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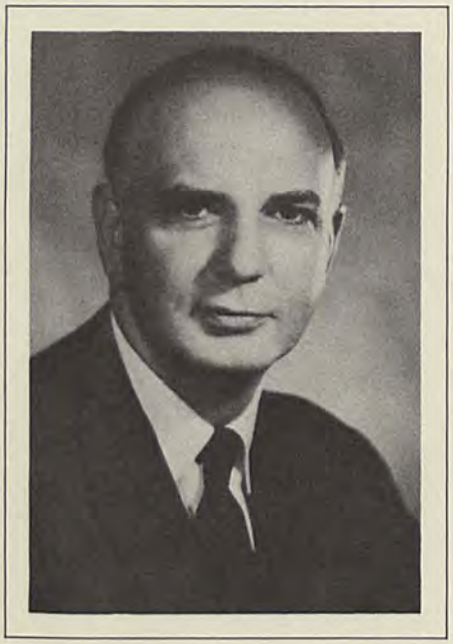
Volcker Succeeds Miller as Chairman of the Federal Reserve Board



Paul A. Volcker succeeded G. William Miller as Chairman of the Board of Governors of the Federal Reserve System on August 6, 1979.

The 51-year-old former president and chief executive officer of the Federal Reserve Bank of New York acquired international recognition when he served as Under Secretary of the Treasury for Monetary Affairs from 1969 to 1974. As Under Secretary, he played a central role during the transition from fixed to floating exchange rates, acting as the principal U.S. negotiator throughout the period. While in this position, he also served as a member of the board of the Overseas Private Investment Corporation and the Federal National Mortgage Association.

Volcker graduated *summa cum laude* from Princeton in 1949 with a B.A. degree. He earned an M.A. degree in political economy and government from the Harvard University Graduate School of Public Administration in 1951. From 1951 to 1952, he was a Rotary Foundation fellow at the London School of Economics.

Volcker began his varied career in public service and banking with the New York Federal Reserve Bank. He remained at the Fed until 1957, when he resigned to become a financial economist at Chase Manhattan Bank. His tenure with Chase Manhattan Bank was interrupted from 1962 to 1965 while he first served with the Treasury. In 1965, he rejoined Chase Manhattan as vice president and director of forward planning. He became president and chief executive officer of the Federal Reserve Bank of New York in 1975.

Among various awards in the course of his career, he has been named as one of the Ten Outstanding Young Men in Government; received the Alexander Hamilton Award, the highest award given officials of the Treasury Department; and received the first William F. Butler Award from the New York chapter of the National Association of Business Economists.

Capacity for Large Farm Loans Expands at Rural Texas Banks

By Don A. Riffe

Non-real-estate farm debt outstanding at Texas lending institutions has nearly tripled since 1970. Growth in this debt has been erratic and sometimes rapid, with annual increases ranging from about 3 percent in 1970 to more than 20 percent in 1971 and 1978. As the total debt has grown, individual loans to finance farm operations have also mushroomed in size. Rising costs, fluctuations in farm income, and the trend toward fewer and larger farms all have influenced the growth in the size of non-real-estate farm loans.

Rapid increases in farm loan size have created problems at some rural banks because traditional methods of handling overline loans—loans that exceed a bank's legal lending limit to one borrower—have not always been adequate. Rural banks have long used loan participations with other lenders to accommodate borrowers with overline loan requests. However, a recent study has shown that commonly used participation arrangements are only marginally profitable for rural Texas banks and may actually be unprofitable in periods of tight money, when they may be needed the most.[1] Compensating balances required by correspondents tend to reflect changing money market conditions and may be very costly for rural banks in periods of generally rising interest rates. Thus, a rural bank's capacity to make large loans may become more important in these periods.

