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During the Bretton Woods era, balance-of-payments developments, gold losses, and exchange-rate concerns had little influence on Federal Reserve monetary policy, even after 1958 when such issues became critical. The Federal Reserve could largely disregard international considerations because the U.S. Treasury instituted a number of stop-gap devices—the gold pool, the general agreement to borrow, capital restraints, sterilized foreign-exchange operations—to shore up the dollar and Bretton Woods. These, however, gave Federal Reserve policymakers the latitude to focus on domestic objectives and shifted responsibility for international developments to the Treasury. Removing the pressure of international considerations from Federal Reserve policy decisions made it easier for the Federal Reserve to pursue the inflationary policies of the late 1960s and 1970s that ultimately destroyed Bretton Woods. In the end, the Treasury's stop-gap devices, which were intended to support Bretton Woods, contributed to its demise.

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FEDERAL RESERVE POLICY AND BRETTON WOODS

> In a fundamental sense, a country's external payments cannot be in satisfactory equilibrium unless the domestic economy is in reasonable balance and its basic national and international objectives are being met.
>
> *Economic Report of the President* 1966, 160

1. Introduction

The Bretton Woods system looked to correct perceived problems of the interwar gold-exchange standard—competitive devaluation, protectionism, deflation, unemployment—by establishing institutions that might credibly maintain a set of parity values for national currencies, while still allowing countries to independently pursue domestic economic objectives and, if necessary to that end, adjust those parity values. It offered a compromise between those who wanted greater exchange-rate flexibility and those who wanted a return to the gold standard. In a world of imperfect wage and price flexibility and incomplete factor mobility, however, Bretton Woods arguably attempted an improbable task. In such a world, monetary-policy independence and fixed exchange rates will not always remain compatible, a situation then requiring the use of significant restraints on capital flows. The latter, however, are disruptive and wholly incompatible with efficiency in a market economy. Moreover, as applied to parity values, credible and adjustable are antithetical attributes.

Consequently, the system that emerged—far from its planners' vision—confronted persistent problems with macroeconomic adjustment, exchange-rate credibility, and adequate liquidity. Within that imperfect system, the U.S. dollar quickly became the key international reserve and vehicle currency, making a credible U.S. commitment to price stability the central necessary condition for the sustainability of the system.

That commitment, of course, did not happen. Before 1959, when most advanced currencies were not widely convertible and when trade and financial restraints proliferated, Bretton Woods and a U.S. monetary policy largely focused on price stability seemed well suited. Persistent U.S. balance-of-payments deficits supplied the world with the dollar and gold reserves that countries needed to maintain their parities in a growing economy. Still, the world did not accept the dollar as gold's equivalent, and by 1960, just as Bretton Woods was becoming fully functional, concerns about the dollar's convertibility raised serious questions about Bretton Wood's viability and elicited criticisms of the dollar's privileged place in that system. Confidence in Bretton Woods was shaken. The changed environment would henceforth require U.S. policy makers to weigh external objectives more carefully in formulating U.S. macroeconomic policies, but with memories of the Great Depression still fresh, no U.S. administration would sacrifice growth and employment to exchange-rate—or even price—stability during the late-1960s and 1970s.

This paper investigates how, in this environment, international considerations may have affected U.S. monetary policy. Between 1960 and 1973, Federal Reserve policy makers often mentioned balance-of-payments concerns in their deliberations and in their statements of policy actions. They did sometimes—especially in crisis situations—adjust policy slightly or temporarily because of international developments. Overall, however, U.S. monetary policy

focused primarily on economic growth at potential and full employment, even at the cost of inflation. Federal Reserve policy makers typically treated balance-of-payments objectives as superfluous to the domestic designs of monetary policy or simply mentioned and ignored them. This attitude was possible because the Federal Reserve viewed expanding capital constraints, efforts at international cooperation, and sterilized foreign-exchange operations as relieving monetary policy of responsibility for international developments and shifting accountability for international events to the U.S. Treasury. These nonmonetary policies were often successful in the short term. Ironically, however, by eliminating the balance of payments as a constraint on U.S. monetary policy, they allowed the Federal Reserve to create the accelerating and entrenched inflation that doomed Bretton Woods. They ultimately made the outcome worse.

2. Fixed Exchange Rates and Full Employment

The designers of the Bretton Woods system envisioned a cooperative international monetary arrangement that would foster exchange-rate stability, but would still allow countries to pursue key domestic economic objectives, notably, full employment.[1] The agreement reflected a fundamental lesson from the interwar years: As desirable as fixed exchange rates might be for promoting international commerce, countries would not long maintain parities at the expense of full employment, economic growth, or price stability. Domestic economic stability had now become a prerequisite for international cooperation and exchange-rate fixity (Kenen 2008).

In the United States, this ordering of policy preferences found expression in the Employment Act of 1946, which required the federal government "to use all practical means…for the purposes of creating and maintaining…conditions under which there will be afforded useful employment opportunities…for those able, willing and seeking to work" (Pub. L. 79-304—70th Congress, Ch. 33—2d, S. 380, Sec. 2). This statute referred only obliquely to price stability (ERP 1966, 176 – 177) and did not mention the balance-of-payments or exchange-rate objectives. The Employment Act, of course, did not preclude U.S. policy makers from considering price stability and external economic goals, but it clearly stated U.S. policy preferences for the Bretton Woods era.

The basic structure of the Bretton Woods system also attempted to remedy potential conflicts between internal and external equilibrium among its member nations. Under Bretton Woods, countries established fixed parity values for their currencies. The United States pegged the dollar to gold and pledged to buy and sell the metal freely at $35 per ounce with foreign monetary authorities. The other major developed nations pegged their currencies to the dollar, promising to keep their exchange rates within a 1 percent band around that central rate by intervening in dollars. When faced with transitory balance-of-payments problems, countries with insufficient reserves could borrow from the newly created International Monetary Fund (IMF) and could impose capital restraints instead of quickly instituting deflationary macroeconomic policies or prematurely altering their par values. If, however, the balance-of-payments difficulties persisted, countries were to make appropriate adjustments to their monetary and fiscal policies. If ultimately faced with a "fundamental disequilibrium" in their balance of payments, countries could adjust their parities. Although the IMF never clearly defined the concept of fundamental disequilibrium, it seemed to center on an inability to simultaneously maintain internal and external equilibrium at the existing parity (Kenen 2008, 4). In the limit, then, the Bretton Woods system allowed nations to solve any fundamental conflict between internal and external equilibrium in favor of the former.[2]

3. From Dollar Shortage to Triffin's Paradox

The Second World War severely damaged economic capacity throughout Europe and in Japan. The war-torn countries looked to the United States, which at the time produced over one-half of the world's manufacturing, for their needed consumption and investment goods (Yeager 1966, 335). This created a demand for dollars, but the war had also depleted most of the belligerents' reserves. Gold had flown into the United States before and during the war, and by the war's end the United States held 71 percent of the world's stock of monetary gold (ERP 1963, 69). Moreover, with the official gold price set at its pre-war value, subsequent inflation drove the real price of gold too low to induce a sufficient supply (Meltzer 1991, Bordo 1993, James 1996).

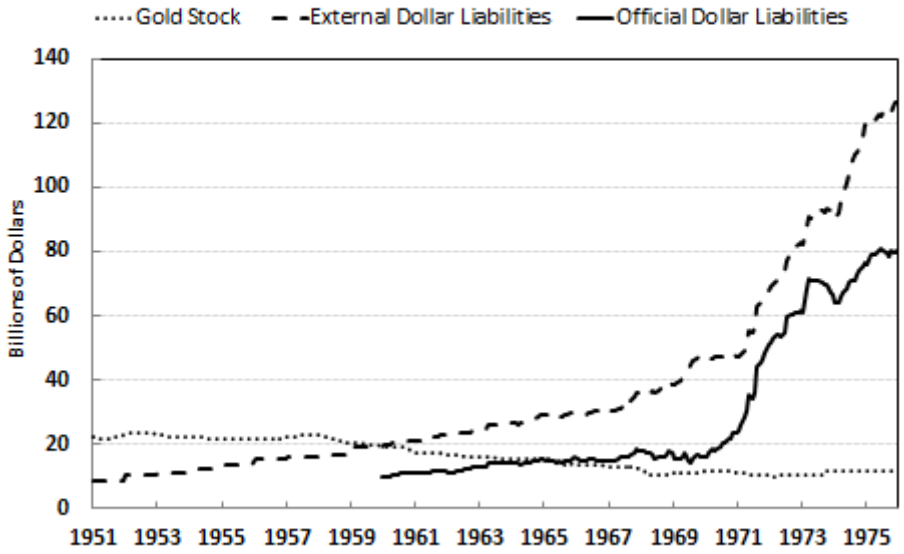
To meet the reserve shortage, the United States channeled dollars into Europe, Japan, and—eventually—developing countries, through various grant and loan programs, most notably the Marshall Plan. These government grants and loans, together with private capital outflows, shifted the U.S. balance of payments into deficit by 1950, where it would remain, with a few yearly exceptions under some definitions, throughout the Bretton Woods era. To further aid foreign countries' acquisition of dollar reserves, the United States tolerated European and Japanese trade policies that discriminated against it. The United States, nevertheless, generally ran a trade surplus during the Bretton Woods period, but not enough to compensate for its financial outflows. All in all, the United States lost $382 million worth of gold reserves on average each year from 1949 through 1958 and increased its liquid dollar liabilities to foreigners at an average annual $1.1 billion over the same period. Still, until 1958, U.S. officials generally viewed the balance-of payments deficits and gold losses as a necessary and desirable step toward global adjustment.

