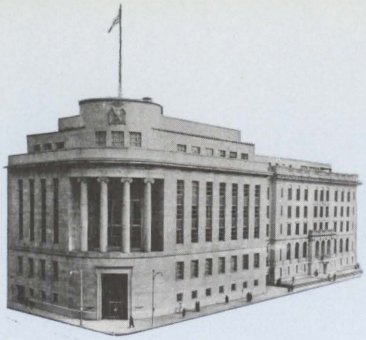

May/June · **1977**

FEDERAL RESERVE BANK OF BOSTON

NEW ENGLAND ECONOMIC REVIEW

Trade with the Oil-Exporting Countries

U.S exports to OPEC countries have increased phenomenally in the last few years, although less rapidly than our oil imports. Contrary to popular opinion, U.S. exports to OPEC of food and military goods are relatively small.

The Euro-Currency Market and the Growth of International Reserves

Although much of the recent, huge increase in international reserves has been attributed to the Euro-currency market, the author suggests that limiting government access to this market is not a feasible approach to controlling the growth of international liquidity. Rather, central bank use of the Euro-currency markets appears to offer some advantages.

Private Credit Rationing

This article describes why and how credit rationing is practiced during tight money periods by commercial, consumer, and mortgage lenders. Home mortgages, new and high-risk business ventures, and the less credit-worthy consumers bear the brunt of credit rationing.

The **New England Economic Review** is produced in the Research Department, and is edited by Mrs. Ruth Norr. The views expressed are those of the individual authors, and do not necessarily reflect official positions of the Federal Reserve Bank of Boston or the Federal Reserve System. The authors will be glad to receive comments on their articles.

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Trade with the Oil-Exporting Countries

BY NORMAN S. FIELEKE*

AS EVERY consumer knows, imported oil plays a crucial and growing role in the U.S. economy. Oil imports now account for about 42 percent of domestic oil use, compared to about 36 percent in 1973. Between 1973 — before the big oil price increase showed up in import bills — and 1976, U.S. spending on imported petroleum and petroleum products rose from $8 billion to $34½ billion, or from 11½ percent of total U.S. merchandise imports and ½ percent of the gross national product to 28 percent of total merchandise imports and 2 percent of the gross national product.[1] While U.S. exports to the oil-producing countries have risen less rapidly, their rise, too, has been phenomenal. This article briefly examines U.S. trade with the members of OPEC (Organization of Petroleum Exporting Countries), the oil cartel which directly or indirectly supplies the great bulk of U.S. oil imports.

* Vice President and Economist, Federal Reserve Bank of Boston.

Cynthia Peters was research assistant for this article, and Anna Estle typed the manuscript.

[1] Import data here are on a balance-of-payments basis.

An Overview

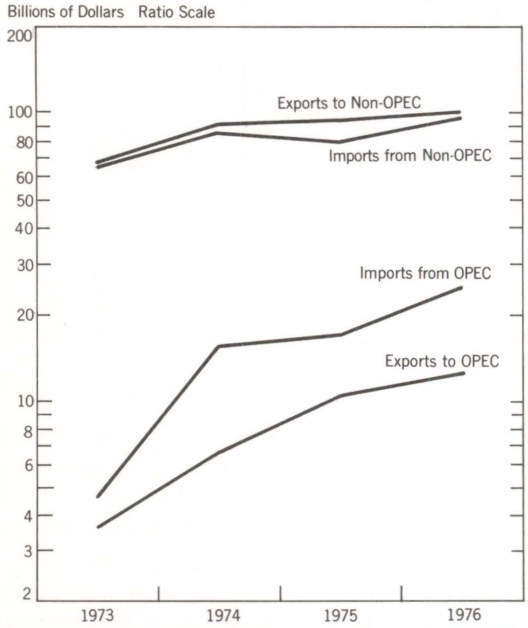
Most of the spectacular rise in the U.S. oil import bill is attributable to the price increases decreed by OPEC rather than to increases in the quantity of imports. Between 1973 and 1976 the quantity of petroleum and products imports rose by 16 percent (from a rate of 6.7 to 7.8 million barrels per day), but the unit price rose by 267 percent (from $3.31 to $12.14 per barrel). By engineering this increase in the price of oil, the members of OPEC have secured a remarkable gain in the terms on which they trade with the rest of the world. As an illustration, Kuwait enjoyed an increase of nearly 300 percent in the average price of its exports between 1973 and 1975, while the average price it had to pay for imported goods rose by only 45 percent.

As shown in Figure 1, U.S. merchandise imports from OPEC have risen more rapidly than U.S. merchandise exports to OPEC, but U.S. exports to OPEC have increased much faster than U.S exports to all other countries.[2]

[2] The trade data shown in the figures are on a Census basis.

Figure 1

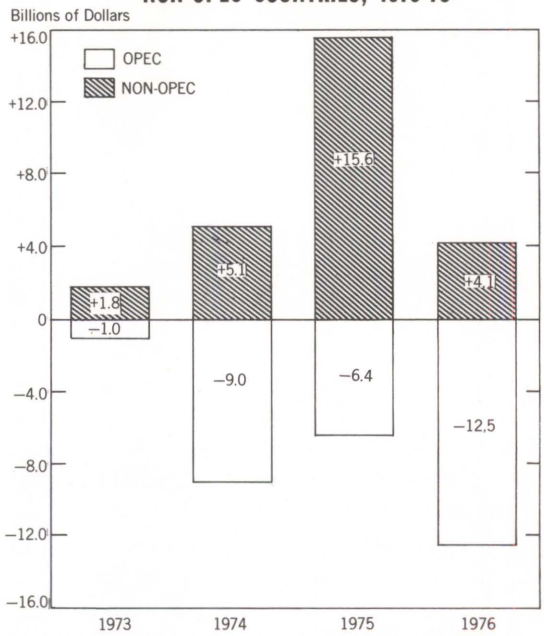
U.S. EXPORTS TO AND IMPORTS FROM OPEC AND NON-OPEC COUNTRIES, 1973-76



Source: U.S. Bureau of the Census: FT 155, 1973-1975; FT 455, 1973-1975; FT 990, 1974-1976; EM 450/455, 1976; IM 150/155, 1976.

Figure 2

U.S. TRADE BALANCE WITH OPEC AND WITH NON-OPEC COUNTRIES, 1973-76



Source: U.S. Bureau of the Census: FT 155, 1973-1975; FT 455, 1973-1975, FT 990, 1974-1976; EM 450/455, 1976; IM 150/155, 1976.

Over the period 1973-1976, U.S. exports to OPEC have risen by $0.43, on average, for every $1 increase in U.S. imports from OPEC; that is, for every extra dollar that this country has spent on OPEC oil, the members of OPEC have spent $0.43 on U.S. merchandise. In spite of this surge in U.S. trade with OPEC, U.S. trade with non-OPEC countries continues to be much larger.

Figure 2 indicates that in recent years the United States has consistently earned a surplus in its merchandise trade with the countries that do not belong to OPEC. However, the deficits with OPEC have been just as consistent, and sometimes larger.

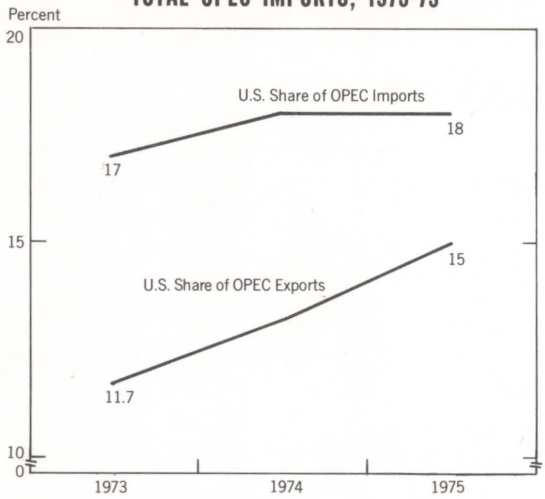
Because OPEC now provides such a lucrative market, the competitive position of the United States in that market is a matter of some interest. As shown by Figure 3, this country supplied about the same share of OPEC merchandise imports in 1973 as in 1975 (the latest year for which data have been published), suggesting little change in our competitive position. By contrast, OPEC has become somewhat more dependent on the United States as a market for its exports, as this country's share of OPEC exports has risen appreciably.

Trade with Individual Members of OPEC

Aggregate figures can conceal much heterogeneity. As Figure 4 reveals, there is a wide range in the size of the U.S. merchandise trade balance with the various members of OPEC. In fact, with several countries the United States has registered a surplus, the largest surplus being with Iran. On the other hand, the largest deficit

Figure 3

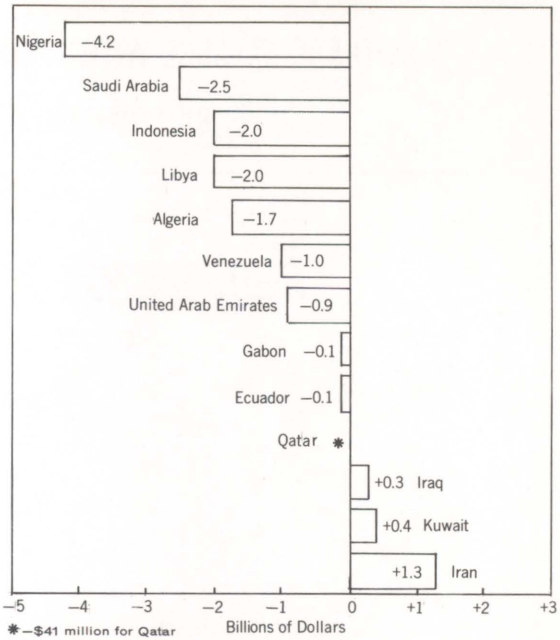
U.S. SHARE OF TOTAL OPEC EXPORTS AND OF TOTAL OPEC IMPORTS, 1973-75



Source: International Monetary Fund, Direction of Trade, Annual 1969-75.

Figure 4

U.S. TRADE BALANCE WITH MEMBERS OF OPEC, 1976



Source: U.S. Bureau of the Census: EM 450/455, 1976; IM 150/155, 1976.

is with Nigeria — not with Saudi Arabia, even though Saudi Arabia did surpass Nigeria last year as the leading supplier of U.S. oil imports.

As markets for U.S. merchandise exports, Iran, Saudi Arabia, and Venezuela are roughly tied for first place among the members of OPEC, as each of the three purchased between $2.6 billion and $2.8 billion from the United States in 1976. However, U.S. exports to Saudi Arabia have been rising more rapidly (both in absolute and percentage terms) than U.S. exports to Iran or Venezuela or any other OPEC member.

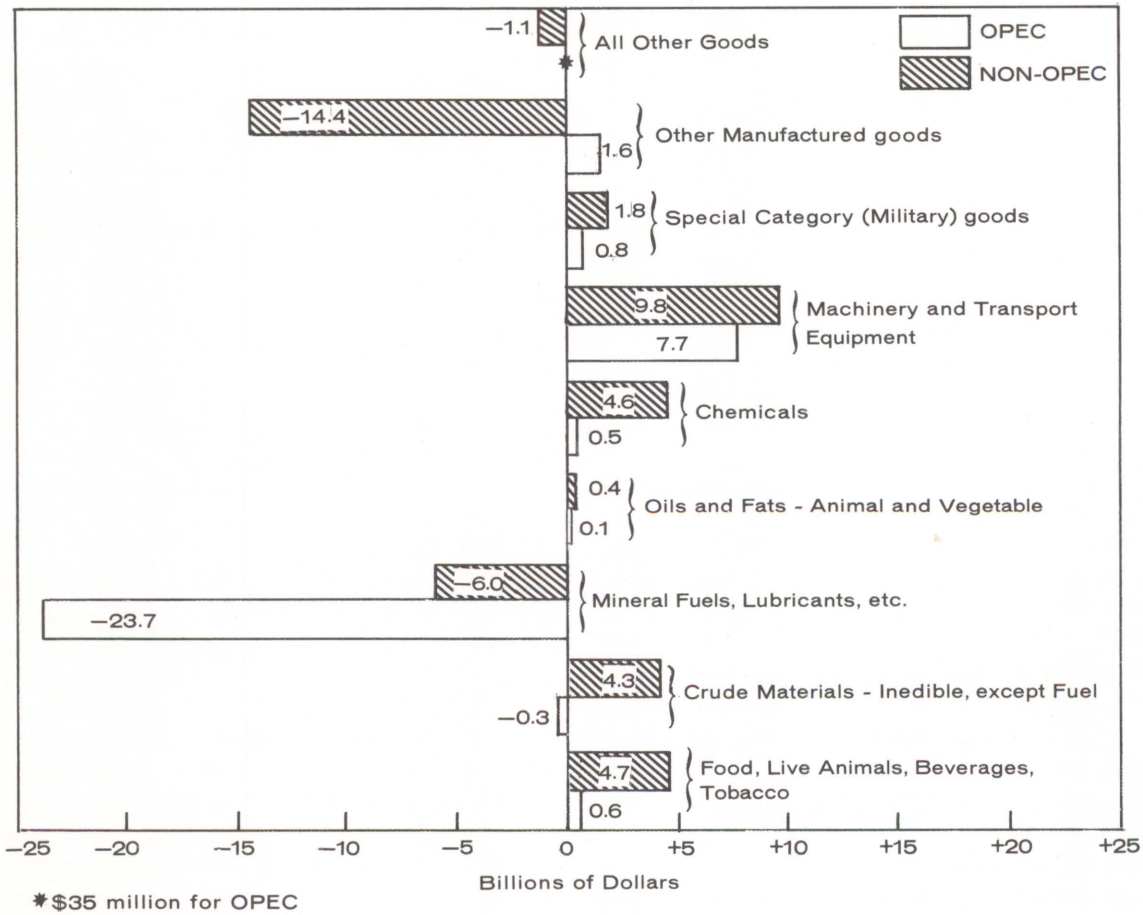
Although Saudi Arabia is becoming the most important OPEC market for U.S. exports, the U.S. competitive position is not nearly so strong in Saudi Arabia as in Venezuela; the United States supplies one-quarter of Saudi Arabia's total imports, but almost one-half of Venezuela's, a larger share than for any other member of OPEC. Venezuela is also deeply involved in the U.S. market, as about 40 percent of its exports come to this country; only for Ecuador (with somewhat more than 40 percent) has the figure been higher.

