary Fund 1986). During the floating-rate regime, the focus of U.S. operations has been direct intervention in the foreign exchange market in response to movements in exchange rates. The dollar’s value has varied substantially over the period (Chart 3). This section reviews the changes in U.S. foreign exchange market goals and methods during the floating-rate regime.

### **Narrow interpretation: 1973 to 1977**

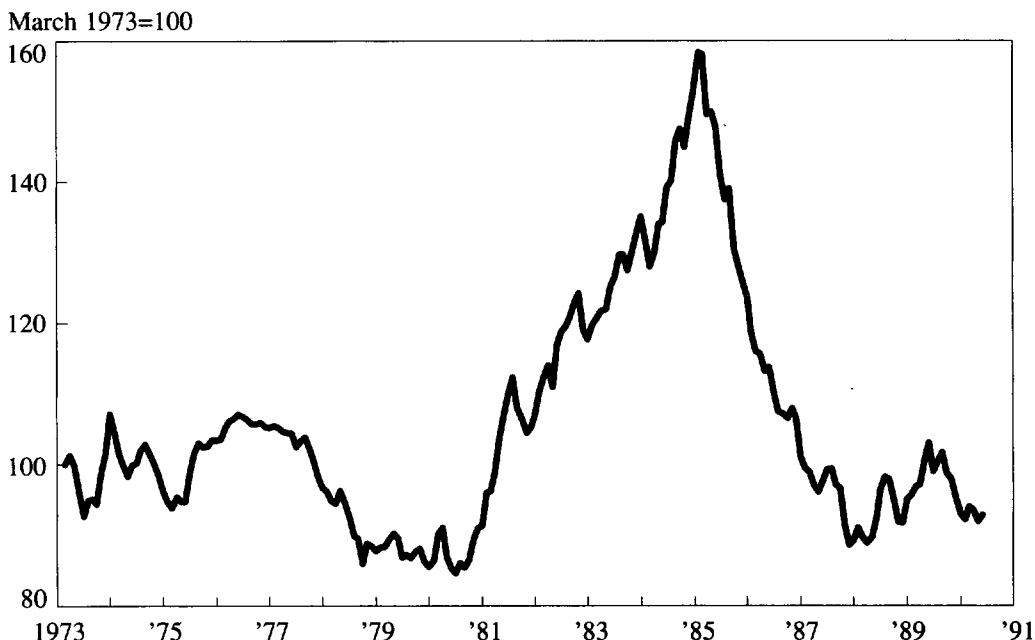
In the years immediately after the Bretton Woods system broke down, the United States directed most of its foreign exchange market intervention toward countering disorderly markets in the narrow sense. Narrowly defined, characteristics of a disorderly market include sharp exchange rate movements, thin trading, and wide spreads between the rates at which market participants are willing to buy (bid rates) and the rates at which they are willing to sell (ask rates). The volume of U.S. intervention from 1973 to 1977 was relatively small. The dollar rose and fell during these years in response to changing market perceptions of economic fundamentals. When the dollar fell sharply, U.S. authorities frequently bought dollars to stabilize market conditions. The United States paid for these purchases by using its foreign currency reserves and by borrowing through the swap network. To accommodate this borrowing, U.S. authorities expanded swap lines with several countries. During periods when the dollar rose, U.S. authorities took the opportunity to purchase foreign currency to repay debts.

An example of U.S. operations during this period was the purchase of dollars in July 1973 to “assist the market in finding solid footing” (Coombs 1973). At the time, the dollar was under downward pressure, in part because of rising interest rates in Europe and market concern about inflationary pressures in the United States. The foreign exchange market showed signs of disorder, including wide bid-ask spreads and thin trading. Trading became so disorderly at times that some New York banks withdrew from the market.