Foreign productivity and competitiveness improved faster after the Second World War than many observers anticipated (Yeager 1966, 458 – 463). By 1958, major European countries had acquired sufficient foreign-exchange reserves to make their currencies fully convertible for current-account transactions.[3] Countries also loosened some of their capital controls. With the full convertibility of the key currencies, Bretton Woods had finally become fully functional.

Despite the economic progress made in Europe and Japan, the U.S. balance of payments worsened and did so in a particularly unsettling manner. The overall balance-of-payments deficit (liquidity basis) had averaged $326 million per year between 1946 and 1957, but from 1958 through 1969, the overall deficit averaged $3.1 billion per year. All of the deterioration was attributable to capital flows; the average trade surplus was little changed. U.S. direct investment outflows increased from an annual average of $913 million between 1946 and 1957 to $2.2 billion between 1958 and 1969. Other long-term capital outflows likewise increased from $255 million to $1.2 billion over the same period. Most startling, however, was a sharp increase in short-term capital outflows—particularly in the early 1960s. Short-term capital—including unrecorded transactions—had generally flowed into the United States averaging $261 million per year between 1946 and 1958. In 1960, $2.5 billion in short-term capital flowed out of the United States, as interest rate margins favoring foreign investments widened. The administration attributed this widening to cyclical patterns creating tighter monetary policies in Europe and Japan than in the United States (ERP 1961, 33 - 34). Between 1960 and 1969, the average annual outflow of short-term capital equaled $2.0 billion. The dollar shortage was becoming a dollar glut.

Confidence in the Bretton Woods system—specifically the dollar price of gold—began to fade shortly after the European currencies became fully convertible. Since the inception of the Bretton Woods system, the United States had provided needed dollar liquidity through its balance-of-payments deficits. Triffin (1960, 8 – 9) understood the dilemma that this situation created: The very act of providing dollar liquidity to accommodate the need for reserves as global commerce expanded threatened the viability of the Bretton Woods system, because once the stock of outstanding dollar liabilities exceeded the U.S. gold stock, the United States could not fulfill its commitment to freely convert dollars to gold. The official dollar price of gold would then lose credibility. In August 1960, total outstanding dollar liabilities began to exceed the U.S. gold stock (figure 1).[4] By December 1965, outstanding dollar liabilities to official institutions, which could directly exchange them, exceeded the U.S. gold stock.

Figure 1: Gold and External Dollar Liabilities



Source: Board of Governors *Banking and Monetary Statistics 1941 – 1970*, Table 15.1,

As if anticipating the situation, the drain on the U.S. gold stock accelerated in early 1958. Some central banks "unwilling to embarrass the U.S. authorities" bought the metal in the London gold market instead of directly from the U.S. Treasury (Samuel Montagu & Co. Ltd 1961, 11). In August 1960, however, private "hot money" demand for gold firmed and began driving prices well above the $35.0875 that the U.S. Treasury then offered foreign central banks. In October 1960, "there was now widespread private enquiry for gold arising from the apprehension of belief that the recurring heavy withdrawals of gold from the U.S. Treasury would soon force an increase in the official U.S. dollar price of gold" (Samuel Montagu & Co. Ltd 1961, 7). Concerns that the Kennedy administration, which pledged to get the economy moving again, might follow Roosevelt's precedent and devalue the dollar upon taking office heightened this "apprehension." Central banks then backed out of the London market. On 20 October 1960, the London gold price rose well above $35 per ounce. It briefly reached $40.50 (offer) per ounce.

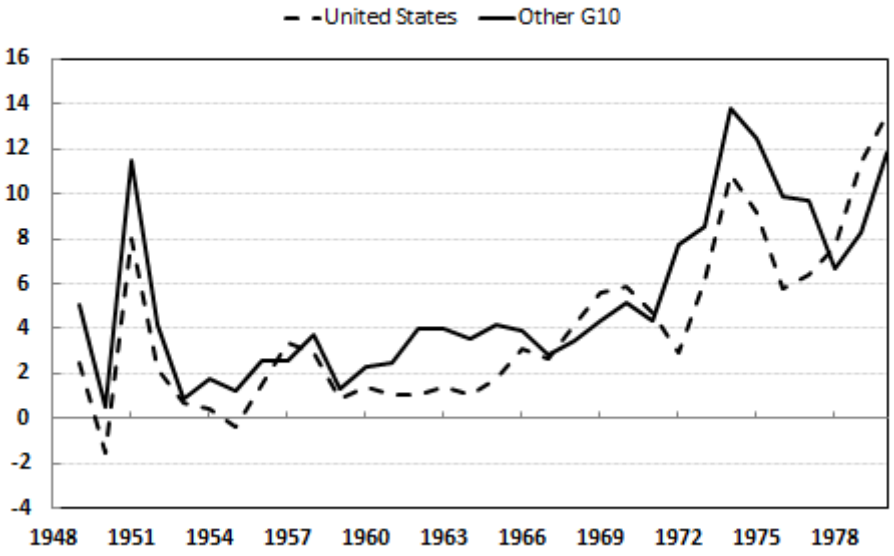
On 27 October 1960, the Bank of England with U.S. assistance began supplying gold to the market. Gold prices fluctuated between $35.35 and $36.50 for the remainder of the year, above the U.S. gold export point of $35.20.[5] They remained above the gold export point through January and February 1961.

McKinnon (1993, 15 – 26) and others have argued that the threat posed by Triffin's paradox resulted because the Federal Reserve did not credibly commit to maintain price stability. If U.S. monetary policy had anchored the dollar's purchasing power, then foreign countries' demands for international liquidity would have determined their reserve accumulation. Their reserve holdings would not then have represented a threat to the U.S. gold stock. Be that as it may, inflation in the United States accelerated after 1965. By 1970, foreign central banks, in defense of their parities, began accumulating massive amounts of U.S. dollars. U.S. official dollar liabilities, which had increased by $5.5 billion during the 1960s, increased $55.4 billion just between December 1969 and March 1973. U.S. inflation made the corrosive situation that Triffin described much worse.[6]

4. Temporary Solutions to Temporary Problems with Permanent Consequences

The Eisenhower and Kennedy administrations and many observers attributed the worsening U.S. balance-of-payments position between 1957 and 1962, by and large, to transitory factors stemming from U.S. military and economic-aid commitments, recent cyclical developments, and the re-emergence of Western Europe and Japan as global competitors. They did not see the external imbalance as "fundamental," requiring a real dollar depreciation of some type. Indeed, a 1962 Brookings Institute study supported this view (Solomon 1982, 58). The study suggested that the U.S. balance of payments position would shift to a $1.9 billion surplus by 1968, even assuming that the economy grew at potential, that is 4 to 4½ percent growth with a 4 percent unemployment rate (ERP 1964, 130 – 131). The surplus resulted because the study anticipated greater price stability in the United States than abroad. Indeed, inflation in the United States had, with the exception of 1957, remained below that of the other G10 countries from 1948 through 1968 (figure 2). Under slightly less favorable assumptions, the Brookings study anticipated a small $600 million basic-balance deficit (ERP 1964, 130 – 131). Under these expectations, little of a "fundamental" nature needed to be done.

Figure 2: Inflation Rates



Source: U.S. Bureau of Labor Statistics, IMF *International Financial Statistics*, various issues.

U.S. policy makers also appreciated that with the maturation of the Bretton Woods system—economic recovery abroad, growing currency convertibility, and an adequate pool of liquidity—short-term financial flows could henceforth be more sensitive to international interest-rate differentials and exchange-rate uncertainty. They seemed to believe, however, that once the transitory adjustments to the U.S. trade and long-term financial accounts were complete, credibility in the dollar would strengthen. Renewed credibility in the dollar would lessen the problem of short-term financial flows.

In response to the turmoil in the London gold market and the underlying balance-of-payments shortfall, the United States undertook a series of stop-gap policy initiatives designed to strengthen confidence in the dollar and, thereby, Bretton Woods until the Brookings prediction unfolded. Some of the measures relied on international cooperation and looked to improve the operations of the international financial system, and others hoped to hasten adjustment in the U.S. balance of payments. Despite the decidedly "non-fundamental" nature of these policies, they created—as we will see—an atmosphere in which the Federal Reserve could focus monetary policy on full employment and economic growth instead of on price stability and external equilibrium. These stop-gap measures then provided the context in which the FOMC formulated the monetary-policy decisions that ultimately led to the demise of Bretton Woods.

4.1 Improving Bretton Woods: GAB and the Gold Pool.

Of the policies intended to strengthen confidence in Bretton Woods, the gold pool was arguably the most important. In October 1961, the United States, Belgium, France, Italy, the Netherlands, Switzerland, West Germany, and the United Kingdom formed the gold pool. Initially, the pool functioned as a gold-sales consortium, but in early 1962, gold prices began to

fall, and the pool started purchasing gold.[7] Thereafter, through 1964, the gold pool generally functioned as a successful stabilizing speculator, but in 1965, the situation changed.[8] International tensions, stemming primarily from uncertainty about the British pound's parity, France's accelerated conversions of dollar reserves into gold, and that country's public criticisms of the Bretton Woods system, resulted in reoccurring bouts of very heavy speculative demand for gold. The gold pool found its resources dwindling as it struggled to keep the gold price below $35.20, and the pool collapsed in March 1968, following the British pound's devaluation. A segregated two-tier, official and private, gold market followed. Countries pledged not to transact in the private gold market. Dollars or Special Drawing Rights (SDRs) would have to satisfy future increases in reserve needs.

