BOARD OF GOVERNORS
OF THE
FEDERAL RESERVE SYSTEM

Office Correspondence

Date March 25, 1971

To Chairman Burns and Governor Brimmer

From Ralph C. Bryant RCB

Subject: Paper on the Balance-of-Payments Impacts of the U.S. Capital Controls

I am attaching with this note a draft of the paper on capital controls which we have been preparing. Before leaving for Paris, Mr. Solomon and I agreed we would try to get a draft to you this week. We are planning to make final revisions in the paper on Monday, March 29th after Mr. Solomon returns. If you feel it would be appropriate, you might then want to send the paper on to Mr. Peterson at the White House for circulation to the members of the Council on International Economic Policy. In Mr. Peterson's memorandum to the Council, a copy of which you have, comments on the OMB paper on this subject were requested by March 30th.

CONFIDENTIAL (FR)

DO THE RESTRAINTS ON U.S. CAPITAL OUTFLOWS IMPROVE THE BALANCE OF PAYMENTS?

Draft

March 25, 1971

Special Studies Section
Division of International Finance
Board of Governors of the Federal Reserve System

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INTRODUCTION AND SUMMARY

There are good grounds for believing that the restraints on certain types of capital outflows from the United States -- the interest equalization tax (IET), the voluntary controls on banks and other financial institutions (VFCR), and the controls over direct foreign investment of U.S. companies -- have held such flows substantially below the levels they would have reached in the absence of the restraints.

The restraints have been effective in limiting the specific capital outflows at which they are aimed in good part because they reinforce one another. Moreover, they undoubtedly have had a greater impact in limiting these capital outflows during periods of monetary ease in this country than during periods of tight monetary conditions.

The effect of the capital controls on the overall balance of payments, however, is not so clear. The gross balance-of-payments "savings" in outflows of U.S. capital affect monetary conditions and economic activity here and abroad. Those effects, in turn, influence the flow of foreign capital into the United States and may also lead to changes in trade and other elements of the current account. Specifically, the limitation on outflows of U.S. capital tends to tighten monetary conditions abroad relative to conditions that would otherwise prevail, thereby reducing some foreign capital flows into the United States. Moreover, the restriction on U.S.

capital outflows could limit the availability of trade credit and thereby result in some loss of U.S. export business. Still more indirectly, the restraint on capital outflows may cause GNP (nominal if not real) in other countries to be less than otherwise and thus reduce the demand for U.S. exports.

Statements about the degree to which gross balance-of-payments savings resulting from reductions in controlled U.S. capital outflows are counteracted by "leakages" -- by outflows of uncontrolled U.S. capital, by the reductions in inflows of foreign capital, and by the loss of export business -- involve very large elements of judgment. The systematic exploration of structural relationships in the international economy lags far behind the investigations of behavioral relationships underlying domestic economic activity, and the effort suffers from severe data deficiencies. There are therefore firm grounds for humility in expressing judgments. Our belief is that offsets to the gross savings in the form of leakages, while significant, are not complete. We do believe that the programs yield a balance-of-payments gain.

The data do not give clear support to an argument that uncontrolled forms of U.S. capital outflow have been larger than they would have been in the absence of controls; these flows (nonbank outflows not covered by the programs, and also net errors and omissions) are dominated by shifts in relative monetary conditions between here and abroad and by other influences unrelated to the controls.

The evidence is relatively strong, moreover, that U.S. exports were not hampered directly by limitations on capital outflows. With respect to inflows of foreign capital, it is particularly difficult to make a judgment about the gap between what actually occurred and what might have occurred in the absence of the capital restraints. There is no strong evidence suggesting either that the gap was large or that it was small. Concerning the still more indirect leakages arising through the general effects of the U.S. controls on economic developments abroad, there is no empirical basis for a judgment. Our judgment concerning these most indirect consequences rests on a theoretical view of the functioning of the international system in the contemporary environment.

In the next section of the paper, we summarize that view of international economic relationships and their implications for the balance-of-payments consequences of the restraints on capital outflows. Section II is a brief appraisal of the current state of knowledge concerning the structural relationships between national economies. We review in Section III some of the empirical evidence that can be brought to bear on the issue. Several appendices deal in more detail with various subtopics. Finally, in Section IV, we include a brief critical comment on a recent paper on this subject prepared in the Office of Management and Budget.

This paper does not attempt to deal with the broader and still more difficult question of whether the various costs associated with the U.S. capital controls exceed any benefits. We do not express judgments about this broader question, and would not wish readers to infer such judgments. We have deliberately restricted ourselves here to the narrower question of whether the programs have a net positive effect in improving the balance of payments.

I. International Economic Interrelationships

The extent to which the gross savings in outflows of U.S.-owned capital owing to the restraints result in a net gain in the overall balance of payments depends on the effects that outflows have on monetary conditions abroad and on the responses of private decision-makers and government policy-makers. The policy responses abroad, in turn, depend upon national economic developments and prospects, especially rates of resource use and degrees of price pressures. The net effects of capital outflows on the U.S. balance of payments, in other words, depend a great deal on whether other industrial countries wish to have policies of expansion or policies of restraint and the extent to which they are able to implement their policy goals. Responses in the private sector initially are influenced by portfolio preferences. The belief that assets denominated in different currencies are not perfect substitutes and that portfolio preferences abroad differ from those in this country underlies the analysis below.

One way to view the process is to contemplate what would have developed had the recent shift toward ease in monetary conditions in the United States occurred in the absence of any capital controls. To begin with direct investment, a larger proportion of U.S. business outlays abroad in recent quarters would have been financed from U.S. sources. This difference in the source of financing would appear in the balance of payments as an increase in direct investment. With the passage of time, there also would be a stock adjustment as maturing issues of U.S. corporations held abroad were replaced with issues in the United States. In the same way, the sale of foreign securities to U.S. investors would have been greater in the absence of controls in the environment of easy monetary conditions in the United States.

Given the large shift in the locus of demands for long-term capital that would have occurred without controls, the stimulus for lower interest rates in foreign capital markets would have been greater than it has been; at the same time, the decline in long-term rates in the United States would have been somewhat retarded. Nevertheless, interest rates in the United States would have declined relative to those abroad -- given that foreign monetary authorities were not also implementing policies of active ease. The re-alignment in interest rates in the absence of controls would have induced both American and foreign investors to alter their portfolios of debt securities in favor of foreign instruments, thereby augmenting the outflows of capital from the United States.

In the absence of the VFCR, the easing in monetary conditions in the United States would have induced the same sort of consequences through an expansion in bank credit to foreigners. In the short-term area, however, the stock adjustment in response to the changed interest-rate relationships between here and abroad can be accomplished much more quickly, producing a substantial outflow promptly.

The additional capital outflows in the absence of the capital controls would have tended to increase directly the money supply in other industrial countries still more than the actual outflows have done, and they also would have tended to increase bank liquidity still more and provided the basis for a larger secondary expansion in credit and money. If this had been allowed to occur -- if the foreign authorities had made no effort to neutralize the inflows of funds -- interest rates abroad would have been under still greater downward pressure. The differential in interest rates between the United States and foreign countries would have been smaller, but this would have been the result of larger net outflows of funds from the United States than actually occurred.

Over time, the process would have produced some balance-of-payments offsets to the augmented capital outflows. The easier monetary conditions induced in other industrial countries would have expanded their demands for U.S. goods and services. Also, working capital requirements abroad would have been greater, and some portion of foreign working capital is held in dollars. To the extent that the additional capital outflows from the United States would have been accompanied by expansion in private foreign demands for short-term dollar assets, the rise in the U.S. official-settlements deficit would have been tempered. The induced expansion in foreign demand for goods and services occurs with some lag, however, and in the interim the absence of capital controls during the process of easing monetary conditions in the United States would have augmented the deficit in the U.S. balance of payments.

How the process would have worked in fact would have been strongly influenced by the policy responses abroad. To the extent that the authorities would have been successful in neutralizing the additional inflows of funds -- in retarding the monetary expansion and declines in interest rates -- the balance-of-payments offsets to the additional outflows of U.S. capital would have been prevented from developing.

The augmented outflows of funds in the absence of the controls would have been in addition to the large repayments of U.S. bank borrowings from the Euro-dollar market that have occurred and have been reflected in the extraordinary U.S. official settlements deficits. Moreover, the augmented outflows from the United States would have occurred when other industrial countries already were experiencing boom conditions and inflationary pressures. The additional expansive effects on their economies would have been totally unwanted. Indeed, even the effects of the repayment of the Euro-dollar borrowings were unwanted and interfered with the policies that the foreign authorities wished to follow. In the circumstances, additional outflows of U.S. capital would have generated offsets in the current account chiefly by raising nominal rather than real GNP in other industrial countries. It would have done so, in other words, by accelerating the rates of inflation abroad.

II. <u>How Much Do We Know About International Capital Flows?</u>

We have emphasized that reductions in the outflow of U.S.-owned capital brought about by the programs will have induced some offsetting flows in other balance-of-payments accounts. We have also noted that since financial instruments are not perfect substitutes and international capital and goods markets are not fully integrated, it seems likely that offsetting flows, while probably important, would be only partial. What would we need in order adequately to judge what part of gross balance-of-payments savings owing to the controls are lost in "leakages?"

In principle, it would be necessary to specify and estimate a full model of the international economy. We would require demand and supply equations for each financial instrument which would reflect the extent of the international interdependencies between national money and capital markets. Thus, the model would even require a complete elaboration of the markets for those financial instruments issued and held entirely domestically since conditions in these "domestic" markets would impinge on the decisions of those individual transactors who hold and those who issue "international instruments." Moreover, the model would have to embody the relationships between international capital flows, economic activity levels in the important industrial countries, and merchandise trade flows.

In sum, we would need a set of highly elaborated macroeconomic models for the major industrialized countries, with fully developed linkages between the real and financial sectors, and a well articulated international sector linking the national models together. Clearly, such a project is not feasible in the foreseeable future.[1/]

When evaluating such evidence as does exist on the effects of U.S. capital controls, it is important to realize just how far we are from having such a model of the world economy. In the first place, we do not even have the necessary econometric models for the major industrial countries. Many of the models which do exist do not even have a link between domestic financial variables and the domestic real economy. Virtually none attempts to explain international transactions other than the current account items.

Given this state of affairs, we obviously cannot produce direct empirical evidence as to whether or not controls on capital outflows are partially offset through changes in the level of economic activity abroad that reduce the United States' trade balance. But as we have noted in Section I, this depends essentially on the ability and desire of foreign authorities to pursue independent monetary policies. It might be possible to draw some inferences from investigations of the institutional factors affecting the ability of foreign authorities to pursue independent policies. While some work along

1/ Producing just such a model is the long-run objective of Project LINK, a study financed through the Social Science Research Council and under the direction of Lawrence Klein, Aaron Gordon, Bert Hickman, and Rudolph Rhomberg. Project LINK is at the present time only in its initial stage. Not even its most enthusiastic proponents would claim that its long-run objective could be attained for many years.

these lines has been attempted, it is fair to say that the question of the degree to which independent policies can be pursued abroad must be considered open.

The main reason why international capital flow equations do not appear in any of the existing econometric models is simply that relatively little work has been done in estimating such equations. It is a common complaint of all empirical researchers that they are handicapped by a lack of appropriate data. In this area, the constraint is especially severe. Data are often collected by national agencies on non-comparable bases and much of the data are held confidentially. Moreover, there are important unobservable variables which play a crucial role in determining capital flows, especially expectations about interest rates and exchange rates.

There is also a clear need for fundamental improvements in the theory of international capital flows. It is only recently that the basic elements of domestic monetary and capital markets theory have been applied to international flows.

A very serious problem that remains to be solved is the appropriate treatment of non-price credit rationing, particularly capital controls imposed by national authorities. Capital controls introduce a "wedge" between desired flows and actual flows. A frequently employed technique in studies that have tried to estimate the quantitative effects of capital flow restraints is the introduction of an additional ("dummy") variable which differentiates the pre-control and post-control periods. However, this technique assumes that the effects of the programs are uniform throughout the period of their imposition, allowing no scope for gradual adjustment by transactors to the controls or to modifications of the controls by the authorities. When the effective impact of the programs varies over the sample period, the "dummy variable" approach can be seriously misleading.

The "learning by doing" phenomenon is especially important for estimating the net impact of the capital control programs. Leakages will likely become increasingly important with the passage of time. In the present context, this points up the necessity for estimating the lags in behavioral responses. The time path of adjustments by transactors in other markets in response to the imposition of controls in one market is virgin territory for both the theoretician and the empiricist.

The preceding discussion has pointed out a few of the more important difficulties in estimating elements of the "ideal model." We wish to re-emphasize the central point that a thorough understanding of the impact of the capital control programs is contingent upon the availability of a complete model. The interrelationships between various capital markets and between capital markets and real economic activity must be explicitly dealt with.

This point is well illustrated by considering one of the empirical studies cited in a recent paper of the Office of Management and Budget.[1/] The cited paper, written by Richard N. Cooper, was specifically addressed to the time period when only the IET was in effect. There is general agreement that the leakages were extremely large at that point. This was clearly recognized and led to a more comprehensive set of controls. In a more recent unpublished paper,[2/] Cooper summarized his judgment on the gross savings and on the probable magnitude of offsetting leakages. He concluded that the present elements of the comprehensive set of restrictions are reinforcing and they have had a significant net impact on the balance-of-payments.

Cooper's paper, and all others of which we are aware, have attempted to estimate the impact (gross or net) of the control programs on the actually observed, historical data. Needless to say, this historical analysis by itself is insufficient for our purposes. Since, as the analysis of the preceding Section suggests, the effective impact of the restraints will vary with our cyclical position, we also want to know (a) what the impact of the programs would have been if we had been more successful in having the economy grow along a non-inflationary, high-employment growth path, and (b) what the impact of the programs would be in the future, given a wide variety of alternative assumptions about domestic and foreign economic activity.

1/ OMB paper entitled "Capital Controls: Questionable Results and Undoubted Costs," March 2, 1971 (Mimeo). We discuss the other two studies cited by the OMB paper in appendices.

2/ Richard N. Cooper, "The Voluntary Credit Restraint Program: An Assessment," January 1969, unpublished paper prepared for a meeting of Academic Consultants at the Federal Reserve Board.

How much do we know about international capital flows? The profession has barely begun to tackle the job. The evidence that does exist is sparse. Even tentative conclusions on what the effects of the United States capital control programs have been are no more than informed guesses.

III. Judgmental Estimates of the Effects of the U.S. Capital Control Program

We try in this section to bring together some information relevant to an analysis of the capital controls and to make some judgmental estimates of how large the gross balance-of-payments savings and the offsetting leakages may have been. We put forward these judgments with genuine hesitation. Although we believe our judgments are as reasonable as can be made given the present state of knowledge, we are mainly impressed -- as emphasized in the last section -- with the inability of anyone to make judgments that are clearly valid.

A. Gross Savings on Capital Flows Covered by the Programs

Interest Equalization Tax. The IET has been imposed on U.S. purchases of foreign securities since mid-1963 and on long-term bank lending since February 1965.

The IET induced a sharp reduction in U.S. purchases of foreign new issues, as suggested by Table 1. The annual average of these purchases fell by $177 million between 1962-63 and 1964-65, and an additional $58 million between the latter period and 1966-69. The severity of the reduction in 1964, shown in Table 1, is probably attributable to the availability in that year of untaxed bank loans as substitutes for security issues. With the extension of the IET to long-term bank loans in 1965, and also the inception of the VFCR, new security issues rose. The reduction of new issues in 1966 and subsequent years from the 1964-65 average appears to be attributable to the relative tightness in the U.S. market for long-term capital. Thus for new issues alone, the gross savings that can be attributed to the capital controls seems likely to be well under $200 million per year on average.

Table 1

U.S. Purchases of Foreign Securities Newly Issued in the United States by European Countries, Australia, New Zealand and South Africa.[a]

1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
24	57	195	289	35	95	15	-	-	14

a/ Japan is excluded because Japanese new issues were partially exempted from the IET. The 1965 exemption of $100 million was continued for several years, but was not fully utilized because of rising U.S. interest rates.