Another notable episode of U.S. intervention was in February 1975, when the United States, Germany, and Switzerland purchased dollars in the first major concerted intervention during the floating-rate period. The dollar was falling because of a severe U.S. recession, a

Chart 3

### The Floating-Rate Period: Trade-Weighted Value of the Dollar



Source: Board of Governors of the Federal Reserve System.

decline in U.S. interest rates relative to foreign rates, and rising inflation in the United States relative to several other countries. These developments had a strong impact because the market doubted whether U.S. economic policy could contain inflationary pressures.

#### Broad interpretation: 1978 to 1980

In the late 1970s, the dollar declined sharply, prompting authorities to act more forcefully. The trade-weighted value of the dollar declined 20 percent from June 1976 to October 1978, largely because of market concern about economic imbalances among major industrial nations (Chart 3). The U.S. economy was experiencing

rising inflation and a worsening current account deficit. In contrast, other countries, such as Japan and Germany, were experiencing weak economic growth and substantial current account surpluses. Initially, U.S. authorities purchased dollars "to deal . . . with the disorder in the exchange market" (Holmes 1978).

The United States began a series of steps to stop the dollar's fall in 1978. In January, the Federal Reserve and Treasury began to participate equally in financing intervention. This was a notable change in tactics because most intervention had previously been for the Fed account. In addition, the Treasury and the Bundesbank agreed to set up a swap arrangement, augmenting U.S. resources for foreign exchange inter-



vention. Over the following months, the Treasury borrowed under this agreement, obtaining marks to use for dollar purchases in the market. During 1978, the Federal Reserve also tightened domestic monetary policy, which increased U.S. interest rates and helped strengthen the dollar.

On November 1, 1978, U.S. authorities announced a major plan to halt the dollar's decline. This plan included, among other efforts, the purchase of dollars in the exchange market. The United States had decided the dollar's decline "had gone beyond what could be justified by underlying economic conditions" (Holmes 1979, p. 67). The plan was the first major departure from a narrow interpretation of the U.S. exchange rate objective. Increases in Federal Reserve swap agreements with various central banks helped finance the intervention, and tighter monetary policy bolstered the move. The United States also used several financing arrangements to increase the Treasury's resources for intervention.

The Treasury drew on the resources available from the IMF. For example, in 1978, the Treasury drew from its position at the IMF to obtain foreign currency to purchase dollars. The Treasury also obtained foreign currency by selling Special Drawing Rights (SDRs) to foreign authorities. An SDR is an international reserve asset the IMF began creating in 1970 to supplement other world reserve assets like the dollar and gold. IMF member nations receive SDR allocations according to the size of their quotas. In 1978, the Treasury sold SDRs for marks, yen, and Swiss francs.

The Treasury also issued foreign-currency-denominated securities, or "Carter bonds." In contrast to the Roosa bonds sold to foreign authorities during the fixed-rate regime, the Carter bonds were sold to the public. The Treasury issued nearly \$2.8 billion equivalent of Carter bonds by January 1979 and ultimately issued over \$6 billion equivalent before it began redeeming the bonds in 1981 (Holmes 1979, p.

203, and Cross 1981). In addition, the Treasury increased gold sales to obtain foreign currency.

The Treasury also made use of financing arrangements with the Federal Reserve. Warehousing, for example, is a method of exchanging dollars in return for foreign currency not needed at the time. The Fed buys foreign currency from the Treasury and simultaneously agrees to sell the currency back at the same exchange rate as in the purchase at some specified date in the future. The FOMC regulates System warehousing of foreign currency for the Treasury and in 1978 the FOMC broadened its warehousing authorization, allowing the System to warehouse foreign currency for the general Treasury account as well as for the ESF.<sup>15</sup> In this way, the System could warehouse the foreign currency proceeds of the Carter bonds until the Treasury used them.<sup>16</sup>