Likewise, the waning confidence in the dollar pointed to a problem with the IMF's borrowing facilities. Should the United States need to borrow other key currencies from the IMF to defend the dollar, the fund might be unable to fulfill the request. Given the U.S. quota, which determined its borrowing allotment, the United States—and other large developed countries—could potentially request more key currencies than the IMF had on hand (ERP 1962, 15 – 16; Solomon 1976, 41). To increase emergency liquidity to key industrialized countries—especially the United States—the ten largest countries, the G10, initiated the General Agreement to Borrow (GAB) in October 1962.[9] Accordingly, the G10 would lend the IMF up to $6 billion worth of their currencies (ERP 1962, 16; ERP 1963, 127 – 128).

4.2 Improving the Balance of Payments: Capital Restraints

With European countries now better able to compete in global markets, the Eisenhower and Kennedy administrations pressed for the removal of discriminatory trade practices that foreign countries had levied primarily against the United States. The Kennedy administration also took steps to encourage exports and reduce the duty free allowances of U.S. tourists. Both administrations also attributed much of the U.S. balance-of-payments shortfall to the United States' military-assistance and economic-development programs. Given the cold-war atmosphere, cutting such aid was not feasible, so the Eisenhower and Kennedy administrations—sometimes under a threat of troop redeployment—increasingly tied such aid to purchases of U.S. goods and services (Gavin 2004).

The Kennedy and Johnson administrations also promoted three key policy changes designed, respectively, to restrain portfolio outflows, bank lending to foreigners, and direct investment abroad.[10] The first set of controls assessed a tax designed to offset the interest-rate advantage that foreigners gained by issuing bonds and stocks in the United States instead of in Europe. On 19 July 1963, the Kennedy administration proposed an Interest Equalization Tax (IET), which levied a one-to-fifteen percent excise on foreign debts—depending on their maturity—and a fifteen percent excise on foreign stocks (Public Law 88-563, 2 September 1964).[11]

Of course, once one type of borrowing was blocked, "other types of capital flows accelerated, offsetting much or all of the gains from the IET" (ERP 1966, 165). Consequently, on 10 February 1965, the Johnson administration renewed and expanded the IET, and introduced a second program focused on financial institutions' lending to foreigners. The Federal Reserve asked banks to voluntarily limit the overall growth of their foreign lending, while giving priority to foreign loans that promoted U.S. exports and helped developing countries. Similar guidelines applied to nonbank financial institutions. In addition, the Commerce Department asked

nonfinancial corporations to reduce their individual net international balances. The objective was to reduce capital outflows, increase net exports, and encourage the remittance of earnings abroad (ERP 1968, 173 – 174), but, by and large, to voluntarily trim their direct foreign investment.

All of these capital controls were subsequently strengthened.[12] Congress allowed the administration to raise the IET rates by 50 percent in 1967. On 1 January 1968, the President tightened the Commerce Department's direct-foreign-investment program and made it mandatory (ERP 1968, 173 – 174). The President also gave the Federal Reserve authority to make its voluntary guidelines mandatory, but the threat worked well enough, and the Federal Reserve kept them "voluntary." The Federal Reserve did, however, issue revised and "substantially more restrictive guidelines for banks and other financial institutions" (AP 1969, 9). With banks now required to reduce foreign lending, especially short-term lending, the "new guidelines, covering both banks and other financial institutions, represent a major tightening of the program begun in 1965" (ERP 1968, 174).[13]

4.3 Federal Reserve Foreign-Exchange Intervention

Perhaps the most important, certainly the longest-lasting, and ultimately the most controversial of the stop-gap measures that the U.S. Treasury and Federal Reserve adopted in the early 1960s to postpone U.S. gold losses and maintain confidence in the dollar were their foreign-exchange operations. The Federal Reserve, always acting in concert with the Treasury, engaged in many different types of transactions, but its main operations attempted to stem U.S. gold losses through the use of foreign-exchange swaps. Because the Federal Reserve routinely sterilized these transactions, swap operations did not impinge on the designs of monetary policy (MacLaury 1969). Like capital constraints and other administration programs, these foreign-exchange operations—to the extent that they were effective—gave monetary policy more leeway to pursue domestic objectives.

In March 1961, the U.S. Treasury's Exchange Stabilization Fund (ESF), with the Federal Reserve Bank of New York acting as its agent, began to intervene in the foreign-exchange market for the first time since World War II. The Treasury's operations consisted primarily of forward sales of German marks, Swiss francs, Dutch guilder, and Italian lira designed to reduce the forward premiums on these currencies against the dollar.[14] Forward premiums were barometers of market confidence in the dollar, and they provided a strong incentive for financial flows when they exceeded levels consistent with existing interest-rate differentials.

The Treasury's operations were successful and profitable (FOMC 12 September 1961, 44), but a lack of resources severely limited the ability of the Treasury's Exchange Stabilization Fund (ESF) to mount a broader dollar defense. Consequently, the Treasury encouraged the Federal Reserve's participation in foreign-exchange operations. Whereas the ESF's budget was ultimately subject to Congressional appropriations, the Federal Reserve had a seemingly unlimited capacity to acquire foreign exchange. On 13 February 1962, after a lengthy debate about its legal authority for such actions, the FOMC authorized intervention in the foreign-exchange market.[15]

The FOMC saw its foreign-exchange operations as *temporary* measures designed to prevent sudden and reversible losses of gold and, thereby, maintain confidence in the dollar. They were not to delay or prevent necessary market corrections, since doing so might only make the inevitable adjustment more disruptive (FOMC, 12 September 1961, 55). Moreover,

prolonged interventions could undermine the willingness of private traders to make a market in foreign exchange (FOMC, 5 December 1961, 60). The primary mechanism for Federal Reserve exchange-market operations, the *Reciprocal Currency Arrangements*, or swap network, reflected the FOMC's operational philosophy, but distinguishing *a priori* between temporary and permanent market disturbances proved impossible to do.

In a typical swap transaction, the Federal Reserve and a foreign central bank undertook simultaneous and offsetting spot and forward foreign-exchange transactions typically at the same exchange rates and equal interest rates. Repayment terminated the drawing, but not the credit line, which central banks renewed annually. Swap drawings initially had a term of three months, but could be renewed once. Central banks were not to seek a second renewal, nor were they to continuously draw on a line for more than a year. Also, central banks in the swap network did not apply conditions, such as the adoption of macroeconomic policies or the application for an IMF loan, to their use.[16]

In March 1962, the Federal Reserve established its first swap line with the Bank of France. By the end of that year, the Federal Reserve had set up lines with central banks in nine key countries: Austria, Belgium, Canada, France, Germany, Italy, the Netherlands, Switzerland, and the United Kingdom. Altogether, the lines provided up to $900 million equivalent in foreign exchange. The network continued to grow, and it evolved from a small, very short-term credit facility in 1962 to a large, intermediate-term facility by the closing of the U.S. gold window in August 1971. By then, the swap network totaled $11.2 billion equivalent in foreign exchange and involved 14 central banks, having picked up the central banks of Denmark, Japan, Mexico, Norway, and Sweden over the intervening years.[17] The Federal Reserve also acquired two swap lines with the Bank for International Settlements, one in Swiss francs and one in other key currencies. Over the years, the term of a typical swap drawing also increased from the original three months to six months. The expansion of the swap lines was a natural consequence of both the mounting threat to the U.S. gold stock and the growing volume of international transactions, but the increasing length of swap drawings and the frequent tendency to renew them suggested that the underlying disequilibrium had more of a fundamental, than a temporary nature.

The Federal Reserve used its swap network to provide cover to central banks temporarily holding unwanted dollar balances. Between 1962 and the closing of the U.S. gold window in 1971, the Federal Reserve borrowed $11.5 billion worth of foreign-exchange through swaps primarily for this purpose. The Federal Reserve then sold the newly acquired foreign exchange back to the same central bank for the unwanted dollars. This set of transactions—the swap drawing plus dollar acquisition—left the foreign central bank holding exactly the same amount of dollars as it did before the swap operation. Now, however, the dollars it held were covered against foreign-exchange risk, since the Federal Reserve contracted to buy them back via the forward leg of the swap at a known exchange rate.

Because swap drawings matured in three months, the Federal Reserve quickly looked for opportunities to fund their repayment.[18] The FOMC, however, precluded the foreign-exchange desk from buying foreign exchange in the market if it was trading above par. When the Federal Reserve could not acquire the foreign exchange in the market, it had three options: The FOMC might buy more time by rolling the swap drawing over. Alternatively, the desk might buy the needed funds off-market from a central bank that was willing to acquire additional dollars in exchange. If these options failed, the Federal Reserve could buy foreign exchange from the U.S. Treasury, which had promised in 1961 to backstop the Federal Reserve's swap operations. If the

Treasury did not presently hold the necessary foreign exchange, it would sell special certificates—later Roosa bonds—or gold to acquire the needed funds, or borrow them from the IMF.[19]

All in all, the Federal Reserve's swap lines often succeeded in preventing countries from converting temporary inflows of unwanted dollar reserves into U.S. monetary gold, especially prior to 1970. Thereafter, however, through the closing of the gold window, the Treasury financed most of the Federal Reserve's swap repayments through asset sales (Bordo, Humpage, and Schwartz forthcoming). In any event, the operations failed to clearly distinguish between temporary dollar movements and those reflecting fundamental U.S. balance-of-payments imbalances. As a consequence, they did not preclude—and arguably worsened—the ultimate adjustment.

The Federal Reserve's swap lines were reciprocal, meaning that foreign central banks could initiate a drawing if they needed a temporary increase in their dollar reserves. As such, swap lines served to augment countries foreign-exchange reserves. Between 1962 and 1971, foreign central banks initiated $15.3 billion worth of swap drawings, with the Bank of England undertaking more than half of the total. They served as an often useful short-term palliative.