In the face of the IET, American net purchases of outstanding foreign equities reached a cumulative total of only $1/4 billion during the 1963-70 period.[1] Suppose that in the absence of the IET, Americans would have wanted to allocate a roughly constant proportion of their equity portfolios to foreign equities. This assumption implies that substantial net purchases of foreign equities, possibly

1/ Net purchases of outstanding bonds were negligible. Net U.S. purchases of Japanese equities in 1969 were very large and more than offset net U.S. sales of foreign equities during most of the 1963-70 period. At the end of 1969, Japanese long-term assets were brought under the VFCR program for nonbank financial institutions. This action has virtually eliminated the flow of funds by U.S. institutional investors into Japanese equities.

as much as $3-4 billion, would have occurred. A number such as $3-4 billion probably represents an upper bound for the cumulative gross savings for 1963-70. With or without the IET, of course, net purchases would undoubtedly have fluctuated considerably.[1/]

We have not tried to make estimates of the gross savings attributable specifically to the 1965 extension of the IET to long-term bank loans. Total foreign lending of banks is considered under the VFCR program.

Voluntary Foreign Credit Restraint. The introduction of the VFCR early in 1965, in combination with the imposition of the IET on banks' long-term loans, was associated with a sharp cutback in new foreign lending by U.S. banks. The balance-of-payments accounts show that the combined outflow of long-term and short-term bank funds fell from an annual average of $1.4 billion in 1960-64 to an annual average of less than $100 million in 1965-69.

That the program played a large role in limiting the outflow of bank credit is not contradicted by the continuous existence of an apparent leeway for additional lending, as shown in Table 2. The apparent leeway under the ceiling reflects mostly cyclical factors, differences among banks, and bank uncertainty about drawdowns by foreign borrowers.[2/]

1/ Inspection of stock price trends in various countries suggests that U.S. prices rose at roughly the average of foreign price rises, but with less fluctuation.

2/ See Bernard Norwood, "Restraining Foreign Credit: Six Year Test," Wharton Quarterly, Winter 1970, pp. 32-37.

Table 2

Banks' Ceilings and Leeway Under the VFCR
(Millions of dollars, end of year)

	1965	1966	1967	1968	1969	1970
General Ceiling						
Aggregate ceiling[a]	9,973	10,407	11,069	9,729	10,092	9,956
Apparent leeway	321	911	1,204	476	694	606
Total General and Export Term-Loan Ceilings[b]						
Aggregate ceilings[a]	9,973	10,407	11,069	9,729	11,356	11,379
Apparent leeway	321	911	1,204	476	1,939	1,842

a/ Ceilings are calculated on the basis of the regulations in effect during the given year. There was some liberalization of the guidelines, effective January 1, 1967, and January 1, 1968.

b/ Export Term-Loan Ceiling added in 1968.

Econometric research on bank lending to foreigners has been fraught with problems, many of which have not been satisfactorily resolved.[1] With the exception of the studies by Bryant and Hendershott, this research has allowed for the effects of the VFCR only in a crude, inadequate fashion. Even Bryant and Hendershott, despite strenuous efforts to adapt their equations so as explicitly to reflect the varying impacts

1/ Appendix D lists some of the references. The studies most relevant here are those by Branson, Bryant and Hendershott, Laffer, Miller and Whitman, and Patrick.

of the VFCR regulations, failed to come up with clear-cut evidence.[1/]

If the proportion of foreign loans in the portfolios of U.S. banks had been the same at the end of 1970 as it was at the end of 1962, foreign loans would have been $16.6 billion instead of the observed figure of $13.8 billion.[2/] This calculation may give a crude indication of the possible magnitude of the effect of the VFCR on the distribution of U.S. bank portfolios. The precise impact of the VFCR at any given time, of course, depends critically on monetary conditions in the United States relative to those abroad. In recent months, the restraining effect of the VFCR on bank lending has increased considerably compared with its effect during the most intense periods of monetary tightness in 1969.

The effect of the VFCR on nonbank financial institutions is even harder to judge, because of the diversity of such institutions and because of potential switches between assets not covered (over $13 billion) to covered assets (under $2 billion). One indication of the

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1/ See Bryant and Hendershott, Financial Capital Flows in the Balance of Payments of the United States: An Exploratory Empirical Study, Princeton Studies in International Finance No. 25, pp. 31-32, 48-50, 60-61; also "Empirical Analysis of Capital Flows: Some Consequences of Alternative Specifications," Forthcoming in Universities-NBER Volume on The International Mobility and Movement of Capital.

2/ Foreign loans here include Canadian, which are exempt from the VFCR. The year 1962 is taken as a base, because of the surge in borrowing in 1963-64 after the IET restricted security issues.

effectiveness of the non-bank program is the virtual cessation of U.S. purchases of Japanese equities after such assets were brought under the program.

Foreign Direct Investment Program. This program was designed to limit outflows of U.S.-owned funds (as they are reflected in the balance of payments) to finance U.S. business investment in foreign affiliates; it was not the intention to limit the investment outlays of those affiliates. The program, it was hoped, would shift the source of financing away from the United States, and it appears to have been successful in doing that.[1/] One possible indication of the size of gross program savings is given by the amount of funds obtained abroad by U.S. parent firms; such financing was virtually zero until the advent of the voluntary program in 1965; in 1968 and 1969 it was more than $2 billion per year. (See Table 3, line 4.[2/])

Gross savings are indicated also by the decline in the ratio of U.S.-controlled funds to plant and equipment expenditures[3/] that

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1/ For example, Guy Stevens found that "virtually no impact of the various balance of payments program is evident on plant and equipment expenditures in manufacturing." See his "Capital Mobility and the International Firm," Universities-National Bureau Conference on International Mobility and Movement of Capital, forthcoming.

2/ These data, from OFDI, are more inclusive than that from OBE, since they include foreign borrowings which are used abroad without first being remitted to the United States.

3/ U.S.-controlled funds are defined to include depreciation allowances since the latter allows direct investors to make some plant and equipment expenditures without recourse either to foreign borrowings or U.S. funds. In other words, reinvestment of depreciation allowances leaves the book value of foreign affiliates unchanged; thus plant and equipment expenditures should be attributed to depreciation allowances as well as to U.S.-source funds and foreign borrowing by parent firms.

Table 3

Selected Data on Direct Foreign Investment
(millions of current dollars)

Financial	1965	1966	1967	1968	1969
1. Net capital transfers	3926	4386	4178	2671	3720
2. + Reinvested earnings	1492	1692	1390	1950	2325
3. = Direct investment	5418	6078	5568	4621	6045
4. - Long-term foreign borrowing by parent firms[b/] and program adjustments[a/]	104	638	542	2161	2346
5. = Net use of U.S.-source funds	5314	5440	5026	2460	3699
6. + Depreciation[c/]	3686	4074	4632	5265	5800
7. + Long-term foreign borrowing by parent firms and program adjustments	104	638	542	2161	2346
8. = Gross use of U.S.-controlled funds	9104	10152	10200	9886	11845
Real					
9. Plant & equipment expenditures	7440	8640	9267	9387	10787

a/ Program adjustments are offsets to foreign borrowing, such as repayments and indirect capital transfers.

b/ Excluding Canada, since no data are available. In contrast, other data in this table are worldwide, i.e., all three OFDI schedules plus Canada.

c/ Estimated

Source: Depreciation and plant and equipment expenditures from Office of Business Economics; other data from Office of Foreign Direct Investments.

has occurred as foreign affiliates have relied to a greater extent on local borrowing (i.e., borrowing by affiliates, in addition to foreign borrowing by parent firms). For 1965, this ratio was 1.225; for the 1966-67 period, when the voluntary program specified firm-level targets, it fell to 1.135. In contrast, the ratio under the Mandatory Program in 1968-69 was 1.075. If the 1965 ratio had prevailed in 1968-69, gross use of U.S.-controlled funds would have been some $1-1/2 billion greater on average per year.

The trend toward greater reliance on local financing is consistent with another set of OFDI data, available for 1967-68 (See Table 4).[1/] For all direct investment outside Canada these data show greater use of local funds during 1968, in relation to current assets, than was the case at the beginning of 1968. However, comparable data for Canada (Table 4) showed a similar movement, reminding us that other factors probably accounted for much of the increased use of local funds on the part of affiliates.

1/ U.S. Department of Commerce, Office of Foreign Direct Investments, Foreign Affiliate Financial Survey 1967-1968 (Washington, July 2, 1970). Comparable data for 1966 and 1969 are not yet available, either from OFDI or OBE.

Table 4

Majority-owned Foreign Affiliates
Current Assets and Foreign-Source Funds, 1967-68
(millions of dollars)

All Schedules	1967	1968
Current assets, end of year	25,805	30,406
Foreign debt	21,909	26,100
Ratio, foreign debt to current assets	.849	.858

Canada	1967	1968
Current assets, end of year	7,649	8,481
Foreign debt	5,549	6,273
Ratio, foreign debt to current assets	.726	.740

The *prima facie* evidence is that the Voluntary and Mandatory Programs had successively larger influences on both parent-firm and affiliate financing.[1/] But, of course, part of this increased foreign financing might have occurred even in the absence of controls as a result of tighter money in the United States toward the end of the period.[2/]

B. "Leakages" Offsetting the Gross Savings

While it is difficult to estimate a possible range of gross balance-of-payments savings generated by the capital controls, it is even more difficult to guess at the size of leakages. The difficulties are severe both because of the limited state of our knowledge (see Section II) and because offsets can conceivably occur in any balance-of-payments category. In the following subsections we attempt to review the evidence available for four categories of transactions where leakages seem particularly likely to have occurred.

Foreign Purchases of U.S. Securities. An obvious source of potential leakages is in foreign purchases of U.S. corporate securities. Most directly, the convertible Eurobonds issued by U.S. corporations

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1/ The initial Voluntary Program for 1965 did not involve firm-level targets, and resulted mainly in the repatriation of head-office balances formerly held in Europe.

2/ A further, albeit indirect, effect of the Mandatory Program on affiliate financing may have resulted from a program-induced change in the mix of capital expenditures towards LDC's, which in turn caused firms to make a closer match between local-currency assets and liabilities.

as a response to the capital controls are undoubtedly a close substitute for stocks and bonds purchased by foreigners in New York. There is no convincing evidence that such substitution did or did not take place. (See Appendix A for a more detailed discussion of this potential leakage.)

During the period in which the capital controls were in force, foreign purchases of U.S. securities increased to unprecedented rates. They might, it is true, have increased still more in the absence of the controls. The only unambiguously correct statement that can be made about the magnitude of this leakage is that it could have been of any size. We find it implausible to imagine that it could have been in excess of a few hundred million dollars per year on average.

Errors and Omissions. Another possible offset to the savings in controlled outflows of capital could have occurred in the errors-and-omissions account in the balance of payments. When that account is unusually large and negative, it is often inferred that flows of unrecorded capital are the cause. There is some evidence, however, that many of the major movements of the errors-and-omissions account can be attributed to forces other than the capital controls.1/ If unrecorded net outflows of U.S. capital were greater or if

1/ R. Rickover, "Interest Rates, Capital Flows, and Errors and Omissions in the U.S. Balance of Payments," Research Memorandum of the Federal Reserve Bank of New York, March 8, 1971.

unrecorded net inflows of foreign capital were smaller than they otherwise would have been in the absence of the capital controls, this has not been obvious in the actual data for net errors and omissions.

There appears to be a substantial normal error -- approaching an annual rate of $1 billion -- reflecting systematic errors in data collection. (See Table 5.) The actual figures vary from that base because of changes in interest-rate differentials between here and abroad, quarter-to-quarter changes in imports (the recording of which appears to lag behind payments), and speculative movements of funds from time to time.

Table 5

Errors and Omissions
(Billions of dollars)

1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
-1.2	-1.1	-1.2	-0.5	-1.1	-0.6	-0.5	-1.1	-0.5	-2.9

The large rise in errors and omissions in 1969, for example, was associated with the sharp increases in interest rates in the Eurodollar market, which attracted funds of U.S. residents out of time deposits in U.S. commercial banks. There was a substantial circular flow of funds, however, as the U.S. banks borrowed back these funds. In fact, the banks' borrowings far exceeded these outflows, with the result that the official-settlements balance of payments was heavily in surplus. An additional factor contributing to the large figure for errors and omissions in early 1969 was the dock strike.

Foreign Holdings of Liquid Assets in the United States. The U.S. capital controls no doubt had some effect on foreigners' demand for liquid dollar assets held in the United States. The growth in foreigners' awareness of investment opportunities in the Eurodollar market in the 1964-70 period, together with the relatively higher yields offered on Eurodollar deposits compared with assets of comparable liquidity and maturity in New York, would have constituted substantial incentives for substituting Eurodollar assets for dollar assets held in the United States. Imposition of the capital controls, which in turn led U.S. banks to multiply the number of their foreign branches and to carry out lending through their branches which might otherwise have been done at head offices, gave an added fillip to the bidding for funds in the Eurodollar market. With Eurodollar rates higher relative to U.S. rates than they otherwise might have been, it seems likely that a larger proportion of the growth in foreigners' total holdings of liquid dollar assets took place in the Eurodollar market rather than in the United States.

In Appendix C, we review some research of Arthur Laffer which purports to show that this leakage has been so large as to offset completely the gross savings due to the VFCR. In that appendix we give some reasons for believing that the method which Laffer used to reach his conclusion is not analytically sound. Indeed, using exactly the same technique that Laffer employed for 1965 and the first half of 1966, we have updated his analysis to include data for the last half of 1966 and for 1967-70. When this is done, the results superficially point to a conclusion that the VFCR has led foreigners to increase their liquid assets in the United States compared with what they otherwise would have done. This latter conclusion is of course nonsense. The fact that Laffer's analytical method leads to a clearly incorrect conclusion with 1967-70 data, however, should also make one highly suspicious of the conclusion that Laffer drew from his analysis using only data for 1965 and the first half of 1966.

Throughout the last fifteen years, U.S. liquid liabilities to nonofficial foreigners have grown more rapidly than the trade of the rest of the world. The growth of foreign liquid assets in the United States relative to foreign trade and GNP has been quite high even if one excludes the atypical cases of liquid liabilities to banks in the United Kingdom, Canada, Japan, and Switzerland. If anything, these trends may have accelerated during the latter half of the 1960's.[1/] If leakages from the gross savings have occurred on a significant scale through this channel, therefore, they have been much more than offset by other unexplained factors leading to faster growth of foreign liquid assets in the United States.

1/ These generalizations are based on some recent empirical research by Ralph Bryant on the international demand for liquid dollar assets.

As in the other cases of potential leakages, one cannot reach clear-cut conclusions. But there is certainly no analytically acceptable evidence which demonstrates that leakages via this particular channel have been large. Our best judgment is that the leakages here might be on the order of a few hundred million dollars per year, but not so large as to be measured in billions of dollars.

Export Performance. We are reasonably confident that the VFCR program has had little "direct" adverse impact on U.S. export performance. None of the export equations of which we are aware employ the volume of trade credit as an explanatory variable. Yet the predictive ability of these equations has not been materially impaired since the imposition of capital controls. Thus, we infer either that United States exports have not been crucially dependent on the availability of United States trade credit, or, more likely, that the programs have succeeded in maintaining the level of these credits while controlling other flows. Indeed, a recent survey of banks, conducted by the Federal Reserve Board, "turned up very few examples of requests for financing the export of U.S. goods that were denied in 1970 because of [the VFCR] program."[1/]

1/ Board of Governors of the Federal Reserve System, "Report on Inquiry into Possible Effects of Voluntary Foreign Credit Restraining Program in 1970 on Export Financing and on Exports," January 7, 1971.

Of course, there may have been "indirect" effects on United States exports resulting from a level of economic activity abroad less than what would have occurred in the absence of U.S. capital controls. Reduced capital flows to the industrialized countries may have affected their monetary conditions and thus their levels of economic activity. Reduced capital flows to the less developed countries (LDCs) may have reduced LDC demand for U.S. exports directly, and indirectly reduced U.S. exports as a consequence of reduced LDC imports from the other industrialized countries. The extent to which these effects were operative depend in large part upon the demand management policies pursued abroad and on their effectiveness. In 1969-1970, economic activity levels in Japan and Western Europe were quite high; capacity was being strained in these countries and inflationary pressures were strong. In those circumstances, greater capital outflows might have enlarged U.S. exports as a result of even more intense inflation abroad.

