

Foreign-held US Government Securities and Monetary Policy in the United States

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THE American deficit in the balance of payments of recent years has had its counterpart in the accumulation of US government securities in the hands of foreigners. Dollars earned by foreigners have been, to a large extent, invested in US government securities. In 1966, foreign official institutions, mainly foreign central banks, held 6.316 billion dollars in US Treasury bills; by May of 1973 this total had risen to 35.736 billion. Marketable US government securities (held mainly by foreign central banks) rose in the same period from 2.329 billion to more than 7 billion dollars; non-marketable government securities (bonds and notes) increased from 695 million in 1966 to 16.012 billion in May of 1973.

In this paper we attempt to study the significance of these holdings of US government securities by foreigners, and their influence on domestic monetary policy. Though such an accumulation is important for the balance of payments, our focus will be mainly on how these holdings influence monetary policy in the United States.

Foreign-held Debt, Bank Reserves and the Money Supply

In order to better understand the significance of foreign-held US government securities for monetary policy we may examine how purchases and sales of government securities influence bank reserves and the money supply.

Concentrating first on foreign central banks as purchasers of governments, if we assume they purchase, say \$100 million in bills from individuals and they use deposits in American commercial banks, total deposits will not change nor will bank reserves. \$100 million are transferred from the accounts of foreign central banks to those of individuals without the cash position of the banking system changing. On the other hand, if they buy securities from banks, demand deposits

decline (by again \$100 million) with bank assets changing in composition from securities to cash. In the first instance money held by the public will increase as they sell securities to foreign central banks; in the second instance, a reshuffling of assets between the banks and foreign central banks occur with demand deposits of foreign central banks declining but total bank reserves remaining the same.

Assuming, on the other hand, that foreign central banks use deposits held at the Federal Reserve system to buy securities, total bank reserves will increase whether they buy these securities from banks or individuals. Buying them from individuals would increase the private money supply directly while their purchase from banks will give the banks the incremental reserves to support a potential increase in the money supply. The use of deposits at the Central Bank is, of course, an injection of high-powered money.

If the Federal Reserve System sells US governments out of their portfolio and foreign central banks are again purchasers such a transaction will have the necessary impact of an equivalent open-market operation by the Federal Reserve namely to reduce both deposits and total bank reserves. This assumes that deposits in the banking system are used; when foreign central banks reduce their deposits at the Federal Reserve in order to purchase these securities, the banking system will not be influenced directly by such transactions.

A purchase of government securities by foreign central banks directly from the US Treasury results in a reduction of foreign-held deposits and an increase in the tax and loan accounts of the Treasury in commercial banks. Total reserves of the banking system will not change; the privately held money supply may go up, however, as the Treasury ultimately disburses these funds.

Changing our assumptions to sales of US government securities by foreign central banks, if private individuals buy them, demand deposits owned by Americans in banks will decline as they are transferred to the account of, say, the Bank of England but the total cash position of the banks will not change. Where purchases are made by the banks and the banks have excess reserves the end result will be an increase in total bank demand deposits; an absence of excess reserves would entail no increase in demand deposits as banks reduce, say, their loans to purchase securities from foreign central banks.

A sale of foreign-held securities to the Federal Reserve system would increase total bank reserves if foreign central banks increase deposits in the banks. A preference on their part for deposits in the Federal Reserve precludes any increase in the liquidity of the banks. If, however, foreign central banks at some future time sell these deposits, accumulated at the Federal Reserve, to their nationals for the purchase of American goods and services total bank reserves and deposits will increase.

In summary, the impact on the reserve base of the banking system will be greater the more involved the Federal Reserve is in purchases from or sales to foreign central banks. Where individuals are involved the reserves of the banks do not change as foreign central banks transfer their deposits to individuals or vice versa. The involvement of banks as sellers of securities to foreign central banks leads to

no change in total bank reserves although deposits do fall at least initially; if the banks buy securities again the cash position of the banks does not change although the amount of demand deposits may increase if the banks have excess reserves.

As in any model, qualifications may be introduced. Though foreign central banks do not increase the total cash position of the banking system by selling securities to banks or individuals, they may change the volume of excess reserves by altering the composition of deposits as between demand and time. This follows from the lower reserve requirement applicable to time deposits. Thus a switch from demand to time deposits by increasing excess reserves also increases the potential for an increase in bank credit and money. Also, though the purchase of, say, treasury bills by foreign central banks may involve no change in the availability of bank reserves it may increase the yield on such securities. Thirdly, it is not clear that a given availability of liquidity in the banking system is a matter of indifference as to the functioning of the banking system or the reaction of the Federal Reserve regardless of the ownership of such liquidity. An increase in the foreign ownership of deposits may elicit one reaction from the central bank as compared to a situation where deposits are held by domestics or may elicit quite different reactions depending on the condition of the balance of payments.