5 Federal Reserve Monetary Policy: 1951 – 1972

During most of the 1950s, exchange-market and balance-of-payments developments had virtually no influence on U.S. monetary-policy decisions (Bordo 1993, Carlson and Wheelock 2014, Eichengreen 2013). U.S. policy makers viewed the persistent balance-of-payment deficits and gold losses during the "dollar-shortage" years as a natural process that fostered global economic recovery and the Bretton Woods system.

During this period, U.S. monetary policy focused on domestic objectives, notably price stability. According to Romer and Romer (2002a, 122 – 123; 2002b, 18), the FOMC believed that inflation ultimately damaged economic growth and that the negative economic consequences of inflation could begin at relatively low rates and build quickly, even if the economy were experiencing some unemployment. The Eisenhower administration advocated balanced budgets and price stability. Moreover, and like the Eisenhower administration, Chairman William McChesney Martin and some other FOMC participants—notably Alfred Hayes, president of the Federal Reserve Bank of New York—maintained that domestic price stability was necessary to maintain the gold peg under Bretton Woods, which they all strongly supported (Bordo and Eichengreen 2013, 454)

The insignificance of international considerations as well as the prominence of price stability in monetary-policy decisions began to change after 1958. The Kennedy administration took office in 1961 believing that the economy had slipped below its potential growth path in 1956. Recessions in 1957-58 and 1960-61 pushed the economy further below potential where it had remained. In 1961, the unemployment rate was near 8 percent—four percentage points above a level consistent with the administration's estimate of full employment (ERP 1962, 46). The Kennedy administration put the current output gap at about 8 percent of potential and believed that the gap would persist through mid-1963 under the best-case scenario (ERP 1962, 52). This initial estimate proved too optimistic, and the Kennedy and Johnson administrations continued to project output gaps until 1965 (ERP 1966, 41). They would focus economic policy primarily on achieving full employment, which the Employment Act of 1946 set as "the keystone of national economic policy," and growth at potential.

Nevertheless, President Kennedy "used to tell his advisers that the two things which scared him most were nuclear war and the payments deficit" (Schlesinger 1965, 654). Besides the policies mentioned in section four, Kennedy sometimes undertook domestically orientated macroeconomic policies in a manner that accommodated—or at least did not worsen—the balance-of-payments situation. The most important of such operations teamed the Treasury with the Federal Reserve in a plan to twist the yield curve.

5.1 Operation Twist: 1960 - 1964

Under the then prevailing macroeconomic orthodoxy of the Kennedy and Johnson administrations, fiscal policy was the chief instrument of demand management. Monetary policy was to accommodate fiscal policy by keeping interest rates low, thereby fostering investment and other types of interest-sensitive spending or, more generally, "accommodating an expansion of demand" (ERP 1965, 66). Both the Kennedy and early Johnson administrations, however, recognized that the existing international situation compromised the Federal Reserve's efforts to foster internal balance. "If low interest rates encouraged foreign borrowing in the United States and a large outflow of funds seeking higher yields abroad, monetary policy may have to be more restrictive than domestic economic objectives alone would dictate" (ERP 1962, 86). Relatively low U.S. interest rates would worsen the U.S. balance-of-payments position and promote greater gold losses.

Hoping to support domestic economic expansion and simultaneously reduce the outflow of funds to foreign money markets, the Federal Reserve looked to "twist" the yield curve. Monetary policy attempted to raise short-term interest rates to a level consistent with rates abroad, thereby reducing capital outflows, while simultaneously preventing a cyclical rise in long-term interest rates, thereby encouraging domestic investment. At the program's start on 23 October 1960, during the turmoil in the London gold market, the FOMC modified its controversial "bills only" operating procedure by buying securities other than Treasury bills, but still remained at the short end of the yield curve. At the time, the committee only wanted to avoid downward pressure on three-month Treasury yields, which seemed unduly low. The committee stressed, however, that domestic objectives of monetary policy took precedence over the external objectives of policy (AP 1961, 69).

On 2 February 1961, President Kennedy "announced that the Federal Reserve and Treasury were developing techniques to help keep long-term rates down while holding short-term rates at internationally competitive levels" (ERP 1962, 88, table 8). The timing of this announcement suggests that Chairman Martin sought the administration's endorsement before he got the FOMC's official approval. At its 7 February 1961 meeting, the FOMC approved open-market operations in longer-term Treasury securities, a policy that would eventually become known as operation twist (AP 1962, 39 – 43). The desk would start buying Treasuries in the 1 to 5½ year maturity range and, after the market became accustomed to the operations, extend purchases to the 5½ to 10 year maturity range. The FOMC authorized outright purchases within a limit, at the time, of $1 billion, but also allowed "offsetting purchases and sales of securities for the purpose of altering the maturity pattern of the System portfolio" (AP 1962, 41). The Fed was also quick to point out that the objective of the operation was not to "seek a given fixed rate for Government securities of any maturity" (AP 1962, p.40). That is, operation twist was not a reversion to pre-Accord, Federal Reserve, debt-management policy of pegging specific Treasury yields.

Governor J. L. Robertson offered a lengthy dissention from the new policy that centered on four concerns (AP 1962, 42 – 43): First, Robertson believed that operation twist—unlike "bills only"—was predicated on an untested theory of the term structure and was not likely to succeed. Second, the change unjustly suggested that the FOMC had "pursued incorrect operations practices" in following "bills only" since 1953. Third, operation twist would disrupt the market for Treasuries by creating confusion about where on the term structure the Desk might choose to operate. Such uncertainty could drive private participants from the market. Fourth, the FOMC was giving too much discretion to the Manager of the Open Market Account. The FOMC had designed "bills only" to take that discretion from the Manager and to assure the market that the post-Accord Fed did not intend to maintain any specific Treasury yields (Meltzer 2009a). The President of the Federal Reserve Bank of Chicago, Carl E. Allen, also dissented on the same grounds as Governor Robertson.[20] Other FOMC participants, who continued to support operation twist in subsequent years, frequently objected to purchases of long-term bonds, preferring instead to remain in the intermediate range of the yield curve. Like Robertson and Allen, they feared that operations at the long end suggested that the Federal Reserve was pegging a bond rate and might disrupt private participation in the market.[21]

TABLE 1: AVERAGE ANNUAL CHANGE IN FEDERAL RESERVE HOLDINGS OF TREASURY SECURITIES

	TOTAL	LESS THAN ONE YEAR	BETWEEN 1 - 5 YEARS	GREATER THAN FIVE YEARS
MILLIONS OF DOLLARS:				
1951 - 1959:	356	450	178	-272
1960 - 1964:	2079	558	1396	124
1965 - 1966:	3636	7010	-3024	-350
PERCENT OF TOTAL CHANGE:				
1951 - 1959:	100	126	50	-76
1960 - 1964:	100	27	67	6
1965 - 1966:	100	193	-83	-10

Board of Governors, Banking and Monetary Statistics, 1941 - 1970, table 9.5.

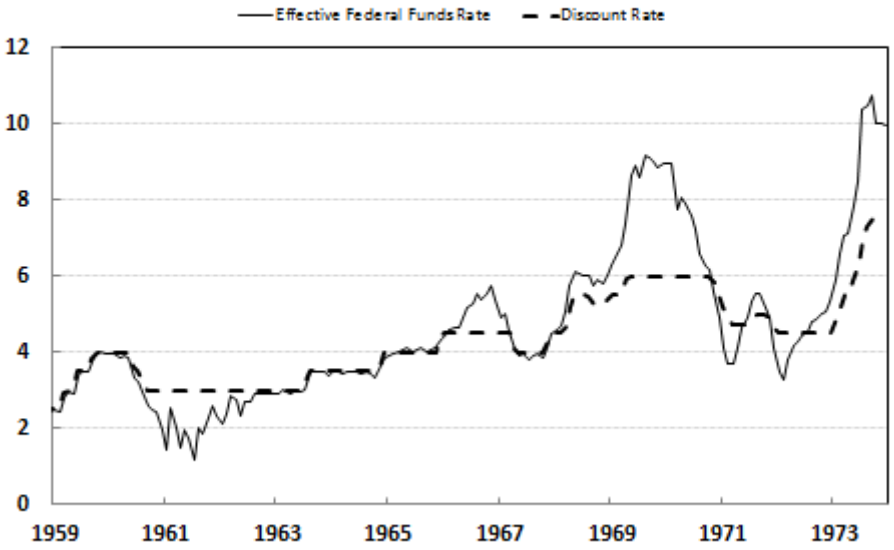
Consequently, the Federal Reserve never bought a substantial amount of Treasuries at the longest end of the yield curve but preferred instead to remain in the short-to-intermediate range (table 1). The FOMC's acquisition of short-term Treasury securities, for example, accounted for 27 percent of its total purchases of Treasuries between 1960 and 1964. Consistent with the broad objective of operation twist, this percentage was, indeed, much smaller than that found either between 1951 and 1959 or between 1965 and 1966. Instead, the FOMC's acquisition of Treasury securities in the one-to-five-year maturity range accounted for 67 percent of all

Treasury securities purchased between 1960 and 1964—a share substantially greater than over either the previous eight years or the subsequent two years. The Federal Reserve's acquisitions of Treasuries at the long-end of the yield curve, however, were very small. Securities with a maturity of over five years equaled only six percent of the total acquisitions.[22] Between 1951 and 1959 and again in 1965 and 1966, the Federal Reserve reduced its holdings of longer-term Treasury securities. Consequently, the Federal Reserve probably never exerted much of a lasting "twist" effect on the very long end of the yield curve, if it indeed had any effect.[23]

For its part, the U.S. Treasury would purchase securities maturing in more than ten years for various government investment and trust accounts and would begin to concentrate new offerings in relatively short maturities to exert upward pressure on short-term yields. "Open market and debt management operations added substantially to the supply of U.S. Government securities maturing within 1 year" during 1961 (ERP 1962, 88 – 89). The Treasury would continue complimentary debt-management operations through 1964. "In each of the past four years [1961 through 1964], the volume of bills issued by the Treasury accounted for half or more of the total increase in the marketable debt. In addition, the Treasury used refunding operations to counteract the tendency for the passage of time to shorten the maturity of the Federal debt (ERP 1965, 69).