Commodity Composition

As can be seen from Figure 5, the commodity composition of the U.S. trade balance with OPEC is quite different from that with the rest of the world. With OPEC, the immense deficit in mineral fuels and lubricants dwarfs the surpluses which the United States earns in other commodity categories. With the rest of the world, there is also a deficit in mineral fuels and lubricants, but not nearly so large. Also, with the rest of the world the major deficit is not in fuels and lubricants but in "other manufactured goods" (mainly consumer goods). Finally, contrary to popular opinion, the United States does not have

Figure 5

U.S. TRADE BALANCE WITH OPEC AND WITH NON-OPEC COUNTRIES, BY COMMODITY CATEGORY, 1976



*$35 million for OPEC

Source: U.S. Bureau of the Census: FT 990, 1976; EM 450/455, 1976; IM 150/155, 1976; and Census Bureau staff.

a very sizable surplus with OPEC in food, although there is a large surplus in this category with the rest of the world.

There are also some similarities. Both with OPEC and with non-OPEC countries the United States enjoys a substantial comparative advan-

tage in machinery and transport equipment, the category in which our greatest surpluses are recorded. Exports of machinery and transport equipment comprise two-fifths of U.S. exports to non-OPEC countries and three-fifths of U.S. exports to OPEC. In trade with OPEC, U.S. exports of machinery and transport equipment have been increasing more rapidly, both absolutely and relatively, than any other export category; transport equipment accounts for about two-fifths of such exports.

Within the United States the New England region, among others, is surely experiencing a stimulus from these large and growing OPEC purchases of machinery and transport equipment. Although only about 7 percent of the Nation's total exports of machinery and transport equipment originate in New England, such exports are very important to the region, making up more than half of its manufactured exports.

It is a common misconception that military goods constitute the bulk of U.S. exports to OPEC. In fact, the trade data show that only 6 percent of U.S. exports to OPEC are military goods. Included among military goods are the traditional items: trucks, aircraft, tanks, guns, ammunition and so forth.

Other Transactions with OPEC

Trade in merchandise is a major part, but by no means all, of the transactions between OPEC and the United States. For example, this country has been earning considerably more on its past substantial investments in OPEC than the members of OPEC have been earning on their investments here.[3] This state of affairs may not endure for long, as OPEC investments in this country have recently been increasing much more rapidly than U.S. investments in OPEC. Moreover, the U.S. surplus of investment earnings has been much too small to offset the U.S. merchandise trade deficit with OPEC.

The table estimates how OPEC has been disposing of its total "investable surplus" (its net surplus of funds available for investment, taking into account both merchandise trade and other current account transactions such as flows of investment income). In total, the members of OPEC have probably invested about the same amount ($10-12 billion) in the United States from year to year, but reduced their rate of investment in the United Kingdom as the pound sterling declined in the foreign exchanges. Also, the available data suggest that OPEC's rate of investment in short-term assets declined sharply after 1974, with a corresponding increase in the percentage of OPEC funds flowing into longer-term investments; this change in investment pattern may help to explain why the money markets have not been disrupted, as was widely feared, by the disposition of OPEC surpluses. In any event, there is little prospect for any immediate substantial reduction in OPEC's annual investable surplus.

Conclusion

Following the meteoric rise in oil prices, there has been a phenomenal increase in the value of trade between the United States and the 13 members of OPEC. The United States runs a sizable deficit in its trade with these countries, especially Nigeria and Saudi Arabia. This deficit is partly offset by a trade surplus with the rest of the world.

Although the United States incurs a very large deficit in its total trade with OPEC, the Nation does have appreciable surpluses in some categories of trade, especially in machinery and transport equipment. Contrary to popular opinion, trade with OPEC in food and military goods is relatively small.

It is estimated that the members of OPEC

[3] Table D in the *Survey of Current Business*, June 1976 p. 60, shows some relevant data.

Estimated Disposition of OPEC Surpluses
(in billions of dollars)

		1974	1975	1976
I.	In United States	12.0	10.0	11.6
	A. Short-term assets[1]	9.3	0.3	0.3
	B. Treasury bonds and notes	0.2	2.0	4.1
	C. Other deposits and securities[2]	1.3	4.0	3.4
	D. Direct investment	0.3	1.0	-0.5
	E. Other[3]	0.9	2.7	4.3
II.	In United Kingdom	7.2	0.2	-1.2
	A. Liquid sterling assets[4]	5.3	0	-2.4
	B. Other loans and investments	1.9	0.2	1.2
III.	In Euro-currency Markets	24.5	9.1	10.3
	A. United Kingdom	13.8	4.1	5.8
	B. Other centers (est.)[5]	10.7	5.0	4.5
IV.	International Institutions	3.3	3.5	1.5
	A. IBRD bonds	1.5	0.9	0.5
	B. IMF Oil Facility	1.8	2.6	2.0
V.	Total Identified Above	47.0	22.8	22.2
VI.	All Other (Residual)	10.6	9.8	20.2
VII.	Total = Investable Surplus	57.6	32.6	42.4
VIII.	OPEC Grant Aid	2.4	2.4	1.6
IX.	Surplus on Goods and Services[6]	60.0	35.0	44.0

[1] Principally Treasury bills, repurchase agreements, bank deposits and CDs.
[2] Long-term bank deposits, corporate and Federal agency bonds, and equities.
[3] Real estate, prepayments of imports, debt repayment, and miscellaneous investments.
[4] Treasury bills and bonds, bank and other deposits.
[5] Including domestic-currency bank deposits in centers other than the United Kingdom and United States.
[6] With oil receipts on a cash basis.

began investing a larger share of their surplus funds in longer-term assets after 1974. Partly as a result, widespread fears that the money markets would be disrupted by the OPEC surpluses have not materialized.

Tables showing U.S. trade with the members of OPEC in more detail for the years 1973–76 are available upon request from the Research Department of this Bank.

The Euro-Currency Market and the Growth of International Reserves

By Jane Sneddon Little*

A GREAT and potentially inflationary acceleration in the growth of official international reserves during the 1970s has recently caused an outcry of concern. After rising about 40 percent during the decade of the sixties, central bank holdings of gold, SDRs, reserve positions with the IMF and foreign exchange more than tripled in the seven years to the end of 1976.[1] Because a large part of the seemingly spontaneous increase in reserves has taken the form of Euro-dollars, the Euro-currency market has become the focus of much of this anxiety. In 1971, for instance, monetary authorities in the Group of 10 agreed not to make additional deposits in the Euro-currency market and in March 1973 suggested imposing the same restraints on all IMF members. More recently, the German Bundesbank has also pointed out that any central bank can expand its gross international reserves simply by borrowing in the international money markets, and it has concluded that "the Euro-markets have since 1973 become the main source of international liquidity (or reserves)."[2] It also suggests that this elasticity in the international monetary system may be detrimental to balance-of-payments discipline and price stability.

This article will describe the role of the Euro-currency market in the creation of international reserves and assess whether or not the situation should be viewed with alarm. It will conclude that denying governments access to the Euro-currency market will not succeed in controlling the growth of international reserves. By contrast, indeed, permitting central banks to deposit and borrow in the Euro-currency markets may present some considerable advantages.

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* Economist, Federal Reserve Bank of Boston. The opinions expressed are those of the author and not necessarily those of the Federal Reserve Bank of Boston or the Federal Reserve System. The author wishes to thank Cynthia Peters for her careful research assistance and Redenta Padilla for her cheerful secretarial help.

[1] Special Drawings Rights (SDRs) are unconditional international reserve assets created in the form of bookkeeping credits by the International Monetary Fund (IMF). Reserve positions with the IMF are unconditional assets which arise from countries' gold subscriptions to the Fund and from the Fund's use of members' currencies to finance the drawings or borrowings of others. Central bankers generally hold these and the other reserve assets in order to be able to buy their own currencies on the foreign exchange markets, thereby supporting their international values. The huge reserves accumulated by some oil producing countries since the end of 1973, however, serve instead as a national inheritance to be invested for the day when the oil wells run dry.

[2] Deutsche Bundesbank, *Report of the Deutsche Bundesbank for the Year 1975*, English trans., April 1976, p. 60.

Why the Growth of International Liquidity Matters

In view of current concern about recent large increases in international liquidity, the question arises as to why this growth in international reserves (which central banks hold to support the international value of their currencies) should matter — especially in a floating exchange rate system in which reserves are supposedly unnecessary and irrelevant? Of course, part of the answer lies in the fact that the world is not really operating with freely floating exchange rates. Although all the countries classified by the IMF as industrial are floating independently or as part of the European joint float or "snake," over 100 smaller countries accounting for 30 percent of IMF member trade in mid-1975 are pegging their currencies. In addition, many of the floating currencies, especially those in the European snake,[3] have been subject to a great deal of management. Between March 1973 and April 1976 official intervention in the foreign exchange market totaled about $120 billion.[4]

More fundamentally, of course, increases in international reserves matter because they are potentially inflationary. To be more specific, when private foreigners earn or otherwise receive dollars which they do not wish to hold, they sell them for some other currency on the foreign exchange market. When foreign central banks feel compelled, either by international agreement as under the Bretton Woods pegged rate system or by domestic policy considerations as under a managed float, to maintain a particular value for their currency in terms of foreign currencies, they must then intervene on the foreign exchange markets to buy the dollars sold by the private sector. In purchasing dollars with domestic currency, the central banks increase the reserves available to commercial banks in their economies and thereby lay the basis for the multiple expansion of credit and the money supply. (In addition, the increase in international reserves may have an indirect inflationary impact since the monetary authorities may feel that this gain permits them to pursue more expansionary policies.)

In looking at the relationship between international reserves and the world money supply, H. Robert Heller of the IMF has concluded that between 1951 and 1974 changes in international reserves accounted for slightly more than half of the observed variation in the world money stock — with a lag of one year. Furthermore, Heller's study suggests that changes in the world money supply accounted for about 60 percent of changes in world prices — with a lag of 1½ to 2 years.[5] Heller has thus provided empirical support for the theoretical expectation that the changes in national money supplies that accompany changes in international reserves do have an important — though lagged — impact on price developments.

It is important to point out that it is the special role of the dollar as a "key" (an intervention and reserve) currency which permits an increase in world reserves and the world money supply to accompany a U.S. balance-of-payments deficit. In the case of payments imbalances between non-key-currency countries with fixed or managed exchange rates, no net increase in world official reserves or commer-

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[3] The countries which participate in the European joint float — currently Germany, Belgium-Luxemburg, the Netherlands, Norway, Sweden, and Denmark — keep their currencies from moving more than 2.25 percent away from each other while floating free of any ties to the dollar.

[4] Paul A. Volcker, President, Federal Reserve Bank of New York, "The International Exchange Rate System: Problems, Progress and Challenge," remarks before the Conference Board in Canada, Toronto, Canada, June 24, 1976.