Implications for Monetary Policy

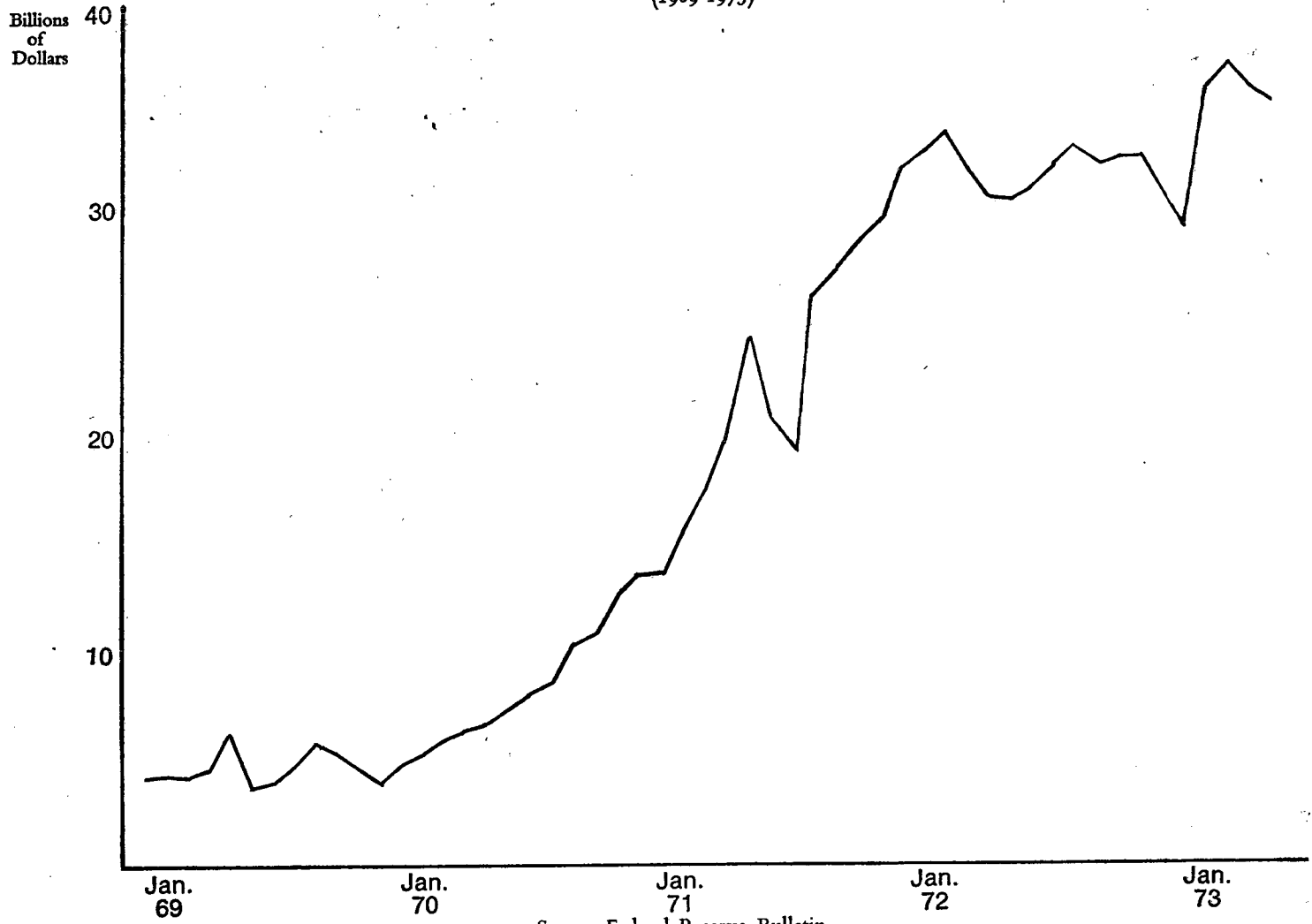
Whatever the causes of American balance of payments deficits which led to the accumulation of government securities by foreign central banks, this stock of foreign-held securities has influenced and certainly will continue to influence the course of US monetary policy. This is in sharp contrast to the years when foreign-held public debt was a small percentage of the total and the main concern was with the burden of an externally-held debt.

In essence the data show an acceleration in the purchases of treasury bills and certificates by foreign official institutions in late 1970 and early 1971. From a peak of 24.7 billion in May 1971 official holdings of bills fell by more than 5 billion in the next two months preceding the August 1971 crisis. During August, foreign central banks again began to purchase short-term treasury securities, with holdings growing by almost eight billion dollars between August 1971 and March 1972. The trend in foreign central bank holdings of bills during the rest of 1972 was downward as they liquidated bills. With the international monetary crisis of early 1973, official holdings again rose (cf. chart I).

In the long-term market, foreign central banks were not very active until the early summer of 1971. Starting in June 1971 foreign central banks increased holdings of US Treasury bonds and notes in every month through the rest of 1971, 1972 and into the spring of 1973. The same generalisation holds with respect to foreign official purchases of non-marketable securities issued by the Treasury; official holdings of this type of security showed a distinct upward trend, with little of the fluctuations evident in foreign official holdings of treasury bills (cf. Tables 2 and 3).

CHART I

US Treasury Bills and Certificates (payable in dollars) owed to official institutions
(1969-1973)