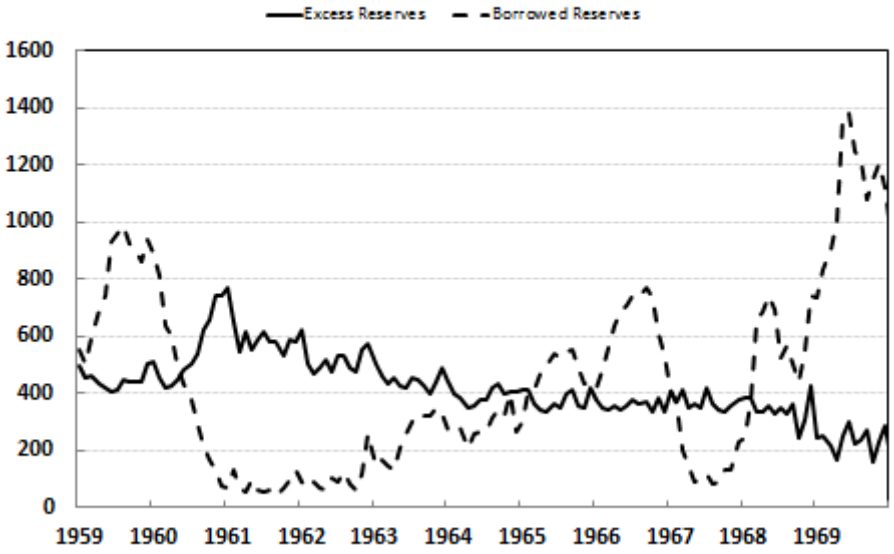
In 1962, the Fed began undertaking other monetary-policy measures to augment the twin objectives of operation twist.[24] In January 1962, July 1963, and November 1964, the Fed raised regulation Q limits, permitting commercial banks to pay higher interest rates on time and savings deposits. U.S. monetary authorities thought that loosening regulation Q would allow domestic commercial banks to compete for funds more effectively against foreign banks and that doing so would keep pressure off long-term rates because commercial banks would channel any new deposits into mortgages, state and local securities, and similar long-term instruments (ERP 1963, 59). In addition, loosening regulation Q would encourage banks to offer more negotiable time certificates, which effectively added to the supply of short-term securities, thereby pushing short-term yields lower (ERP 1964, 47). The Federal Reserve usually undertook increases in regulation Q ceilings in tandem with hikes in the discount rate. On 17 July 1963, the Fed increased the discount rate from 3 percent to 3½ percent "largely to reinforce efforts to raise short-term interest rates for balance of payments reasons" (ERP 1964, 47) (figure 3). The Fed took the action in response to increases in foreign interest rates (Solomon 1982, 47). The Fed again raised the discount rate to 4 percent on 24 November 1964 for balance-of-payments purposes, following a hike in the Bank of England's bank rate. The Fed also lowered reserve requirements on time and savings deposits, thereby releasing reserves to encourage domestic expansion without undertaking open-market operations (ERP 1963, 59).[25]

Figure 3: Federal Reserve Policy Rates



Source: Haver Analytics

Figure 4: Net Free Reserves

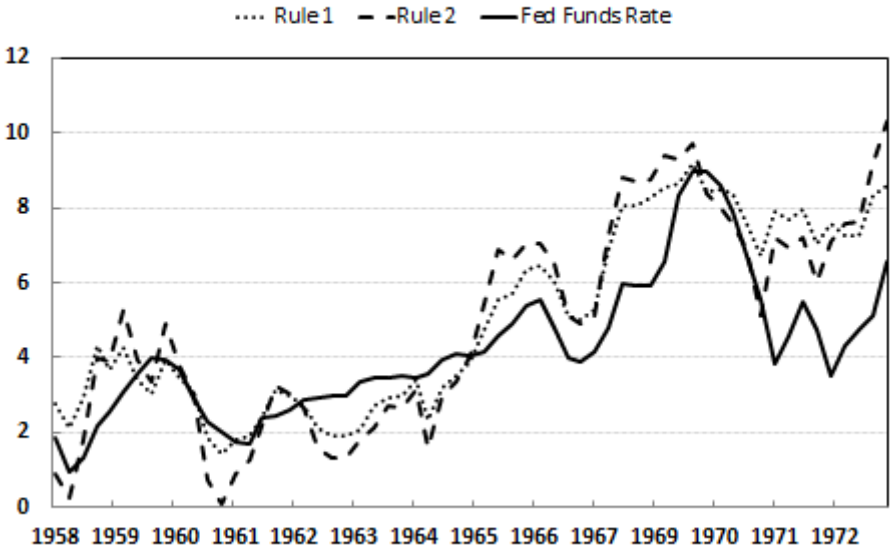


Note: Net Free Reserves equal Excess Reserves less Borrowed Reserves

Source: Board of Governors *Banking and Monetary Statistics 1941 – 1970*, Table 10.2.

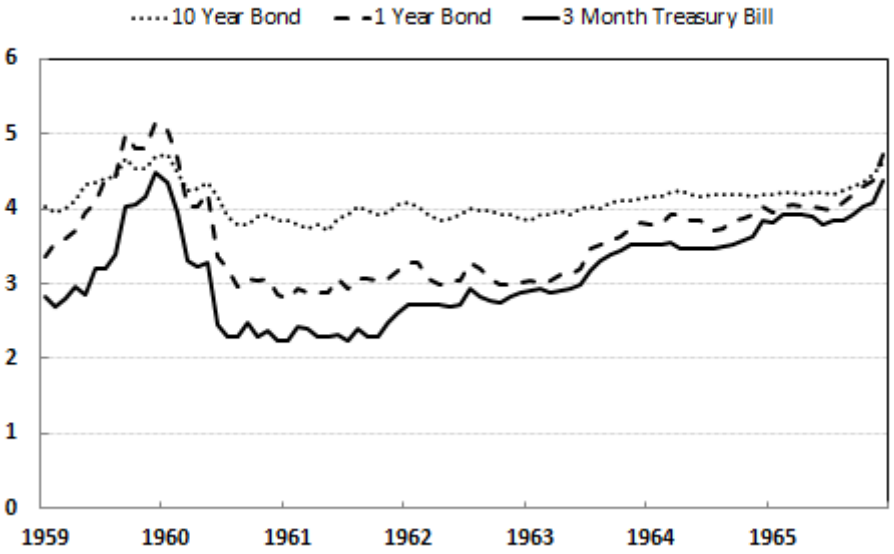
Operation twist continued through 1964, and although the FOMC focused primarily on supporting the expansion of aggregate demand, international considerations did seem to modify monetary policy somewhat. During these years, the Federal Reserve increased its total holdings of U.S. Treasury securities by nearly $2 billion on average per year, substantially more than the average increase over the previous eight years. Net free reserves—a then common gauge of monetary policy—became positive in mid-1960, suggesting stimulus (figure 4). Free reserves peaked in January 1961, but remained positive until early 1965. Nevertheless, from 1960:Q4 through 1961:Q2 and 1962:Q4 though 1965:Q4, the federal funds rate often remained higher than a standard Taylor rule might predict; that is, monetary policy remained somewhat tighter than domestic economic objectives alone warranted (figure 5).[26] Moreover, the operations of the Federal Reserve and Treasury resulted in a yield curve broadly consistent with the aims of the program (figure 6). Short-term interest rates rose after 1961, and although longer-term yields did not fall, they remained—in contrast to previous post-war cyclical experiences—"steadily resistant to upward pressure during the expansion" (ERP 1965, 69). Although the overall balance-of-payments position improved somewhat between 1960 and 1964, it was all attributable to trade. Capital flows, at best, demonstrated some improvements in some years. Operation twist did not do much for the balance of payments.

Figure 5: Real Time Taylor Rules



Source: Haver Analytics, authors' calculations, see endnote #26

Figure 6: Treasury Yields



Source: Haver Analytics

5.2 Compatible Objectives 1965 – 1969

From 1965 through 1969, any influence that international objectives exerted on Federal Reserve monetary-policy decisions seemed to wane. Operation twist ended after 1964 because the United States did not need a bifurcated interest-rate policy to handle the emerging domestic economic problem, inflation, and the persistent balance-of-payments concern, gold losses. Tighter monetary policy and higher interest rates addressed both problems simultaneously, so even if FOMC participants still worried about balance-of-payments shortfalls, their concerns hid comfortably behind a focus on inflation (AP 1966, 101). FOMC participants would differ primarily over the relative importance of inflation and full employment goals in policy decisions. Of course, those interested in a tighter, inflation-focused monetary policy often cited balance-of-payments criterion to bolster their case.

Also contributing importantly to this diminution of external objectives in Federal Reserve policy was—in conjunction with the array of other policies in place—the administration's 10 February 1965 and 1 January 1968 extensions and tightening of restraints on cross-border capital flows.[27] In a fixed-exchange-rate regime, rigid controls on capital flows give a domestically orientated monetary policy more leeway. Capital constraints and foreign-exchange interventions continued to receive the Federal Reserves' full participation, but these actions also shifted responsibility for the nation's balance-of-payments problems increasingly to the administration, giving the Federal Reserve added leeway to focus on domestic policy concerns (Bordo and Eichengreen 2013, Eichengreen 2013). The existence of capital restraints and the implied shift in responsibility for the balance of payments would influence monetary policy until the end of Bretton Woods.