Farm loan size has been recognized as a problem in Texas agricultural financing for some time. Earlier in the decade, there was some concern that farm credit demands would outgrow the lending capabilities of many rural Texas banks.[2] However, an examination of annual changes in maximum loan limits at agriculturally oriented rural banks since 1970 indicates that loan limits have, on average, at least kept pace with increases in farm loan size.[3] Although overall growth in credit requirements of individual farmers may have outpaced growth in bank loan limits in particular years, bank loan limits appear to have kept up over a longer span of time.

Rural bank loan limits more than double . . .

The maximum amounts that banks may lend to one borrower are determined by statute and are computed as a percentage of qualifying bank capital and surplus accounts. Statutory limits are intended to reduce any tendency for a bank to expose itself to an undue amount of risk from a single borrower.

1. Kamol Boondiskulchok, *Economic Analysis of Correspondent Banking as a Source of Funds to Texas Agriculture*, Ph.D. dissertation, Texas A&M University, 1976 (Ann Arbor, Mich., and London: University Microfilms International, 1979).

2. Seth Lewis Paulson, "Agricultural Financing in Texas: Problems Associated with Statutory Lending Limits of Commercial Banks" (M.S. thesis, Texas A&M University, 1975).

3. The term "loan limit" will be used to refer to dollar amounts, varying from one bank to another, while "statutory limit" will refer to percentages affecting all banks.

Table 1

LOAN LIMITS OF SELECTED AGRICULTURAL BANKS IN TEXAS

(Dollar amounts in thousands)

	State banks		National banks[1]		
Dec. 31	Average limit	Percent change from prior year	Average lower limit	Average upper limit	Percent change from prior year[2]
1970 ...	$ 72.9	—	$ 79.4	$198.4	—
1971 ...	78.7	8.0	85.8	214.5	8.1
1972 ...	87.2	10.8	94.0	234.9	9.6
1973 ...	101.8	16.7	108.6	271.4	15.5
1974 ...	117.2	15.1	123.0	307.5	13.3
1975 ...	127.3	8.6	137.0	342.5	11.4
1976 ...	141.2	10.9	149.1	372.7	8.8
1977 ...	162.1	14.8	168.5	421.1	13.0
1978 ...	181.1	11.7	195.2	488.0	15.9

1. Lower limit calculated as 10 percent of qualifying capital base; upper limit, as 25 percent.
2. May not exactly correspond to changes in both lower and upper limits because of rounding.

A bank operating under a national charter may lend up to 10 percent of its qualifying capital base to one borrower for most types of loans. One important exception is that up to 25 percent may be extended for a livestock loan. Banks operating under a state of Texas charter have a more narrowly defined qualifying capital base than national banks but may lend up to 25 percent of that base to one borrower.

To analyze changes in loan limits at agriculturally oriented Texas banks, a group of banks with at least one-fourth of their loan portfolios in agricultural loans was selected from the December 1970 reports of condition. After dropping banks that changed charter or closed in later years, data for the remaining 388 banks were obtained from the December reports of condition for each year from 1970 through 1978. The sample includes 211 state banks and 177 national banks.

Results of the loan limit computations are shown in Tables 1 and 2. Loan limits at national banks were computed using both the 10- and 25-percent restrictions. The average loan limit for the selected group of banks has more than doubled since 1970, increasing at an average annual rate of 11.9 percent for national banks and 12.1 percent for state banks.

In spite of the apparently rapid average increase in bank loan limits, at least 19 percent of the selected banks could not make a loan above $100,000 at the end of 1978 (Table 2). Most of these were state banks, although a few national banks could not make a loan above $100,000 even with the 25-percent allowance for livestock loans. At least half of the selected banks had loan limits below $200,000. National banks appear to have had a distinct advantage in servicing many large agricultural loan requests, because of the importance of livestock in the Texas agricultural economy and the broader capital base considered for loan limit computations. Without the exception for livestock loans, the average loan limit for national banks would have been about $195,000 at the end of 1978, compared with about $181,000 for state banks.