Source: Federal Reserve Bulletin

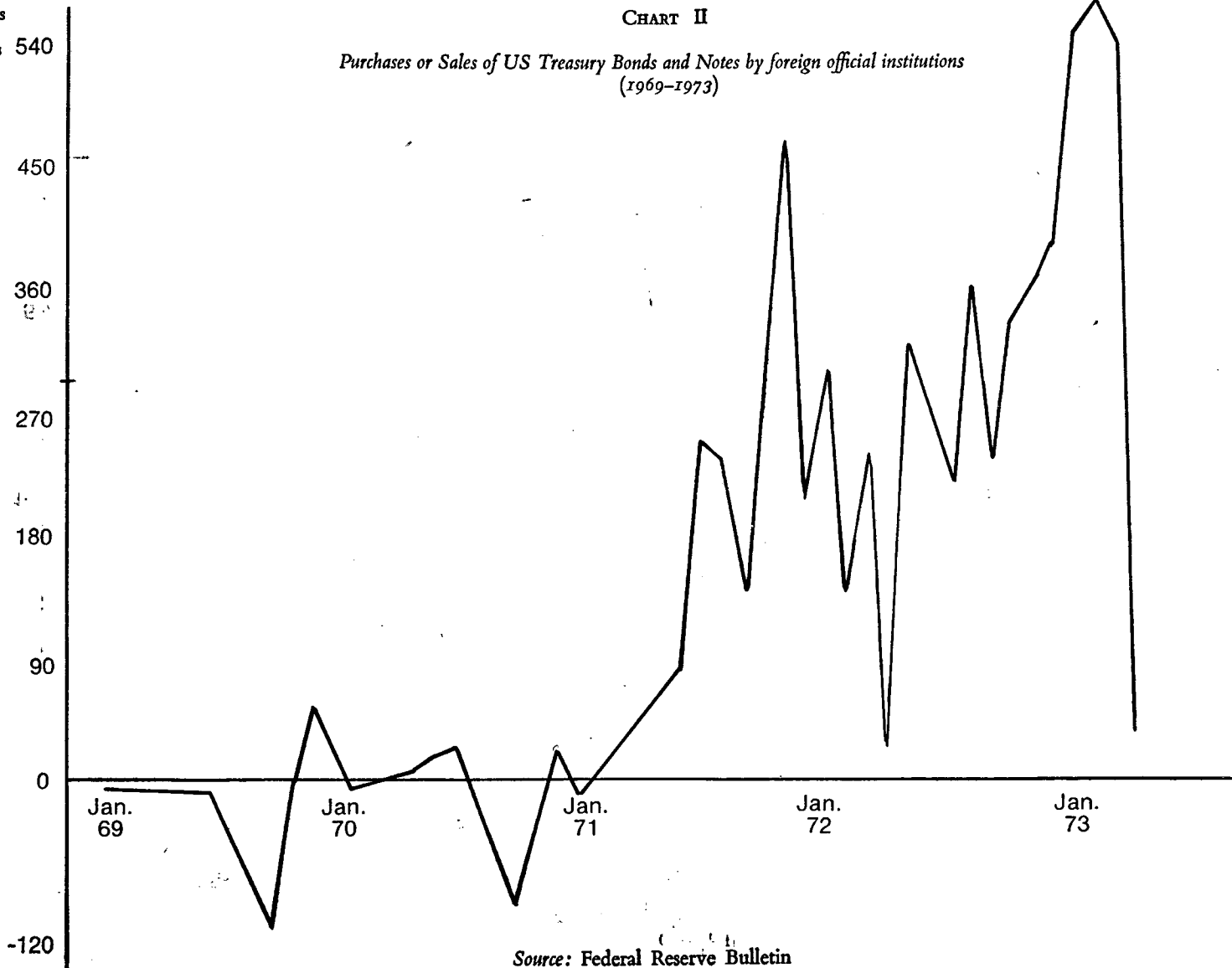
Millions
of
Dollars

CHART II

*Purchases or Sales of US Treasury Bonds and Notes by foreign official institutions
(1969-1973)*

SECURITIES AND MONETARY POLICY IN THE UNITED STATES

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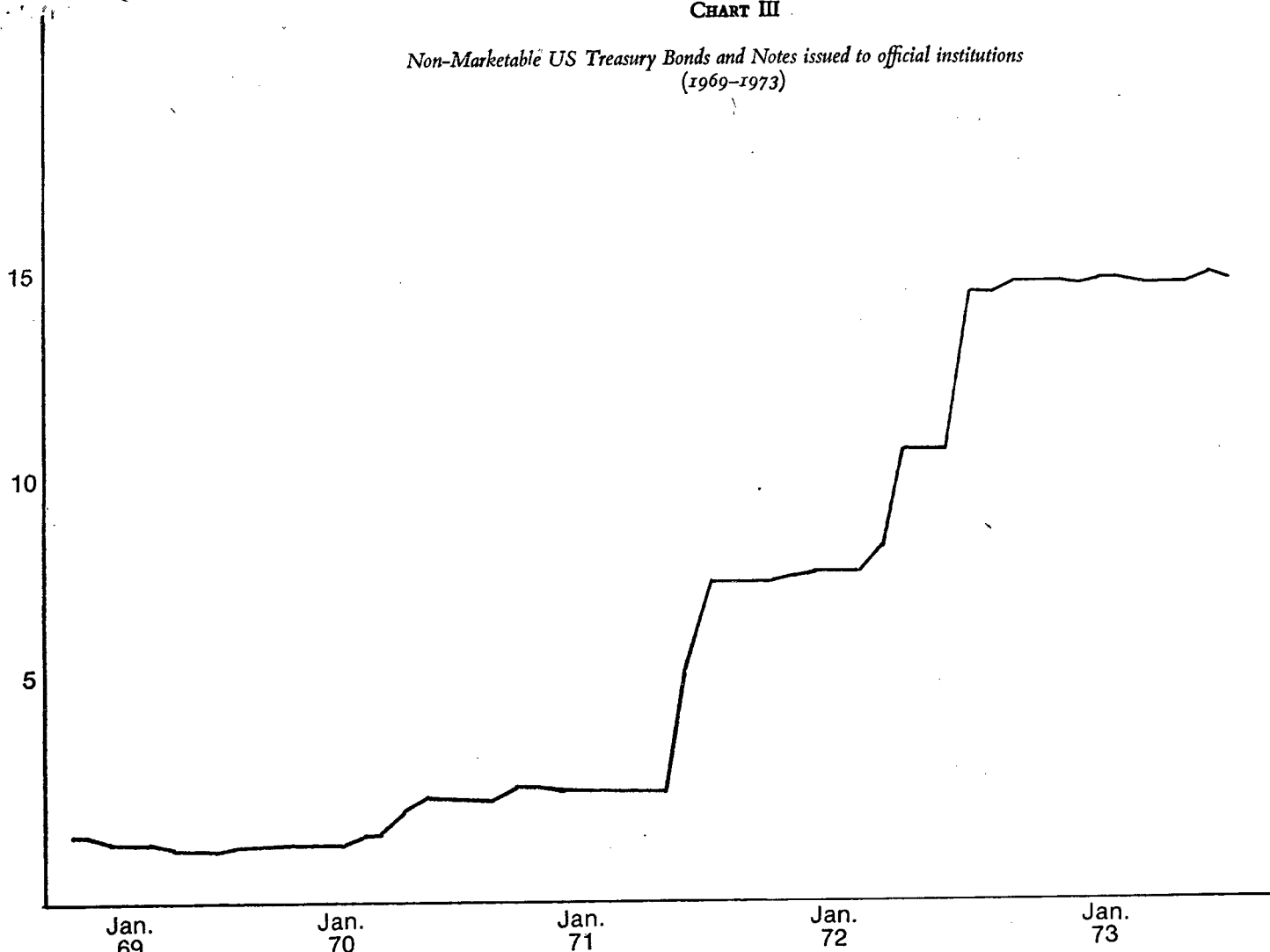


Source: Federal Reserve Bulletin

Billions
of
Dollars

CHART III

*Non-Marketable US Treasury Bonds and Notes issued to official institutions
(1969-1973)*



Source: Federal Reserve Bulletin

The accumulation of US government debt by foreign central banks and their activities in securities markets resulted in a marked increase in the percentage of foreign-held US public debt; this ratio rose from 3 per cent in 1969 to 22 per cent in 1972.¹ The dollars used by foreign central banks (acquired as a result of their intervention in foreign exchange markets) helped finance treasury deficits by acquiring securities directly from the US Treasury. They also were used to purchase securities directly from individuals; in 1971 private individuals sold some \$10 billion in securities to foreign central banks.²