Other Leakages. Offsets to the gross balance-of-payments savings generated by the control programs could in principle have occurred in every uncontrolled category of transactions in the U.S. balance of payments. While we believe the four categories discussed above are likely to have been the most important in quantitative terms, we recognize that non-negligible offsets could have taken place in still other parts of the current or capital accounts. We have no way of making an informed judgment about the magnitude of these other leakages.

IV. A Brief Comment on the OMB Paper: "Capital Controls: Questionable Results and Undoubted Costs."

In light of the discussion in the previous sections, how should we interpret the recent paper from the Office of Management and Budget?[1/] In our view, the OMB paper fails altogether to do justice to the analytical complexity of the questions raised by the capital control programs.

The OMB paper begins, quite correctly, by emphasizing that any reductions in the outflow of U.S.-owned capital brought about by the programs will have induced some offsetting flows in other balance-of-payments accounts. Unfortunately, this reasonable *a priori* presumption is then used to support the *non sequitur* (page 2) that "there is no reason to expect that capital controls would, in any significant sense, actually reduce the net outflow of reserves." Financial instruments are not perfect substitutes and international capital and goods markets are not fully integrated.

Although leakages surely exist, we strongly doubt that they have completely negated the effects of the controls -- particularly in periods of monetary tightness in the United States. In any case, far too little is known about this subject to justify the sweeping

1/ "Capital Control Programs: Questionable Results and Undoubted Costs," transmitted on March 2, 1971, with accompanying memorandum by the Director of the Office of Management and Budget to the members of the Council on International Economic Policy via the Honorable Peter G. Peterson.

assertions in the OMB paper.

The empirical studies cited in the OMB paper fall very short of being convincing evidence. We have already noted (page 14) that the Cooper paper which is cited is not relevant to the present set of reinforcing controls.

The OMB paper does accurately convey the tenor of a study, dated May 11, 1970, by the Center for Political Research, the conclusions of which are in opposition to the OFDI program. But in our view these CPR conclusions are not warranted by the information and economic analysis in the study (see Appendix B).

The third empirical study cited as evidence in the OMB paper is by Arthur Laffer and deals with short-term bank-reported claims and liabilities. We have already noted (pages 28-29) that Laffer's analytical methods could not adequately justify his conclusion about the effects of the VFCR even in 1967 (when he first wrote his paper), much less justify the position in the March 1971 OMB paper (see Appendix C).

The "overall assessment" in the OMB paper states:

> Detailed studies of the capital control programs have uncovered absolutely no evidence of any effect on the balance of payments.
>
> The common and primary purpose of the capital control programs is to stem the net outflow of U.S. official reserve assets by obstructing American investments and loans to foreigners. All available evidence suggests that these programs cannot and have not accomplished or even worked towards this purpose.

These statements are simply false. It would be equally misleading, but no more incorrect, to say that "detailed studies of the capital control programs have uncovered absolutely no evidence that the gross balance-of-payments savings from reductions in U.S. capital outflows have been undermined by leakages elsewhere in the balance-of-payments accounts" and that "there is no available evidence suggesting that these programs cannot and have not accomplished their purpose."

There is a trenchant line from the second scene of Act II of Hamlet, in which Gertrude reprimands Polonius for his rhetoric: "More matter, with less art." This would be a useful guideline for improving the OMB paper.

This paper was prepared by
Murray Altmann, Ralph Bryant,
George Henry, and Alan Severn

Appendix A

Potential Leakages via Reduced Foreign Purchases of U.S. Corporate Securities

A frequently mentioned balance-of-payments account in which gross reductions in capital outflows might have been offset is that of foreign purchases of U.S. corporate securities. While foreign purchases of such securities rose markedly after controls were strengthened in 1965, it is of course possible that the rise would have been greater in the absence of direct investment, or other, controls.

One obvious possibility is that the convertible Eurobonds issued by American direct investors were a substitute for ordinary American equities. These Eurobonds were sold only to non-residents of the United States. They were favorably priced, relative to comparable securities within the United States. Therefore, the standard argument goes, investors outside the United States may have been induced to hold convertible Eurobonds instead of ordinary American equities, since they received no price concessions on the latter category.

Observed transactions, however, show a close quarter-by-quarter association between foreign purchases of U.S. equities and of convertible Eurobonds issued by U.S. corporations (see attached chart). Thus, if there was substitution in the short run, it was apparently dominated by causation common to the two types of security. In addition, there may be a significant lag in foreigners' adjustment to the surge of Eurobond issues. Therefore, further evidence is needed to establish the degree of substitution between the two types of security over a longer period.

Preliminary results from an ongoing study of foreign purchases of U.S. equities being carried out by Alan Severn, however, fail to indicate any significant degree of substitution. The relative importance over time of American stocks in foreign equity portfolios was compared to relative risks and returns and to the growth of mutual funds abroad,[1/] for the period 1962-70. Through 1969 and the first three quarters of 1970, foreign investors continued to hold as much of U.S. stocks as might be expected in light of relative risks, returns, and size of portfolios.[2/]

Direct investment controls may also have affected foreign purchases of U.S. equities in ways other than through substitution of Eurobonds. In particular, any reduction of American cash purchases of existing foreign firms may have limited the equities purchases of foreign individuals, i.e., the former owners of the foreign firms. But since a typical foreign investor is likely to invest only a small fraction of his equities portfolio in American stocks, this offset is likely to be small. A similar, and similarly small, offset could be a restriction of loans available to foreign equity investors as U.S. corporations pre-empted part of available European capital.

There are also reasons for believing that the U.S. corporate securities account may contain some offsets to the IET or VFCR programs.

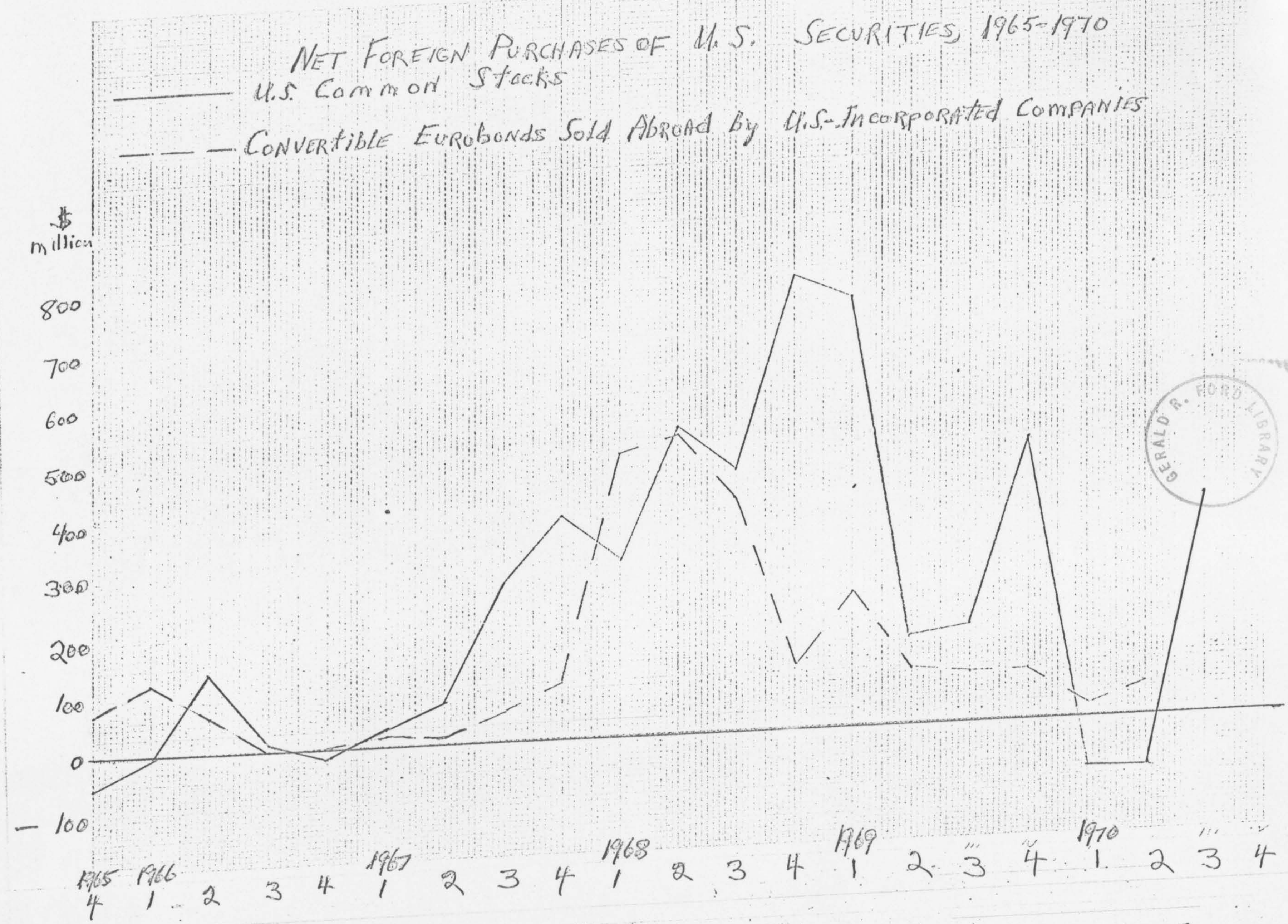
1/ Including closed-end funds, to the extent that data are available.

2/ Holdings during the 1968 Eurobond surge were nearly identical to those "predicted," while they were higher than "predicted" for 1969 (by $.4 billion), though lower for the first three quarters of 1970 (by $.3 billion).

For example, one could imagine that the virtual cessation of American purchases of foreign stocks, induced by the IET, caused foreign stock prices to rise less rapidly, thereby lowering the value of foreigners' portfolios compared with what they otherwise would have been and, over time, inducing European investors to reduce their purchases of American equities.[1/]

Altogether, it appears that the U.S. capital controls had relatively little impact on foreign holdings of U.S. equities. Even if offsets were present, but hidden by other factors relevant to foreign investment in U.S. equities, the offsets were apparently small in relation to the gross savings generated by the control programs.

1/ The rise in the nominal value of foreign equity portfolios exceeded $150 billion during the 1963-70 period. While an infusion of additional purchases from the U.S. could have raised the value of foreign equities even further, any reasonable amount of U.S. purchases would have played only a secondary role in foreign stock markets.


NET FOREIGN PURCHASES OF U.S. SECURITIES, 1965-1970
U.S. Common Stocks
Convertible Eurobonds Sold Abroad By U.S.-Incorporated Companies
$ million
800
700
600
500
400
300
200
100
0
-100
1965 4
1966 1
2
3
4
1967 1
2
3
4
1968 1
2
3
4
1969 1
2
3
4
1970 1
2
3
4

Appendix B

A Comment on the CPR Report
"Federal Control of Foreign Direct Investments"

This report by the Center for Political Research, dated May 11, 1970, was apparently done for an unnamed corporate client; the emphasis is on the locus of decision-making power with respect to control of foreign direct investment.

Several flaws may be noted in this report:

1. It implies that earnings on direct investment depend on U.S. equity in such investment, rather than on the aggregate size of the activity (as measured, for example, by total assets). On page 14 the following statement appears:

> "Just how long OFDI's short-term balance of payments benefits will last is open to debate.... What is not open to debate is that restrictions on direct U.S. foreign investment will eventually lead to a decline (or slower growth) in the dollar amount earned abroad each year by U.S. firms. In addition, heavy borrowing abroad by U.S. firms necessarily leads to sharp increases in U.S. interest payments to foreigners. Such payments have more than doubled since 1966; they are now running at an annual rate of about 3.3 billion dollars."

2. The above quotation implies that interest payments on corporate borrowing abroad are an addition to total interest payments by the United States as a whole. But if the corporations were to borrow in the United States and send the proceeds abroad, the outflow would be reflected in combined private and official foreign holdings of dollars. Since the holders of these additional dollars could be expected to hold them in interest-bearing form, the interest payments on these

holdings would partially offset the reduced payments by U.S. corporations. Thus, only the difference between interest rates is relevant here.

3. Several New York bankers are quoted as stating that as of 1970, only half-a-dozen firms (mainly in petroleum and computers) have been affected by the program; about 200 others have been partially affected, but can still carry out their investment programs. But this statement apparently means that plant and equipment expenditures, rather than the financing of such expenditures, has been largely unaffected. Yet it is primarily the financing which directly affects the U.S. balance of payments and which is aimed at by the program.

The debate about the balance-of-payments effects of direct investment activity (to which the report refers) is not relevant here, because the scale of such activity has been largely unchanged. Therefore fees and royalties, parts and components, exports back to the United States, etc., are not affected.

4. The report states that in the aggregate, firms were below their "allowables," in both 1968 and 1969. While this is true, it does not necessarily reflect on the effectiveness of the program. The regulations are the most restrictive for the continental Western European countries, and least restrictive for less developed countries. It appears that most of the leeway below allowables was concentrated in the LDC's. The CPR report does not mention this possibility as a

partial explanation for the fact that allowables were not fully utilized.

In summary, the CPR report is analytically weak. Its worst fault is that it fails clearly to distinguish between financial and real consequences of the control of direct investment.

Appendix C

(To be inserted in final version)

Appendix D

Annotated List of References

This is not intended as an exhaustive survey of the literature. It does bring together much of the literature which bears on the subject matter of this paper.

1. Board of Governors of the Federal Reserve System, "Report on Inquiry into Possible Effects of Voluntary Foreign Credit Restraining Program in 1970 on Export Financing and on Exports, January 7, 1971.

   The survey of banks summarized in the report, "turned up very few examples of requests for financing the export of U.S. goods that were denied in 1970 because of [the VFCR] program"

2. William H. Branson, Financial Capital Flows in the U.S. Balance of Payments, (North-Holland Publishing Company, Amsterdam, 1968).

   Branson's Ph.D. dissertation applies a stock-adjustment model to capital flows, with particular emphasis on estimation of lags via the Almon technique. The capital control programs are taken into account only by means of on-off dummy variables.

3. William H. Branson and Raymond D. Hill, Jr., "A New Model of Financial Capital Flows in the U.S. Balance of Payments," December 9, 1970 (Mimeo).

   This paper updates and revises the empirical results in the preceding reference.

4. Ralph C. Bryant and Patric H. Hendershott, "Financial Capital Flows in the Balance of Payments of the United States: an Exploratory Empirical Study," Princeton Studies in International Finance No. 25 (June 1970).

   Bryant and Hendershott attempt to elaborate an appropriate theoretical framework for investigating international capital flows. The model is applied to data for U.S. short-term outflows to Japan with particular attention placed on trying to capture the influence of the VFCR program.

5. Ralph C. Bryant and Patric H. Hendershott, "Empirical Analysis of Capital Flows: Some Consequences of Alternative Specifications," a paper presented at a Universities - NBER Conference on International Mobility and Movement of Capital, January 30-February 1, 1970, Washington, D. C.

This paper, which expands the analysis in the previous reference, discusses the substantial difficulties in determining an appropriate specification for capital flow equations. Alternative specifications are shown to imply very different conclusions about the effect of capital control programs.

6. Center for Political Research, "Federal Control of Foreign Direct Investments, May 11, 1970.

The report discussed the program and concludes that "the available statistics regarding the OFDI program ... cast doubt on the extent to which the program actually restricts direct foreign investment today."

7. Richard N. Cooper, "The Interest Equalization Tax: An Experiment in the Separation of Capital Markets," Finanz Archiv, 24 (December 1965), 447-471.

Cooper investigates the period when only the IET was in effect and concludes that, for all intents and purposes, offsetting flows in other accounts entirely negated the impact of the IET.

8. Richard N. Cooper, "The Voluntary Credit Restraint Program: An Assessment," January 1969 (Mimeo). Unpublished paper prepared for FRB Academic Consultants.

Cooper summarizes his judgment on the gross savings and on the probable magnitude of offsetting leakages. He concludes that the present elements of the comprehensive set of restrictions are reinforcing and that they have had a significant net impact on the balance-of-payments.