[5] H. Robert Heller, "International Reserves and World-Wide Inflation," *IMF Staff Papers*, XXIII (March 1976), pp. 74 and 78.

cial banks' reserves generally results. A Belgian deficit with Denmark, say, is in the first instance accompanied by a fall in Belgian reserves and the Belgian money supply and an expansion in Danish reserves and the Danish money supply as the Belgian central bank sells dollars to prop the price of its franc while the Danes buy dollars to quell a rise in the price of the krone. While the Belgian and Danish governments could then theoretically offset the domestic impact of such payments imbalances, in practice it is often exceedingly hard for any but the largest, most closed economies to do so over the long run.[6]

On the other hand, a flow from the United States to foreign official hands almost always increases the quantity of money available abroad without reducing it in the United States. Let's assume, for instance, that Danish residents acquire dollars in exchange for Danish goods or securities and sell these dollars to their commercial banks which in turn present the dollars to the central bank for kroner. While the Danish commercial banking system thereby acquires new krone cash reserves, the Danish central bank acquires dollar balances in the United States which it is very unlikely to hold in any form that will reduce bank reserves in the United States. If the central bank buys nonmarketable U.S. government securities from the Treasury, for instance, the Treasury will spend the deposit to finance the budget.

The Recent Growth of International Reserves

Three developments in the recent growth of international reserves have caused much comment. These changes are the acceleration of the growth rates, the increased importance of Euro-currency deposits and the apparent shift of the source of liquidity from the U.S. payments deficit to the Euro-currency market. This section describes these developments in some detail.

After growing at an average annual rate of a little over 3 percent during the 1960s, international reserves jumped from $79 billion at the end of 1969 to $255 billion at the end of 1976. This increase represented a greatly accelerated average growth rate of almost 20 percent a year. As can be seen in Table I, almost half of the huge increase was concentrated in just two years — 1971 and 1974. In 1971 reserves jumped $41 billion or 43 percent while in 1974 they increased $37 billion or 20 percent. Since then, reserve growth has fallen off considerably although during 1976 the annual rate of increase was still well above the average for the 1960s.

Within this large increase in official reserves, a substantial change in composition has also occurred with foreign exchange — and particularly Euro-currency — reserves gaining increased importance. By contrast, gold holdings, the most traditional and once-dominant component in international reserves, have remained almost constant in physical terms since 1970. Between 1968 and the IMF gold sales of 1976,[7] however, the major monetary authorities abstained from making gold purchases — from the private market by agreement and from each other because the official price was — and still remains — far below the market price. As a result the share of gold — valued at the official price — in total reserves has fallen from almost 50 percent in 1969 to less than 20 percent in 1976. Largely because the world's gold supply increases at a relatively slow and erratic pace, the pending amendment to the

[6] Of course, if the Danish commercial banks can multiply a given quantity of krone reserves into a larger volume of credit than the Belgian commercial banks can do with an equivalent volume of franc reserves — say, because Danish reserve requirements are lower than Belgian reserve requirements, then the shift in reserves from Belgium to Denmark would raise the world money supply by a marginal amount.

[7] The Swiss and French central banks have bought gold at the recent IMF auctions.

Table I
The Growth and Composition of International Reserves
1969–1976
(End of Period)

	1969	1970	1971	1972	1973	1974	1975	1976
Total Reserves ($ million)	78,670	93,247	133,797	159,077	183,655	220,581	227,404	254,845
Annual Change (percent)	—	+18.53	+43.49	+18.89	+15.45	+20.11	+3.15	+12.07
Gold ($ million)	38,916	36,992	38,990	38,653	42,953	43,531	41,562	41,109
Annual Change (percent)	—	-4.94	+5.40	-0.86	+11.12	+1.35	-4.52	-1.09
Share of Total Reserves (percent)	49.47	39.67	29.14	24.30	23.39	19.73	18.28	16.13
SDRs ($ million)	0	3,124	6,379	9,430	10,624	10,845	10,260	10,057
Annual Change (percent)	—	—	+104.19	+47.83	+12.66	+2.08	-5.39	-1.98
Share of Total Reserves (percent)	—	3.35	4.77	5.93	5.78	4.92	4.51	3.95
Reserve Position in Fund ($ million)	6,726	7,697	6,895	6,867	7,441	10,828	14,778	20,606
Annual Change (percent)	—	+14.44	-10.42	-0.41	+8.36	+45.52	+36.48	+39.44
Share of Total Reserves (percent)	8.55	8.25	5.15	4.32	4.05	4.91	6.50	8.09
Currency Reserves ($ million)	33,028	45,434	81,534	104,126	122,636	155,377	160,804	183,073
Annual Change (percent)	—	+37.56	+79.46	+27.71	+17.78	+26.70	+3.57	+13.85
Share of Total Reserves (percent)	41.98	48.72	60.94	65.46	66.78	70.44	70.71	71.84

Note: Details may not add to totals due to rounding.
Source: International Monetary Fund, *International Financial Statistics*, May 1976 (1969 data); December 1976 (1970 data); March 1976 (1971–1976 data).

IMF's Articles of Agreement seeks to reduce the role of gold in the international monetary system and to enhance that of the SDR.

At present, moreover, SDR holdings amount to only about 4 percent of total reserves. Since the original three allocations of SDRs in 1970 to 1972 inconveniently coincided with the first great spurt in currency reserves, further creation has been postponed and any subsequent increase in SDR holdings in dollar terms has reflected exchange rate changes. Accordingly, SDRs as a proportion of total reserves have fallen since 1972.

As for countries' reserve positions with the IMF, they also have made only a relatively small net contribution to international reserve growth between 1969 and 1976. By contrast with gold and SDRs, however, after declining as a proportion of total reserves until 1973, their share has recently been increasing again. This rise reflects increased borrowings of national currencies from the IMF which in turn were prompted by the quadrupling of oil prices beginning in late 1973 and by the world recession which aggravated the deficits of the nonoil-producing LDCs.

In sharp contrast to the relative stagnation of the other forms of international liquidity, foreign exchange reserves more than quintupled between 1969 and 1976. As a result, currency reserves have accounted for 85 percent of the increase in international liquidity since the end of 1969 and they have become the primary reserve asset. In comparison with the beginning of the period when currency made up 42 percent of total reserves, in 1976 72 percent of world reserves were in currency form. This development is viewed in some quarters with alarm because unlike other kinds of reserve growth, increases in foreign exchange reserves appear to be "uncontrolled" — in the sense that they result

from the actions of individual, possibly self-seeking, governments and not from concerted multilateral agreements.

A significant part of the increase in foreign exchange reserves has taken the form of Euro-currency deposits,[8] which surged a staggering 10 times between 1969 and 1975. During this period, as a result, Euro-currency deposits rose from 15 to 35 percent of foreign exchange reserves. This shift to Euro-currency deposits has been particularly pronounced since the end of 1973 when the oil crisis produced a huge accumulation of reserves in the hands of the oil exporting countries. Between the end of 1969 and the end of 1973, additions to Euro-currency deposits accounted for a quarter of the increase in total reserves. In the last two years of the period, however, the rise in Euro-currency deposits accounted for more than half the growth in total international liquidity. This change primarily reflects OPEC enthusiasm for the Euro-currency market — a predilection which is based on interest-rate and political considerations. Generally, Euro-deposits bear a higher rate of return than their domestic counterparts.[9] Moreover, the oil exporters probably have wanted to avoid placing all their reserves in the United States for fear that this country might sequester the funds. Nevertheless, all of the geographic groups listed in the IMF's breakdown shown in Table II have increased their Euro-dollar deposits substantially. Even the industrial countries, most of which agreed not to increase official Euro-currency placements in 1971, have more than doubled their official deposits since that time.

What is the source of this spontaneous, and possibly inflationary increase in foreign exchange reserves? German Bundesbank officials and other observers have concluded that since 1973 the primary source has shifted away

[8] Euro-currency deposits are balances deposited in banks outside of the country of origin of the currency involved; thus, Euro-dollars are dollar balances deposited in banks outside of the United States while Euro-sterling refers to sterling balances deposited outside of the United Kingdom.

[9] In the case of U.S. dollars, Euro-banks pay interest on short-term Euro-dollar deposits while most banks in the United States are prohibited by Regulation Q from paying any interest at all on deposits made for less than 30 days.

Table II
Official Holdings of Euro-currencies
1969 to 1975
(End of year; billions of U.S. dollars)

	1969	1970	1971	1972	1973	1974	1975
Total Identified Holdings of Euro-currencies	4.9	10.7	12.3	22.6	30.8	47.9	55.8
Euro-dollars	4.9	10.4	11.2	19.3	25.1	41.4	48.2
Industrial countries	2.2	5.1	3.7	6.1	8.8	7.7	7.6
Primary producing countries	2.7	5.2	7.5	13.3	16.2	33.7	40.6
Major oil exporting countries	0.8	1.6	3.0	4.2	4.9	21.5	28.3
Other primary producing countries	1.9	3.6	4.5	9.1	11.3	12.2	12.3
Other Euro-currencies	n.a.	0.3	1.1	3.3	5.7	6.5	7.7

Note: Details may not add to totals due to rounding.
Source: International Monetary Fund, *Annual Report 1976*.

from the U.S. balance-of-payments deficit toward the Euro-currency market. A recent OECD study states, for example, that a "salient feature of the last few years has been the substitution of the Euro-dollar market for the United States balance of payments deficit as the major source of liquidity."[10] It further suggests that the proportion of total reserve creation accounted for by the U.S. deficit on official settlements basis[11] slipped from over one-half in 1970–1973 to less than 30 percent in the more recent period. According to this study, the Euro-currency market was the "source" of less than 20 percent of the increase in the earlier period but accounted for over 40 percent of the rise in 1974 and early 1975.[12]

The contribution of the Euro-currency market in this OECD study is measured by the increase in official Euro-currency deposits. The contribution of the U.S. deficit in turn is measured essentially by the increase in U.S. liabilities to foreign officials. Traditionally such increases in U.S. liabilities to foreign officials have been interpreted as indicating the amount by which the supply of dollars on the foreign exchange market has exceeded the private demand for them at the going rate of exchange. In the absence of the Euro-currency market, such increases were a not unreasonable measure of the impact of the U.S. deficit on the growth of international reserves. Unfortunately, however, such an approach is no longer very promising because Euro-currency transactions muddy the evidence concerning the contribution of the U.S. payments deficit.

These transactions can confuse the issue because when a central bank makes a Euro-dollar deposit, it converts a claim on the United States into a claim on a private foreign bank. The private foreign bank, in turn, has a liability to the central bank and as a matching asset a claim on a U.S. bank. U.S. liabilities to a foreign official thus become U.S. liabilities to a private foreign bank. As a result, U.S. liabilities to foreign officials fall while the volume of international reserves remains unchanged. The contribution of past U.S. deficits to international reserve growth thus appears to have been diminished merely because foreign monetary authorities have chosen to hold their reserves in Euro-banks rather than in the United States. It would be misleading, then, to conclude that the Euro-dollar market is a source of international liquidity just because central banks hold deposits there. Nonetheless international reserves can be increased by the operation of the Euro-dollar market in the sense explained in the next section.

Euro-dollar Transactions and International Reserves

While it has long been understood that U.S. deficits in a fixed or managed exchange rate system necessarily result in increased holdings of foreign exchange reserves, the fact that Euro-currency transactions can also increase official reserves has been recognized only relatively recently. Indeed, in the late 1960s Euro-currency transactions created something of a mystery when some observers began to note a growing difference between U.K. and U.S. records of their liquid debts to foreign officials and what was presumably the same thing, the foreign officials' records of their foreign exchange reserves. Until 1966 this difference was usually less than $1 billion and was easily dis-

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[10] Organization for Economic Cooperation and Development, "Trends in International Liquidity," *Economic Outlook*, December 1975, p. 78.

[11] This balance measures the difference between the change in U.S. official reserves and in foreign official claims on the United States. This balance is no longer published by the U.S. Government in part because its interpretation has become very difficult in an era of managed floats and OPEC "reserves" held for investment purposes. For additional discussion of this balance, see Norman S. Fieleke, *What is the Balance of Payments?* Federal Reserve Bank of Boston, July 1976, pp. 17–19.