The impact of dealings by foreign central banks in the government securities market was obviously noted by the Federal Reserve system and the implications of their activity analysed in the deliberations of the open-market committee. At the meeting of June 29, 1971 it was noted that short-term rates were subject to pressure from actual or potential sales of foreign central banks.³ Approximately one month later, bill rates were cited as having risen partly as a result of sales by foreign official accounts.⁴

Following the announcement of the New Economic Policy on August 15, 1971, the influence of foreign central banks continued to be felt in terms of helping to reduce bill rates. In the meeting of October 19, 1971, it was noted that bill rates had fallen by some 70 basis points since August 15 as a result of foreign demand.⁵ In the November 16, 1971 meeting pressure on bill rates was seen as resulting from the reduced supply (of bills) traceable to foreign purchases.⁶

Quite logically the Federal Reserve expressed concern over foreign official purchases of bills, the downward pressure on bill rates and the adverse effect such pressure would have on the balance of payments. In the June 19–20, 1972 meeting it was decided that the Federal Reserve in providing reserves should not buy bills (which would reduce yields) and that foreign demand for bills should be met from the system's portfolio.⁷ To the extent that such sales might have undesirable effects, reserve needs should be met by other means. The nature of these means was not spelled out.

Other instances can be used to illustrate the significance on Federal Reserve thinking of foreign central bank activities in the government securities market. In the July 18, 1972 meeting the open-market committee saw bill rates not rising

1. International Letter, Federal Reserve Bank of Chicago, Nov. 9, 1973.

2. Though the emphasis of this study is on foreign central bank holdings of US governments, there were also private, foreign purchases (and sales) though on a much smaller scale. During 1971, for example, sales by foreigners (other than foreign official institutions) of long term securities amounted to 79 million; during 1972 they purchased 21 million in long-term governments. Foreign banks typically have not held much in US Treasury bills; between April and June 1971 they did increase purchases by some 1.5 billion. In the next several months they liquidated practically all of their holdings.

3. *Annual Report*, Board of Governors 1971, p. 158.

4. *Ibid.* p. 164.

5. *Annual Report*, Board of Governors 1971, p. 186.

6. *Ibid.* p. 192.

7. *Annual Report*, Board of Governors 1972, p. 156.

as other rates partly in anticipation of foreign official purchases. They also confessed to providing reserves (in the previous month) in such a way as to minimise further declines in bill rates which were associated with foreign official purchases.⁸

Though the open-market committee did refer to foreign central bank activities and availability of bank reserves, most emphasis seems to have been placed on the direct impact of foreign purchases or sales on interest rates. Foreign purchases were seen as lowering yields, foreign sales as raising yields. To the extent that maintenance of bill rates at a level compatible with external equilibrium was an objective of monetary policy during 1971 and 1972, downward pressure on bill rates exerted by foreign official purchases would appear to have reduced the effectiveness of monetary policy relative to the attainment of their objective.⁹ Along the same lines, if official purchases of marketable long-term securities during 1972 and early 1973 helped keep long-term interest rates down, this may have been incompatible with appropriate contracyclical monetary policy in that phase of the business cycle. That is to say, since the economy normally experiences rising interest rates in the prosperity phase of the cycle, restraining the rise of long-rates reduced their stabilising effect.

The purchases of long-term securities by foreign central banks during late 1971 through 1972 and into the spring of 1973 is seen as restraining increases in interest rates at the long end of the structure¹⁰ and to that extent restraining the effectiveness of monetary policy. This is not to say that the Federal Reserve could not have conducted open-market operations in bonds so as to put upward pressure on rates if they so desired. On the basis of policy statements by Central Banking authorities it appears, however, that they welcomed aid in restraining upward pressure on long rates with the latter seen as interfering with recovery from recession. Thus Arthur Burns, testifying before the Joint Economic Committee, said:

I also want to bring to your attention a policy statement that we issued which is helping to nudge interest rates down, particularly in the case of the more sticky types of mortgage and consumer loans.¹¹

This attitude toward interest rates, on the part of the Federal Reserve is vulnerable to criticism. Almost two years after the trough of the 1969-70 business cycle reached in the third quarter of 1970, long-term rates on government bonds were some 100 basis points lower.¹² Foreign central banks by purchasing government bonds contributed to the maintenance of these artificially low rates, which could

8. *Ibid.* pp. 158-160.

9. The extent to which bill rates declined may be seen in the rate on 3 month bills for January 1970 of 7.13 per cent, as compared to 4.44 per cent one year later and 3.38 per cent in March of 1971.

10. *Federal Reserve Bulletin*, June 1973, p. 440.

11. *1972 Economic Report of the President, Hearings Before the Joint Economic Committee*, Feb. 1972, p. 213.

12. The attitude of the Council of Economic Advisors was in line with this policy as evidenced by Herbert Stein's statement concerning the desirability of restraining upward pressure on interest rates. *Wall Street Journal*, October 13, 1971.

not be justified on the basis of experience in past business cycles¹³ nor on the basis of anti-inflationary contracyclical monetary policy.

The use of foreign held funds in the government securities market has been seen to have created problems for monetary policy by causing a pattern of rates that did not contribute to the efficiency of monetary management. It may be asked, however, if the existence of these large holdings of government securities by foreign central banks create other potential problems for the Federal Reserve.