9. Arthur B. Laffer, "Short-term Capital Movements and the Voluntary Foreign Credit Restraining Program" 1969 (Mimeo).

Laffer presents regression equations for the changes in "U.S. private short-term claims on foreigners" and for the changes in "U.S. short-term liabilities to private foreigners." The relationship between actual flows and what his equations predict lead him to conclude that there has been no net balance-of-payments saving from the VFCR program.

10. Walther Lederer, "Notes on the Structure of the U.S. Balance of Payments," not dated, (Mimeo).

Lederer argues that "major fluctuations in the balance on goods and services are to a large extent offset by fluctuations in unilateral and nonliquid capital transactions." However, some regressions of the capital flow balance on the goods and services balance and various dummy variables lead him to conclude that the capital constraint programs have had a net effect on the balance of payments.

11. C. H. Lee, "A Stock-Adjustment Analysis of Capital Movements: The United States-Canadian Case," Journal of Political Economy, Vol. 77 (July/August, 1969), 512-523.

This is another econometric application of the stock-adjustment model, in this case to U.S.-Canadian capital flows. On-off dummy variables are used to allow for the effects of the capital control programs.

12. Fritz Machlup, "The Transfer Gap of the United States," Banca Nazionale del Lavoro Quarterly Review, No. 86 (September 1968), 195-238.

Machlup rearranges the standard balance-of-payments accounts to arrive at what he calls the "net real transfers" and the "net financial transfers" of the United States. His work leads him to conclude that in most circumstances changes in net financial transfers will be offset by changes in net real transfers. He concludes that "the balance-of-payments program pursued by the United States Government ... is useless for the purpose for which it was designed."

13. N. C. Miller and M. v. N. Whitman, "A Mean-Variance Analysis of United States Long-Term Portfolio Foreign Investment," The Quarterly Journal of Economics, LXXXIV (May 1970), 175-196.

In this and several subsequent papers, Miller and Whitman apply the portfolio selection approach to various categories of capital flows in the U.S. balance-of-payments. On-off dummy variables are used to allow for the effects of the capital control programs.

14. John Patrick, "Bank Lending to Foreigners under the FCRP and the IET," NYFRB Research Memorandum, June 20, 1969.

Patrick reviews recent data on capital flows and then presents regression results for equations explaining (quarterly changes in) short-term bank-reported claims on foreigners and in total bank-reported claims on foreigners. His results lead him to conclude that the two programs do reduce (and quite substantial) the flows at which they are directed.

15. Samuel Pizer, Statement to the Commission on International Trade and Investment Policy on the "Capital Restraint Programs," October 15, 1970.

    Pizer argues that there has been a large impact of the programs in reducing gross outflows in the categories controlled. He concludes moreover that despite the possibility of some leakages, there has been a substantial net effect.

16. Martin F. J. Prachowny, A Structural Model of the U.S. Balance of Payments (North-Holland Publishing Company, Amsterdam, 1969).

    This is another econometric study that uses on-off dummy variables in some capital flow equations to allow for the effects of the U.S. capital control programs.

17. R. Rickover, "Export Finance Before and After the Voluntary Foreign Credit Restraint Program," NYFRB Research Memorandum, October 14, 1969.

    Rickover attempts to estimate the effect of the VFCR program on export financing with a simple regression relating changes in trade credit to (current and lagged) changes in the value of U.S. exports. He believes that the volume of export trade financing has been affected by the VFCR program.

18. R. Rickover, "Interest Rates, Capital Flows, and Errors and Omissions in the U.S. Balance of Payments," NYFRB Memorandum, March 8, 1971.

    Rickover concludes that the "normal" unrecorded outflow (errors and omissions) attributable to systematic errors in data collection is sizable. Interest rates (in the United States, Canada, and the Euro-dollar market) and U.S. banks' liabilities to their foreign branches exert a strong influence on unrecorded outflows. Delays between payments for U.S. imports and their recorded arrival in the United States also influence errors and omissions when significant changes occur in the volume of imports.

19. Guy Stevens, "Capital Mobility and the International Firms," a paper presented at a Universities-NBER Conference on International Mobility and Movement of Capital, January 30-February 1, 1970, Washington, D. C.

Stevens estimates an econometric model of firm behavior. He concludes that "virtually no impact of the various balance-of-payments programs is evident on plant and equipment expenditures in manufacturing."

BOARD OF GOVERNORS
OF THE
FEDERAL RESERVE SYSTEM

Office Correspondence

Date April 12, 1971

To Board of Governors

Subject: Effects of Balance of Payments Restraint Programs.

From Robert Solomon

CONFIDENTIAL (FR)

The attached paper, prepared in the International Division's Special Studies Section, under the guidance of Ralph Bryant, examines the impact of the capital outflow restraint programs and tries to evaluate the various leakages that could offset their direct impact.

After studying the evidence, the authors of the paper state their belief that "the programs yield a significant balance of payments gain."

RS

Attachment.

liquid assets
For. blance

CONFIDENTIAL (FR)

DO THE RESTRAINTS ON U.S. CAPITAL OUTFLOWS IMPROVE THE BALANCE OF PAYMENTS?

April 7, 1971

Special Studies Section
Division of International Finance
Board of Governors of the Federal Reserve System

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Confidential (FR)

INTRODUCTION AND SUMMARY

There are good grounds for believing that the restraints on certain types of capital outflows from the United States -- the interest equalization tax (IET), the voluntary controls on banks and other financial institutions (VFCR), and the controls over direct foreign investment of U.S. companies -- have held such flows substantially below the levels they would have reached in the absence of the restraints.

The restraints have been effective in limiting the specific capital outflows at which they are aimed in good part because they reinforce one another. Moreover, they undoubtedly have had a greater impact in limiting these capital outflows during periods of monetary ease in this country than during periods of tight monetary conditions.

The effect of the capital controls on the overall balance of payments, however, is less clear. The gross balance-of-payments "savings" in outflows of U.S. capital affect monetary conditions and economic activity here and abroad. Those effects, in turn, influence the flow of foreign capital into the United States and may also lead to changes in trade and other elements of the current account. Specifically, the limitation on outflows of U.S. capital tends to tighten monetary conditions abroad relative to conditions that would otherwise prevail, thereby reducing some foreign capital flows into the United States. Moreover, the restriction on U.S.

capital outflows could limit the availability of trade credit and thereby result in some loss of U.S. export business. Still more indirectly, the restraint on capital outflows may cause GNP (nominal if not real) in other countries to be less than otherwise and thus reduce the demand for U.S. exports.

Statements about the degree to which gross balance-of-payments savings resulting from reductions in controlled U.S. capital outflows are counteracted by "leakages" -- by outflows of uncontrolled U.S. capital, by reductions in inflows of foreign capital, and by loss of export business -- involve very large elements of judgment. The systematic exploration of structural relationships in the international economy lags far behind the investigations of behavioral relationships underlying domestic economic activity, and the effort suffers from severe data deficiencies. There are therefore firm grounds for humility in expressing judgments. Our belief is that offsets to the gross savings in the form of leakages, while far from negligible, are also far from complete. We do believe that the programs yield a significant balance-of-payments gain.

The data do not seem to give much support to an argument that uncontrolled forms of U.S. capital outflow have been substantially larger than they would have been in the absence of controls; these flows (nonbank and bank outflows not covered by the programs, and also net errors and omissions) are dominated by shifts in monetary policies here and abroad and by other influences unrelated to the controls. The evidence is relatively strong, moreover, that U.S. exports were not hampered directly by limitations on capital outflows. With respect to inflows of foreign capital, it is particularly difficult to make a judgment about the gap between what actually occurred and what might have occurred in the absence of the capital restraints. There is no reliable evidence showing either that the gap was large or that it was small. Concerning the still more indirect leakages arising through the general effects of the U.S. controls on economic developments abroad, there is no empirical basis for a judgment. Judgments concerning these most indirect consequences necessarily rest on a theoretical view of the functioning of the international system in the contemporary environment.

In the next section of the paper, we briefly summarize the analytical perspective appropriate for studying the balance-of-payments consequences of the restraints on capital outflows. Section II and Appendix A give our appraisal of the current state of knowledge concerning the structural relationships between national economies. We review in Section III some of the empirical evidence that can be brought to bear on the issue. Several appendices deal in more detail with various subtopics. Finally, in Section IV, we include a brief critical comment on a recent paper on this subject prepared in the Office of Management and Budget.

Our paper does not attempt to deal with the broader and still more difficult question of whether the various costs associated with the U.S. capital controls exceed any benefits. We do not express judgments about this broader question, and would not wish readers to infer such judgments. We have deliberately restricted ourselves here to the narrower question of whether the programs have a net positive effect in improving the balance of payments.

I. ANALYTICAL FRAME OF REFERENCE

An analysis of the balance-of-payments effects of imposing controls on U.S. capital outflows should in principle take into account all the behavioral relationships which link national economies together into an interdependent world economy. It is clearly insufficient to look just at the reductions in outflows of the specific types of capital at which the controls are directed, large though these gross savings may be.

One way to establish the appropriate analytical perspective is to pose the following three questions: 1) Do U.S. residents directly substitute other types of capital outflow for the flows of controlled capital that otherwise would have occurred? 2) How are monetary conditions and economic activity in the United States affected, and how do such effects feed back onto the balance of payments? 3) How are monetary conditions and economic activity in foreign countries affected, with consequent feedback effects on the U.S. balance of payments?

The various control programs -- the IET, the VFCR, and the OFDI regulations -- cover the principal types of U.S. capital outflows that may substitute for one another and therefore are mutually reinforcing. The remaining flows of U.S. capital not subject to controls are the claims of nonbanks on foreigners -- both those claims reported and those that are not reported but reflected in errors and omissions

-- and also some exempted claims of banks. The extent to which these other outflows can and do substitute for the controlled outflows has to be ascertained before one can answer the question posed in this paper.

The way that a reduction in capital outflows from the United States affects monetary conditions and economic activity in the United States is conditioned by the reserve-currency role of the dollar. If the reduction in the outflow of capital and the initial improvement in the U.S. balance of payments has no effect on U.S. holdings of gold and other reserve assets, there is no automatic effect on the money supply and on the reserves of U.S. commercial banks. Since U.S. official settlements deficits or surpluses are often financed solely by changes in reserve liabilities, the U.S. monetary authorities are frequently not confronted, as other countries in such circumstances always are, by the issue of whether to offset the effects of the balance of payments on money supply and bank liquidity. Demand management policies in the United States, therefore, have probably been little if any different from what they would have been without the controls -- unless prior to introduction of the controls, the concern for external balance was leading U.S. policy-makers to pursue more restrictive policies than they wanted to pursue for domestic reasons alone.[1/]

1/ On the other hand, the controls and their immediate balance-of-payments effects did induce shifts in both the demand for and supply of funds in particular sectors of the U.S. money and capital markets, which had some consequences for the size and composition of banks' assets and liabilities and also for the term structure of interest rates. Through causal sequences of this type, the imposition of the controls could have produced second-order feedback effects on a number of categories of balance-of-payments transactions.

What type of feedback effects can result from the impacts of the controls on monetary conditions and economic activity in foreign countries? The way an analyst answers this third question is likely to be a critical factor in determining his estimates of the importance of leakages, and hence his judgment about the ultimate net effects of the controls on the U.S. balance of payments.

Reduced outflows of capital from the United States tend to hold down the growth in money supply, bank liquidity, and credit flows in the rest of the world, compared with what would occur in the absence of the U.S. controls. The extent to which these effects are important in individual countries depends critically on government policy-makers. At one extreme, a country's policy-makers may have such a variety of policy instruments and be so skillful at offsetting external influences that they succeed in creating virtually the same domestic monetary conditions and economic activity that would have prevailed in the absence of the U.S. controls. If all foreign policy-makers were so fortunate and skillful, the initial gross savings in the U.S. balance of payments attributable to the capital controls would not be badly eroded by unfavorable feedback effects. At the other extreme, a country's policy-makers may be unable to prevent the reduced outflows of capital from the United States from having a full impact on domestic monetary conditions and economic activity. If all foreign policy-makers were limited in that way, a very large proportion of the initial gross savings in the U.S. balance of payments might ultimately be eroded and there might be little net effect of the controls on the overall balance of payments. Most countries, of course, fall somewhere in between these two extremes.

The feedback effects on the U.S. balance of payments can in principle occur in virtually all categories of balance-of-payments transactions. Tighter monetary conditions and higher interest rates abroad (compared with what they would be in the absence of the U.S. controls) could reduce all types of foreign capital flows in the United States. Slower real growth and/or a less rapid rate of inflation than would otherwise occur may reduce foreign imports from the United States.

The qualitative effects of the controls on capital outflows and on the balance of payments can be illustrated more specifically by describing the hypothetical situation that might have developed had the recent shift toward ease in monetary conditions in the United States occurred in the absence of any capital controls. Our purpose in including this hypothetical description here is still the limited one of outlining an appropriate analytical frame of reference. We are <u>not</u> attempting to predict what might happen if the existing control programs were to be dismantled.

To begin with direct investment, a larger proportion of U.S. business outlays abroad in recent quarters would have been financed from U.S. sources. This difference in the source of financing would appear in the balance of payments as an increase in direct investment. There also would be a stock adjustment as maturing debt of U.S. corporations held abroad -- much of which is short-term -- was replaced with issues in the United States. The sale of foreign securities to U.S. investors would have been greater in the absence of controls in the environment of easy monetary conditions in the United States.

Given the large shift in the locus of demands for long-term capital that would have occurred without controls, the stimulus for lower interest rates in foreign capital markets would have been greater than it has been; at the same time, the decline in long-term rates in the United States would have been somewhat retarded. Nevertheless, interest rates in the United States would have declined relative to those abroad -- given that foreign monetary authorities were not also implementing policies of active ease. The re-alignment in interest rates in the absence of controls would have induced both American and foreign investors to alter their portfolios of debt securities in favor of foreign instruments, thereby augmenting the outflows of capital from the United States.

In the absence of the VFCR, the easing in monetary conditions in the United States would have induced the same sort of consequences through an expansion in bank credit to foreigners. In the short-term area, the stock adjustment in response to the changed interest-rate relationships between here and abroad can be accomplished quickly, producing a substantial outflow promptly.

The additional capital outflows in the absence of the capital controls would have tended to increase directly the money supply in other industrial countries still more than the actual outflows have done, and they also would have tended to increase bank liquidity still more and provided the basis for a larger secondary expansion in credit and money. If this had been allowed to occur -- if the foreign authorities had made no effort to neutralize the inflows of funds -- interest rates abroad would have been under still greater downward pressure. The differential in interest rates between the United States and foreign countries would have been smaller, but this would have been the result of larger net outflows of funds from the United States than actually occurred.

Over time, the process would have produced some balance-of-payments offsets to the augmented capital outflows. The easier monetary conditions induced in other industrial countries would have expanded their demands for U.S. goods and services. Also, working capital requirements abroad would have been greater, and some portion of foreign working capital is held in dollars. To the extent that the additional capital outflows from the United States would have been accompanied by expansion in <u>private</u> foreign demands for short-term dollar assets, the rise in the U.S. official settlements deficit would have been tempered. The induced expansion in foreign demand for goods and services occurs with some lag, however, and in the interim the absence of capital controls during the process of easing monetary conditions in the United States would have augmented the deficit in the U.S. balance of payments.

How the process would have worked in fact would have been strongly influenced by the policy responses abroad. To the extent that the authorities would have been successful in neutralizing the additional inflows of funds -- in retarding the monetary expansion and declines in interest rates -- the balance-of-payments offsets to the additional outflows of U.S. capital would have been prevented from developing.

The augmented outflows of funds in the absence of the controls would have been in addition to the large repayments of U.S. bank borrowings from the Eurodollar market that have occurred and have been reflected in the extraordinary U.S. official settlements deficits. Moreover, the augmented outflows from the United States would have occurred when other industrial countries already were experiencing boom conditions and inflationary pressures. The additional expansive effects on their economies would have been totally unwanted. Indeed, even the effects of the repayment of the Eurodollar borrowings were unwanted and interfered with the policies that foreign monetary authorities wished to follow. In the circumstances, additional outflows of U.S. capital would have generated offsets in the current account chiefly by raising nominal rather than real GNP in other industrial countries. It would have done so, in other words, by accelerating the rates of inflation abroad.