### **Narrow interpretation: 1981 to 1984**

With the arrival of the Reagan Administration in 1981 and a more hands-off approach to government, U.S. authorities once again interpreted the goal of countering disorderly markets narrowly. From 1981 to 1984, the United States rarely intervened in the foreign exchange market. This policy stance reflected the view of the Treasury during the first Reagan term that the market should determine exchange rates. The new policy limited intervention to extreme circumstances, such as after the shooting of President Reagan in March 1981. Furthermore, the administration questioned whether intervention could have much effect on the exchange rate.<sup>17</sup>

The dollar rose dramatically during the early 1980s (Chart 3). This rise has been attributed to the strong U.S. economy, large budget deficit, tight U.S. monetary policy, and high real interest rates relative to the rest of the world. From July 1980 to its peak in February 1985, the dollar's value increased over 85 percent. As the dollar rose, the domestic business community began to

complain that the dollar's strength limited the competitiveness of U.S. products against foreign competitors.

### **Broad interpretation: 1985 to present**

In 1985, against the backdrop of a very strong dollar, the Treasury during the second Reagan term returned the United States to a broad interpretation of its exchange rate policy goal. Since then, the United States has intervened both to calm disorderly markets and to correct apparent inconsistencies between exchange rate levels and economic fundamentals. In pursuit of its goals, the United States has intensified cooperation with foreign authorities on international economic policy. Also, in contrast to operations during most of the postwar period—which had largely consisted of dollar purchases—recent U.S. intervention has consisted mostly of dollar sales, resulting in record U.S. holdings of foreign currency.

During 1985, the United States intervened more heavily than it had for several years. From January to March 1985, U.S. authorities sold over \$650 million in the foreign exchange market. These actions were taken to prevent a further rise in the dollar's value, thus reflecting a broader interpretation of U.S. intervention goals. During 1985, official intervention goals as reported to the IMF were broadened to include intervening "to counter disorderly conditions in the exchange markets or when otherwise deemed appropriate" (International Monetary Fund 1986). The major episode of U.S. intervention in 1985 occurred after the meeting of the five industrialized G-5 nations at the Plaza Hotel in September.<sup>18</sup> At this meeting, G-5 officials agreed that appreciation of foreign currencies was desirable because exchange rates did not reflect economic fundamentals. Officials were also concerned about the threat of rising protectionism in the United States. In the weeks after the Plaza Accord, the United States sold dollars in the largest U.S. intervention since the late

1970s. Foreign authorities also sold substantial amounts of dollars. The volume of U.S. intervention from September to October exceeded \$3 billion, nearly five times the volume of the U.S. intervention earlier in the year. As the dollar continued to fall throughout the rest of 1985 and 1986, further U.S. intervention became unnecessary.

By early 1987, the dollar had fallen to its lowest level in seven years. The weak dollar reflected a growing U.S. trade deficit and signs of a weakening U.S. economy. At a meeting in February at the Louvre in Paris, G-7 officials decided that exchange rates reflected economic fundamentals.<sup>19</sup> As a result, these officials decided to "cooperate closely to foster stability of exchange rates around current levels" (Bank for International Settlements 1987). This agreement, the Louvre Accord, has guided international cooperation in exchange rate policy to the present. The Louvre Accord also signaled a shift in U.S. policy from encouraging the appreciation of foreign currencies to fostering exchange rate stability.

During the rest of 1987, the dollar generally fell and U.S. intervention consisted primarily of dollar purchases. The dollar's continued decline reflected in part large U.S. trade deficits. The October stock market crash and the associated easing of monetary policy by the Federal Reserve also placed downward pressure on the dollar. In 1987, the United States conducted an even higher volume of intervention than in 1985. This intervention largely consisted of dollar purchases to stop the dollar's slide. Foreign officials cooperated with the U.S. effort and in December 1987, G-7 officials restated their Louvre commitment to cooperate in the foreign exchange market. In an effort to calm the market, these officials also announced that "either excessive fluctuation of exchange rates, a further decline of the dollar, or a rise in the dollar to an extent that becomes destabilizing to the adjustment process, could be counterproductive by damaging

growth prospects in the world economy'' (U.S. Department of the Treasury 1987).