Since the Federal Reserve has attempted in the past to minimise instability in the money market, it would appear that the actions of foreign central banks add still another set of variables to be reckoned with by the Federal Reserve. Many studies of Central Bank policy in the US emphasise that the Federal Reserve conducts open-market operations primarily in a defensive manner to offset those factors that would tend to put pressure on the money market. In a more concrete manner if such items as float, currency in circulation, Treasury deposits etc, are behaving so as to reduce bank reserves the Federal Reserve would buy governments so as to supply reserves to the banking system.¹⁴ With foreign central banks in a position to, say, sell securities and in effect conduct open-market operations of their own, the Federal Reserve must of necessity take such action into account in determining overall reserve availability. Since all of the market factors affecting bank reserves can only be estimated with a significant margin of error, the activities of foreign central banks in the money and securities market via buying or selling securities would appear to widen this margin.¹⁵

Conceivably the task of the Federal Reserve in regulating bank reserves could be made more difficult by the fact that the need, say, of foreign central banks to liquidate securities may not coincide with the needs of the money market for liquidity. There is no, *a priori*, reason to suppose that foreign central bank sales of securities will be consistent with the Federal Reserve's policy on interest rates or with the desire of the American Central bank to provide reserves. Assuming, let us say, that the phases of the business cycle do not coincide as between the US and other economies then foreign central banks may be selling securities to help finance an external deficit at the same time that the monetary authorities in the US are attempting to prevent a rise in interest rates which might abort a recovery. Intervention in the market by the Federal Reserve to prevent this rise could result in excessive and undesired creation of reserves.

13. In both the 1954 and 1958 recoveries long-term yields increased. Thus, one year after the trough of August 1954, long-term bonds were yielding some 47 basis points more. In April 1959, the yield on long-term bonds was 4.01 per cent as compared to 3.12 per cent one year earlier. Approximately the same relationship held in the year following the February 1961 trough. *Business Conditions Digest*, February, 1973.

14. In the first half of 1973 the Federal Reserve bought some 4.2 billion in bills mainly from foreign central banks so as to offset an increase in treasury balances at the Federal Reserve, which reduced reserves. *Commentary on Credit*, Solomon Brothers, July 20, 1973, p. 4.

15. It is estimated that deviations of actual from projected market factors affecting reserves average some 250 million dollars. "Monetary Aggregate and Federal Reserve Open-Market Operations", *Monthly Review*, Federal Reserve Bank of New York, April 1971, p. 82.

Holdings of treasury securities by foreign central banks may create other problems for the Federal Reserve. If foreigners shift holdings from long-term to short-term issues, this would influence debt management policies with the Treasury having to come more often to the market for financing. Also it would influence monetary policy in terms of having to maintain a posture of even-keel more often. This may mean a pattern of open-market operations much more defensive in nature than would otherwise have been the case. The Federal Reserve could have allowed market factors absorbing reserves to have tightened the money market; faced, however, with the need to maintain even-keel more often, defensive open-market operations might be more aggressive in offsetting forces reducing bank reserves.

Foreign operations in the long-term sector of the government securities market may not only, as has already been discussed, alter the pattern of interest rates but may also force a change in the *modus operandi* of open-market operations relative to the markets in which securities are bought and sold. Though the Federal Reserve concentrates open-market operations predominantly in the bill market (bills only has long been abandoned) a distortion of the structure of rates by foreign purchases of long-term securities might induce the Federal Reserve to alter their operations in favour of the long-term part of the market. It is not clear, however, that increased activity by the Federal Reserve in the market for long-term securities would contribute to the proper functioning and efficiency of the market for government securities.

The increased importance of foreign central banks in the government securities markets may also create technical problems for the Federal Reserve in monetary management. Since open-market operations are the most important tool of policy, both the size and composition of the Federal Reserve's portfolio of securities are important. If foreign central banks decide to sell securities, the Federal Reserve faces no constraint in being able to buy them.¹⁶ The ability of the Central Bank to buy government securities as a means of injecting reserves into the banking system is constrained, however, if foreign purchases have depleted the inventories of dealers. There is some evidence that this has indeed happened.¹⁷

Though some of the problems associated with foreign holdings of government securities have been discussed it is not clear that their management always frustrates monetary policy. To the extent that foreign investment during 1972 of \$4.3 billion in marketable and \$3.8 billion in non-marketable issues helped meeting more than half of the Treasury's borrowing¹⁸ needs, it might have obviated the necessity of having the Treasury borrow directly from the Federal Reserve which would have further increased reserve availability and enhanced the inflationary potential. The purchases of about \$10 billion in marketable government securities by foreigners from private individuals during 1971 was certainly preferable to a situation involving their purchase by banking system or worse yet

16. At one time a constraint did exist in terms of the Federal Reserve's holdings of gold certificates.

17. 1973 *Economic Report of the President, Hearings Before the Joint Economic Committee*, p. 430.

18. *Annual Report*, Board of Governors 1972, p. 55.

the Central Bank with the latter situations involving the monetisation of such debt. This, of course, neglects the interest-rate aspects of these purchases by foreign central banks which may induce a pattern of rates unacceptable to the monetary authorities.¹⁹

The existence of such a large stock of government securities held by foreign-central banks has other interesting aspects for monetary policy. Would the problems for monetary policy be any different if the dollars earned through our balance of payments deficits had been invested in the stock or corporate bond market? Since only a small part did go into these markets, we can only speculate on what the Fed's role would be.²⁰ A massive inflow of these funds into, say, the corporate bond market would have had the immediate impact of reducing yields and conceivably a more direct favourable influence on domestic investment, which at least in 1972 would have served to frustrate monetary policy by not exerting the restraining influence of higher interest rates. If, on the other hand, securities in the hands of foreigners are viewed as a potential source of instability for money and capital markets, would the potential instability be lessened if foreign central banks had bought corporate rather than government bonds? Assuming that foreign officials would bring off a mass liquidation, it is difficult to see the Federal Reserve abandoning the market and allowing a financial panic to develop. Granted that foreign central banks could liquidate debt, whether private or governmental, the role of the Central Bank in assuring the liquidity of the banking system would not appear to be any different. Indeed, the potential instability of government debt exists even if Americans hold the debt, with the role of the Federal Reserve as a lender of last resort clearly delineated in some period of crisis.

If we can assume that monetary policy has even a minimal effect on the willingness of investors to hold on to securities by way of its impact on capital values can we also assume that foreign central banks will be influenced and in the desired direction? More specifically and without attempting to resurrect the Availability Doctrine, if capital losses deter private investors from selling government securities will it have the same effect on foreign central banks who are not as profit-oriented? If not, then some of the effectiveness of monetary policy though marginal, may be lost.