. . . but so does farm loan size

Unfortunately, direct information on farm loan size or number of farm borrowers is not available for commercial banks. Information useful for gauging the growth in farm loan size is available, however, from another major source of non-real-estate farm credit in Texas—production credit associations.

Second only to banks as suppliers of agricultural credit, production credit associations (PCA's) have held roughly one-fourth of the non-real-estate farm debt outstanding at financial institutions in Texas since 1970. On average, PCA loans tend to be larger than bank loans to farmers, but year-to-year changes in the size of the bank loans are assumed to be reasonably similar to changes occurring at PCA's.

Table 2

DISTRIBUTION OF SELECTED AGRICULTURAL BANKS IN TEXAS, BY LOAN LIMITS

	Percent of banks, by loan limit categories								
	Under $100,000			$100,000 to $200,000			Over $200,000		
		National banks[1]			National banks[1]			National banks[1]	
Dec. 31	State banks	Lower limit	Upper limit	State banks	Lower limit	Upper limit	State banks	Lower limit	Upper limit
1970 ...	39	35	14	13	9	16	2	2	15
1971 ...	37	35	12	15	9	15	3	2	18
1972 ...	36	32	10	15	10	15	3	3	21
1973 ...	32	27	6	17	14	14	5	5	25
1974 ...	29	23	5	18	16	13	8	6	28
1975 ...	24	21	4	21	18	12	9	7	29
1976 ...	23	20	3	21	16	11	10	10	31
1977 ...	20	18	2	23	14	11	12	13	32
1978 ...	17	14	2	22	15	9	15	16	35

1. Lower limit calculated as 10 percent of qualifying capital base; upper limit, as 25 percent.
NOTE: Percentages may not add to 100 because of rounding.

The average size of PCA loans to Texas farmers has increased at an average annual rate of about 12.2 percent since 1970. This growth has varied considerably, with annual increases ranging from almost zero to nearly 28 percent (Table 3). It is apparent that the overall growth in farm loan size was actually slow in a number of years relative to the growth in bank loan limits. On average, however, the growth rates were very similar.

While changes in average loan size indicate general growth in farm credit requirements, relatively large loans are the only ones likely to grow enough to exceed a bank's loan limit. The loan limit computations suggest that borrowers with credit needs as low as $100,000 may be "bumping" loan limits at many rural banks. A classification of Texas PCA borrowers by size of loan since 1973 shows that the number of borrowers with loans of more than $100,000 outstanding has increased 50 percent in the past five years. During the same period, borrowers with loans of $50,000 or less declined 22 percent.

Bank borrowers are probably not distributed among loan-size categories in the same proportions as PCA borrowers, but the PCA data (Table 3) suggest that a small but growing proportion of relatively large borrowers account for a large share of total agricultural loan dollars at rural banks. At the end of 1973, those in the group with loans over $100,000 represented only 9.3 percent of all Texas PCA borrowers but accounted for 66.6 percent of the dollar loan volume. At the end of 1978, this group represented 15.5 percent of all borrowers and accounted for 69.6 percent of loan volume.

It is possible that farm borrowers requiring relatively large loans have been gravitating from rural banks to larger banks and to PCA's, but there is currently very little information on how and where large farm borrowers do their banking business. Assuming that the PCA data reflect trends occurring at rural banks, it would appear that a relatively small number of large farm borrowers account for a large portion of total farm loans at many rural banks. Thus, there seems to be some need for banks to keep raising loan limits and/or find more effective methods of handling overline loans.

Are loan limits a factor in capital growth?

Additions to the bank capital accounts used in computing loan limits are a normal part of bank growth. It is interesting to note, however, that loan limits increased faster than total assets at about 30 percent of the banks examined. The more rapid rise in the appropriate capital accounts may reflect, in part, bankers' concern over the loan limit problem as well as other factors, such as higher profits or increasing asset risk.