[12] OECD, *op. cit.*, Table 33, p. 77.

missed as statistical discrepancy. By the end of 1970, however, it had risen to $13.2 billion, and economists began pointing out that central bankers depositing exchange reserves in the Euro-dollar market were themselves adding to the piles of unwanted dollars they kept finding in their tall silk hats. As Professor Machlup of Princeton has described this situation, "Most magicians who pull rabbits out of their hats know full well that they put them there before the beginning of the show. The magicians in . . . [this] story, however, are more naive, they are just as surprised as the audience by the emergence of the rabbits from their hats."[13]

With Professor Machlup's and others' help it then became widely understood that when central bankers made deposits in the Euro-dollar market, U.S. liabilities to foreign officials fell while international reserves remained unchanged. Moreover, the Euro-banks then lent these dollars out, thereby increasing the supply of dollar assets outside of the United States relative to the private demand for them. At times when the dollar was under speculative pressure, these dollars were then frequently converted to local currencies. This conversion tended to push the price of the dollar down and the price of local currencies up. Under the fixed rate system, some central bankers then had to buy dollars to maintain the international values of their currencies. They thereupon recorded another resented rise in their foreign exchange reserves and another inflationary increase in their domestic money supplies — solely on the basis of their recycled reserves and without any increase in U.S. liabilities at all.

In trying to brake this whirligig activity, authorities in the Group of 10[14] and Switzerland agreed in 1971 to abstain from making additional deposits in the market — temporarily at least. In their behalf, the BIS also transferred some funds from the Euro-dollar market to the United States. Thereafter, in March 1973, the major industrial countries suggested the possibility of imposing similar restraints on all IMF members. This suggestion has seemingly had only a very limited impact, however, because many officials are loath to give up the high earnings, flexibility and other advantages of the Euro-dollar market; thus, particularly as the surpluses of the oil-exporting countries accumulated, official Euro-dollar deposits have continued the rapid growth already discussed.

Although official Euro-currency deposits were the original cause of concern, the oil crisis stimulated a big upsurge in official or officially inspired Euro-currency borrowings for balance-of-payments purposes, and these transactions have now become the focus of attention. Naturally, the proceeds of these loans are not generally redeposited in the Euro-currency market but are spent to finance balance-of-payments deficits. The best available indicators of the volume of these borrowings are announced medium-term Euro-currency credits to governments and public financial institutions. Such credits to governments and public financial institutions grew from an estimated $1.7 billion issued in 1971 to $14.5 billion issued in 1974, as is shown in Table III. In 1975 the volume of loans fell off because credits to the industrial countries where the recession had greatly improved the balance-of-payments situation declined considerably. New loans to the developing countries continued to expand in 1975, however, and in 1976 total official Euro-

[13] Dr. Fritz Machlup, "The Magicians and Their Rabbits," *The Morgan Guaranty Survey*, May 1971, p. 3. See also Helmut Mayer, *Some Theoretical Problems Relating to the Euro-dollar Market*, Essays in International Finance, no. 70, (Princeton, N.J.: International Finance Section, Department of Economics, Princeton University, February 1970).

[14] The Group of 10 includes Belgium, Canada, France, West Germany, Italy, Japan, the Netherlands, Sweden, the United Kingdom and the United States. It is an unofficial arm of the IMF.

Table III
Publicly Announced, Medium-Term Euro-currency Credits to Governments and Public Financial Institutions[1]
1971 – 1st Half, 1976
(billions of U.S. dollars)

Year	Total Government	Developed Countries	LDCs
1971	1.5	.2	1.3
1972	2.4	1.0	1.4
1973	8.8	4.8	4.0
1974	14.5[2]	8.9	4.5
1975	10.3[2]	1.1	6.4
1976, 1st half	6.2[2]	.6	3.4

[1] Loans with a maturity of at least one year including credits guaranteed by governments and public financial institutions.

[2] Total includes credits to Socialist countries, international organizations and unallocated and is not the sum of credits to developed countries and LDCs.

Sources: Estimates for the years 1971–73 are based on lists compiled by the Rothschild Intercontinental Bank and published in *Euromoney*, monthly issues, 1971–1974. Data for 1974–1976, 1st half are from World Bank, *Borrowing in International Capital Markets, Second Quarter 1976*, EC-181/762, August 1976, Table 9, p. 31.

currency borrowings appear to have approached the 1974 pace again.

Unfortunately, these figures include credits not actually drawn and exclude unannounced credits. Moreover, the line between borrowings made by governments and public financial institutions and private borrowings encouraged by government policy may be very thin.

Although these Euro-currency borrowings have clearly contributed to the much discussed huge increases in gross official assets, it is important to recognize that borrowed reserves are not equivalent to owned reserves. When a central bank borrows in the Euro-currency market, its liability offsets its gain in gross reserves and the debtor institution will be well aware that its net reserve position (assets minus liabilities) has not improved. Noting that about half of the $44 billion increase in gross reserves which occurred between the end of 1973 and the end of 1975 represents increases in official Euro-currency debt greatly reduces the awesome proportion of the changes.

Nevertheless, if short-term assets and liabilities are recognized as being proportionately more liquid than progressively longer-term assets and liabilities, then official Euro-currency borrowings have strengthened the net *liquidity* position[15] of central bankers considerably. To explain more fully, if a central bank borrows completely liquid cash reserves by means of an only slightly less liquid one week or one month credit, say, this short-term borrowing will have improved the bank's net liquidity position very little and will have given it very little additional room to maneuver. If, on the other hand, the central bank borrows cash reserves by means of a considerably less liquid five-year loan, its net liquidity position will have improved a great deal, and it will have gained much more freedom of action. We know, of course, that all of the $43.7 billion Euro-currency borrowings shown in Table III were made for at least one year. Moreover, World Bank data covering 75 to 85 percent of the loan volume shown in Table III indicates that 90 percent of the medium-term Euro-currency loans made to governments in 1974 and 1975 had a maturity of at least five years. Indeed, in 1974 40 percent of these loans were made for at least 10 years. Clearly, then, these Euro-currency borrowings have contrib-

[15] Net liquidity position is defined as the sum of weighted assets minus the sum of weighted liabilities with the weights assigned according to degree of liquidity. The shortest-term and thus most liquid assets and liabilities should have the highest weight.

uted significantly to the net liquidity of the world's central banks.

The question remains, however, as to whether the Euro-currency transactions can increase international reserves above the level they would have reached in any case. This question is treated in the next section.

Should Official Recourse to the Euro-currency Markets Be Curtailed?

Since increases in international liquidity can be inflationary and since official Euro-currency transactions can lead to increases in reserves not sanctioned by the world community, should official recourse to the Euro-currency market be curtailed? The proposal made by the major industrial countries in 1971 and repeated in 1973 that central banks abstain from making Euro-currency deposits and hold their foreign exchange reserves in the United States or other issuing country has already been mentioned. Furthermore, questions concerning the wisdom of governments borrowing from the Euro-currency and other international money markets — especially for balance-of-payments purposes — have recently been raised. In addition to the impact on gross international reserves and international liquidity, the political ramifications of private banks making conditional loans to foreign governments have been an issue in both the borrowing and lending countries. Then too, from the commercial banks' perspective, lending for general budgetary or balance-of-payments purposes rather than for specific revenue generating projects may be excessively risky.

Are limits on official recourse to the Euro-currency market thus a good idea? In the current context, the answer is no, because capital flows from the United States would be likely to offset the impact of any such proposals on the major variables of concern. These variables are the volume of official reserves and the volume of commercial bank domestic currency reserves where exchange rates are being fixed; the international price of the dollar and other currencies where exchange rates are not being fixed; and the size of the infamous Euro-currency multiplier.

When limiting central bank Euro-dollar deposits was first proposed in 1971, the idea may have had some merit since at that time U.S. foreign exchange controls such as the Voluntary Foreign Credit Restraint Program may have impeded transfers between the U.S. capital market and the Euro-currency market; thus, if central banks had placed their dollar reserves in the United States, some of the dollar balances might have remained boxed up there. To the extent that the controls were effective, additional rounds of domestic currency and international reserve increases could have been avoided. In January 1974, however, the United States ended its foreign exchange control programs partly in order to facilitate the recycling of OPEC surplus reserves. Given the distortions and costs inherent in such programs their demise was most welcome. Currently, therefore, capital can flow from the United States to foreign borrowers without restraint. Indeed, a very high degree of integration exists — in part because the same major international banks now operate on both sides of the Atlantic.

Under these circumstances limiting official access to the Euro-currency market would be unlikely to change either the volume of international or domestic currency reserves[16] or the international price of the dollar. As has already been discussed, capital flows to and from this country almost never affect the quantity of reserves available to banks in the United States. Requiring central banks to hold their dollar

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[16] The author wishes to thank Ivan Iskroff, Special Assistant in the Foreign Department of the Federal Reserve Bank of New York, for making this point.

balances in the United States would, thus, have no impact on the quantity of reserves available here. As for the impact abroad, the transfer of official deposits from the Euro-dollar market to the United States would tend to raise Euro-interest rates relative to those in this country. As a result, private capital outflows either to the Euro-dollar market or directly from banks in the United States to nonbank borrowers abroad would be likely to offset the official transfers. Where exchange rates were being fixed, thus, subsequent increases in central bank reserves and in foreign high-powered money would tend to be the same whether they resulted from Euro-banks relending funds deposited by central banks or from private capital flows from the United States. Where exchange rates were floating, the downward pressure on the international price of the dollar would also tend to be the same regardless of where central banks placed their reserves. Similar offsets can be traced in the case of prohibitions on central bank Euro-currency borrowings — prohibitions which would incidentally be close to unmanageable given the fine shadings between official and officially encouraged private borrowing.[17]

As for the final issue which has been raised, limiting central bank Euro-currency transactions is also unlikely to change the size of the Euro-currency multiplier very significantly. The concept of a Euro-currency multiplier is, of course, related to the familiar commercial bank deposit multiplier. According to this model, commercial or Euro-bank lending operations will multiply an initial quantity of primary deposits or reserves into a larger final quantity of deposits. Because some theorists have argued that a Euro-currency multiplier could be very large and that the Euro-currency markets could, thus, be dangerously inflationary, the idea has attracted a great deal of worried attention.

Recently, however, several economists[18] have pointed out that the example of a commercial bank multiplier (which assumes that commercial banks can increase their deposits and loans without affecting relative interest rates and that their customers will hold a fixed proportion of their assets in the form of bank deposits) does not apply to Euro-banks. This lack of applicability stems from the fact that Euro-banks operate in an unregulated, highly competitive market where each transaction produces a change in relative interest rates. If, for instance, European depositors decide to transfer dollars from banks in the United States to the Euro-dollar market because of the advantages of holding these balances in local banks, the shift in primary deposits would bring about a relative decline in Euro-dollar interest rates and would induce a flow of funds previously held in the Euro-dollar market to the United States. A recent study which incorporates these interest-rate leakages in its approach to the Euro-dollar multiplier question estimates that between 1968 and 1972 the maximum possible size of the multiplier, including the enlarging impact of central bank deposits, was a low 1.4.[19]

To add to the insignificance of the multiplier — however small, moreover, because Euro-banks appear to borrow short to lend long to a much lesser extent than the U.S. commercial

[17] For the same reasons, efforts to determine whether the U.S. deficit or the Euro-currency market was the source of increases in international reserves are largely irrelevant. Whatever economic forces now cause an increase in official reserves via the Euro-currency market would in its absence cause additional capital flows from the United States.

[18] See, for instance, John Hewson and Eisuke Sakakibara, "The Euro-dollar Deposit Multiplier: A Portfolio Approach," *IMF Staff Papers*, XXI (July 1974), 307–328; Jurg Niehans and John Hewson, "The Eurodollar Market and Monetary Theory," *Journal of Money, Credit and Banking*, VIII (February 1976), 1–27; and Andrew D. Crockett, "The Euro-Currency Market: An Attempt to Clarify Some Basic Issues," *IMF Staff Papers*, XXIII (July 1976), 375–386.

[19] Hewson and Sakakibara, *op. cit.*, 325.

banks, say, the typical Euro-bank creates very little liquidity for the nonbank sector.[20] For this reason, "the whole debate about money creation in the Euromarket is largely beside the point,"[21] since the "Eurodollar system is, in the main, a network for the efficient distribution of liquid dollar funds."[22] In other words, a growing consensus concludes that the multiplier concept does not apply to the Euro-currency market.

Are International Reserves Excessive?

As the last section indicated, curbing official access to the Euro-currency market is not an answer to the problem of the unrestrained growth of international reserves. But then, how much of a "problem" actually exists? While reserve increases can clearly be inflationary and while the huge increase of 1971 probably falls in that category, the world environment has changed considerably since then. The quadrupling of oil prices in 1973 and 1974 represented a significant shock to most economies. Then too the inflationary surge of 1973 to 1975 was unusually severe as was the world recession. Did this combination make a slower rate of reserve increase appropriate or did it justify the fast pace which actually occurred?[23] Finally, of course, the advent of additional exchange rate flexibility reduces the need for official reserves although it also permits countries to avoid unwanted reserve gains occasioned by inflationary policies abroad. In this current context, do reserve increases since 1973 appear to have been excessive?