II. HOW MUCH DO WE KNOW ABOUT INTERNATIONAL ECONOMIC RELATIONSHIPS?

How would it be possible adequately to appraise the magnitude of gross balance-of-payments savings due to the U.S. capital controls and the proportion of these gross savings that are lost through leakages?

As the preceding section suggests, it would be necessary to specify and estimate a highly elaborated model of the international economy. Such a model would need to include demand and supply equations for each important financial instrument (international and domestic). These equations would in turn have to be specified so as adequately to reflect the complex interrelationships between all financial markets. Moreover, the model would have to embody the behavioral relationships linking international capital flows, merchandise trade flows, and economic activity levels for all major countries or regions. Finally, the analysis would have to take explicit account of the likely reactions of foreign policy makers to various types of U.S. policy actions.

The economics profession is very far from having such a model of the international economy. The partial evidence about behavioral relationships that does exist is grossly inadequate. In these circumstances, even tentative conclusions about the effects of the United States capital control programs can be no more than informed guesses. A fuller treatment of this important point has been deferred to Appendix A.

We try in the next section to bring together some empirical information relevant to an analysis of the capital controls and to make some judgmental estimates of how large the gross balance-of-payments savings and the offsetting leakages may have been. We put forward these judgments with genuine hesitation. Although we believe our judgments are as reasonable as can be made given the present state of knowledge, we are mainly impressed -- as emphasized in Appendix A -- with the inability of anyone to make judgments that are clearly valid.

III. JUDGMENTAL ESTIMATES OF THE EFFECTS OF THE U.S. CAPITAL CONTROL PROGRAM

A. Gross Savings on Capital Flows Covered by the Programs

Interest Equalization Tax. The IET has been imposed on U.S. purchases of foreign securities since mid-1963 and on long-term bank lending since February 1965.

The IET induced a sharp reduction in U.S. purchases of foreign new issues, as suggested by Table 1. The annual average of these purchases, which had been building up sharply in 1962 and early 1963, fell by $177 million between 1962-63 and 1964-65, and an additional $58 million between the latter period and 1966-69. The severity of the reduction in 1964, shown in Table 1, is probably attributable to the substitution of untaxed bank loans for security issues in that year. With the extension of the IET to long-term bank loans in 1965, and also the inception of the VFCR, new security issues rose moderately. The reduction of new issues in the 1966-69 period from the 1964-65 average appears to be attributable in large part to the relative tightness in the U.S. market for long-term capital. With the advent of easier money in the United States after 1969, the IET undoubtedly had more of a restraining effect on foreign new issues.

Table 1

U.S. Purchases of Foreign Securities Newly Issued in the United States by European Countries, Australia, New Zealand and South Africa.[a/]
(millions of dollars)

1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
24	57	195	289	35	95	15	-	-	14	-[b/]

a/ Japan is excluded because Japanese new issues were partially exempted from the IET. The 1965 exemption of $100 million was continued for several years, but was not fully utilized because of rising U.S. interest rates.

b/ Excluding an exchange of stock issued to finance a foreign direct investment in the United States. This transaction had a neutral effect on the balance of payments.

The IET has at least two types of effects on new issues. Most immediately, potential foreign borrowers are deterred by the existence of the tax itself. Less directly, the cumulative effects of the tax over time probably have given an added fillip to the development of European capital markets, inducing Europeans to raise more capital in their own markets as opposed to the U.S. market. In the face of growing foreign demand for long-term capital, the full impact of the IET on new issues in 1970 could well have been substantially in excess of the average volume of new issues observed in 1962-63.

In the face of the IET, American net purchases of outstanding foreign equities reached a cumulative total of only $1/4 billion during the 1963-70 period.[1/] Suppose that in the absence of the IET, Americans would

1/ Net purchases of outstanding bonds were negligible. Net U.S. purchases of Japanese equities in 1969 were very large (approximately $300 million) and more than offset net U.S. sales of foreign equities during most of the 1963-70 period. At the end of 1969, Japanese long-term assets were brought under the VFCR program for nonbank financial institutions. This action has virtually eliminated the flow of funds by U.S. institutional investors into Japanese equities.

have wanted to allocate a roughly constant proportion of their equity portfolios to foreign equities. This assumption implies that substantial net purchases of foreign equities, possibly as much as $3-4 billion, would have occurred. A number such as $3-4 billion probably represents an upper bound for the cumulative gross savings for 1963-70. Without the IET, of course, net purchases would undoubtedly have fluctuated considerably.[1/]

We have not tried to make estimates of the gross savings attributable specifically to the 1965 extension of the IET to long-term bank loans. Total foreign lending of banks is considered under the VFCR program.

Voluntary Foreign Credit Restraint. The introduction of the VFCR early in 1965, in combination with the imposition of the IET on banks' long-term loans, was associated with a sharp cutback in new foreign lending by U.S. banks. The balance-of-payments accounts show that the combined outflow of long-term and short-term bank funds fell from an annual average of $1.4 billion in 1960-64 to an annual average of less than $100 million in 1965-69.

That the program played a large role in limiting the outflow of bank credit is not contradicted by the continuous existence of an apparent leeway for additional lending, as shown in Table 2. The

1/ Inspection of stock price trends in various countries suggests that U.S. prices rose at roughly the average of foreign price rises, but with less fluctuation.

apparent leeway under the ceiling reflects mostly cyclical factors, differences among banks, and bank uncertainty about draw-downs by foreign borrowers.[1/]

Table 2

Banks' Ceilings and Leeway Under the VFCR
(Millions of dollars, end of year)

	1965	1966	1967	1968	1969	1970
General Ceiling						
Aggregate ceiling[a/]	9,973	10,407	11,069	9,729	10,092	9,956
Apparent leeway	321	911	1,204	476	694	606
Total General and Export Term-Loan Ceilings[b/]						
Aggregate ceilings[a/]	9,973	10,407	11,069	9,729	11,356	11,379
Apparent leeway	321	911	1,204	476	1,939	1,842

a/ Ceilings are calculated on the basis of the guidelines in effect during the given year. There were both liberalizations and intensifications of the guidelines from 1965 to mid-1968 and several relaxations since late 1968.

b/ Export Term-Loan Ceiling added at the end of 1969.

Econometric research on bank lending to foreigners has been fraught with problems, few if any of which have been satisfactorily resolved.[2/] With the exception of the studies by Bryant and Hendershott,

1/ See Bernard Norwood, "Restraining Foreign Credit: Six Year Test," Wharton Quarterly, Winter 1970, pp. 32-37.

2/ Appendix E lists some of the references. The studies most relevant here are those by Branson, Bryant and Hendershott, Laffer, Miller and Whitman, and Patrick.

this research has allowed for the effects of the VFCR only in a crude, inadequate fashion. Even Bryant and Hendershott, despite strenuous efforts to adapt their equations so as explicitly to reflect the varying impacts of the VFCR guidelines, failed to come up with clear-cut evidence.[1/]

If the proportion of foreign loans in the portfolios of U.S. banks had been the same at the end of 1970 as it was at the end of 1962, foreign loans would have been $16.6 billion instead of the observed figure of $13.8 billion.[2/] This calculation may give a crude indication of the possible magnitude of the effect of the VFCR on the distribution of U.S. bank portfolios. The precise impact of the VFCR at any given time, of course, depends critically on monetary conditions in the United States relative to those abroad. In the past year, the restraining effect of the VFCR on bank lending has increased considerably, compared with its effect during the most intense periods of monetary tightness in 1969. It is estimated that German companies borrowed nearly $1.8 billion in Eurodollars during 1970. In the absence of the VFCR, a significant portion of this loan demand might have been met by U.S. banks.

1/ See Bryant and Hendershott, Financial Capital Flows in the Balance of Payments of the United States: An Exploratory Empirical Study, Princeton Studies in International Finance No. 25, pp. 31-32, 48-50, 60-61; also "Empirical Analysis of Capital Flows: Some Consequences of Alternative Specifications," Forthcoming in Universities-NBER Volume on The International Mobility and Movement of Capital.

2/ Foreign loans here include Canadian, which are exempt from the VFCR. The year 1962 is taken as a base because of the surge in borrowing in 1963-64 after the IET restricted security issues.

The effect of the VFCR on nonbank financial institutions is even harder to judge, because of the diversity of such institutions and because of potential switches between assets not covered (over $13 billion) and covered assets (under $2 billion). One indication of the effectiveness of the non-bank program is the virtual cessation of U.S. purchases of Japanese equities after such assets were brought under the program, in contrast to net U.S. purchases of $300 million in 1969.

Foreign Direct Investment Program. This program was designed to limit outflows of U.S.-owned funds (as they are reflected in the balance of payments) to finance U.S. business investment in foreign affiliates; it was not the intention to limit the investment outlays of those affiliates. The program, it was hoped, would shift the source of financing away from the United States, and it appears to have been successful in doing that.[1/] One possible indication of the size of gross program savings is given by the amount of funds obtained abroad by U.S. parent firms; such financing was virtually zero until the advent of the voluntary program in 1965; in 1968, 1969, and 1970 it was more than $2 billion per year. (See Table 3, line 4.[2/])

1/ For example, Guy Stevens found that "virtually no impact of the various balance of payments program is evident on plant and equipment expenditures in manufacturing." See his "Capital Mobility and the International Firm," Universities-National Bureau Conference on International Mobility and Movement of Capital, forthcoming.

2/ These data, from OFDI, are more inclusive than those from OBE, since they include foreign borrowings which are used abroad without first being remitted to the United States.

Table 3

Selected Data on Direct Foreign Investment
(millions of current dollars)

	Financial	1965	1966	1967	1968	1969	1970[e]
1.	Net capital transfers	3926	4386	4178	2671	3720	4250
2.	+ Reinvested earnings	1492	1692	1390	1950	2325	3150
3.	= Direct investment	5418	6078	5568	4621	6045	7400
4.	- Long-term foreign borrowing by parent firms[a] and program adjustments[b]	104	638	542	2161	2346	2500
5.	= Net use of U.S.-source funds and Reinvested Earnings	5314	5440	5026	2460	3699	4900
6.	+ Depreciation[e]	3686	4074	4632	5265	5800	6400
7.	+ Long-term foreign borrowing by parent firms and program adjustments	104	638	542	2161	2346	2500
8.	= Gross use of U.S.-controlled funds	9104	10152	10200	9886	11845	13800
	Real						
9.	Plant & equipment expenditures	7440	8640	9267	9387	10787	13200

a/ Excluding Canada, since no data are available. In contrast, other data in this table are worldwide, i.e., all three OFDI schedules plus Canada.

b/ Program adjustments are offsets to foreign borrowing, such as repayments and indirect capital transfers.

e/ Estimated

Source: Depreciation and plant and equipment expenditures from Office of Business Economics; other data from Office of Foreign Direct Investments.

The decline in the ratio of U.S.-controlled funds to plant and equipment expenditures[1] that has occurred as foreign affiliates have relied to a greater extent on local borrowing (i.e., by affiliates, in addition to foreign borrowing by parent firms) is a possible indication of additional gross savings. For 1965, this ratio was 1.225; for the 1966-67 period, when the voluntary program specified firm-level targets, it fell to 1.135. In contrast, the ratio under the Mandatory Program in 1968-70 was 1.065. If the 1965 ratio had prevailed in 1968-70, gross use of U.S.-controlled funds would have been some $1-3/4 billion greater on average per year.

The trend toward greater reliance on local financing is consistent with another set of OFDI data, available for 1967-68 (See Table 4).[2] For all direct investment outside Canada, these data show that each dollar of new current assets was matched in 1968 by 91 cents in affiliate borrowing, as opposed to 85 cents in outstanding affiliate

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1/ U.S.-controlled funds are defined to include depreciation allowances since the latter allow direct investors to make some plant and equipment expenditures without recourse either to foreign borrowings or U.S. funds. In other words, reinvestment of depreciation allowances leaves the book value of foreign affiliates unchanged; thus plant and equipment expenditures should be attributed to depreciation allowances as well as to U.S.-source funds and foreign borrowing by parent firms.

2/ U.S. Department of Commerce, Office of Foreign Direct Investments, Foreign Affiliate Financial Survey 1967-1968 (Washington, July 2, 1970). Comparable data for 1966 and 1969 are not yet available, either from OFDI or OBE.

borrowing per dollar of current assets at the beginning of 1968.[1/] However, comparable data for Canada (Table 4) showed a similar movement, reminding us that other factors probably accounted for much of the increased use of local funds on the part of affiliates.

The prima facie evidence is that the Voluntary and Mandatory Programs had successively larger influences on both parent-firm and affiliate financing.[2/] But, of course, part of this increased foreign financing might have occurred in 1968 and 1969 even in the absence of controls as a result of tighter money in the United States. In 1970, however, the Mandatory Program was undoubtedly effective in preventing corporations from shifting new financing back to U.S. sources, as well as refinancing outstanding foreign debt in the United States.

B. "Leakages" Offsetting the Gross Savings

While it is difficult to estimate a possible range of gross balance-of-payments savings generated by the capital controls, it is even more difficult to guess at the size of leakages. The difficulties are severe both because of the limited state of our knowledge (see Appendix A) and because offsets can conceivably occur in any

1/ Affiliate financing is functionally related to current assets because of seller financing of locally obtained inputs and because firms attempt to match local-currency assets and liabilities. See S. Robbins and R. Stobaugh, Comment on Stevens' "Capital Mobility and the International Firm," Universities-National Bureau Conference on International Mobility and Movement of Capital, forthcoming.

2/ The initial Voluntary Program for 1965 did not involve firm-level targets, and resulted mainly in the repatriation of head-office balances formerly held in Europe.

Table 4

Majority-owned Foreign Affiliates
Current Assets and Foreign-Source Funds, 1967-68
(millions of dollars)

	Outstanding end-1967	Outstanding end-1968	Change during 1968
All Schedules			
Current assets	25,805	30,406	4,601
Foreign debt	21,909	26,100	4,191
Ratio, foreign debt to current assets	.849	.858	.911
Canada			
Current assets	7,649	8,481	831
Foreign debt	5,549	6,273	724
Ratio, foreign debt to current assets	.726	.740	.871

balance-of-payments category. In the following subsections we attempt to review the evidence available for four categories of transactions where leakages seem particularly likely to have occurred.

Foreign Purchases of U.S. Securities. An obvious source of potential leakages is in foreign purchases of U.S. corporate securities. Most directly, the convertible Eurobonds issued by U.S. corporations as a response to the capital controls are undoubtedly a close substitute for securities which foreigners would otherwise purchase in New York.

During the period in which the capital controls were in force, foreign purchases of U.S. securities increased to unprecedented rates. They might, it is true, have increased still more in the absence of the controls. Indeed, there is no convincing evidence on what the magnitude of this leakage may have been. We find it implausible, however, to imagine that it could have been in excess of a few hundred million dollars per year on average. (See Appendix B for a more detailed discussion of this potential leakage.)

Errors and Omissions. Another possible offset to the savings in controlled outflows of capital could have occurred in the errors-and-omissions account in the balance of payments. When that account is unusually large and negative, it is often inferred that flows of unrecorded capital are the cause. There is some evidence, however, that many of the major movements of the errors-and-omissions account can be attributed to forces other than the capital controls.[1/]

There appears to be a substantial normal error -- approaching an annual rate of $1 billion -- reflecting systematic errors in data collection. (See Table 5.) The actual figures vary from that base because of changes in interest-rate differentials between here and abroad, quarter-to-quarter changes in imports (the recording of which appears to lag behind payments), and speculative movements of funds from time to time.