Given the parameters of the situation with a huge balance of payments deficit and its counterpart the accumulation in the form of government securities, foreign central banks might have reduced the problems of monetary management by

19. The Treasury indicates that the overhang of foreign-held securities influenced the timing of its borrowing in 1972. To reassure the market against any sudden demand for cash if foreign central banks liquidated securities, the Treasury advanced its own cash borrowing into December (rather than November 1972). *1972 Report of the Secretary of the Treasury*, p. 23.

20. Net purchases of US corporate stock by foreigners amounted to but 1·672 billion in 1971 and 3·316 billion in 1972; for corporate bonds the figures were ·68 billion in 1971 and 1·824 billion in 1972. These were obviously but a fraction of the purchases of governments. *Federal Reserve Bulletin*, June 1973, pp. 84-85.

altering the pattern of their purchases. Purchases of Treasury bonds in 1971 (in contrast to the substantial investment in bills) would have reduced downward pressure on bill rates with its concomitant destabilising influence on the Balance of Payments. On the other hand, heavy purchases of bills (rather than bonds) during 1972 and early 1973, meeting with the pressure of expanding economic activity, might not have contributed as much to reducing bill rates and also, not interfering with the stabilising influence of rising long-term interest rates in the prosperity phase of the business cycle. Whether the pattern of purchases optimal from the viewpoint of effective monetary policy would be consistent with the needs of foreign official institutions is a moot question.

The assurances of the Federal Reserve that foreign central bank holdings of US governments pose mere transitory problems²¹ in terms of the money market, are not borne out by the realities of the situation. For one, they have admitted that foreign purchases have caused distortions in the pattern of interest rates especially in the light of the preference displayed by foreign central banks for bills. This distortion has implications not only for the balance of payments but also for the attractiveness of savings and long-term investment. Thus, the wide differential between short and long rates in 1971 has been cited as increasing the attractiveness of time and savings accounts, in turn influencing spending on construction.²² Secondly, there is ample evidence that the Federal Reserve has been influenced by the actions of foreign central banks. Instances have already been given of policy decisions made by the Fed as an offset to the activities of foreign central banks. These include the supplying of reserves by means other than the purchase of bills, and the contracting of repurchase agreements as a means of supplying reserves temporarily so as to be able to purchase securities from foreign central banks in the wake of the anticipated reflow of funds following the Smithsonian agreement.²³ Thus, it does not appear reasonable to view foreign central bank holdings of US government securities as a mere transitory problem. The very activities of the Federal Reserve are at variance with this view.

Foreign holdings of US government securities have been treated as to their impact on monetary policy. It is clear, however, that they present problems for both debt management and the reform of the international monetary system. For debt management since so much is in the form of liquid short-term securities; for international monetary reform since a decrease in the demand for US government securities may coincide with a decrease in the demand for dollars. If we can assume that foreign central banks are responsible enough to avoid a mass liquidation of US government securities, the task of both the Federal Reserve and the Treasury would be eased in direct proportion to the movement of foreign holdings into longer-term and better yet into non-marketable securities. A subsidy to foreign central banks, either in the form of reduced taxes on interest income

21. 1973 *Economic Report of the President, Hearings on the Economic Report*, p. 431.

22. *Annual Report*, Board of Governors 1971, p. 44.

23. *Ibid.* p. 117.

or perhaps higher interest rates,²⁴ could be justified if it contributed to the immobilisation of such funds. This assumes, of course, that foreign central banks see it as being in their own self-interest to reduce the liquidity of their holdings.

Even if such a freezing of foreign holdings of governments were not feasible, the task of monetary policy does not seem to be insurmountable. It is hardly likely that the American balance of payments will show surpluses of the same order as the deficits that led to the accumulation. As the dollar does strengthen in world markets, foreign central banks will be expected to liquidate some of their security holdings.²⁵ To the extent that both the strengthening and liquidation are orderly, they need present no great problems to the Federal Reserve.

Patterns of Security Holdings among Nations

The overall accumulation of security holdings by foreign central banks hides significant differences among them in the patterns of securities held. The Germans have displayed a preference for US Treasury bills and longer-term non-marketable bonds; their holdings of marketable notes and bonds have been small. Between January of 1970 and 1971 official German holdings of treasury bills jumped from 983 million to 6.869 billion; they held but one million dollars in marketable bonds. During the first five months of 1971, holdings of bills increased to 11.585 billion; from that time, however, they liquidated treasury bills as may be seen from their holdings of but 4.4 billion in January 1973. With the inflow of dollars into Germany during the winter of 1973, the Deutsche-Bundesbank accumulated some 7.6 billion in bills in March and April of 1973. Though German holdings of bills were declining through late 1971 and during 1972, they did increase purchases of special treasury issues of non-marketable notes and bonds; these bonds denominated in dollars jumped from 3.0 billion in May of 1971 to well over \$11 billion by the end of 1972. The Germans had held non-marketable treasury issues denominated in D-Marks through the 1960s; at no time, however, did their holdings exceed one billion dollars (cf. Table 4).

Official Japanese holdings of treasury bills have also displayed a rising trend, similar to that of the Germans, with the difference that the Japanese did not liquidate bills during the second half of 1971 and into 1972 as did the Germans. Their holdings of bills increased by some 9.2 billion in 1971. By the end of 1972 there was little change. During the crisis of early 1973, however, the Japanese did sell some 3.8 billion of treasury bills. In contrast to the Germans, the Japanese purchased a large amount of marketable bonds and notes; their holdings rose from but 61 million in January 1971 to 2.0 billion in January 1972 and 4.8 billion a year later.

24. Senator Proxmire, chairman of the Joint Economic Committee, has inquired as to the possibility of a moratorium on taxes payable by foreign central banks on their holdings of governments. *1973 Economic Report of the President, Hearings Before the Joint Economic Committee*, p. 423.

25. In recent months, instances have been recorded of the interaction of foreign exchange and securities markets. With the uncertainties of the oil crisis, the Japanese have liquidated treasury bills pushing bill rates up. *Wall Street Journal*, November 5, 1973.

Of the major industrial nations, Canada invested more on a proportionate basis of its dollar holdings in non-marketable US government notes and bonds. It increased its holdings of treasury bills during 1971 and 1972 then liquidating some \$300 million in late 1972 and early 1973. Holdings of marketable notes and bonds were also reduced by some 100 million during 1970 and 1971 but then rose rapidly in the latter months of 1972 and early 1973. The importance of non-marketable securities (denominated in dollars) may be seen in the some 2.6 billion held in 1971 and 2.8 billion held in 1972. This was greater than their combined total of marketable issues of bills, notes and bonds.