The next major increase in the volume of U.S. intervention came in 1989. This intervention again was consistent with the G-7 commitment to exchange rate stability. The bulk of U.S. intervention in 1989 was during the first half of the year. For example, the dollar came under upward pressure at times during the spring and summer because of political uncertainty abroad and interest-rate differentials favorable to the dollar. In response, U.S. authorities sold dollars.<sup>20</sup> Also, after their September 23 meeting, G-7 officials issued a communique stating that the dollar's rise was inconsistent with longer run economic fundamentals (Bank for International Settlements 1989). During the last months of the year, upward pressure on the dollar subsided and the dollar fell.

Recent U.S. intervention has resulted in the largest U.S. holdings of foreign currency ever. Total holdings of the Federal Reserve and the Treasury combined have risen from \$8 million in 1973 to nearly \$45 billion in December 1989.<sup>21</sup> The growth of these balances reflects the fact that recent intervention has usually involved dollar sales.

#### **IV. Summary**

The goals and methods of U.S. foreign exchange operations have changed over time. Under the Bretton Woods regime, the role of the United States was to convert officially held dollars into gold. In the 1960s, concern for the U.S. gold stock grew, as foreign monetary authorities accumulated large amounts of dollars. To protect the gold stock, the United States borrowed foreign currency to buy dollars from foreign authorities. The United States also on rare occasions intervened directly in the foreign exchange market.

The primary objective of U.S. exchange rate policy during the floating exchange rate period has been to counter disorderly market conditions. Over time, U.S. authorities have interpreted this objective both narrowly and broadly. Major episodes of U.S. intervention occurred in the late 1970s, in 1985, and from 1987 to the present. In the late 1970s, U.S. authorities intervened to support the weak dollar and, in 1985, to counter the strong dollar. From 1987 to the present, U.S. operations have been mixed, with the underlying goal to maintain exchange rate stability. Direct intervention was particularly heavy in 1989, totaling over \$20 billion, the highest volume ever.

## Endnotes

<sup>1</sup> Data on the size of U.S. foreign currency holdings in 1989 were obtained from Board of Governors of the Federal Reserve System 1990a. Data on the volume of U.S. transactions in the foreign exchange market were taken from various issues of the Federal Reserve Bank of New York's *Quarterly Review*.

<sup>2</sup> The ESF fund was established by the Gold Reserve Act of 1934 to be operated by the Treasury to stabilize the exchange value of the dollar. The Treasury maintains its ESF and its general accounts at the Federal Reserve, which acts as the government's banker.

<sup>3</sup> The FOMC is made up of seven members of the Board of Governors and five of the 12 district Federal Reserve Bank presidents.

<sup>4</sup> During the fixed-rate regime, the United States was committed to buying gold at \$35 an ounce "for settlement of international balances and other legitimate monetary purposes" (International Monetary Fund 1967).

<sup>5</sup> During the fixed-rate regime, the foreign exchange value of a country's currency was officially set by that country's government. Countries occasionally revalued (officially raised) or devalued (officially lowered) their currencies against the dollar. For more information, see Federal Reserve Bank of New York 1983.

<sup>6</sup> For example, in the early 1960s, the United States undertook "Operation Twist," which was designed both to limit outflows of short-term capital by keeping short-term interest rates high and to foster economic growth by keeping long-term interest rates low (Salvatore 1983).

<sup>7</sup> The Bank for International Settlements (BIS) also may participate in swaps.

<sup>8</sup> The Federal Reserve conducts most swaps for the United States. The Treasury has conducted swaps infrequently for relatively small amounts. The FOMC monitors Federal Reserve swap arrangements and in 1963 decided the Fed should not extend its borrowing through the swap network for more than one year.