In 1965, the FOMC increasingly cited inflationary pressures as the justification for its actions (AP 1966, 18). Economic activity was "unusually vigorous," particularly in the second half of the year (AP 1966, 3). By the end of the year, the output gap had virtually disappeared and the unemployment rate was close to the administration's 4 percent goal. Defense spending rose sharply and business investment accelerated, promising continued economic growth. Credit demand strengthened and interest rates firmed. With the requirements of the Employment Act of 1946 fulfilled, the FOMC initially looked to "attain somewhat firmer conditions in money markets," and free reserves turned negative by March (AP 1966, 15). Inflation pressures, however, continued to build throughout the year, and on 6 December 1965, in the face of strong resistance from the Johnson administration, the Federal Reserve raised the discount rate from 4 to 4½ percent and raised regulation Q limits (figure 3).

Although the discount-rate hike seemed a clear signal of the FOMC's intention to tighten further (ERP 1967, 55), the monetary tightening in 1965 and 1966 was relatively modest. Perhaps the Federal Reserve hesitancy reflected the Johnson administration's and Congress' criticisms of monetary tightening (Meltzer 2009a). Net free reserves remained negative throughout these years, but the nominal federal funds rate increased only 150 basis points, and the real (ex post) federal funds rate fell by 60 basis points. By late 1966, the FOMC arguably undertook the first of the insufficient stop-go operations that would characterize monetary policy during the Great Inflation era and ultimately damage Federal Reserve credibility. In October 1966, as tightening credit conditions threatened economic growth, the FOMC adopted a "less firm" stance for monetary policy. In early 1967, monetary policy moved vigorously to ease domestic credit conditions "… through complementary changes in open market operations, reserve requirements, and the discount rate" (AP 1968, 3). Net free reserves again became positive, and interest rates fell.

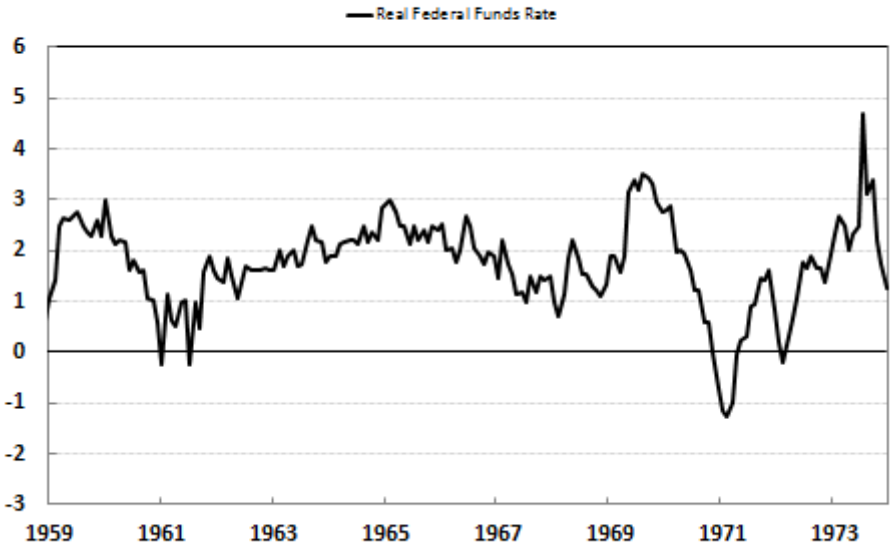
This period of monetary ease ended on 18 November 1967, when the British government devalued the pound by 14.3 percent, and the Bank of England raised its discount rate to 8 percent—its highest level in 58 years (Bulletin March 1968, 273 – 274). Since 1962, U.S. foreign-exchange operations had lent strong support to the pound. U.S. policymakers feared that other countries would quickly follow the pound's devaluation. Speculative pressure might then focus on the dollar and seriously undermine—possibly destroy—credibility in the Bretton Woods system. To minimize the potential spillover effects onto the dollar, the Federal Reserve increased the discount rate back to 4½ percent on 19 November 1967 and tightened reserve requirements on 27 December 1967. Net free reserves began to shrink and the federal funds rate increased.

In 1968, inflation accelerated and "an inflationary psychology was becoming embedded in decision-making for key sectors of the economy" (AP 1969, 6). This included the traded-goods sector. In 1968, U.S. inflation exceeded that of the ten largest U.S. trading partners by nearly a full percentage point. Generally, since the Second World War, U.S. inflation remained below inflation in the other key developed countries (figure 2). The differential had recently been narrowing, especially since 1965, the year in which the U.S. trade surplus began shrinking. In 1968, the U.S. posted a $1.8 billion trade surplus, down from $4.6 billion in the previous year and a recent high of $8.5 billion in 1964. Inflation impacted the balance of trade, the key positive component in the U.S. balance of payments. With inflation rising and weakening the trade balance, monetary policy did not face a conflict between its domestic and international policy objectives.

On 17 March 1968, the gold pool suspended operations. Since the devaluation of the British pound, the gold pool had lost $3 billion worth of gold (FOMC Minutes 2 April 1968, 4). The Federal Reserve increased the discount rate on 14 March 1968 from 4 ½ to 5 percent both in response to the gold pool and the rising inflation rate. The Fed increased the discount rate again in April, and open-market operations became decidedly more restrictive, primarily as a response to rising inflation. On 28 June 1968, Congress approved the administration's long-delayed package of fiscal constraints including a 10 percent surtax on personal and corporate income and limitations on federal spending. Many FOMC participants saw tighter fiscal policy as important in reducing excessively stimulative fiscal pressures (Maisel 1973). The tighter fiscal policy and a concern of slowing economic activity led the FOMC to ease monetary-policy somewhat in the summer.[28] The Federal Reserve cut the discount rate as market rates declined. Free reserves, however, remained negative.

This half-hearted concern for economic softness was brief. "During 1969, the Federal Reserve moved to a very restrictive monetary policy in an effort … to dissipate deeply rooted expectations of continuing inflation" (AP 1970, 3). By mid-year net free reserves became dramatically more negative and the real federal funds rose sharply (figure 7). The Federal Reserve increased the discount rate on 4 April 1969 to 6½ percent and hiked reserve requirements. In any event, inflation accelerated during 1969 and was running just above 6 percent at year's end.

Figure 7: Real Federal Funds Rate



Note: The real federal funds rate equals the nominal federal funds rate less the year-over-year percent change in CPI.

Source: Haver Analytics.

The Federal Reserve anti-inflation policy—and hence its legitimate contribution to the country's external economic problems—from 1965 through 1969 was an obvious failure because the FOMC did not stick to it for long enough.[29] The inflation rate rose from around 1 percent in early 1965 to 6 percent by the end of 1969. After 1965:Q3, the federal funds rate remained persistently below the level that a Taylor rule would prescribe as consistent with domestic economic objectives (figure 5). The overall balance-of-payments deficit did not improve; the United States lost $3.6 billion worth of gold, and liquid dollar liabilities expanded by $16.4 billion.

5.3 Benign Neglect 1970 - 1972

After 1969, the internal and external objectives of monetary policy again came into conflict. Over the previous four years, the U.S. economy had generally operated at, or somewhat above its potential, suggesting—under the then prevailing paradigm—that the accompanying rise in inflation was primarily of the demand-push variety.[30] In such an environment, aggregate demand was excessive, and monetary policy needed to tighten, especially if fiscal policy failed to do so. In these circumstances, a tighter policy was consistent with the Employment Act of 1946; unemployment was well below 4 percent in 1969. Moreover, a tighter policy had the additional benefit of fostering the nation's balance-of-payments objectives.

Late in 1969, however, economic activity peaked. The United States then operated below potential, at least until early 1972, but inflation remained relatively high. According to the then-predominant distinction between demand-pull, and cost-push inflations, if the economy were below potential, aggregate demand was deficient, and any persistent price pressure was of the cost-push variety. Conventional monetary and fiscal policies could do little to prevent cost-push inflation without forcing the economy into a protracted recession. Their proper role was to keep economic growth at potential, while incomes policy dealt with cost-push inflation. Capital restraints could handle balance-of-payments concerns. Burns adhered to this view of policy.

The seemingly hard-stop monetary policy of 1969 shifted decidedly to "go" in 1970, as the economy experienced a recession that lasted from January through November. "To help stimulate economic activity while at the same time guarding against fueling inflation, monetary policy during 1970 shifted from a posture of restraint that had prevailed during much of 1969 to a posture designed to assure adequate expansion in monetary and credit aggregates and an easing in over-all credit conditions" (AP 1971, 7).[31] Open-market operations brought the nominal federal funds rate from nearly 9 percent in January 1970 to 4.9 percent by year's end (figure 3). The real federal funds rate dropped from 2.8 percent to a negative 0.7 percent over this same time frame (figure 7). The Federal Reserve cut the discount rate from 6 to 5¾ percent on 16 November 1970 and to 5½ percent on 4 December 1970. Short-term interest rates fell relative to those abroad, intensifying the capital outflows. The money stock (M2) grew 3.7 percent faster than output, and inflation remained around 5½ percent at year's end.

Although the economy grew in 1971, it remained below potential. Inflation continued to moderate, but reached only 3.3 percent at year's end. The FOMC seemed to absolve itself from responsibility: "Developments over the first 7 months of the year [1971] brought increasingly into question whether conventional monetary and fiscal policies alone were adequate to combat the cost-push inflation and deterioration in the U.S. balance of payments, while at the same time continuing to promote more vigorous recovery in the domestic economy" (AP 1971, 7). The FOMC opted for economic growth, and in "1971 monetary policy encouraged further substantial

growth in bank reserves, money [supply], and bank credit in helping to stimulate economic recovery from the mild recession of 1969 – 70" (AP 1972, 3). The Federal Reserve lowered the discount rate twice in January to 5 percent, and again to 4¾ in mid-February. Money growth grew at double-digit rates and exceeded real economic growth by more than 8 percentage points on average over the year. The real federal funds rate remained below 1 percent (and often negative) through August 1971.