This question is extremely hard to answer since it is difficult to measure reserve adequacy with any precision at all. The Executive Directors of the IMF, who are required by international agreement to oversee the adequacy of world reserves, adopt a rather cautious, agnostic approach to the issue in their most recent *Annual Reports*. On balance, however, they seem to imply that reserve growth was not excessive in 1974 and 1975. They note that in spite of the increased flexibility of exchange rates and the increased availability of international money market credits to official borrowers, the majority of IMF members still peg their rates and that the "floaters" intervene "at times heavily."[24]

The IMF Directors thus believe that the ratio of reserves to imports remains "one useful indicator of reserve needs"[25] and they continue to base their most specific conclusions on this measure. They point out that in 1974 the ratio of aggregate reserves to imports reached the lowest level in 20 years, the period covered by the available data.[26] Of course, calculating reserves with gold valued at its market price rather than at the "official" price used in most countries' accounts, increases the appearance of reserve ease considerably. Even measured in this way, however, in 1974 and 1975 the ratio of reserves to imports was below the levels prevailing in 1955 and 1960 although it had risen above the low point hit in 1969. Moreover, (with gold valued at SDR 35 per ounce) the ratios for all major country groups except the oil exporters were much lower in 1974 and 1975 than in any recent year as can be seen in Table IV. The industrial countries as a group showed a substantially lower ratio of

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[20] That is, the typical Euro-bank adds little to the degree of "moneyness" of the nonbank sector's financial position. Niehans and Hewson, *op. cit.*, 13.

[21] *Ibid.*, 9.

[22] *Ibid.*, 15.

[23] Actually, the inflationary conditions may themselves have required the fast pace of reserve growth. Given the downward inflexibility of prices, the previous period's inflation must be taken as a given in judging the adequacy of the current level of world reserves. See also Herbert G. Grubel, *The International Monetary System*, (Baltimore, Md.: Penguin Books Inc., 1970), p. 66.

[24] International Monetary Fund, *Annual Report 1976*, Washington, D.C., p. 40.

[25] *Ibid.*, p. 40.

[26] IMF, *Annual Report 1975*, p. 40.

Table IV
Ratios of Reserves to Imports[1]
1966-1975
(percent)

	World	Industrial countries	Primary Producing Countries		
			More developed	Oil exporters[2]	Other less developed
1966	37	40	31	43	27
1967	36	38	29	46	28
1968	33	34	30	45	28
1969	30	30	30	43	28
1970	29	28	28	43	29
1971	32	33	33	52	28
1972	33	37	48	63	32
1973	34	31	47	59	34
1974	26	21	29	78	25
1975	28	22	26	93	23

[1] Reserves are centered quarterly averages for the years shown. Official gold holdings are valued at SDR 35 per ounce.
[2] The range of variation in this ratio among oil-exporting countries is considerable. Among those countries for which 1975 data are available, Indonesia had the lowest ratio (14 percent) and Saudi Arabia had the highest (more than 300 percent).

Source: International Monetary Fund, *Annual Report 1976*, Table 16, p. 40.

reserves to imports in 1974 and 1975 than they had during the entire postwar period. The non-oil primary producing countries, which generally peg their exchange rates and have limited access to world financial markets, also had ratios below those of the late '60s and early '70s. For this last group of countries the IMF concludes that reserve adequacy has actually fallen.[27]

This result reflects the impact of the distribution of reserves on the degree of reserve ease. As the IMF Directors point out, while global reserves grew by one-third between the end of 1973 and April 1976, the reserves of the non-oil primary producing countries did not show any net increase at all during the period. During 1974 the entire increase accrued to the major oil exporters. In 1975 and early 1976 the increase was shared by oil-exporting and some industrial countries.[28]

Advantages of Permitting Official Access to the Euro-currency Market

So far unrestrained official access to the Euro-currency market does not seem to have proved damaging to the international monetary system. By contrast, in fact, official participation in the Euro-currency market has probably been beneficial to the world economy on at least two counts.

[27] IMF, *Annual Report 1976*, pp. 40–41.

[28] IMF, *Annual Report 1976*, p. 41.

If we accept the IMF Directors' conclusion that international reserves were not excessive in 1974 and 1975, then in a period of severe recession the world economy clearly benefited from the provision of temporary liquidity via the Euro-currency market. Certainly, in the absence of the Euro-currency and other international money markets, it cannot be taken for granted that international agreement would have produced official credits of comparable size. Governments alone borrowed about $24 billion from the Euro-currency market in 1974 and 1975 and only $11 billion from the IMF. Indeed, their reserve positions with the IMF amounted to only $15 billion at the end of 1975. The ministers of the Group of 24 developing countries have commented with concern about "the inadequacy of Fund liquidity"[29] while the $3.9 billion loan to Britain has required the IMF to draw on the General Arrangement to Borrow to gather the necessary resources.[30] Although the IMF is a flexible institution and has raised the size of its permissible credits by 45 percent while the ratification of its new quota increases proceeds, as a creature of 129 sovereign governments, it cannot be as adaptable as the swift-moving Euro-currency market. Of course, national banking systems would no doubt have filled the breach if the Euro-market had not existed, but the world-wide Euro-currency network which is notorious for its ability to increase capital mobility clearly helped the private sector to provide and distribute the necessary funds.

The second advantage inherent in permitting officials to borrow and deposit reserves in the Euro-currency market is that this access encourages central banks to hold an optimum quantity of reserves. This result stems from a basic argument of welfare economics, which states that any good or service which can be created at zero social cost should be produced to the point that the social utility derived from an extra unit of that good or service is zero. Moreover, because the private cost of buying or using a good or service should be equal to the social cost of producing it, a good which can be created at zero social cost should also cost nothing to use and hold. Otherwise consumers will not demand the socially optimum quantity of the commodity.

Money, whether it be domestic or international, is of course, one of those commodities which can be produced at negligible social cost. Unfortunately, however, for any one country, acquiring or holding reserves requires giving up or foregoing real resources which could otherwise be invested or consumed. Holding reserves thus involves a cost (or a profit) unless the reserve assets bear an interest rate, which after adjustment for inflation, approximates the real rate of return on capital.

This cost (or profit) has damaging consequences, for if the interest rate on reserves is much lower than the real rate of return on capital, the central banks may tend to borrow and spend reserves too quickly. They may want to acquire real resources and to avoid the elimination of payments deficits. The results of these activities will be inflationary. If, on the other hand, the interest rate on reserves is above the real rate of return on capital, officials will have an incentive to acquire reserves. They will tend to eliminate deficits too quickly — with deflationary consequences. Only a system which permits central banks to earn something approaching the real rate of return on capital on their reserve assets encourages holding the optimum level of reserves and thus encourages optimum balance-of-payments policies —

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[29] "Press Communique of the Ministers of the Group of 24," issued in Manila, October 2, 1976, and reprinted in *IMF Survey*, October 18, 1976, p. 313.

[30] The General Arrangement to Borrow is an agreement between the IMF and the Group of 10 permitting the Fund to borrow up to $6.2 billion.

financing when that alternative is less expensive and adjusting when that option is less costly.[31]

Unfortunately, interest rates (after adjustment for inflation) on most reserve assets do not come very close to approximating the world real rate of return on capital. Gold reserves do not earn any interest at all although their value does rise with inflation. Moreover, while the IMF has raised the interest rate which it pays on SDRs and on creditor positions in the Fund during the last two years, this rate is still required to be below competitive market rates since it is set by formula at three-fifths of the weighted average of short-term market interest rates in the United States, the Federal Republic of Germany, the United Kingdom, France and Japan. The IMF's current remuneration rate is 3.75 percent. As for charges on drawings from the Fund, other than under the oil facility, they are also set by formula and are nominally well below market rates. The average annual rate for fiscal year 1976 was 3.9 percent, for instance.[32] The real cost of the strictly conditional IMF borrowings seems to be higher than competitive market rates, however. As the Group of 24 Developing Nations pointed out in Manila, few of the LDCs have made use of Fund resources beyond the automatic credit tranche because of the severity of the conditions imposed.[33] A comparison of the size of recent official Euro-currency borrowings with the size of credits from the IMF also suggests that governments generally view conditional IMF drawings as more costly than nominally more expensive Euro-currency borrowings and an alternative to be avoided if at all possible.

Although interest rates on dollar reserves held in or borrowed from banks in the United States are closer approximations of the world real rate of return on capital than are IMF rates, they still represent conditions in a single (albeit very important) capital market. Moreover, banks in the United States are subject to reserve requirements, interest rate ceilings and other regulations which distort the rates they pay and charge. By contrast, interest rates in the highly competitive, broadly international and largely unregulated Euro-currency market probably yield the best available approximation of the world-wide real rate of return on capital. In this sense, then, Euro-currency reserves are now the most efficient form of reserves, and permitting central bankers to borrow and deposit in the Euro-currency market encourages the optimum pace of adjustment.

Of course, it should be mentioned that national currencies do not necessarily make good international reserves. As Robert Triffin[34] pointed out almost 20 years ago, using national currencies as international reserves generally makes the growth of official reserves dependent on a key currency country's willingness to let its short-term liabilities grow relative to its own reserve assets. As a result, this country's net position will deteriorate to the point that the world may lose confidence in the international value of the currency in question. The serious depreciation of the pound during 1976 plus the recent announcement of a $3 billion "safety net" designed to support British efforts to reduce the reserve currency role of sterling point to some of the difficulties involved. Shortly after the quadrupling of oil prices, the OPEC countries began to increase their holdings of sterling reserves,

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[31] See Grubel, *The International Monetary System*, pp. 62–65, Herbert G. Grubel, "Interest Payments and the Efficiency of the International Monetary System," *Monte dei Paschi di Siena Economic Notes*, no. 3, September/December 1973, and Harry G. Johnson, "Efficiency in International Money Supply," *Further Essays in Monetary Economics*, (Cambridge, Mass.: Harvard University Press, 1973), pp. 271–76.

[32] IMF, *Annual Report 1976*, p. 57.

[33] "Press Communique of the Ministers of the Group of 24," *op. cit.*, p. 313.

[34] Robert Triffin, *Gold and the Dollar Crisis*, (New Haven: Yale University Press, 1960).

partly because of their long-standing ties with Britain. Then in 1976, in the presence of woeful U.K. internal conditions, such as a relatively high rate of inflation, and a consequent depreciation of sterling, the OPEC countries switched several billion dollars of their reserves from pounds to other assets, thereby aggravating the decline of sterling. Moreover, should a decline in confidence in the dollar develop at some future date, a similar flight of official capital from the dollar into some other currency might occur. Such a loss of confidence is less likely, however, as long as exchange rates against the dollar are not artificially fixed at disequilibrium levels.

In summary, then, this article has argued that limiting government access to the Euro-currency market is not a feasible approach to controlling the growth of international liquidity. This conclusion raises no problems, however, since international reserve growth via the Euro-currency market does not appear to have been excessive. Morever, permitting central banks to deposit and borrow in the Euro-currency market actually offers considerable advantages since earning the real rate of return on capital on their reserves encourages officials to adopt efficient balance-of-payments policies.

Private Credit Rationing

PAUL S. ANDERSON AND JAMES R. OSTAS*

IT IS fall, 1974 in Boston. Savings banks have very little money to lend on home mortgages because depositors have been withdrawing substantial amounts from their savings to invest in securities paying much higher rates than banks pay on savings. What loanable funds a certain savings bank has can be:

(a) used to buy corporate bonds yielding almost 11 percent, and having no servicing expenses, or

(b) lent out at 9½ percent to a long-standing depositor on a mortgage loan which has servicing costs of just under ½ of 1 percent.

Question: does the savings bank choose (a) or (b)? Most students of economics, as well as most of the public, would choose answer (a). But savings bankers, the people who count, usually choose (b). Instead of lending funds to the highest bidders, savings bankers and other institutional lenders choose to charge less and then to distribute, or *ration*, their credit on some basis other than rate paid.

At the present time, funds for lending are plentiful and the question of credit rationing a remote one. However, periods of monetary restraint have been a recurring phenomenon in our economy, and problems of credit rationing may return at some future time. The very concept of private credit rationing remains controversial, and its importance in implementing monetary policy is still questioned by many.[1] However, particularly during periods of credit restraint, the allocation of available funds among borrowers clearly is not based entirely upon the interest rate paid.

The impact of direct rationing of some prospective borrowers out of the market necessarily differs from the effect of an increase in interest rates. Specific attempts to measure these factors have been far less frequent than the development of theories to explain credit rationing, however. This article will be confined to a description of some of the lending practices related to credit rationing in the commercial, consumer, and mortgage loan fields.