Table 5

Errors and Omissions
(Billions of dollars)

1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
-1.2	-1.1	-1.2	-0.5	-1.1	-0.6	-0.5	-1.1	-0.5	-2.9	-1.3

The large rise in errors and omissions in 1969, for example, was associated with the sharp increases in interest rates in the Euro-dollar market, which attracted funds of U.S. residents out of time deposits in U.S. commercial banks. There was a substantial circular

1/ See, for example, R. Rickover, "Interest Rates, Capital Flows, and Errors and Omissions in the U.S. Balance of Payments," Research Memorandum of the Federal Reserve Bank of New York, March 8, 1971.

flow of funds, however, as the U.S. banks borrowed back these funds. In fact, the banks' borrowings far exceeded these outflows, with the result that the official-settlements balance of payments was heavily in surplus. An additional factor contributing to the large figure for errors and omissions in early 1969 was the dock strike.

If unrecorded net outflows of U.S. capital have been greater or if unrecorded net inflows of foreign capital have been smaller than they otherwise would have been in the absence of the U.S. capital controls, this has been far from obvious in the actual data for net errors and omission.

Foreign Holdings of Liquid Assets in the United States. The U.S. capital controls no doubt had some effect on foreigners' demand for liquid dollar assets held in the United States. The growth in foreigners' awareness of investment opportunities in the Eurodollar market in the 1964-70 period, together with the relatively higher yields offered on Eurodollar deposits compared with assets of comparable liquidity and maturity in New York, would have constituted substantial incentives for substituting Eurodollar assets for dollar assets held in the United States. Imposition of the capital controls, which in turn led U.S. banks to multiply the number of their foreign branches and to carry out lending through their branches which might otherwise have been done at head offices, gave an added fillip to the bidding for funds in the Eurodollar market. With Eurodollar rates higher relative to U.S. rates than they otherwise might have been, it seems likely that a larger proportion of the growth in foreigners' total holdings of liquid dollar assets took place in the Eurodollar market rather than in the United States.

In Appendix D, we review some research of Arthur Laffer which purports to show that this leakage has been so large as to offset completely the gross savings due to the VFCR. In that appendix we give some reasons for believing that the method which Laffer used to reach his conclusion is not analytically sound. Indeed, using exactly the same technique that Laffer employed for 1965 and the first half of 1966, we have updated his analysis to include data for the last half of 1966 and for 1967-70. When this is done, the results superficially point to a conclusion that the VFCR has led foreigners to <u>increase</u> their liquid assets in the United States compared with what they otherwise would have done. This latter conclusion is of course nonsense. The fact that Laffer's analytical method leads to a clearly incorrect conclusion with 1967-70 data, however, should also make one highly suspicious of the conclusion that Laffer drew from his analysis using only data for 1965 and the first half of 1966.

Over the last fifteen years, U.S. liquid liabilities to nonofficial foreigners have grown more rapidly than the trade of the rest of the world. The growth of foreign liquid assets in the United States relative to foreign trade and GNP has been quite high even if one excludes the atypical cases of liquid liabilities to banks in the United Kingdom, Canada, Japan, and Switzerland. If anything, these secular trends may have accelerated during the latter half of the 1960's.[1/] If leakages from the gross savings have occurred on a significant scale through this channel, therefore, they have been much more than offset by other unexplained factors leading to faster growth of foreign liquid assets in the United States.

As in the other cases of potential leakages, one cannot reach clear-cut conclusions. But there is certainly no analytically acceptable evidence which demonstrates that leakages via this particular channel have been large. Our best seat-of-the-pants judgment is that the leakages here might be on the order of a few hundred million dollars per year, but not so large as to be measured in billions of dollars.

Export Performance. We are reasonably confident that the VFCR program has had little "direct" adverse impact on U.S. export performance.[2/] None of the export equations of which we are aware employ the volume of trade credit as an explanatory variable. And the predictive ability of these equations has not been materially

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1/ These generalizations are based on some recent empirical research by Ralph Bryant on the international demand for liquid dollar assets.

2/ A recent survey of banks, conducted by the Federal Reserve Board, "turned up very few examples of requests for financing the export of U.S. goods that were denied in 1970 because of [the VFCR] program." Board of Governors of the Federal Reserve System, "Report on Inquiry into Possible Effects of Voluntary Foreign Credit Restraining Program in 1970 on Export Financing and on Exports," January 7, 1971.

impaired since the imposition of capital controls. Thus, we infer either that United States exports have not been crucially dependent on the availability of trade credit, that the programs have succeeded in maintaining the level of U.S. trade credits while controlling other U.S. flows, or, most likely, that other sources of credit (including lending by the foreign branches of U.S. banks) have been substituted for U.S. credit.

Of course, there may have been "indirect" effects on United States exports resulting from a level of economic activity abroad less than what would have occurred in the absence of U.S. capital controls. Reduced capital flows to the industrialized countries may have affected their monetary conditions and thus their levels of economic activity. Reduced capital flows to the less developed countries (LDCs) may have reduced LDC demand for U.S. exports directly, and indirectly reduced U.S. exports as a consequence of reduced LDC imports from the other industrialized countries. The extent to which these effects were operative depends in large part upon the demand management policies pursued abroad and on their effectiveness. In 1969-1970, economic activity levels in Japan and Western Europe were quite high; capacity was being strained in these countries and inflationary pressures were strong. In those circumstances, greater capital outflows might have enlarged U.S. exports as a result of even more intense inflation abroad.

Other Leakages. Offsets to the gross balance-of-payments savings generated by the control programs could in principle have occurred in every uncontrolled category of transactions in the U.S. balance of payments. While we believe the four categories discussed above are likely to have been the most important in quantitative terms, we recognize that non-negligible offsets could have taken place in still other parts of the current or capital accounts. We have no way of making an informed judgment about the magnitude of these other leakages.

IV. A BRIEF COMMENT ON THE OMB PAPER: "CAPITAL CONTROLS: QUESTIONABLE RESULTS AND UNDOUBTED COSTS."

In light of the discussion in the previous sections, how should we interpret the recent paper from the Office of Management and Budget?[1/] In our view, the OMB paper fails altogether to do justice to the analytical complexity of the questions raised by the capital control programs.

The OMB paper begins, quite correctly, by emphasizing that any reductions in the outflow of U.S.-owned capital brought about by the programs will have induced some offsetting flows in other balance-of-payments accounts. Unfortunately, this reasonable a priori presumption is then used to support the non sequitur (page 2) that "there is no reason to expect that capital controls would, in any significant sense, actually reduce the net outflow of reserves." It is a big step from the plausible statement that leakages exist to the statement that they completely offset the effects of the controls. Financial instruments are not perfect substitutes and international capital and goods markets are not fully integrated.

1/ "Capital Controls: Questionable Results and Undoubted Costs," transmitted on March 2, 1971, with accompanying memorandum by the Director of the Office of Management and Budget to the members of the Council on International Economic Policy via the Honorable Peter G. Peterson.

Although leakages surely exist, we strongly doubt that they have completely negated the effects of the controls -- particularly in periods of monetary tightness in the United States. In any case, far too little is known about this subject to justify the sweeping assertions in the OMB paper.

The empirical studies cited in the OMB paper fall very short of being convincing evidence. We note in Appendix A (page 34) that the Cooper paper which is cited is not relevant to the present set of reinforcing controls.

The OMB paper does accurately convey the tenor of a study, dated May 11, 1970, by the Center for Political Research, the conclusions of which are in opposition to the OFDI program. But in our view these CPR conclusions are not warranted by the information and economic analysis in the study (see Appendix C).

The third empirical study cited as evidence in the OMB paper is by Arthur Laffer and deals with short-term bank-reported claims and liabilities. We have already noted (pages 27-28) that Laffer's analytical methods could not adequately justify his conclusion about the effects of the VFCR even in 1967 (when he first wrote his paper), much less justify the position in the March 1971 OMB paper (see Appendix D).

The "overall assessment" in the OMB paper states:

> Detailed studies of the capital control programs have uncovered absolutely no evidence of any effect on the balance of payments.

> The common and primary purpose of the capital control programs is to stem the net outflow of U.S. official reserve assets by obstructing American investments and loans to foreigners. All available evidence suggests that these programs cannot and have not accomplished or even worked towards this purpose.

These statements are simply false. It would be equally misleading, <u>but no more incorrect</u>, to say that "detailed studies of the capital control programs have uncovered absolutely no evidence that the gross balance-of-payments savings from reductions in U.S. capital outflows have been undermined by leakages elsewhere in the balance-of-payments accounts" and that "there is no available evidence suggesting that these programs cannot and have not accomplished their purpose."

There is a trenchant line from the second scene of Act II of <u>Hamlet</u>, in which Gertrude reprimands Polonius for his rhetoric: "More matter, with less art." This would be a useful guideline for improving the OMB paper.

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Appendix A

AN APPRAISAL OF THE STATE OF CURRENT KNOWLEDGE

Reductions in the outflow of U.S.-owned capital brought about by the programs will have induced some offsetting flows in other balance-of-payments accounts. However, since financial instruments are not perfect substitutes and international capital and goods markets are not fully integrated, it seems likely that offsetting flows, while probably important, would be only partial.

In order adequately to measure the size of gross balance-of-payments savings owing to the controls and to determine what part of the gross savings are lost in "leakages," it would be necessary to specify and estimate a full model of the international economy. We would require demand and supply equations for each financial instrument which would reflect the extent of the international interdependencies between national money and capital markets. Thus, the model would even require a complete elaboration of the markets for those financial instruments issued and held entirely domestically since conditions in these "domestic" markets would impinge on the decisions of those individual transactors who hold and those who issue "international instruments." Moreover, the model would have to embody the relationships between international capital flows, economic activity levels in the important industrial countries, and merchandise trade flows.

In sum, we would need a set of highly elaborated macroeconomic models for the major industrialized countries, with fully developed linkages between the real and financial sectors, and a well articulated international sector linking the national models together. Clearly, such a project is not feasible in the foreseeable future.[1/]

When evaluating such evidence as does exist on the effects of U.S. capital controls, it is important to realize just how far we are from having such a model of the world economy. In the first place, we do not even have the necessary econometric models for the major industrial countries. Many of the models which do exist do not even have a link between domestic financial variables and the domestic real economy. Virtually none attempts to explain international transactions other than the current account items.

Given this state of affairs, we obviously cannot produce direct empirical evidence as to whether or not controls on capital outflows are partially offset through changes in the level of economic activity abroad that reduce the United States' trade balance. This depends essentially on the ability and desire of foreign authorities to pursue independent monetary policies. It might be possible to draw

1/ Producing just such a model is the long-run objective of Project LINK, a study financed through the Social Science Research Council and under the direction of Lawrence Klein, Aaron Gordon, Bert Hickman, and Rudolph Rhomberg. Project LINK is at the present time only in its initial stage. Not even its most enthusiastic proponents would claim that its long-run objective could be attained for many years.

some inferences from investigations of the institutional factors affecting the ability of foreign authorities to pursue independent policies. While some work along these lines has been attempted, it is fair to say that the question of the degree to which independent policies can be pursued abroad must be considered open.

The main reason why international capital flow equations do not appear in any of the existing econometric models is simply that relatively little work has been done in estimating such equations. It is a common complaint of all empirical researchers that they are handicapped by a lack of appropriate data. In this area, the constraint is especially severe. Data are often collected by national agencies on non-comparable bases and much of the data are held confidentially. Moreover, there are important unobservable variables which play a crucial role in determining capital flows, especially expectations about interest rates and exchange rates.

There is also a clear need for fundamental improvements in the theory of international capital flows. It is only recently that the basic elements of domestic monetary and capital markets theory have been applied to international flows.

A very serious problem that remains to be solved is the appropriate treatment of non-price credit rationing, particularly capital controls imposed by national authorities. Capital controls introduce a "wedge" between desired flows and actual flows. A frequently employed technique in studies that have tried to estimate the quantitative effects of capital flow restraints is the introduction of an additional ("dummy") variable which differentiates the pre-control and post-control periods. However, this technique assumes that the effects of the programs are uniform throughout the period of their imposition, allowing no scope for gradual adjustment by transactors to the controls or to modifications of the controls by the authorities. When the effective impact of the programs varies over the sample period, the "dummy variable" approach can be seriously misleading.

The "learning by doing" phenomenon is especially important for estimating the net impact of the capital control programs. Leakages will likely become increasingly important with the passage of time. In the present context, this points up the necessity for estimating the lags in behavioral responses. The time path of adjustments by transactors in other markets in response to the imposition of controls in one market is virgin territory for both the theoretician and the empiricist.

The preceding discussion has pointed out a few of the more important difficulties in estimating elements of the "ideal model." The central point is that a thorough understanding of the impact of the capital control programs is contingent upon the availability of a complete model. The interrelationships between various capital markets and between capital markets and real economic activity must be explicitly dealt with.

This point is well illustrated by considering one of the empirical studies cited in a recent paper of the Office of Management and Budget.[1] The cited paper, written by Richard N. Cooper, was specifically addressed to the time period when only the IET was in effect. There is general agreement that the leakages were estremely large at that point. This was clearly recognized and led to a more comprehensive set of controls. In a more recent unpublished paper,[2] Cooper summarized his judgment on the gross savings and on the probable magnitude of offsetting leakages. He concluded that the present elements of the comprehensive set of restrictions are reinforcing and they have had a significant net impact on the balance-of-payments.

Cooper's paper, and all others of which we are aware, have attempted to estimate the impact (gross or net) of the control programs on the actually observed, historical data. Needless to say, this historical analysis by itself is insufficient for our purposes. Since the effective impact of the restraints will vary with our cyclical position, we also want to know (a) what the impact of the programs

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1/ OMB paper entitled "Capital Controls: Questionable Results and Undoubted Costs," March 2, 1971 (Mimeo). The other two studies cited by the OMB paper are discussed in Appendices C and D.

2/ Richard N. Cooper, "The Voluntary Credit Restraint Program: An Assessment," January 1969, unpublished paper prepared for a meeting of Academic Consultants at the Federal Reserve Board.

would have been if we had been more successful in having the economy grow along a non-inflationary, high-employment growth path, and (b) what the impact of the programs would be in the future, given a wide variety of alternative assumptions about domestic and foreign economic activity.

How much do we know about international capital flows? The profession has barely begun to tackle the job. The evidence that does exist is sparse. Even tentative conclusions on what the effects of the United States capital control programs have been are no more than informed guesses.

Appendix B

POTENTIAL LEAKAGES VIA REDUCED FOREIGN PURCHASES OF U.S. CORPORATE SECURITIES

A frequently mentioned balance-of-payments account in which gross reductions in capital outflows might have been offset is that of foreign purchases of U.S. corporate securities. While foreign purchases of such securities rose markedly after controls were strengthened in 1965, it is of course possible that the rise would have been greater in the absence of direct investment, or other, controls.

One obvious possibility is that the convertible Eurobonds issued by American direct investors were a substitute for ordinary American equities. These Eurobonds were sold only to non-residents of the United States. They were favorably priced, relative to comparable securities within the United States. Therefore, the standard argument goes, investors outside the United States may have been induced to hold convertible Eurobonds instead of ordinary American equities, since they received no price concessions on the latter category.

Observed transactions, however, show a close quarter-by-quarter association between foreign purchases of U.S. equities and of convertible Eurobonds issued by U.S. corporations (see attached chart). Thus, if there was substitution in the short run, it was apparently dominated by causation common to the two types of security. In addition, there may be a significant lag in foreigners' adjustment to the surge of Eurobond issues. Therefore, further evidence is needed to establish the degree of substitution between the two types of security over a longer period.

Preliminary results from an ongoing study of foreign purchases of U.S. equities being carried out by Alan Severn, however, fail to indicate any significant degree of substitution. The relative importance over time of American stocks in foreign equity protfolios was compared to relative risks and returns and to the growth of mutual funds abroad,[1] for the period 1962-70. Through 1969 and the first three quarters of 1970, foreign investors continued to hold as much of U.S. stocks as might be expected in light of relative risks, returns, and size of portfolios.[2]

Direct investment controls may also have affected foreign purchases of U.S. equities in ways other than through substitution of Eurobonds. In particular, any reduction of American cash purchases of existing foreign firms may have limited the equities purchases of foreign individuals, i.e., the former owners of the foreign firms. But since a typical foreign investor is likely to invest only a small fraction of his equities portfolio in American stocks, this offset is

1/ Including closed-end funds, to the extent that data are available.

2/ Holdings during the 1968 Eurobond surge were nearly identical to those "predicted," while they were higher than "predicted" for 1969 (by $.4 billion), though lower for the first three quarters of 1970 (by $.3 billion).