Whether the growth in loan limits at rural banks has been entirely a benefit of bank capital growth that would have occurred anyway or partially the

Table 3

LOANS OUTSTANDING AT PRODUCTION CREDIT ASSOCIATIONS IN TEXAS

(Dollar amounts in thousands)

Dec. 31	Average loan size	Percent change from prior year	Loans over $100,000		
			Percent of total borrowers	Percent of total loans	Average loan size
1970 . . .	$25.1	5.5	n.a.	n.a.	n.a.
1971 . . .	32.1	27.9	n.a.	n.a.	n.a.
1972 . . .	35.5	10.6	n.a.	n.a.	n.a.
1973 . . .	41.1	15.8	9.3	66.6	$293.9
1974 . . .	44.7	8.8	10.1	63.0	277.7
1975 . . .	45.9	4.1	10.7	63.8	274.1
1976 . . .	50.4	9.8	12.1	65.4	272.5
1977 . . .	50.5	.2	13.1	65.0	250.1
1978 . . .	60.6	20.0	15.5	69.6	272.1

n.a.—Not available.
SOURCES: Federal Intermediate Credit Bank of Houston.
U.S. Department of Agriculture.

result of bank response to loan-size problems, loan limits appear to have generally kept pace with the growth in farm loan size in the seventies. As farm growth and inflation continue to boost farm loan size, it may be increasingly difficult for small agriculturally oriented banks to handle the growing number of larger farm loans. This may be especially true for state banks, partly because they tend to be smaller and partly because computation of their loan limits is based on a much narrower definition of capital than is used for national banks.

Loan participations have been and will continue to be an important tool for rural banks. A major problem with the profitability of loan participations has been that rural banks often do not pass full costs on to their farm borrowers. This may already be changing, and an extended period of rapidly increasing farm loan size would probably encourage arrangements where borrowers bear more of the costs involved in overline loan participations.

Although relatively little is known about the number of overline loan requests being received by rural banks at the present time, the strength of farm credit demands during the past year suggests such requests have been on the increase. The average size of Texas PCA loans jumped 20 percent in 1978. Thus, in spite of overall rapid growth in recent years, loan limits at rural banks may once again have some catching up to do.

New member bank

Security National Bank, Austin, Texas, a newly organized institution located in the territory served by the San Antonio Branch of the Federal Reserve Bank of Dallas, opened for business August 1, 1979, as a member of the Federal Reserve System. The new member bank opened with capital of $750,000 and surplus of $750,000. The officers are: David M. Currey, President, and Dot Holloway, Cashier.

New nonmember bank

First Security Bank & Trust, Haughton, Louisiana, a newly organized insured nonmember bank located in the territory served by the Head Office of the Federal Reserve Bank of Dallas, opened for business July 12, 1979.

Procedures Relaxed for TT&L Depositaries

Treasury tax and loan procedures have been relaxed somewhat by the Treasury Department. The procedure changes, effective August 2, 1979, resulted from complaints voiced by the smaller Remittance Option banks in the Tax and Loan Investment Program and will affect approximately half of the depositary banks in the country. These banks have contended that it was impossible to meet delivery requirements outlined in the program and not incur late charges.

Under the changes, the Treasury amended the definition of Immediate Remittance Option 2 banks to include those banks having annual tax and loan credits of $3 million or less. The figure had formerly been set at $1.5 million. There will be 162 Eleventh Federal Reserve District banks, out of a total of 1,018 in the Remittance Option class, reclassified from Immediate Remittance Option 1 to Immediate Remittance Option 2.

The first $5,000 of tax and loan deposits reported to the Fed each day will be exempted from the late fee provided the bank's average balance of funds in transit in excess of one business day is $25,000 or less, calculated on a weekly basis. The Treasury's new provision will result in some late-fee exemption for 70 percent of the Remittance Option banks in the Eleventh District.