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[1] For a review of the continuing debate in the literature about credit rationing, see Benjamin M. Friedman, "Credit Rationing: A Review," Board of Governors of the Federal Reserve System, *Staff Economic Studies*, 72, 1972, 27 pp. One of the more recent attempts to measure credit rationing used the Federal Reserve System's Quarterly Survey of Changes in Bank Lending Practices. See Duane G. Harris, "Credit Rationing at Commercial Banks: Some Empirical Evidence," *Journal of Money Credit and Banking*, Vol. VI, No. 2 (May 1974), pp. 227–240.

I. The Rationing Phenomenon

For most people, rationing refers to the procedure used primarily during wartime to allocate goods in short supply. Ration coupons that permitted the purchase of a set amount of the rationed item per time period were parceled out on a per capita basis. Economists call this nonprice rationing, as opposed to the common way of allocating goods by price rationing, which is charging a price that equalizes supply and demand. In price rationing, each dollar bill is, in effect, a ration coupon.

Rationing is defined in this article as the way goods or credit are allocated when their price is set at so low a level that more is demanded than is available. The rationing phenomenon has two aspects, the setting of a below-market or "too-low" price and the method of allocation at this price. Three combinations can be distinguished according to who sets the price and who determines the allocation scheme:

1. Price and rationing method both determined by government. This is the World War II type of rationing where the government controlled the price of goods in short supply and specified, by the use of ration coupons, how the short supply was to be distributed.
2. Price determined by government but rationing carried out by private sector. This type occurred at the time of the 1974 gasoline shortage. The government set the price at a level where more was demanded than was available. The short supply of gasoline was distributed privately, generally on the basis of first come, first served.
3. Both price and rationing determined in private sector. A striking example of this type of rationing occurred in the post World War II years after price controls were abolished in 1946. Auto manufacturers did not set prices at a level which would equalize demands with supplies, but at a lower level. More cars were demanded at these prices than were available and the automobile manufacturers permitted their dealers to distribute cars according to their best judgment.

All these examples were drawn from the markets for goods, but the rationing phenomenon also occurs in the credit markets. Most credit rationing falls into the second and third types. Examples of the first type, where the government sets both price and the rationing scheme, are rare in this country but have been common in some other countries, such as France.[2] The concept of rationing used here is the process by which lenders allocate their loanable funds when they do not (or cannot) charge a high enough interest rate to balance demands for loans with supplies of funds.

II. Usury Laws

The most obvious example of "too low" interest rates occurs where usury laws set low ceilings on interest rates that can be charged on loans. Forty-eight states have usury laws which vary in coverage and the level of the ceiling, but most apply only to loans to individuals and noncorporate businesses.[3] Usually small consumer instalment loans are exempt from these general usury ceilings but are covered by special, higher ceilings. Loans to corporations most often are exempted entirely or covered by higher ceilings. As a result, usury ceilings primarily affect per-

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[2] Donald R. Hodgman, "The French System of Monetary and Credit Controls," Banca Nazionale del Lavoro, *Quarterly Review*, No. 99 (December 1971), pp. 324–353; Donald R. Hodgman, "Credit Controls in Western Europe: An Evaluation Review," and Jacques H. David and Marcus H. Miller, "Discussion," in *Credit Allocation Techniques and Monetary Policy*, Federal Reserve Bank of Boston, Conference Series No. 11, September 1973, pp. 137–177.

[3] Norman W. Bowsher, "Usury Laws: Harmful When Effective," *Federal Reserve Bank of St. Louis Review*, Vol. 56, No. 8 (August 1974), pp. 16–23.

sonal loans to consumers, mortgage loans to home buyers, and business loans to unincorporated firms.

The intent of usury laws is to protect "unsophisticated" borrowers against "exorbitant" interest rates. While such an intent can be applauded, usury laws really cannot do the job. The basic difficulty is that usury ceilings conflict with the law of supply and demand which sets prices in the market place. If the usury ceiling is below the market interest rate which lenders can get, lenders will tend not to lend to those borrowers who are "protected" by the ceiling. For example, if conditions are such that the interest rate on mortgage loans should be 9 percent in order to balance demands for loans with supplies of funds but the ceiling on loans is 7½ percent (as it was in Vermont until April 1974), then more funds are demanded at 7½ percent than are available and credit rationing results. What funds banks do lend at the ceiling, they will lend to long-standing customers. Thus those borrowers that do benefit from usury ceilings generally would get favored treatment anyway because they are known to the lender or can provide good security.

Available evidence suggests that in those states with usury ceilings below the market interest rate, thrift institutions increase their lending on out-of-state mortgages and other credit instruments.[4] As a result, funds lent on local conventional mortgages are reduced, as are new housing starts.[5] While FHA and VA mortgages are exempt from usury laws in several states, they do not serve to fill the "financing gap" that results from usury ceilings on conventional mortgages. FHA and VA mortgages involve a lot of "red tape." Their rates are set in Washington, and while the effective rate can be raised by discounting, many borrowers, and even lenders, object to this practice.

Of the 48 states with usury laws, a large number have raised the ceilings or relaxed the provisions of the law in the last ten years. They recognized that the net effect of usury ceilings substantially below market rates was on balance more injurious than helpful.

III. Evidence of Private Credit Rationing Activity

It is obvious why interest rates on loans can become "too low" when usury ceilings are in force. But even where usury ceilings do not apply, loan rates are often "too low" during periods when funds are in short supply. At such times lenders do not raise rates to levels which would reduce demand to the volume of funds available, but hold rates at a lower level. At this lower level, the demand for funds exceeds the supply and lenders allocate or ration available funds to borrowers on some basis other than willingness to pay.

Borrowers become aware of the rationing phenomenon when they apply for loans. Normally lenders inquire about the applicant's credit rating and then state the terms of the loan. But when funds are in short supply, the lender will first determine whether the applicant is entitled to credit on the basis of his past relationship with the lender. If the applicant is not, he will probably be turned down with no discus-

[4] Suzanne Cutler, "The Public Policy Objectives of the Regulation of Depository Institutions," in Leonard Lapidus et al., *Public Policy Toward Mutual Savings Banks in New York State: Proposals for Change*, Federal Reserve Bank of New York and New York State Banking Department, June 1974, p. 111.

[5] James R. Ostas, "Effects of Usury Ceilings in the Mortgage Market," *Journal of Finance*, Vol. XXXI (June, 1976), pp. 821–834; Arthur J. Rolnick, Stanley L. Graham and David S. Dahl, "Minnesota's Usury Law: An Evaluation," *Ninth District Quarterly*, Federal Reserve Bank of Minneapolis, April 1975, pp. 16–25; Norman W. Bowsher, *op. cit.*, p. 19, and Robins, Philip K., "The Effects of State Usury Ceilings on Single Family Homebuilding," *Journal of Finance*, Vol. XXIX, (March 1974), pp. 227–235.

sion of what rates would be charged and whether the applicant would be willing to pay these rates.

Shown in the chart are comparisons of interest rates which indicate periods when rates charged for loans were lower than rates paid on comparable investments, which is a standard symptom that credit rationing is occurring. In the top panel are rates charged on conventional mortgage loans and the rate prevailing in the secondary or wholesale market for government-insured (FHA) mortgage loans. During periods when supplies of mortgage funds were short, particularly in 1969–70 and 1974, rates in the secondary market rose 50 basis points or more above rates charged conventional borrowers. Not only does this indicate that rates charged for conventional mortgages were relatively low, but that lenders accepted these lower rates when they could have bought insured mortgage loans in the secondary market at a higher rate of return.

The lower panel in the chart compares the prime business loan rate with the cost of 90-day certificates of deposit (CDs) adjusted for reserve requirements. This adjusted CD rate is a measure of a bank's marginal cost of funds. Normally the prime loan rate approximates or slightly exceeds the CD cost, but in 1973 and again in 1974 the prime loan rate did not even keep up with the adjusted CD cost.[6] Again, banks were charging less for these loans than they were paying for their marginal source of funds.

Also shown in the lower panel are rates for consumer loans, which have been relatively stable. From a level of about 9 percent in 1963, rates on consumer loans by banks rose slowly to about 10½ percent in 1970–72 and then more rapidly to 11½ percent in 1974. Since the servicing expenses of these loans amount to around 3 percent per year, the net return on these loans did not cover the marginal cost of funds as represented by the CD rate. Obviously the rate on consumer loans was also below what might be expected during tight money periods.[7]

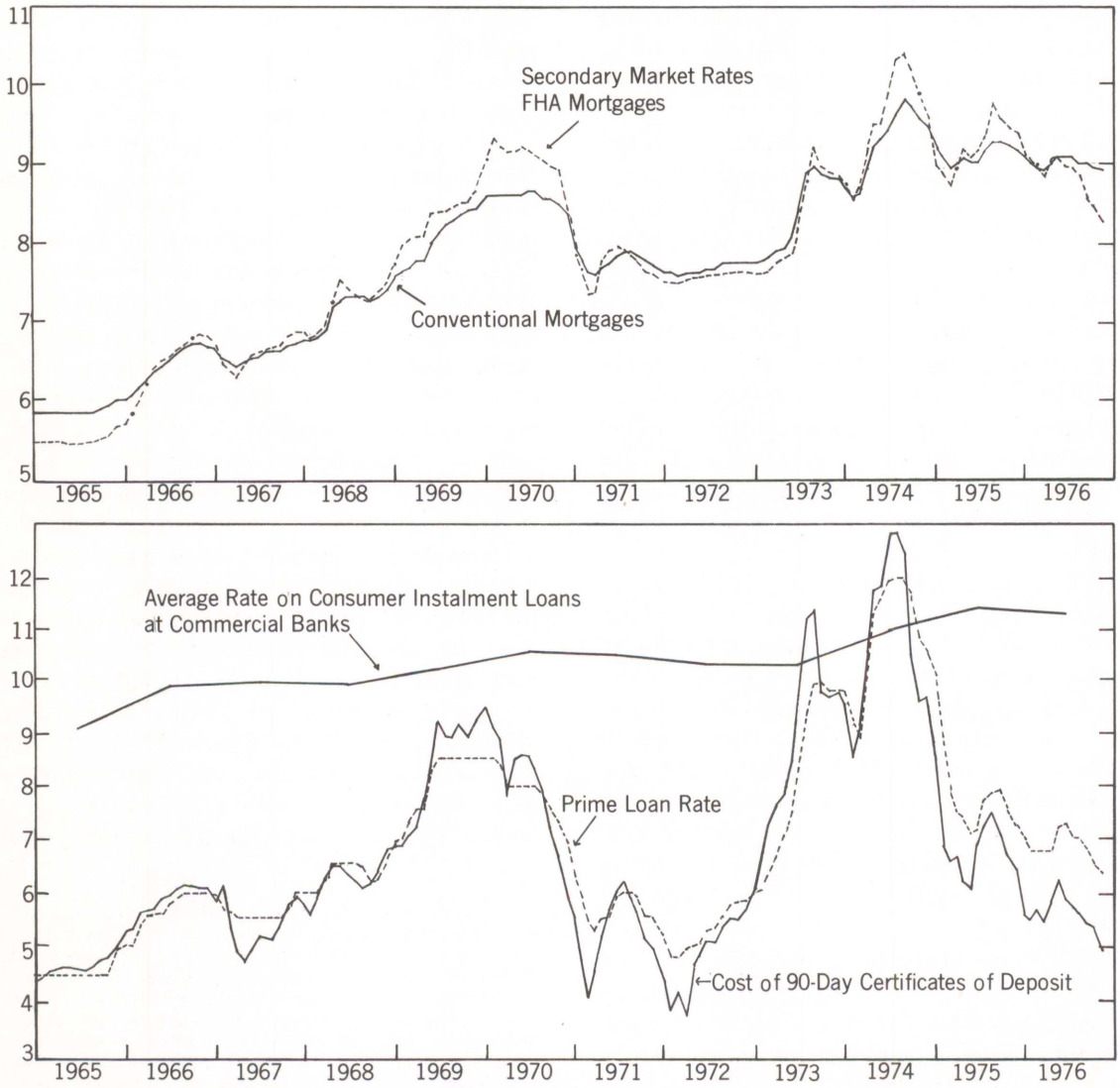
Why are lenders reluctant to charge what the market will bear? Several factors influence lenders to act circumspectly. They involve the image lenders want to gain and maintain before both governmental bodies and customers. Federal and state governments are quick to express concern if they believe that lenders are raising loan rates to unwarranted levels. In the past, some state governments have imposed restrictive usury ceilings, which can severely limit the operations of lenders.