<sup>9</sup> These bonds were named after Robert Roosa, Undersecretary for Monetary Affairs, U.S. Treasury, 1961-64.

<sup>10</sup> For a discussion of open market techniques, see Roth 1986.

<sup>11</sup> These two ways that sterilized intervention may affect the exchange rate are more formally called the portfolio balance channel and the signaling channel. The portfolio balance channel operates if interest rates and the exchange rate adjust to reestablish equilibrium in the bond market because foreign and domestic bonds are not perfect

substitutes. In the example in the text, for instance, market participants initially may not want to hold the additional U.S. Treasury securities added to the market by the sterilization. But, if the dollar's value falls, market participants may become willing to purchase the new "cheaper" dollar-denominated securities. If domestic and foreign bonds are perfect substitutes, however, sterilized intervention (operating through the portfolio balance channel) is ineffective. The signaling channel operates if the intervention signals the market about a change in macroeconomic policy, which obviously would affect the exchange rate. For further discussion, see Edison 1990.

<sup>12</sup> A 1983 G-7 study, for example, found that from 1973 to 1981, sterilized intervention "did not generally have a lasting effect, but that intervention in conjunction with domestic policy changes did have a more durable impact" (Jurgensen 1983). For a discussion of other studies, also see Edison 1990, and Frenkel 1990.

<sup>13</sup> During a floating-rate regime, currencies either appreciate or depreciate in response to market forces. The terms revalue and devalue apply only in fixed-rate systems. For more information, see Federal Reserve Bank of New York 1983.

<sup>14</sup> During the floating-rate regime, the goal of U.S. policy has generally been "to counter disorderly conditions in the exchange markets" (International Monetary Fund 1988).

<sup>15</sup> For information about the effect of warehousing on the money supply and for information about other aspects of U.S. foreign exchange operations, see Meulendyke 1989.

<sup>16</sup> Another type of financing arrangement between the Fed and the Treasury is for the Fed to monetize SDRs and gold. If the ESF wishes to supplement its dollar balances, it may ask the Fed to monetize SDRs. The Fed does this by purchasing SDRs from the ESF for dollars. More precisely, the Fed purchases SDR certificates, which represent the Fed's claim on a specified amount of SDRs. If the ESF wishes to use monetized SDRs, it must first repurchase them from the Fed. Monetizing gold is similar to monetizing SDRs except, instead of SDR certificates, the Fed purchases gold certificates, representing the Fed's claim on a specified amount of the Treasury's gold.

<sup>17</sup> Beryl Sprinkel, then Chairman of the President's Council of Economic Advisers, expressed this view in his 1981 Congressional testimony, saying that he was "not at all certain that intervention in a market as massive as our dollar exchange market can have much effect, certainly not in the longer run" (International Economic Policy 1981).

18 The G-5 includes the United States, Japan, West Germany, France, and the United Kingdom.

19 The G-7 includes members of the G-5 plus Canada and Italy.

20 Over time, the ESF has increased the amount of SDRs it has asked the Federal Reserve to monetize. In 1989, the ESF increased the amount of SDRs monetized by the Federal Reserve to \$8.5 billion, a 70 percent increase over the year before, to supplement its resources for foreign currency operations. These figures were taken from various issues of the *Federal Reserve Bulletin*.

21 Over time, the FOMC has increased the limit on the

amount of foreign currency the Federal Reserve may hold. The current maximum, approved at the March 1990 FOMC meeting, is \$25 billion. The Federal Reserve also continues to warehouse foreign currency for the Treasury to supplement the Treasury's resources for foreign currency operations. At its March 1990 meeting, the FOMC increased the amount of foreign currency the Fed may warehouse for the Treasury to \$15 billion. The previous increase in the limit was from \$5 billion to \$10 billion in September 1989. Such increases reflect the Treasury's need of dollars for foreign currency purchases rather than foreign currency for dollar purchases (Board of Governors 1990b).

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