The behaviour of the United Kingdom in the management of US government securities reflected the growth and then decline in their official reserves and also a marked preference for treasury bills. The British official holdings of treasury bills increased through 1971 till August of that year. After liquidating some 500 million between August and September 1971, they again began buying bills in November with their holdings increasing to 6.3 billion by March 1972. Since that peak, however, official holdings declined some 3.0 billion by the end of 1972. Though the United Kingdom did buy 300 million in bills during the crisis of early 1973, their holdings were still well below those of a year earlier. The liquidation of bills during 1972 was related to the balance of payments difficulties of the United Kingdom during this period. As to holdings of other securities the

TABLE I: *Holdings of Treasury bills by country, 1969-73, at three-month intervals (in millions of dollars)*

	Germany	Japan	Canada	France	UK	Italy	Switzerland
1969 June	1,166	970	55	72	156	326	37
Sept.	3,112	1,058	27	116	1	339	180
Dec.	189	1,234	233	99	59	178	234
1970 March	1,635	1,456	336	232	251	102	191
June	2,825	1,272	229	439	58	325	296
Sept.	4,945	998	350	727	459	367	337
Dec.	6,938	1,676	479	856	170	436	421
1971 March	8,348	2,757	623	1,202	1,210	1,195	289
June	6,239	4,743	648	1,662	4,092	1,107	593
Sept.	4,480	9,989	988	2,471	4,555	1,608	2,094
Dec.	5,777	10,548	1,153	2,462	6,295	1,232	2,003
1972 March	7,141	11,095	1,017	2,412	6,373	916	1,824
June	5,991	9,760	1,325	2,880	5,578	379	1,402
Sept.	5,278	9,620	1,192	3,872	3,397	824	2,237
Dec.	4,735	10,099	855	3,845	2,948	533	1,529
1973 March	12,382	6,618	802	4,364	3,144	451	1,528

Source: Treasury Bulletins.

TABLE 2: *Holdings of marketable bonds and notes by country, 1969-73, at three-month intervals (in millions of dollars)*

	Germany	Japan	Canada	France	UK	Italy	Switzerland
1969 June	—	10	389	6	368	—	44
Sept.	—	10	389	6	406	—	45
Dec.	—	61	272	6	407	—	42
1970 March	—	62	271	6	350	—	46
June	—	61	286	6	396	—	45
Sept.	—	61	284	6	423	—	49
Dec.	—	61	192	6	499	—	49
1971 March	—	61	188	7	537	—	48
June	3	142	174	2	490	—	29
Sept.	3	755	175	2	432	—	29
Dec.	3	1,717	181	2	323	—	60
1972 March	3	2,391	178	2	268	—	53
June	3	2,901	313	2	264	—	53
Sept.	3	3,481	432	2	293	—	45
Dec.	3	4,380	558	2	327	—	45
1973 March	3	5,421	559	2	276	—	44

Source: Treasury Bulletins.

TABLE 3: *Non-marketable US Treasury bonds and notes issued to official institutions, 1969-73, at three-month intervals*

	In Dollars (Millions)			In Foreign Currencies (Millions)		
	Germany	Canada	Italy	Germany	Italy	Switzerland
1969 June	—	1,084	140	1,200	226	541
Sept.	—	1,084	139	1,200	125	541
Dec.	—	1,129	135	1,200	125	541
1970 March	—	1,429	121	542	—	541
June	—	2,229	32	542	—	541
Sept.	—	2,289	29	542	—	541
Dec.	—	2,289	25	542	—	541
1971 March	—	2,289	25	542	—	541
June	3,000	2,289	25	542	—	569
Sept.	5,000	2,289	23	542	—	1,172
Dec.	5,000	2,640	22	612	—	1,215
1972 March	5,158	2,840	22	536	—	1,216
June	7,658	2,840	22	536	—	1,217
Sept.	11,315	2,840	22	459	—	1,218
Dec.	11,315	2,840	22	306	—	1,233
1973 March	11,471	2,840	22	153	—	1,254

Source: Treasury Bulletins.

United Kingdom held no non-marketable securities; holdings of some 546 million in marketables in January 1971 (270 million by January 1972) were a small percentage of their holdings.

Among other industrial nations certain patterns of investment by foreign central banks may be noted. France's interest in US government securities has been manifested almost completely in terms of bills. Their investment in bills grew from 994 million dollars in January 1971 to 3.3 billion in August of that year. They did liquidate some 1.3 billion in the next two months, but resumed buying bills toward the end of 1971. Holdings increased during all of 1972 and early 1973 as official reserves grew. France's holdings of marketable notes and bonds were a minimal 2 million dollars in 1972; they held no non-marketable bonds.

Italy's official holdings of treasury bills grew during 1971 reaching a peak of 1.608 billion in September 1971. Since then holdings of bills have displayed a negative trend. They have shown no interest in marketable long-term US government securities. Though official holdings of non-marketable bonds and notes (denominated in dollars) amounted to over 100 million dollars in 1969, the major part was liquidated by 1972. All of the 125 million in non-marketables (denominated in lire) were liquidated since 1970.²⁶

Switzerland did purchase substantial amounts of treasury bills during 1971. Indeed their holdings of bills jumped by some 1.5 billion between July and August 1971. Over the next year they then sold a billion dollars in these short-term securities. Though they purchased 1.05 billion dollars in bills between June and July 1972, their holdings declined during the rest of 1972 and into early 1973. As to longer-term securities, Swiss official holdings of marketable notes and bonds were very small. They held, however, 1.2 billion in non-marketables during 1971 and 1972. These were denominated in Swiss Francs.