Possible reactions of borrowers and the public generally also make lenders hesitant about raising loan rates rapidly. Maintaining good relationships with existing customers is important for long-run profit maximization. This is especially the case where the "products" are loans and deposits and one lender's products are practically identical to another's. Lending institutions strive to develop good relations with their customers and rapid and aggressive raising of loan rates can easily alienate them. Thus, lenders tend to delay raising loan rates until

[6] A special factor serving to hold down the prime loan rate in 1973 and 1974 was the Federal Government's Committee on Interest and Dividends which monitored interest rate and dividend payment developments during this period.

[7] Construction lending provides an interesting contrast to the lending areas discussed in this article because it has little rationing — lenders generally charge the going market rate. The chief construction lenders are commercial banks, savings and loan associations, and real estate investment trusts. The characteristics of construction lending probably explain why credit is allocated on the basis of rate rather than being rationed when credit is tight. Construction lending is risky and the failure rate among builders and developers is much higher than the average among borrowers in general. The soundness of a loan depends on both the competence of the builder and the profitability of the completed project. Builders generally do not have substantial assets of their own, so they cannot provide much additional security. In addition, the construction industry is fairly small so little public attention is paid to its credit costs.

LOAN RATES, MARKET RATES AND INTEREST COSTS (1965-1976)



Note-The mortgage rate series are those compiled by the Department of Housing and Urban Development. The cost of 90 day CDs includes the cost of carrying reserves against these time deposits. The consumer loan rate is an estimate based on the Functional Cost survey of the Federal Reserve prior to 1971 and on a sample survey since then.

most comparable money market rates have risen and even then to raise their loan rates a little less than these other rates. In essence, lenders sacrifice short-run profits because they think that course is more profitable in the long run.

It should be noted that, as contrasted with credit rationing caused by low usury ceilings, voluntary credit rationing diminishes with the passage of time. Lenders do gradually raise their lending rates, and if tight conditions persist long enough, rates may eventually reach the "correct" level so rationing is not needed. Also, as tight credit conditions become more common, as has happened since 1966, lenders adjust their interest rates more quickly. This can be seen in the chart; rates on all three types of loans shown were raised more quickly and to a greater extent in 1973–74 than in the two preceding restraint periods. Thus voluntary credit rationing is really a temporary phenomenon and may well become less important in the future as the country becomes more accustomed to large fluctuations in interest rates.

Mortgage Loans

The chief home mortgage lenders are thrift institutions — savings and loan associations and savings banks. These lenders present themselves as "people's institutions" and in the past Congress has granted them various types of favored treatment such as somewhat higher interest rate ceilings than commercial banks. Thrift institutions have also been successful in gaining a favorable and sympathetic attitude from the public. Residential mortgage borrowers have usually obtained more attractive terms than offered by other lenders. This favorable public attitude would be jeopardized if thrift institutions began raising mortgage rates as rapidly as competitive conditions allowed during periods of credit restraint.

Business Loans

Most business borrowers are much more interested in the availability of bank loans than in the current rate of interest. So long as they believe they are not paying more than other business borrowers in the same situation, they will accept higher rates, even though reluctantly. But elected officials express a great deal of concern about rapid rises in business loan rates. If Congress becomes sufficiently antagonistic to banks, it can pass penalizing legislation restricting bank operations and profits. Commercial banks have been quite successful in the postwar years in obtaining greater "tax equality," and they could jeopardize this trend by too aggressive rate-setting. A clear example of banks bowing to governmental pressure occurred in 1973 when the Government Committee on Interest and Dividends requested banks to raise the prime rate slowly and banks complied, even though they were under no legal requirement to do so.

Furthermore, banks do not have to raise the prime rate to the highest point possible in order to make good profits during a period of restraint. This is the case even though the cost of funds rises so rapidly during periods of restraint that for a time the *marginal* cost of funds borrowed by a bank exceeds the interest received from many, if not most, of its borrowers. However, the *average* cost of bank funds does not rise as quickly as do yields on earning assets because about one-third of bank funds on average are obtained from demand deposits which pay no interest. The net result is that although the costs of *additional* funds (those obtained through CDs, for example) rise above the yield on business loans, average costs of funds are low enough to provide a very profitable spread. Moreover, loan rates usually decline more slowly than CD rates when credit conditions ease. As the chart shows, a profitable spread opened up

between the prime rate and the net cost of CDs in the easy credit periods of 1971–72 and 1975–76. Thus, when the credit cycle is viewed as a whole, bank profits suffer little, if at all, as a consequence of charging lower-than-market rates on business loans during a tight period.

Banks can also make up a part of the undercharges on business loans by other adjustments. The most common of these is to increase the compensating balances the borrower must hold. For example, if this balance is increased from 10 to 20 percent of the loan or the line of credit, the borrower really gets 10 percent less from his loan, yet his interest payment is the same as before, so his actual cost per $1 used is about 10 percent higher. Banks can also make up for "too-low" interest rates on business loans by adjusting commitment fees, fees for handling trust and pension accounts, and other charges. Still another adjustment is to add a premium to the prime rate, often done with new customers. Even though the new borrower may be as creditworthy as existing prime borrowers, the bank may charge him, say, prime plus 1 percent. This premium charge is continued until a regular customer relationship is established. Thus, for all these reasons the actual level of the prime rate on business loans may not accurately reflect the real cost of lending to any given borrower or its overall profitability to the bank.

These adjustments in the terms of the customer relationship are, at best, only a partial substitute for raising the business loan rate. Like the below-market level of the loan rate, they are symptoms of the fact that an imbalance, or disequilibrium, exists in the supply and demand for funds which requires rationing. If banks felt they could raise rates rapidly enough to balance supplies and demands, they would undoubtedly do so rather than adjusting these other lending terms because interest rate changes are much simpler than the other adjustments which usually involve individual negotiations with borrowers.

But it is not practical for banks (or other lenders) to change loan rates whenever market conditions change, even if they felt they could. Market interest rates, such as on Treasury bills or commercial paper, change continuously. Lenders prefer to delay changing their rates until they are fairly certain that the change will not have to be reversed soon.

Also, business demands for funds are so intense, or inelastic, at times that even fairly substantial rises in the lending rate do little to dampen these demands. For example, a lending officer of a large midwestern bank that was especially short of loanable funds stated that his bank raised the rate for some prime customers by three percentage points above the prevailing prime rate but that resulted in no withdrawals of loan requests.

In sum, there are frictions in rate setting on loans that make it practically impossible for lenders to allocate credit on the basis of rate alone. Thus, whenever credit conditions tighten rapidly, some rationing is inevitable.

Consumer Loans

Rates on consumer loans of banks are by far the most stable of the three types discussed in this article. The explanation involves the marketing strategies of banks adopted as a response to the history of consumer credit. In the 1920s, when consumer loans were first extended in any significant amount, they were considered risky and the rates charged were high. But these loans proved surprisingly sound in the depression of the 1930s. Their loss ratio was small; in fact, the percentage of failures among banks was much higher than the loss percentage on consumer loans. The relatively high interest yield combined with low losses made these loans very

profitable during the 1930s, 1940s, and early 1950s when other yields were historically low.

Successful consumer lending requires sufficient volume so that processing costs per loan are moderate. At best, processing costs tend to run over 3 percent, and if not well controlled can easily rise to more than twice that level. But it is difficult to develop consumer loan business "off the street." It takes persistent advertising to gain recognition and habitual acceptance as a low-cost consumer lender with "low bank rates." Such advertising is aimed at influencing the habits of the borrowing public rather than convincing the public the institution merits special treatment.

This marketing effort is a long-term operation — it cannot be turned off when interest rates rise and then resumed with any success when rates decline. Because of this, banks believe it is good marketing policy to hold consumer loan rates as stable as possible during tight money in order to maintain the bank's reputation as a comparatively low cost lender. Thus banks are willing to charge less than is warranted during high rate periods in order to preserve their public acceptance and to profit by it when rates decline.

The other major consumer lenders, sales and consumer finance companies, dominated this market until commercial banks entered on a wide scale in the late 1930s. Since then, the finance companies have gradually lost market shares to commercial banks. Their cost of funds averages higher than that of banks and they typically charge higher rates — about 13 percent on new car loans, for example, as compared to about 11 percent by banks. But they cannot set their rates too far above bank rates or they will lose their market share even faster. Thus their rates tend to be determined by the level of bank rates. On small personal loans, which generally have the highest rates of the various types of consumer loans, usury ceilings often determine the level of interest rates.

IV. How Loans Are Rationed

Rationing Mortgage Funds

During tight money periods, the inflow of funds to mortgage lenders declines substantially. Since lenders generally chose not to raise lending rates enough to reduce applications to the volume of available funds, they have a large gap between supplies of funds and demands for them. Their problem is how to parcel out the limited supply.

First, of course, lenders must honor prior loan commitments. Then their first general rationing action is to turn down all out-of-area applicants. According to all mortgage lenders who were interviewed, they want to satisfy borrowers in their main market area first. They also generally refuse all applications for credit for purchases of vacation homes. They believe primary home purchasers deserve priority.

Beyond these criteria, they rank borrowers by group. The following order is fairly typical of the priorities of thrift institutions:

1) Long-established depositors.
2) Buyers of houses on which lenders already have mortgages (refinancing loans).
3) Borrowers referred by brokers and builders who have a long-established association with lender.
4) Commercial mortgage borrowers.
5) Applicants "off the street" with no ties to lender.

Some institutions may tend to have somewhat different rankings and vary in their lending policies. Some lenders, attracted by the high rates paid, will rank large commercial mortgage borrowers second or third in their priority of applicants. Lenders who prize their broker and

builder contacts might rank this group second.

Borrowers are further ranked by their relative safety. Those receive preference who can provide a high downpayment, 30 percent or even more, and can pay off the loan within 20 years. Not only do such terms make the loan less risky but they help the liquidity position of the lender by reducing the funds loaned out and increasing the rate of repayment.

A refinancing loan (giving a new loan on the same house on which the bank already held a mortgage) has been attractive in recent years because it allows the lender to obtain a higher rate of interest on what is essentially an old loan and on which the interest rate is usually lower than the prevailing rate. Such loans combined with a high downpayment are particularly attractive since the lender needs to advance less additional cash than for an original mortgage. Lenders will often grant a rate somewhat lower than the prevailing rate on such refinancing loans, in order to expedite the home sale and enable the lender to turn over the loan and get a higher rate than on the original mortgage.

A few mortgage lenders, however, may rely entirely on price to determine their lending policies. For example, one New England savings bank in a predominantly retirement and resort area, finding itself with a large inflow of savings during a period of general restraint, nevertheless charged all applicants a mortgage rate in line with corporate bond rates and higher than the prevailing mortgage rate charged by other thrift institutions. Similarly, a large commercial bank made a substantial short-term profit during a tight money period by lending for home mortgages at a high rate of interest and realizing a capital gain by selling the mortgage loans to a Federal agency at a lower rate of interest.

Normally, most new borrowers are referred by brokers and builders or come to the bank "off the street." Therefore when these two groups are rationed out, the lender has voluntarily cut out most of its new mortgage market. Unless disintermediation is severe, he will still be able to satisfy long-established depositors and the demand for refinancing loans, and occasionally, commercial mortgage borrowers as well. Of course, the lender is not strictly bound by any ranking and he will accommodate new applicants who seem to have an especially urgent need or who appear especially likely to become long-run customers.

Rationing Business Loans

Most business borrowers are long-time depositors of commercial banks, so a close relationship exists between the bank and the business borrower. These long-time depositors traditionally are entitled to a certain quota or line of credit and they generally are more interested in its availability than its cost during a period of restraint, because many profitable business opportunities are usually available at such times. The difficulty is that demands for business loans substantially exceed the volume of funds available then. In fact, a tight money period is generally characterized by rapid increases in business demands for funds which are not accommodated by monetary policy.

During such a period of credit restraint, the first priority of commercial banks is to grant all loan requests that fall within established credit lines. These are considered binding obligations by most banks whether or not a formal commitment fee has been paid. Beyond this, banks provide additional credit on a selective basis using such criteria as credit-worthiness, length or permanence of the customer relationship, profitability of the account over time in relation to bank services provided, proposed use of funds, including analysis of the feasibility of the project, degree of need, and availability of alternative sources of funds. Of course, banks run the risk of alienating customers by unfavorable loan

decisions but they also know that applicants will have difficulty obtaining a loan at another bank as well.

Since in rationing business loans, banks first limit their lending to regular customers and to the accommodation of their usual needs, the new venture, the unusual or the risky project, the acquisition loan and the unexpectedly large demand for funds become casualties during a tight money period. Thus previous commitments tend to limit the supply of funds available for innovation and expansion. This must be counted an important cost of monetary restraint.