New Dollar Coin Introduced

The Susan B. Anthony dollar coin was introduced into circulation as part of the nation's currency and coinage system on July 2, 1979. Over 15,678,000 of the new coins have been distributed to banks in the Eleventh District by the Federal Reserve Bank of Dallas and its branches in El Paso, Houston, and San Antonio. As of July this year, 500 million coins had been minted, and production will continue at a rate of 80 million per month to assure adequate supplies.

The size and weight of the new dollar make it easy to carry and handle and should make it attractive to retailers and the public.

The coin offers significant cost savings to the Treasury Department and ultimately to taxpayers. The Treasury has indicated that the initial cost reduction will come to approximately $4.5 million. The initial savings result from a lower production cost for the new dollar coin than for the Eisenhower dollar. The Eisenhower coin cost 8 cents to produce, compared with 3 cents for the Anthony coin.

As the new coin gains acceptance and displaces the $1 bill currently in circulation, additional cost savings will be realized. The $1 bill costs 2 cents to produce, but it has a useful life of only 18 months. Although the Susan B. Anthony dollar costs an additional cent to produce, it will circulate for 15 years or more in good condition.

Display posters, pamphlets, and other information concerning the Susan B. Anthony coin are available from all Federal Reserve banks and the Treasury Department.

"Fed Quotes"

Brief Excerpts from Recent Federal Reserve Speeches, Statements, Publications, Etc.

"Government regulation of various aspects of economic activity may introduce distortions and inequities into the economy. Despite laudable objectives, there is little doubt that both Federal legislation and the regulations implementing that legislation have sometimes resulted in a lessening in competition, a reduced resilience to deal with economic change, and a higher and more rigid structure of costs and prices which the consuming public must inevitably bear.

"It is clear also that regulation has contributed to the inefficient use of real resources in the economy. When regulated businesses are precluded from competing directly on a price basis, they are likely to adopt indirect means of promoting their business. Banks and other depository institutions, for example, frequently offer free services and give away merchandise in their efforts to attract new funds when price competition is limited by interest rate ceilings on deposits.

"Federal law and regulation have sometimes had the effect of fostering monopolistic and cartel-like behavior on the part of ostensibly competing firms by insulating these firms from the discipline of effective competition. On other occasions, regulatory action may preserve the inefficient marginal firm, or divert resources to less than the most productive uses through the offering of special advantages to certain industries at the expense of consumers.

"A balanced view needs to recognize that much Federal regulation promotes the public interest and contributes to the performance of the economy. For example, regulation designed to maintain the safety and soundness of individual banks is critical to the strength of the financial system and the efficient functioning of the economy as a whole. In the area of securities regulation the SEC disclosure requirements help make needed information available to aid investor decision-making and increase the efficiency of securities markets. But it is an important discipline to review and evaluate outstanding regulations on a periodic basis to see whether they are still justified, can be simplified or need to be modernized in light of recent developments."

"This brings me to another question as to whether the regulatory reform proposal in itself will accomplish the desired purpose of the bill. Since most agency rules and regulations are issued pursuant to the mandates of specific laws and to carry out Congressional intent, it may be that many of the economic problems and inequities caused by regulation are rooted in the enabling legislation itself, rather than in the specific form the regulations have taken."

Philip E. Coldwell, Member, Board of Governors of the Federal Reserve System (Before the Subcommittee on the Legislative Process and the Subcommittee on the Rules of the House, U.S. House of Representatives, June 20, 1979)

"Good counsel is to be found in a view that has been gaining ground in recent years and that is particularly consistent with what I believe to be the proper role of government in the economy. It is a policy of steadiness, of avoiding brusque changes in monetary as well as other macro policies, and of avoiding what has come to be called 'fine tuning.' The belief that we can steer the economy with precision reflects a belief in the virtues of big government. Experience has not borne out this belief. Efforts to steer the economy closely have probably exacerbated cyclical fluctuations. They have also pulled the government more and more deeply into interventionist activities. A policy of steadiness, not reacting sharply to every cyclical move in the economy, seems to be the best way not only to reduce these fluctuations in the long run but also to limit the role of the government and assure the survival of a free market."