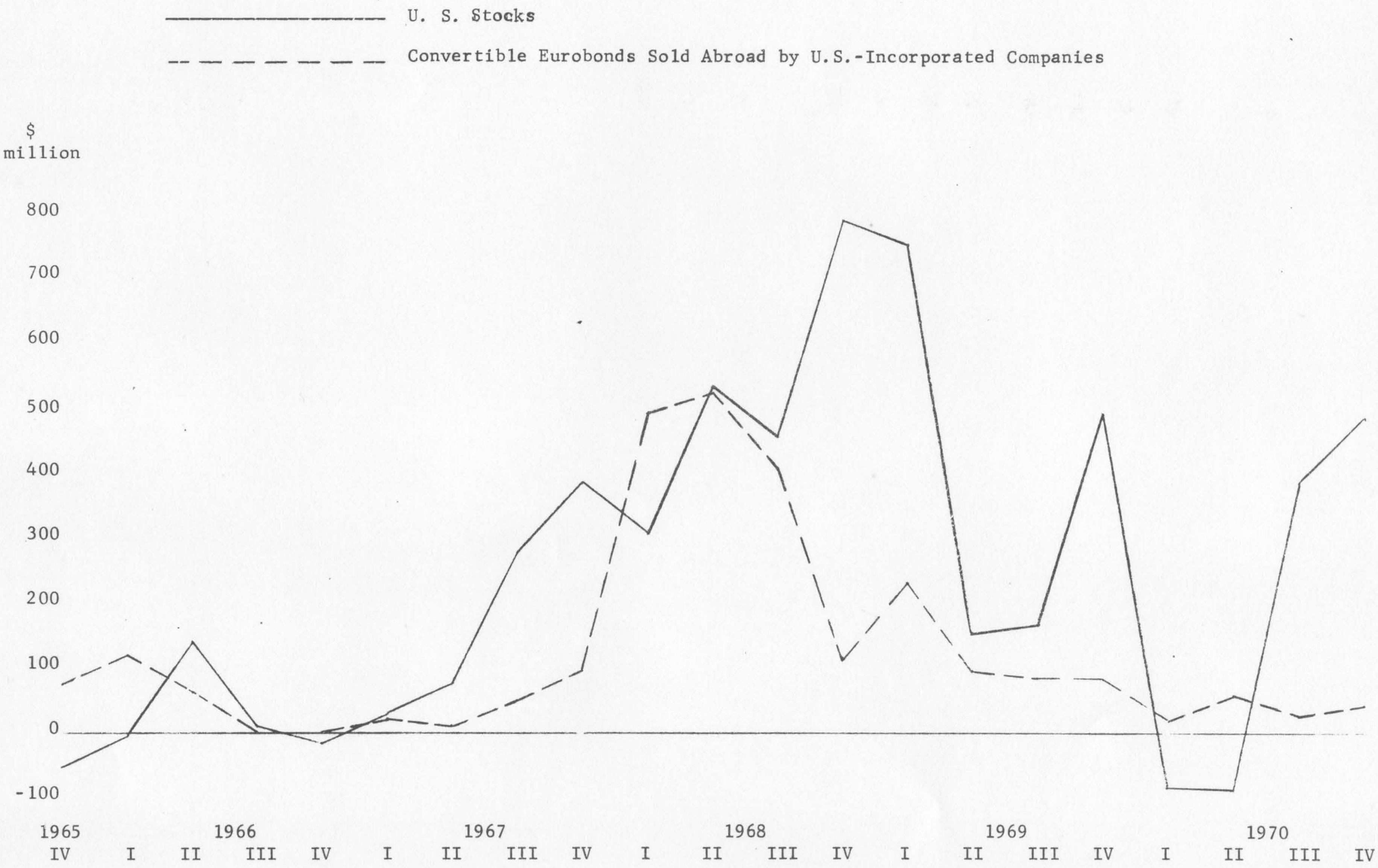
likely to be small. A similar, and similarly small, offset could be a restriction of loans available to foreign equity investors as U.S. corporations pre-empted part of available European capital.

There are also reasons for believing that the U.S. corporate securities account may contain some offsets to the IET or VFCR programs. For example, one could imagine that the virtual cessation of American purchases of foreign stocks, induced by the IET, caused foreign stock prices to rise less rapidly, thereby lowering the value of foreigners' portfolios compared with what they otherwise would have been and, over time, inducing European investors to reduce their purchases of American equities.[1/]

Altogether, it appears that the U.S. capital controls had relatively little impact on foreign holdings of U.S. equities. Even if offsets were present, but hidden by other factors relevant to foreign investment in U.S. equities, the offsets were probably small in relation to the gross savings generated by the control programs.

1/ The rise in the nominal value of foreign equity portfolios exceeded $150 billion during the 1963-70 period. While an infusion of additional purchases from the U.S. could have raised the value of foreign equities even further, any reasonable amount of U.S. purchases would have played only a secondary role in foreign stock markets.

NET FOREIGN PURCHASES OF U.S. SECURITIES, 1965-1970



Appendix C

A COMMENT ON THE CPR REPORT "FEDERAL CONTROL OF FOREIGN DIRECT INVESTMENTS"

This report by the Center for Political Research, dated May 11, 1970, was apparently done for an unnamed corporate client; the emphasis is on the locus of decision-making power with respect to control of foreign direct investment.

Several flaws may be noted in this report:

1. It implies that earnings on direct investment depend on U.S. equity in such investment, rather than on the aggregate size of the activity (as measured, for example, by total assets). On page 14 the following statement appears:

> "Just how long OFDI's short-term balance of payments benefits will last is open to debate.... What is not open to debate is that restrictions on direct U.S. foreign investment will eventually lead to a decline (or slower growth) in the dollar amount earned abroad each year by U.S. firms. In addition, heavy borrowing abroad by U.S. firms necessarily leads to sharp increases in U.S. interest payments to foreigners. Such payments have more than doubled since 1966; they are now running at an annual rate of about 3.3 billion dollars."

2. The above quotation implies that interest payments on corporate borrowing abroad are an addition to total interest payments by the United States as a whole. But if the corporations were to borrow in the United States and send the proceeds abroad, the outflow would be reflected in combined private and official foreign holdings of dollars. Since the holders of these additional dollars could be expected to

hold them in interest-bearing form, the interest payments on these holdings would partially offset the reduced payments by U.S. corporations. Thus, only the difference between interest rates is relevant here.

3. Several New York bankers are quoted as stating that as of 1970, only half-a-dozen firms (mainly in petroleum and computers) have been affected by the program; about 200 others have been partially affected, but can still carry out their investment programs. What this statement apparently means is that plant and equipment expenditures, rather than the financing of such expenditures, has been largely unaffected. But the stated purpose of the control programs was and is to affect the financing, which in turn is what directly affects the U.S. balance of payments.

The debate about the balance-of-payments effects of direct investment activity (to which the report refers) is not relevant here, because the scale of such activity has been largely unchanged. Therefore fees and royalties, parts and components, exports back to the United States, etc., are not affected.

4. The report states that, in the aggregate, firms were below their "allowables," in both 1968 and 1969. While this is true, it does not necessarily reflect on the effectiveness of the program. The regulations are the most restrictive for the continental Western European countries, and least restrictive for less developed countries. It appears that most of the leeway below allowables was concentrated in

the LDC's. The CPR report does not mention this possibility as a partial explanation for the fact that allowables were not fully utilized.

In summary, the CPR report is analytically weak. Its worse fault is that it fails clearly to distinguish between financial and real consequences of the control of direct investment.

Appendix D

A COMMENT ON RESEARCH BY ARTHUR B. LAFFER ON SHORT-TERM BANK-REPORTED CAPITAL MOVEMENTS

Arthur Laffer carried out some econometric research during 1966-67 from which he drew strong conclusions about the balance-of-payments impacts of the VFCR program.[1/] Laffer's conclusions have been recently cited in the March 1971 OMB paper entitled "Capital Controls: Questionable Results and Undoubted Costs," as follows:

> ...the net effects of the VFCRP on the U.S. balance of payments seem to be quite negligible. In fact, for a long time, the VFCRP appears to have cost the United States in terms of foreign exchange, and only after a year or more in operation were the net effects on the U.S. official settlements balance of payments non-negative. Therefore, the ostensible success of this program with respect to U.S. capital flows appears to have been negated by foreign capital flows.[2/]

We believe Laffer's research to be so inconclusive and the method by which he reached his judgment about the VFCR to be so

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1/ The basic research done by Laffer is described in detail in his Stanford Ph.D. dissertation entitled International Hot Money and the U.S. Balance of Payments. Part of this research, particularly that part concerned with the VFCR, is summarized in an unpublished paper "Short-term Capital Movements and the U.S. Balance of Payments" (December 1967). We believe that a slightly revised version of the December 1967 paper was circulated in 1969 at the University of Chicago under the title "Short-term Capital Movements and the Voluntary Foreign Credit Restraint Program." We were unable to obtain a copy of the 1969 version of the paper; as far as we are aware the equations and empirical results are identical in the 1967 and 1969 versions.

2/ OMB paper, p. 6. The same passage appears on page 20 of the December 1967 paper.

unreliable that little if any weight should be attached to his supposed evidence. The purpose of this appendix is to review Laffer's research briefly and to update it with data for 1967-70.

As we note in the text (p. 27 above), our replication and updating of Laffer's results yield an opposite conclusion from the one originally reached by Laffer. In our opinion, however, neither conclusion -- that the VFCR does or does not improve the balance of payments -- is warranted by Laffer's research and our updating of it.

Synopsis of Laffer's Methods and Conclusion

Laffer's study deals with only two types of capital flows: (a) changes in the short-term claims on foreigners reported by U.S. banks, and (b) changes in the liabilities to private foreigners reported by U.S. banks. For each of these two flows, Laffer estimates a regression equation, using monthly data for the period January 1959 through December 1964. (The influence of the VFCR program is held to have begun during January 1965; although the program was not announced until mid-February, Laffer argues that the market anticipated its imposition.) Using these estimated equations, Laffer then projects the values of the two capital flows for the eighteen-month period January 1965 through June 1966.[1] He interprets the differences between the actual values and the predicted values of the capital flows (the "residuals") as measures of the impact of the VFCR program.

1/ In other words, data for the explanatory variables for the January 1965 to June 1966 period are plugged into the estimated equation in order to obtain a "predicted" series for the two capital flows.

For the eighteen-month period examined by Laffer, the predicted net outflows for bank lending substantially exceed the net outflows actually observed.[1/] This result leads Laffer to conclude that the VFCR was successful in holding down the category of capital outflow at which it is directed. But for his other category of capital flow, Laffer finds a result that seems consistent with large "leakages" having occurred. Actual inflows of foreign liquid funds into U.S. banks are substantially less than the inflows predicted by the equation. Laffer attributes the entire amount of these residuals to the effects of the VFCR as well. When the supposed effects of the VFCR on the two types of capital flows are netted together, it turns out -- for this eighteen-month period -- that the net effect is quite close to zero.

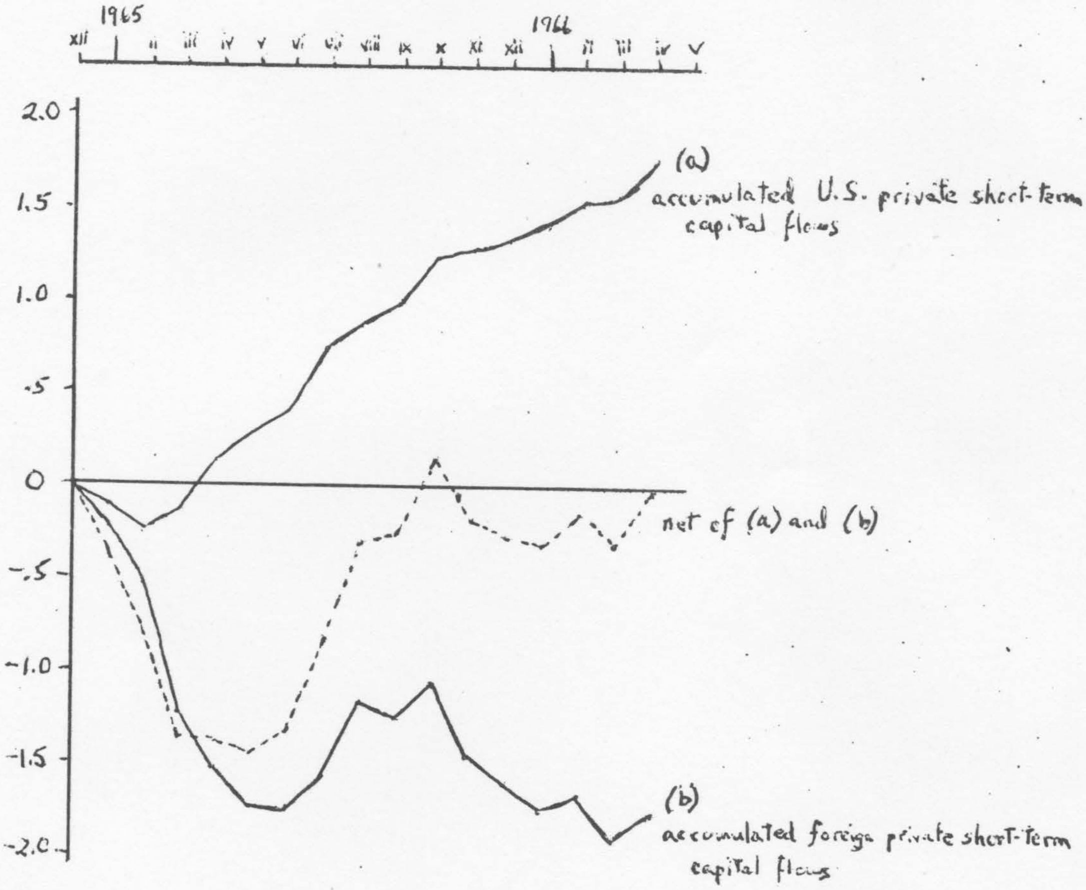
Chart 1 (reproduced from the OMB paper) shows these alleged impacts of the VFCR program. In that chart, the residuals calculated by Laffer (the difference between predicted and actual flows) are accumulated through time, so that the plotted curves give the supposed cumulative effects of the program.

1/ Actual bank claims on foreigners changed little from the beginning to the end of the period. Laffer's equation predicts a significant net increase.