By the summer of 1971, speculators were moving funds out of dollars into U.S. gold. The Federal Reserve raised the discount rate from 4¾ percent to 5 percent on 16 July, and the federal funds rate increased. On 15 August 1971, President Nixon closed the gold window. He also imposed a 90-day U.S. wage and price freeze, which then led to wage and price controls, and a 10 percent surcharge on all dutiable U.S. imports. In the near crisis atmosphere that prevailed, capital restraints began to emerge. Initially the Federal Reserve seemed to maintain the somewhat firmer monetary policy tone that it adopted in July, but eased again in October. The Federal Reserve then lowered its discount rate to 4¾ percent in November 1971 and again to 4 ½ percent in December 1971. Apparently, the President's actions loosened external constraints on monetary policy.

At the Smithsonian meeting on 17 – 18 December 1971, the United States devalued the dollar against gold by approximately 8½ percent to $38 per ounce. Other countries also revalued their currencies relative to the dollar, bringing the overall dollar depreciation to 10.7 percent against the key foreign currencies (de Vries 1976, 555). But, the Smithsonian Agreement did little to restore confidence in Bretton Woods. During 1972, speculators, who saw the devaluation as too small, pushed many European currencies to the tops of their permissible—and now wider—exchange-rate bands. Reflecting the continued uncertainty, gold prices reached $60 per ounce by mid-1972, well above the new official price.

U.S. monetary policy did little to build confidence in Bretton Woods after the devaluation as it continued its stop-go behavior. Although it firmed slightly immediately following the Smithsonian agreement, U.S. monetary policy eased again in September 1972. The real federal funds rate, however, remained below 2 percent throughout the year. The money stock continued to grow at double-digit rates or 4 percentage points faster than output growth each quarter through 1973:Q1.

In 1972, foreign central banks accumulated large amounts of unwanted dollars, as they defended their currencies' parity values. In doing so they stoked home inflationary pressures. Price levels in foreign G10 nations rose 7.7 percent on average for the year. U.S. inflation, although lower than the foreign G10 average, began rising sharply. Foreign central banks' attempts to tighten monetary policies only encouraged capital inflows. Many countries increasingly attempted to adopt or strengthen their capital restraints. On 12 February 1973, with exchange markets in Europe and Japan closed and gold prices hovering around $90 per ounce, the United States devalued the dollar by an additional 10 percent to $42 per ounce. When markets re-opened speculation against the dollar became rampant, as those holding dollars did not want to again be caught off guard (FOMC 7 March 1973, 3). Within a month nearly all major currencies were floating against the dollar. The Bretton Woods system ended (IMF 1973, 2 – 8). Economic growth, full employment, and price stability now took precedence over exchange-rate fixity.

6 Conclusion

During the Bretton Woods era, the FOMC frequently mentioned balance-of-payments developments, fears of gold loss, and exchange-rate concerns in its deliberations and in its explanations of policy actions, but these international considerations carried little overall weight in the committee's decisions—even after 1958, when such issues became critical for Bretton Woods' survival. After 1960, U.S. monetary policy focused instead on domestic economic objectives, chiefly full employment and growth at potential. International crises, such as the British pound's devaluation, did sometimes prompt the Federal Reserve to temporarily tighten monetary policy in hopes of bolstering the dollar and forestalling gold losses, and sometimes international considerations shaped the contours—if not the overall thrust—of U.S. monetary policy, as during operation twist. In addition, international factors sometimes helped recommend and support monetary action taken for domestic objectives, as when policy tightened in 1968 and 1969. These instances, however, were clearly the exception; Federal Reserve policy preferences normally conformed to the Employment Act of 1946.

Federal Reserve policy makers could largely disregard international considerations, especially after 1965, because the U.S. Treasury instituted, and by then strengthened, a number of stop-gap devices—the gold pool, the general agreement to borrow, capital restraints, sterilized foreign-exchange operations—to shore up the dollar and Bretton Woods. These not only gave monetary policy the latitude with which to focus on domestic-policy objectives, but also shifted responsibility for international developments from the FOMC to the Treasury. Often these devices were successful in forestalling U.S. gold losses, and, given the circumstances, they arguably prolonged the life of Bretton Woods. Ultimately, however, they were destructive.

By removing the pressure of international considerations from FOMC policy decisions, these devices made it easier for the FOMC to pursue the inflationary policies that ultimately destroyed Bretton Woods. A credible commitment to price stability by the Federal Reserve was the *sine qua non* of any fixed-exchange-rate system relying on the U.S. dollar as its key international reserve and vehicle currency, and after 1965, the Federal Reserve failed in this regard.

Removing the international constraints on monetary policy was a sufficient—not a necessary—condition for the Great Inflation that followed, but it may have added the spark to the abundant theoretical tinder already available.[32] At the time, mainstream economists and policy makers downplayed the importance of money in the inflation process, emphasizing instead the ability of fiscal policy to control inflation. Monetary policy was to help keep aggregate demand at potential. This required reliable measurement, but policy makers at the time consistently underestimated the natural rate of unemployment and overestimated potential output. Such errors would lead policy makers to pursue a monetary policy that was excessively easy. A failure to distinguish between nominal and real interest rates may also have biased policy toward too much ease. Other policy makers believed that inflation was not as socially disruptive as unemployment and, accepting a permanent Phillips Curve tradeoff, they were willing to trade higher inflation for a lower unemployment rate. Often they pressured the Federal Reserve to ease monetary policy.

In any event, monetary policy eventually created the Great Inflation, and to the extent that stop-gap policies removed international constraints on monetary policy, they ultimately contributed to the collapse of Bretton Woods—the system they sought to maintain.

References

Bank of England. 1964. The London Gold Market. *Quarterly Review* 4(1): 16 – 21.

[AP] Board of Governors of the Federal Reserve System. various issues. Annual Report of the Federal Reserve System.

Board of Governors of the Federal Reserve System. 1976. *Banking and Monetary Statistics, 1941 – 1970*. Washington, D.C.: Board of Governors.

Bodner, D.E. 1970. Proposed Modification of Procedures to Be Employed in Transactions under Certain Swap Lines, 3 December, unpublished Board of Governors of the Federal Reserve System memorandum.

Bordo, M.D. 1993. "The Bretton Woods International Monetary System: A Historical Overview," in: Bordo, M. and Eichengreen, B. *A Retrospective on the Bretton Woods System, Lessons for International Monetary Reform*. Chicago: The University of Chicago Press.

Bordo, M.D. and Eichengreen, B. 2013. Bretton Woods and the Great Inflation, in Bordo, M.D. and Orphanides, A. (eds.) *The Great Inflation, Rebirth of Modern Central Banking*. Chicago: Chicago University Press.

Bordo, M. D. Humpage, O.F. Schwartz, A.J. forthcoming. *Strained Relations: U.S. Foreign-Exchange Operations and Monetary Policy in the Twentieth Century*. Chicago: University of Chicago Press.

Bordo, M. D. and Orphanides, A. 2013. Introduction. in Bordo, M.D. and Orphanides, A. (eds.) *The Great Inflation, Rebirth of Modern Central Banking*. Chicago: Chicago University Press.

[Bulletin] Board of Governors of the Federal Reserve System. various issues. Treasury and Federal Reserve Foreign Exchange Operations. *Federal Reserve Bulletin*. Washington, D.C.: Board of Governors of the Federal Reserve System.

Carlson, M. and Wheelock, D. 2014. Navigating Constraints: The Evolution of Federal Reserve Monetary Policy, 1935 – 59. Federal Reserve Bank of St. Louis *Working Paper 2014-013A.*

Coombs, C.A. 1976. *The Arena of International Finance*. New York: John Wiley & Sons.

de Vries, M.G. 1985. *The International Monetary Fund 1972 – 1978, Cooperation on Trial*, vol. 1. Washington, D.C.: International Monetary Fund.

[Desk Report] Federal Reserve Bank of New York. various issues. *Annual Report on Operations in Foreign Currencies*, unpublished report submitted by the Special Manager of the System Open Market Account for Foreign Currency Operations to the Federal Open Market Committee.

[ERP] Economic Report of the President. various issues. Washington, D.C.: Government Printing Office.

Eichengreen, B. 2013. Does the Federal Reserve Care about the Rest of the World? *Journal of Economic Perspectives* 27(4): 87 – 104.

Eichengreen, B. 2000. From Benign Neglect to Malignant Preoccupation: U.S. Balance of Payments Policy in the 1960s in Perry, G. and Tobin, J. (eds.) *Economic Events, Ideas and Policies: The 1960s and After*. Washington, D.C.: Brookings Institution.

[FOMC] Federal Open Market Committee. various issues. *Minutes of the Federal Open Market Committee*. Board of Governors of the Federal Reserve.

Gavin, F.J. 2004. *Gold, Dollars, and Power, The Politics of International Monetary Relations, 1958 – 1971*. Chapel Hill: The University of North Carolina Press.

Hetzel, R.L. 1996. Sterilized Foreign-Exchange Intervention: The Fed Debate in the 1960s, Federal Reserve Bank of Richmond, *Economic Quarterly* 82(2): 21 – 46.

Hetzel, R.L. 2008. *The Monetary Policy of the Federal Reserve, A History*. New York: Cambridge University Press.

International Monetary Fund. various issues. *International Financial Statistics*.