Shown in the accompanying table is a comparison of business lending practices of large commercial banks during easy and tight credit periods. While changes in the interest rate are the most common reaction to ease or tightness, many other reinforcing changes are made in loan terms and in lending attitudes. This listing of lending adjustments demonstrates that the bank-business borrower relationship includes many facets in addition to the rate charged. A small percentage of banks tightened various non-interest terms in early 1971 even though that was an easing period and no banks raised rates. Presumably this represents a completion of tightening actions these banks had begun during the preceding tight money period of 1969–70 and is further evidence that the loan rate itself does not fully reflect the costs of borrowing.

It is a common assumption that small business gets rationed out of the business loan market at such times. It is a fact that bank lending to large business generally does increase greatly as a proportion of total business lending during a tight money period. For example, between 1972 and 1974, the dollar amount of total new short-term business loans of $1 million and over nearly doubled, according to the Quarterly Survey of Interest Rates conducted by the Federal Reserve System, while the total of similar loans of under $1 million grew less than 10 percent.

However, the substantial increase in bank lending to large business during credit tightness probably reflects cyclically greater use of credit lines by large borrowers rather than changing

Changes in Bank Lending Practices at Selected Large Commercial Banks on Loans to Nonfinancial Businesses

	Easy credit period: three months to Feb. 1971		Tight credit period: three months to Aug. 1974	
	Firmer	Easier	Firmer	Easier
	(percentages of reporting banks)			
Loan terms:				
Interest rate	0	85	77	0
Compensating balances	2	25	68	0
Credit standards	5	5	60	0
Maturity of term loans	1	26	55	0
Value of applicant as depositor or source of other business	5	19	69	0
Intended use of loan	2	27	64	0

Source: Federal Reserve System Quarterly Survey of Bank Lending Practices.

credit standards. In most cases the bank is the small firm's only source of credit, and the small firm uses this source almost continuously. While large firms maintain compensating balances and lines of credit during times of ease, large firms also use stock issues, commercial paper, loans from insurance companies, and other sources to obtain their funds, and not just bank loans as in the case of small firms. When credit is restricted and other sources of funds such as commercial paper become too expensive or are unavailable, the large firm then relies more heavily on its bank lines of credit, and bank lending to large businesses increases.

Rationing Consumer Loans

The two main lenders of consumer credit, commercial banks and finance companies, are in somewhat different situations with regard to making consumer loans when money is tight. According to the bankers interviewed, the primary goal of most commercial banks is to provide the maximum amount of funds to their priority customers, businesses, and to limit other uses of funds including consumer lending as much as possible. But in trying to limit consumer lending, they must be careful not to tarnish their image as "the bank that likes to say yes." They raise credit standards, but this does not eliminate many applicants because banks typically get the better risks anyway. They discontinue advertising consumer lending, but this has little impact on their established clientele. Banks can do especially little about limiting credit card lending. Once cards have been issued and contracts made with stores to honor them, the volume of credit extended is essentially in the hands of the consumers. Thus, in the final analysis, commercial banks do little effective rationing of consumer credit.

Consumer lending is the priority operation of finance companies, both sales finance and consumer finance. They encounter a severe profits squeeze during a tight credit period because interest costs on their borrowed funds, of which short-term bank loans and commercial paper are a large share, rise rapidly while their interest income rises little since consumer lending rates are so sluggish. Some finance companies also face a reduction in the availability of funds during such periods because banks that are short of loanable funds often single out finance company credit lines as the area to be cut back. In addition, commercial paper tends to become difficult to market unless the seller maintains an excellent credit standing.

Because of lowered profitability and the reduced availability of funds, finance companies ration credit mainly by raising credit standards. This is quite effective in limiting their lending because their applicants span a wide range of creditworthiness. The result is that the higher-risk, and usually lower-income, consumers get rationed out. Thus charging relatively low rates and rationing loans have the same impact as usury ceilings on consumer loans. Low-risk, high-income consumers pay relatively low rates for their loans, while higher-risk, low-income consumers have difficulty gaining access to conventional sources of credit.

Sales finance companies, which do most of their consumer lending indirectly by purchasing consumer loans from auto and appliance dealers, could conceivably reduce their lending by dropping some of these dealers during tight money periods. But if they were to do so, they would lose the business from those dealers permanently because the disappointed dealers would turn to another source of funds. Therefore, if a sales finance company intends to retain its share of the market during times when lending is profitable, it must do its best to serve its dealers when money is tight. Dealers must then, in turn, limit their credit sales to the better credit risks. Some finance companies did discon-

tinue purchasing mobile home "paper" entirely during the 1973–74 tight money period even though this meant that they would have difficulty reentering that market if they decided to do so in the future. Mobile home paper had become less profitable than other consumer lending lines and it also absorbed a larger amount of funds per loan.

Other consumer lenders have also had diverse experiences in recent years. Savings banks and savings and loan associations in some states have been empowered to make consumer loans, and some of them aggressively competed with the commercial banks for better-risk loans. But they have been thwarted by their funds shortages during the recent periods of credit restraint. As a result some of them had to stop practically all such lending, and this made it difficult for them to regain a share of the market when fund supplies became more plentiful after 1974. Credit unions, however, have had substantial inflows of funds even in the tight money periods, because they paid somewhat higher rates on their savings than other institutions and they usually had the advantage of convenience as well. As a result, they did not have to ration their loans and they increased their share of the market substantially so that they are now approaching commercial banks in the growth of consumer loans.

V. Impact on Lenders

Discussions of credit rationing usually focus on the impact on borrowers — who gets credit under rationing and who does not. Often overlooked is the impact on lenders. Since rationing entails a lower interest rate than could be charged, it results in at least a short-term loss to lenders.

The chief lenders to business, commercial banks, probably suffer least among lenders who ration credit. They can generally recoup any loss of income resulting from low rates by making adjustments in other facets of customer service. In any case, during periods of tight credit yields on commercial bank assets, which are almost entirely short-term, rise rapidly (even though less rapidly than they could), while their average costs rise more slowly because a good share of their funds comes from demand deposits on which no interest is paid. As a result, their earnings increase; from 1972 to 1974, for example, the net earnings spread (gross income minus total expenses) of commercial banks rose from 0.66 percent of total assets to 0.81 percent.

Among consumer lenders, sales and consumer finance companies tend to have reductions in net income during periods of credit rationing. For example, net income of these companies declined from a base of 100 in 1972 to 85 in 1973 and 89 in 1974, according to data compiled by the Citibank of New York, while net income of commercial banks rose from 100 in 1972 to 118 in 1973 and 127 in 1974. Rates on consumer loans rise very sluggishly at such times but interest costs of finance companies rise rapidly because they rely heavily on short-term debt, both commercial paper and bank loans, on which rates rise substantially. With respect to their consumer loans, commercial banks are in somewhat the same situation, but consumer loans are a relatively small portion of their assets, just over 10 percent, while these loans are well over 50 percent of the assets of most sales and consumer finance companies.

The chief mortgage lenders, thrift institutions, are affected most severely during tight money periods. Their earning assets are mostly long-term mortgages on which the returns do not rise, of course, when current market rates rise. Therefore they cannot afford to raise rates paid on savings (and are in fact prevented from doing so by Regulation Q requirements). At such times depositors tend to withdraw their funds to invest in higher-yielding assets such as U.S. Treasury bills and notes.

As a result of such savings withdrawals, thrift institutions have few funds to invest. They parcel or ration their funds primarily into mortgages at lower rates than it would be possible to obtain from other investments. This limits their earnings growth, but only slightly because the amount of funds involved is usually very small at such times.

Although savings banks do not sacrifice much income by charging below market rates for home mortgages when their funds are short, they do forego a substantial amount of extra income in years when funds are plentiful by not investing in the highest-yielding assets. For example, since 1967, home mortgage rates have usually been below corporate bond rates on a net yield basis after mortgage servicing expenses. These servicing expenses amount to around ½ of 1 percent, so corporate bonds are more profitable than mortgages if their market yields are within ½ of 1 percent of mortgage yields. Bond yields since late 1967 have usually been within that range of home mortgage yields and, in fact, exceeded mortgage yields in 1969, 1970, 1971, 1974, and 1975. Therefore, for maximum income, savings banks should have invested only in corporate bonds over this period or raised their mortgage lending rate to an equivalent net yield level. In some of these years, notably 1970 through 1972, savings banks had substantial amounts of deposit inflows to invest, so they sacrificed a good deal of income by placing the major part of their available funds into mortgages. This form of rationing is explained by the same factors that lay behind rationing of mortgage loans to customers — savings banks had to maintain their image as "people's institutions."

Another current influence which compounds the earnings problem of thrift institutions is the array of governmental restrictions and programs which are aimed at holding down mortgage rates. Usury ceilings, discussed earlier, are one example. Other rate-depressing actions include the activities of various government and government-sponsored agencies such as the Federal National Mortgage Association, the Government National Mortgage Association, and the Federal Home Loan Mortgage Corporation. These agencies obtain funds from the U.S. Treasury or by borrowing in the credit market and they then channel these funds into the single-family home mortgage market with the express purpose of holding down mortgage rates. This results, of course, in reduced earnings of thrift institutions and serves to weaken their financial positions, particularly in the case of federally chartered savings and loan institutions which do not have the power to invest in corporate bonds as well. While these government efforts to hold down mortgage rates are not directly connected with rationing, the same concept lies behind them, namely, that high mortgage rates should be opposed, whatever the general level or trend of interest rates. Such a public policy attitude must be altered if thrift institutions are to continue to be healthy and viable institutions.

Thrift institutions are, however, modifying their lending behavior as a result of these experiences. Savings banks, which are not restricted to mortgage lending to the same extent as savings and loan associations, have been investing about three-quarters of their net funds inflows since 1974 in bonds. Also, since 1973 both types of thrift institutions have raised their mortgage lending rates somewhat more rapidly when credit markets showed signs of tightening, as seen in the chart. Finally, many thrift institutions are actively selling off the mortgage loans they originate to the government-sponsored agencies. As thrifts do this, they will be forced to raise their rates to keep up with rates in this resale market to avoid a capital loss. As seen in the chart, rates in the secondary market fluctuate more widely than primary rates for conventional loans.

Summary

Credit rationing occurs during tight money periods in mortgage, business, and consumer loan markets because lenders are reluctant to raise interest rates as rapidly as market conditions might indicate, and so must use nonprice criteria to distribute scarce funds. Credit rationing is a phenomenon understood by lenders and borrowers alike, despite the nontangible aspects of some of its operations. It may be characterized as one of the costs of contracyclical monetary policy, with the highest price paid by new and high-risk ventures. But credit rationing may also be described as a sound business practice, operating in the best long-run interest of lenders and borrowers who have long-standing relationships.

The most pronounced form of credit rationing now takes place in the home mortgage loan market, where supplies of funds decrease sharply during a period of restraint due to disintermediation at thrift institutions. Funds shortages are not nearly as acute in the business and consumer loan markets, so that rationing is not as severe.

Methods of rationing differ among lenders, but the general pattern at thrift institutions has been to grant first priority to long-established depositors. Since they account for only a small fraction of mortgage loan applicants, this shuts out most would-be borrowers. Second priority is usually given to refinancing loans, while third are applicants referred by realtors and builders with whom the lender has a long-standing relationship. The business loan market differs from the mortgage loan market, in that most large commercial banks in periods of restraint do have access to additional funds to try to satisfy increased demands for business loans. However, commercial banks do not raise rates on business loans enough to reduce demand to the level of available funds, and they also do some rationing.

Rates in the consumer loan market are the most sluggish of the three loan areas. Because demands for such loans generally do not rise much and because severe funds shortages do not occur, drastic rationing is not necessary despite the rate sluggishness. Whatever rationing is needed is achieved by raising credit standards.

Generally lenders are affected only slightly by credit rationing because tight money periods tend to be relatively brief. But in recent years mortgage lenders, and in particular thrift institutions, have been burdened by a rationing effect even when credit was relatively plentiful; home mortgage rates have been kept below competitive levels by a variety of governmental programs, yet thrift institutions are pressured into channeling the bulk of their funds into this market. This has had a long-run unfavorable impact in their earnings, and has weakened their financial position and ability to attract savings.

Interviews With Lenders

About 30 lenders were interviewed or asked for written comments during preparation of this article; they included officers at thrift institutions, business loan officers at commercial banks, and consumer loan officers at commercial banks and consumer loan companies. Those queried agreed that they did ration funds at least to some extent among potential borrowers when supplies were tight, rather than simply lending to qualified applicants willing to pay the highest rates. They also agreed that their purpose was to assure longer-run profitability even at the expense of some short-term losses.

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