Chart 1

CUMULATIVE BALANCE-OF-PAYMENTS IMPACTS OF VFCR PROGRAM FOR SIXTEEN-MONTH PERIOD JANUARY 1965 TO APRIL 1966 AS CALCULATED BY ARTHUR LAFFER

(chart reproduced from OMB Paper)



Updating Laffer's Conclusion

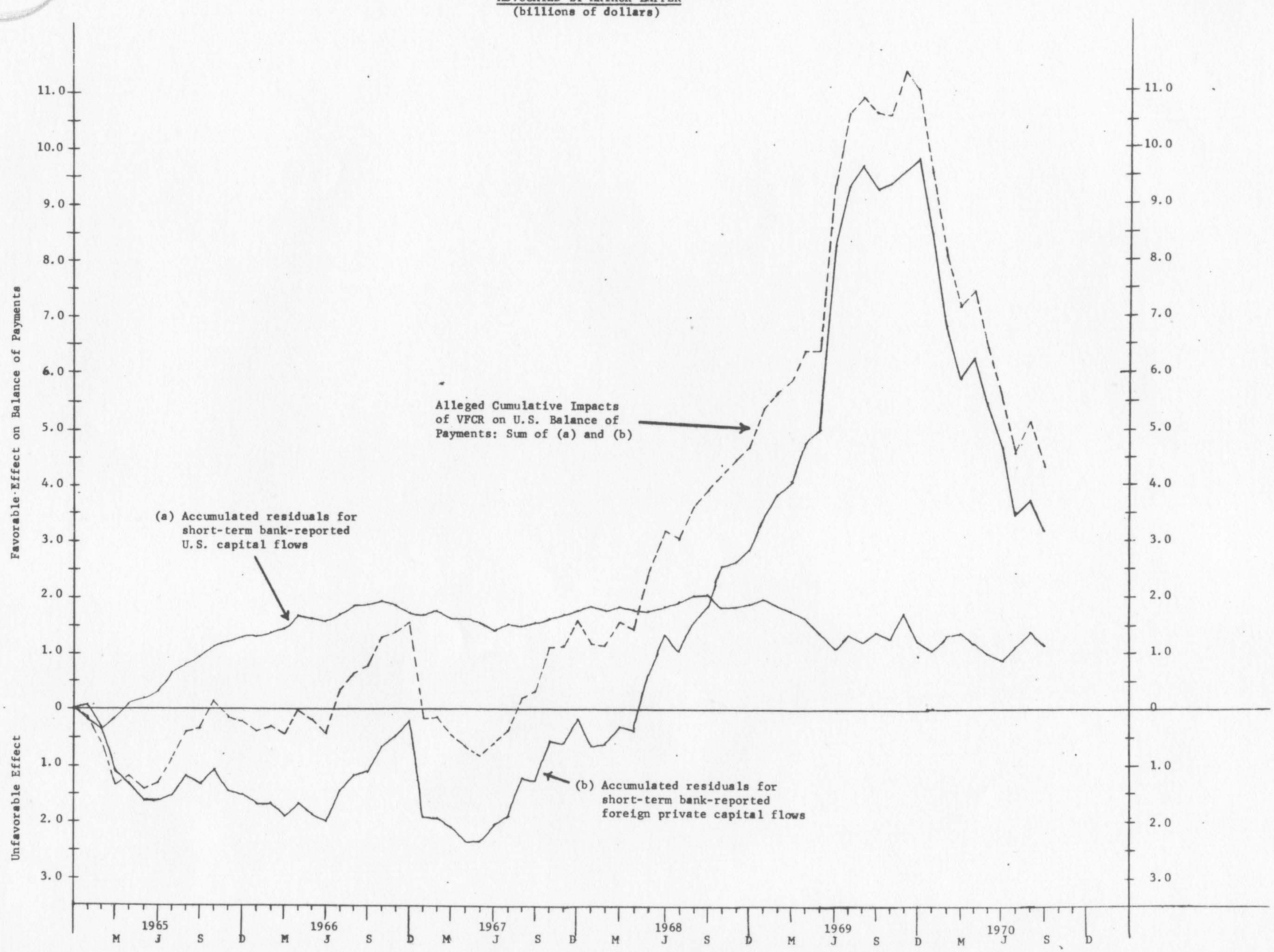
Even if Laffer's method were analytically reliable, it would seem undesirable from the vantage point of March 1971 to accept a conclusion based only on an analysis of the eighteen-month period ending in June 1966. We therefore thought it only prudent to bring Laffer's results up to date by considering the whole period January 1965 to September 1970 (the last month for which we could easily obtain data for all the required variables). The results of updating his analysis are displayed in Chart 2. As the reader can easily verify, the first eighteen months of Chart 2 are essentially a reproduction of Chart 1.[1/]

If we follow Laffer in attributing residuals from his equations entirely to the VFCR program, Chart 2 tells us that the VFCR held bank lending to foreigners some $1-2 billion below what it otherwise would have been throughout the five years ending in September 1970. It also says that the VFCR had the effect, up until mid-1968, of reducing foreigners' holdings of liquid assets in U.S. banks compared with what they otherwise would have been. After the summer of 1968, however, the VFCR began to give an immense stimulus to foreigners to hold more liquid assets in U.S. banks than they otherwise would have held. Still taking the results at face value, Chart 2 tells

1/ The very minor differences between the paths plotted in Chart 1 and those in Chart 2 (for the period January 1965 to April 1966) are due to very minor differences between Laffer's equations and our replications of Laffer's equations. These differences are explained further below.

Chart 2

1965-70 CUMULATIVE BALANCE-OF-PAYMENTS IMPACTS OF THE VFCR PROGRAM CALCULATED VIA METHOD ADVOCATED BY ARTHUR LAFFER
(billions of dollars)



us that the impact of the VFCR on the two capital flows combined was either perverse or zero until mid-1966, became sharply favorable in the last half of 1966, became perverse again in mid-1967, and thereafter became immensely favorable.

These inferences are of course completely unfounded. The equations which underpin the analysis are weak and the residuals calculated from them, therefore, cannot be validly used to make such strong inferences about the impacts of the VFCR. We have taken the trouble to present the updated calculations only to emphasize that Laffer's evidence will not begin to support the conclusions that have been based on it.

Some Weaknesses in Laffer's Econometric Analysis

This is not the place to present a detailed, technical review of Laffer's research. Of necessity, therefore, we merely enumerate here what we believe to be some of its most serious weaknesses.

The Achilles' heel in Laffer's methodology is his interpretation of the post-1964 residuals calculated from his equations as entirely due to the impacts of the VFCR program. This procedure would only be acceptable if his estimated equations were highly successful in all other respects at explaining the two types of capital flow. But in fact the explanatory power of his equations is quite poor (the adjusted R^2's in his two equations are .49 and .35). What is worse, the economic rationale for the estimated equations is doubtful in several ways. In these circumstances, it can be extremely misleading to project the equations outside the sample period and to assign the calculated residuals to only one of many omitted influences. Just how misleading this procedure can be is amply illustrated by Chart 2. The tremendous bulge in foreign holdings of liquid assets in U.S. banks in 1969 had little if anything to do with the VFCR. But there is nothing in Laffer's methodology -- even for the 1965-66 period -- that guards against such a serious misinterpretation.

The basic weaknesses in Laffer's research stem from the inadequate and incomplete specification of his equations. Although Laffer argues that interest rates ought to appear in the equations, he drops them out of his analysis after a superficial effort suggests they are statistically insignificant. The least unsatisfactory econometric studies of capital flows to date have produced evidence that capital flows are quite sensitive to interest rates.[1/] The failure appropriately to take interest-rate effects into account is almost certainly a major explanation for the poor performance of Laffer's equations.

The equation for changes in bank claims on foreigners includes a variable representing the previous month's capital flow.

1/ See, for example, the studies by Branson, Bryant and Hendershott, and Miller and Whitman cited in Appendix E.

Laffer includes this variable on the grounds that "we might easily expect a repayment effect on capital flows of this month due to capital flows of the previous month."[1/] We believe that this variable in fact introduces a complicated lag pattern into the equation that cannot be explained as a "repayment effect" and that is difficult to rationalize on theoretical grounds.

The equation for changes in bank liabilities to private foreigners makes no distinction between liabilities to overseas branches of U.S. banks, liabilities of U.S.-located agencies of Canadian and Japanese banks to their head offices abroad, and liabilities to other private foreigners. An analysis that does not make these distinctions may well fail from the outset. The greatly increased borrowing of U.S. banks from their own branches in the Eurodollar market, for example, is the primary reason why Laffer's equation produces huge residuals in 1969 and 1970, which in turn underly the big hump in Chart 2.[2/]

A major part of the statistical explanatory power of the liabilities equation, which in any case only captures 35 per cent of the variation, is due to several "institutional" variables having

1/ Laffer paper of December 1967, p. 12.

2/ In fairness to Laffer, it should be noted that no one has yet been very successful in econometrically analyzing the liabilities of U.S. banks to their overseas branches. But even in 1967 Laffer should have been aware of the importance of making this distinction.

purely transitory effects (e.g., year-end window-dressing, month-end so-called "Thursday-Friday" transactions). Well over half of the variables that Laffer's theory suggests to him should have non-transitory effects on the stock of foreign private liquid assets in the United States (e.g., interest rates, U.S. imports, growth rates in the United States and foreign countries) turn out to be statistically insignificant.

Of the two equations, the one for changes in bank claims on foreigners is less unsatisfactory. As can be seen in Chart 2, it does much less badly in tracking the actual 1965-70 changes in bank claims than the other equation does in tracking changes in bank liabilities.

All in all, Laffer's two econometric equations cannot be accepted as reliable. We were led to further skepticism, moreover, in the process of trying to duplicate the equations. We were able to come close to Laffer's equations only by using the exact data which he had used.[1/] When we collected revised data for the two capital flow variables and for several of the explanatory variables, which are presumably more correct than the data used by Laffer, we found that there were non-trivial changes in some of the coefficients in Laffer's equations and that the explanatory power of one of the equations

1/ In replicating Laffer's equations, we drew on the data tables contained in appendices to his Ph.D. dissertation. In a few very minor respects, we were unable to duplicate Laffer's data exactly. These data discrepancies account for the very small differences between Laffer's coefficients and the coefficients we obtained using his data.

declined appreciably. We also re-estimated Laffer's equations for some other sample periods. In these cases, too, the equations were altered to such a degree that we found ourselves becoming more and more doubtful of the basic specifications.

Concluding Comment

We have been quite critical of Laffer's research in this note. We would like to end by trying to dispel a possible misinterpretation of our views. We are certainly not maintaining that we ourselves have an unambiguously superior method of estimating the impacts of the VFCR on short-term bank-reported capital flows. All researchers in this difficult area have every reason to present research results with a large dose of humility. The only unpardonable sin is to pretend that blood can be squeezed out of a turnip.

Appendix E

Annotated List of References

This is not intended as an exhaustive survey of the literature. It does bring together much of the literature which bears on the subject matter of this paper.

1. Board of Governors of the Federal Reserve System, "Report on Inquiry into Possible Effects of Voluntary Foreign Credit Restraining Program in 1970 on Export Financing and on Exports, January 7, 1971.

   The survey of banks summarized in the report, "turned up very few examples of requests for financing the export of U.S. goods that were denied in 1970 because of [the VFCR] program"

2. William H. Branson, Financial Capital Flows in the U.S. Balance of Payments, (North-Holland Publishing Company, Amsterdam, 1968).

   Branson's Ph.D. dissertation applies a stock-adjustment model to capital flows, with particular emphasis on estimation of lags via the Almon technique. The capital control programs are taken into account only by means of on-off dummy variables.

3. William H. Branson and Raymond D. Hill, Jr., "A New Model of Financial Capital Flows in the U.S. Balance of Payments," December 9, 1970 (Mimeo).

   This paper updates and revises the empirical results in the preceding reference.

4. Ralph C. Bryant and Patric H. Hendershott, Financial Capital Flows in the Balance of Payments of the United States: an Exploratory Empirical Study, Princeton Studies in International Finance No. 25 (June 1970).

   Bryant and Hendershott attempt to elaborate an appropriate theoretical framework for investigating international capital flows. The model is applied to data for U.S. short-term outflows to Japan with particular attention placed on trying to capture the influence of the VFCR program.

5. Ralph C. Bryant and Patric H. Hendershott, "Empirical Analysis of Capital Flows: Some Consequences of Alternative Specifications," a paper presented at a Universities - NBER Conference on International Mobility and Movement of Capital, January 30-February 1, 1970, Washington, D. C.

This paper, which expands the analysis in the previous reference, discusses the substantial difficulties in determining an appropriate specification for capital flow equations. Alternative specifications are shown to imply very different conclusions about the effect of capital control programs.

6. Center for Political Research, "Federal Control of Foreign Direct Investments," May 11, 1970.

The report discussed the program and concludes that "the available statistics regarding the OFDI program ... cast doubt on the extent to which the program actually restricts direct foreign investment today."

7. Richard N. Cooper, "The Interest Equalization Tax: An Experiment in the Separation of Capital Markets," Finanz Archiv, 24 (December 1965), 447-471.

Cooper investigates the period when only the IET was in effect and concludes that, for all intents and purposes, offsetting flows in other accounts entirely negated the impact of the IET.

8. Richard N. Cooper, "The Voluntary Credit Restraint Program: An Assessment," January 1969 (Mimeo). Unpublished paper prepared for FRB Academic Consultants.

Cooper summarizes his judgment on the gross savings and on the probable magnitude of offsetting leakages. He concludes that the present elements of the comprehensive set of restrictions are reinforcing and that they have had a significant net impact on the balance-of-payments.

9. Arthur B. Laffer, "Short-term Capital Movements and the Voluntary Foreign Credit Restraining Program" 1969 (Mimeo).

Laffer presents regression equations for the changes in "U.S. private short-term claims on foreigners" and for the changes in "U.S. short-term liabilities to private foreigners." The relationship between actual flows and what his equations predict lead him to conclude that there has been no net balance-of-payments saving from the VFCR program.

10. Walther Lederer, "Notes on the Structure of the U.S. Balance of Payments," not dated, (Mimeo).

Lederer argues that "major fluctuations in the balance on goods and services are to a large extent offset by fluctuations in unilateral and nonliquid capital transactions." However, some regressions of the capital flow balance on the goods and services balance and various dummy variables lead him to conclude that the capital restraint programs have had a net effect on the balance of payments.

11. C. H. Lee, "A Stock-Adjustment Analysis of Capital Movements: The United States-Canadian Case," Journal of Political Economy, Vol. 77 (July/August, 1969), 512-523.

This is another econometric application of the stock-adjustment model, in this case to U.S.-Canadian capital flows. On-off dummy variables are used to allow for the effects of the capital control programs.

12. Fritz Machlup, "The Transfer Gap of the United States," Banca Nazionale del Lavoro Quarterly Review, No. 86 (September 1968), 195-238.

Machlup rearranges the standard balance-of-payments accounts to arrive at what he calls the "net real transfers" and the "net financial transfers" of the United States. His work leads him to conclude that in most circumstances changes in net financial transfers will be offset by changes in net real transfers. He concludes that "the balance-of-payments program pursued by the United States Government ...'is useless for the purpose for which it was designed."

13. N. C. Miller and M. v. N. Whitman, "A Mean-Variance Analysis of United States Long-Term Portfolio Foreign Investment," The Quarterly Journal of Economics, LXXXIV (May 1970), 175-196.

In this and several subsequent papers, Miller and Whitman apply the portfolio selection approach to various categories of capital flows in the U.S. balance of payments. On-off dummy variables are used to allow for the effects of the capital control programs.

14. John Patrick, "Bank Lending to Foreigners under the FCRP and the IET," NYFRB Research Memorandum, June 20, 1969.

Patrick reviews recent data on capital flows and then presents regression results for equations explaining (quarterly changes in) short-term bank-reported claims on foreigners and in total bank-reported claims on foreigners. His results lead him to conclude that the two programs do reduce (and quite substantial) the flows at which they are directed.

15. Samuel Pizer, Statement to the Commission on International Trade and Investment Policy on the "Capital Restraint Programs," October 15, 1970.

    Pizer argues that there has been a large impact of the programs in reducing gross outflows in the categories controlled. He concludes moreover that despite the possibility of some leakages, there has been a substantial net effect.

16. Martin F. J. Prachowny, A Structural Model of the U.S. Balance of Payments (North-Holland Publishing Company, Amsterdam, 1969).

    This is another econometric study that uses on-off dummy variables in some capital flow equations to allow for the effects of the U.S. capital control programs.

17. R. Rickover, "Export Finance Before and After the Voluntary Foreign Credit Restraint Program," NYFRB Research Memorandum, October 14, 1969.

    Rickover attempts to estimate the effect of the VFCR program on export financing with a simple regression relating changes in trade credit to (current and lagged) changes in the value of U.S. exports. He believes that the volume of export trade financing has been affected by the VFCR program.

18. R. Rickover, "Interest Rates, Capital Flows, and Errors and Omissions in the U.S. Balance of Payments," NYFRB Memorandum, March 8, 1971.

    Rickover concludes that the "normal" unrecorded outflow (errors and omissions) attributable to systematic errors in data collection is sizable. Interest rates (in the United States, Canada, and the Euro-dollar market) and U.S. banks' liabilities to their foreign branches exert a strong influence on unrecorded outflows. Delays between payments for U.S. imports and their recorded arrival in the United States also influence errors and omissions when significant changes occur in the volume of imports.

19. Guy Stevens, "Capital Mobility and the International Firms," a paper presented at a Universities-NBER Conference on International Mobility and Movement of Capital, January 30-February 1, 1970, Washington, D. C.

Stevens estimates an econometric model of firm behavior. He concludes that "virtually no impact of the various balance-of-payments programs is evident on plant and equipment expenditures in manufacturing."