These diverse patterns of investment of dollars in US government securities may be analysed in terms of several different factors. The purchase of treasury bills on such a large scale in 1971 cannot be justified by interest rate differentials nor by the desire to maximise interest income since bill rates during all of 1971 were well below those on US government long-term securities. Conversely, the accumulation of bonds during 1972 appears logical if earnings were the over-riding consideration as the positively sloped pattern of yields persisted during 1972. Secondly, the obvious preference for treasury bills reflects the liquidity advantages of these securities, which was obtained at a significant cost in foregone income during these years. A third consideration would be the state of the Balance of Payments of the respective countries. Great Britain, for example, accumulated treasury bills during 1971 but then liquidated a significant portion as it incurred an external deficit during 1972. Italy followed a similar pattern of investment and liquidation.

Besides interest rate differentials, liquidity and balance of payments considerations, two other factors appear relevant in explaining differences among nations

26. These are the so-called Roosa Bonds.

in security holdings, the desire to co-operate with American monetary authorities²⁷ and the desire to protect their assets against the loss associated with devaluation. The purchase of sizeable amounts of long-term non-marketable bonds by both the Germans and Canadians reflects a spirit of co-operation on their part, easing the task of both the Treasury and of the Federal Reserve by accepting assets with less liquidity. The Germans and Swiss, also, purchased long-term non-marketable securities denominated in their own currencies motivated no doubt by a desire to protect themselves against losses associated with possible devaluation of the dollar.

Assuming that foreign central banks attempt to maximise utility in their holdings of treasury securities, we may think of them as equating desired to actual holdings. Since US Treasury bills were purchased by all of the countries studied (whereas some did not purchase marketable and others non-marketable) we will attempt to relate desired holdings of bills to actual holdings. Desired holdings of treasury bills are viewed as being functionally related to (1) bill rates (R_t), which reflect opportunity costs of investing in treasury bills, (2) the rates of inflation measured by the consumer price index (P_t) as a proxy reflecting expectations as to the general state of the US economy, and (3) holdings of total official reserves (O_t) as a constraint on their demand for bills. Thus, desired treasury bill holdings (by foreign central banks) are a function of bill rates, prices and official reserves. If desired are equal to actual holdings, (B_t) then in equilibrium.

$$B_t = f(R_t, P_t, O_t)$$

Regressing holdings of bills (for each of the seven countries) on each of these three variables, using monthly data for the period 1969 through March 1973 yielded the following results. The variable most often related in a statistically significant manner to treasury bill holdings, is official holdings of reserves. The two other variables explained little of the variation in foreign official holdings of bills.

Using first differences of the data, the following results were obtained. For Germany almost 72 per cent of the variation in bills could be explained by changes in official reserves, with the coefficient of the official reserve variable approximately 0.9. For Japan a higher R^2 was obtained (.898) with the official reserves variable statistically significant and approximating one.²⁸ For each of the other five countries the R^2 's were distinctly lower but again the official reserves variable was statistically significant and like Germany and Japan having a positive coefficient indicating that increases in reserves were associated with increases in bill holdings. Equations for each country are given in Table 1.

27. The German Central Bank rationalised its investment policies as not contributing to an increase in international liquidity. *Report of the Deutsche Bundesbank*, 1971, p. 105. The Bank of Italy sees the purchase of some 9 billion dollars in medium and long-term securities by foreign central banks as reducing international liquidity. *Annual Report*, Bank of Italy 1972, p. 31.

28. When using logarithmic differences, the coefficients for the official reserves variable was significant for four of the seven countries, Germany, Japan, Italy and France, with coefficients, respectively, of 3.64, 1.86, 3.63 and 1.94. Thus, the demand for bills for each of them appears to be elastic.

TABLE 4: Equations relating holdings of US Treasury bills to prices, bill rates and official reserves, by country, 1969-73

<u>Japan</u>				
	$B_t = 0.008$ (.090)	$-0.500P_t$ (2.64)	$-0.277R_t$ (1.885)	$+1.008O_t$ (16.95)
	$R^2 = .898$ $D.W. = 2.559$			
<u>Germany</u>				
	$B_t = -0.1480$ (.537)	$-0.149P_t$ (.240)	$-0.449R_t$ (1.340)	$+0.9080O_t$ (8.88)
	$R^2 = .717$ $D.W. = 1.450$			
<u>Switzerland</u>				
	$B_t = 0.0555$ (0.557)	$-0.1107P_t$ (.518)	$-0.0848R_t$ (.693)	$+0.2114O_t$ (2.76)
	$R^2 = .181$ $D.W. = 2.341$			
<u>Canada</u>				
	$B_t = 0.0237$ (.772)	$-0.0583P_t$ (.902)	$-0.0434R_t$ (1.15)	$+0.2341O_t$ (2.42)
	$R^2 = .1746$ $D.W. = 1.930$			
<u>France</u>				
	$B_t = 0.0473$ (0.673)	$+0.1064P_t$ (0.722)	$+0.189R_t$ (2.18)	$+0.6000O_t$ (5.74)
	$R^2 = .500$ $D.W. = 1.789$			
<u>United Kingdom</u>				
	$B_t = -0.9474$ (-0.351)	$+0.1615P_t$ (0.578)	$+0.245R_t$ (1.46)	$+0.637O_t$ (5.48)
	$R^2 = .44$ $D.W. = 0.987$			
<u>Italy</u>				
	$B_t = 0.0340$ (.660)	$-0.1012P_t$ (-0.934)	$-0.0225R_t$ (-0.333)	$+0.474O_t$ (4.22)
	$R^2 = .36$ $D.W. = 1.89$			

Conclusions

The investment of the proceeds of the US balance of payments deficits into government securities by foreign central banks has been seen to have influenced the pattern of interest rates in a manner not perfectly in accord with the achieve-

ment of the objectives of policy. The purchases of bills by foreign official institutions in 1971 and of long-term securities in 1972 and early 1973 contributed somewhat to lower rates than those compatible with the attainment of external equilibrium in 1971 and non-inflationary aggregate demand in 1972 and 1973.

The problems posed by the accumulation of government securities relate not only to the ability of the Federal Reserve to achieve a desired pattern of interest rates but also to maintain the desired degree of reserve availability. Whether this will prove to be a more serious problem will be determined by the success in immobilising funds into longer-term and non-marketable securities, and by the extent to which the dollar improves in foreign-exchange markets. A gradual strengthening of the dollar leading to a gradual liquidation of securities by foreign central banks should pose no serious danger either in the form of disruption of financial markets or an excessive creation of liquidity by the Central Bank.

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