James, H. 1996. *International Monetary Cooperation Since Bretton Woods*. New York: Oxford University Press.

Kenen, P.B. 2008, Bretton Woods System. in Durlauf, S.N. and Blume, L. E. (eds.) *The New Palgrave Dictionary of Economics*, 2nd edition, online: Palgrave Macmillan.

MacLaury, B.K. 1969. Discussion of Questions Raised by Governor Maisel Concerning System Foreign Currency Operations, unpublished Board of Governors of the Federal Reserve System memorandum, 30 January.

Maisel, S.J. 1973. *Managing the Dollar*. New York: W.W. Norton.

McKinnon, R.I. 1993. The Rules of the Game: International Money in Historical Perspective. *Journal of Economic Literature* 31(1): 1 – 44.

Meltzer, A.H., 1991, U.S. Policy in the Bretton Woods Era. Federal Reserve Bank of St. Louis, *Economic Review* 73(3): 54 – 83.

Meltzer, A. H. 2003. *A History of the Federal Reserve, vol.1, 1913 – 1951*. Chicago: University of Chicago Press.

Meltzer, A.H. 2009a. *A History of the Federal Reserve vol. 2, book one, 1951 – 1969*. Chicago: University of Chicago Press.

Meltzer, A.H. 2009b. *A History of the Federal Reserve vol. 2, book two, 1970 – 1986*. Chicago: University of Chicago Press.

Modigliani, F. and Sutch, R. 1966a. Debt Management and the Term Structure of Interest Rates: An Empirical Analysis of Recent Experience. *Journal of Political Economy* 75(4, part 2): 569 – 589).

Modigliani, F. and Sutch, R. 1966b. Innovations in Interest Rate Policy. *American Economic Review* 56(1/2): 178 – 197.

Pauls, B.D. 1990. U.S. Exchange-Rate Policy: Bretton Woods to Present. Federal Reserve *Bulletin* 76(11): 891 – 908.

Romer, C.D. and Romer, D.H. 2002a. A Rehabilitation of Monetary Policy in the 1950s. *American Economic Review* 92(2): 121 – 127).

Romer, C.D. and Romer, D.H. 2002b. The Evolution of Economic Understanding and Postwar Stabilization Policy. *Rethinking Stabilization Policy*. Jackson Hole, Wy: Federal Reserve Bank of Kansas City.

Samuel Monetagu & Co. Ltd. 1961. *Annual Bullion Review 1960*.

Schlesinger, A. M. 1965. *A Thousand Days, John F. Kennedy in the White House*. Boston: Houghton, Mifflin Co.

Solomon, R. 1971. Use of Swap Network, unpublished Board of Governors of the Federal Reserve System memorandum, 13 August.

Solomon, R. 1982. *The International Monetary System: 1945 – 81*. New York: Harper and Row.

Swanson, E. T. 2011. Let's Twist Again: A High-Frequency Even-Study Analysis of Operation Twist and Its Implications for QE2. *Brookings Papers on Economic Activity* (Spring): 151 – 207.

[Task Force] Task Force on System Foreign Currency Operations, 1990. "Reciprocal Currency Arrangements (The "Swap" Network)," Paper #9, 24 January, unpublished Board of Governors of the Federal Reserve System report.

[Task Force] Task Force on System Foreign Currency Operations. 1990. "Profits and Losses in U.S. Foreign-Currency Operations," Paper #10, 8 January, unpublished Board of Governors of the Federal Reserve System report.

Taylor, J.B. 1999. A Historical Analysis of Monetary Policy Rules. in Taylor, J.B. (editor) *Monetary Policy Rules*. Chicago: University of Chicago Press.

Todd, W.F. 1992. "Disorderly Markets: The Law, History, and Economics of the Exchange Stabilization Fund and U.S. Foreign-Exchange Market Intervention," in Kaufman, G. G. (ed.) *Research in Financial Services: Private and Public Policy*, Vol. 4, Greenwich, Conn.: JAI Press, pp. 111-79.

Triffin, R. 1960. *Gold and the Dollar Crisis, The Future of Convertibility*. New Haven, Conn: Yale University Press.

Yeager, L.B. 1966. *International Monetary Relations: Theory, History, and Policy*. New York: Harper & Row Publishers.

Notes

[1] Bordo (1993) and James (1996) provide surveys of Bretton Woods. Meltzer (2003, 2009a, 2009b) offers a detailed, contextually rich discussion of Federal Reserve policy under Bretton Woods. Meltzer (1991) contains a narrower focus. Eichengreen (2000, 2013) has also recently discussed Federal Reserve policy during Bretton Woods. Pauls (1990) offers a more Federal Reserve centric view of the period. Coombs (1976) and Solomon (1982) are valuable discussions from former Federal Reserve officials.

[2] Under this arrangement, deficit countries felt pressures to adjust their exchange rates more immediately than surplus countries. Bretton Woods maintained a scarce currency clause, but it was never invoked.

[3] The Japanese yen became convertible for current-account transactions in 1964.

[4] Congress required the Federal Reserve to hold gold reserves equal to 25 percent its note and deposit liabilities. In 1958, the London gold market understood the limits that the required gold reserves implied (see Samuel Montagu & Co. Ltd. 1959, 10). On 3 March 1965, Congress ended the reserve requirement on deposit liabilities, and on 18 March 1968, Congress dropped the reserve requirement on notes.

[5] Data on the London gold market in 1960 are from Samuel Montagu and Co. Ltd. (1961). Coombs (1976, 47) estimates the U.S. gold export price at $35.20 per ounce

[6] Another factor contributing to Triffin's paradox arose because of the slow pace with which cross exchange rates adjusted under Bretton Woods. Deficit countries defended their currencies by selling dollars whereas surplus countries did so by buying dollars. When dollars flowed from deficit to surplus countries, they left a country that needed them and entered a country that often held too many. This cross-rate adjustment problem increased the likelihood that the surplus country would seek to exchange the dollars for gold.

[7] This section draws on Bank of England (1964) and *Bulletin* (1961 – 1967)

[8] On the collapse of the Gold Pool, see: Coombs (1976, 152-173).

[9] The G10 consisted of Belgium, Canada, Franc, Germany, Italy, Japan, the Netherlands, Sweden, the United Kingdom, the United States. Switzerland joined in 1964 bringing the number to eleven, but G10 stuck.

[10] Bordo and Eichengreen (2010, 479 – 481) provide a summary of these controls and related actions. Meltzer (2009b, 693 –704) discusses the imposition of controls after 1964.

[11] The IET did not apply to developing countries and allowed broad exemptions to Canada.

[12] These restraints seem to have had little effect (Eichengreen 2000).

[13] On 4 April 1969, President Nixon indicated his desire to eliminate capital controls and began relaxing restrictions on direct investment. The EIT was abolished in January 1974.

[14] The Treasury also undertook some limited spot transactions, and engaged in some gold swaps (Bordo, Humpage and Schwartz forthcoming).

[15] On the debate about the Federal Reserve's legal authority for intervention, see Todd (1992) and Bordo, Humpage and Schwartz (forthcoming).

[16] As Bordo, Humpage and Schwartz (forthcoming) explain, conditionality in the late 1970s, encouraged the Federal Reserve to acquire a large portfolio of German marks and Japanese yen in the early 1980s and to end the use of swaps for intervention.

[17] The FOMC denied applications from Ireland and Venezuela.

[18] Hopefully, the source of the unwanted dollar balances at a specific central bank had also dissipated by the time the swap matured.

[19] Roosa bonds, named after Treasury Undersecretary for Monetary Affairs, Robert Roosa, who designed them, were non-marketable, medium-term, foreign-currency-denominated bonds that the U.S. Treasury issued to foreign central banks. They differ from foreign-currency-denominated Carter bonds of the 1970s in that the latter were sold in Swiss and German capital markets, not directly to central banks.

[20] Allen was not a voting member of the FOMC until the 28 March 1961 meeting.

[21] See, for example, AP 1962, pp. 73, 76, & 98

[22] The Federal Reserve reduced its holding of Treasury bonds with maturities greater than ten years.

[23] Swanson (2011) using high-frequency, event-study techniques finds that operation-twist announcements in February, March, and April 1961 had a significant, but small impact on long-term bond yields consistent with the objectives of the program. Modigliani and Sutch (1966b) find at most weak evidence for operation twist effects. These were largely concentrated in the one-to-five year portion of the yield curve. Their initial study attributed modest term-structure effects only to changes in Regulation Q (Modigliani and Sutch 1966a).

[24] Also see the discussion of policy in Bordo and Eichengreen (2013, 459 – 463).

[25] The Fed allowed member banks to count vault cash as required reserves and lowered reserve requirements in August 1960 for the same reason.

[26] Following Taylor (1999), we estimated a Taylor rule with real-time data from the Federal Reserve Bank of Philadelphia. Our inflation target is two percent, and we define the GDP gap relative to trend as calculated using a Hodrick-Prescott filter. Rule 2 gives twice as much weight to the output gap as rule 1.

[27] "It seemed to me that there were other and better techniques than a tight money policy to alter the balance of payments. An attempt by the Federal Reserve to offset speculative international capital flows by raising interest rates was a misuse of monetary policy. Taxes and the existing voluntary program to control such flows would be far better" (Maisel 1973, 73)

[28] Meltzer (2009a) contends that the Congressional delay in passing the tax surcharge explains why the FOMC did not tighten monetary policy sooner.

[29] Meltzer (2009a) discusses many reasons for this failure.

[30] Hetzel (2008) discusses how the demand-pull, cost-push view of inflation affected monetary policy during the Great Inflation.

[31] The 10 percent tax surcharge also expired in 1970.

[32] (Bordo and Orphanides 2013) provide a survey of work on the Great Inflation.