Henry C. Wallich, Member, Board of Governors of the Federal Reserve System
(At Paris, France, June 14, 1979)

Salary Surveys Offered for 1979

The 1979 Officers' and Employees' Salary Surveys are now being conducted for member banks in the Eleventh Federal Reserve District. To participate, bankers must complete and return, by September 14, the questionnaire that was recently mailed to all member banks in the District. The survey findings will be available to participating banks about October 15. Additional information may be obtained from the Bank and Public Information Department of the Federal Reserve Bank of Dallas, (214) 651-6261.

The surveys provide average, minimum, and maximum salaries for 31 official positions and 28 employee positions. Various incentive and longevity data are also provided. The information is presented by bank size and geographic location. The Officers' Salary Survey was first offered in 1972; the Employees' Salary Survey, in 1973.

Eurobanking and World Inflation

By Adrian W. Throop

Inflation has accelerated in the industrial countries of the world during the past decade. The annual average rate of price increase was 2 to 3 percent between 1961 and 1967; 5 percent from 1968 through 1972; and as high as 9 percent since 1973, even in years when shortfalls in supplies of oil and grain were not a contributing factor.

Over the same period, Eurocurrency deposits have grown from insignificance to in excess of the U.S. money stock now. Eurocurrency banking consists of accepting deposits and making loans in currencies other than that of the country in which the bank is located. It is done largely but not exclusively by banks in Europe and largely though not exclusively in U.S. dollars. Transactions are conducted through conventional banks, utilizing ordinary banking procedures. The unusual aspect is the use of a monetary unit other than the national currency.

Growth of the Eurocurrency market has tended to parallel the acceleration of world inflation. In 1961-67, total Eurocurrency deposits expanded about $6 billion a year. By 1968-72, Eurocurrency deposits grew about $36 billion a year and in 1973-77, about $91 billion a year. Is the coincidence of rapid growth of the Eurocurrency market and the acceleration of world inflation accidental, or is there a cause-and-effect relationship?

Since Eurocurrency deposits may serve as substitutes for national moneys and since national banking regulatory authorities have generally chosen not to impose on Eurocurrency deposits and loans any restraints applied to powers to create domestic deposits and credit, the growth of Eurobanking could have significantly contributed to the acceleration of world inflation. Specifically, some analysts suggest there is an analogy between Eurocurrency banking and the more common domestic-currency commercial banking systems. Domestic commercial banks create new money and credit on the basis of the amount of reserves available to them. Since national monetary authorities are able to control the amount of bank reserves, as well as set legal reserve requirements on deposits, they can control the amount of money and credit created by the banks they regulate. But with Eurocurrency deposits not being subject to legal reserve requirements, it is suggested there exists the possibility of an almost unlimited creation of Eurocurrency money and credit.[1]

1. An early statement of this analogy is Milton Friedman, "The Eurodollar Market—Some First Principles," *Morgan Guaranty Survey*, Morgan Guaranty Trust Company of New York, October 1969, pp. 4-14. The analogy has been widely used to explain the rapid growth of the Eurocurrency market and the concurrent worldwide inflation. See, for example, "Controlling Euro-Currencies," a *Wall Street Journal* editorial, August 30, 1974, and "Stateless Money: A New Force on World Economies," *Business Week*, August 21, 1978, pp. 76-85.

Other analysts believe that Eurobanking is more like the activity of financial intermediaries whose deposits are not money, such as the time and savings account functions of commercial banks and similar deposits at savings and loan associations and credit unions. In this view, because the relatively unregulated Eurocurrency market offers better deposit rates to lenders and better loan rates to borrowers, it has primarily substituted for loans and time deposits at financial institutions in national markets. In this view, Eurocurrency deposits and loans would not necessarily create any net new credit but would primarily serve only as an additional conduit for channeling current saving from ultimate lenders to ultimate borrowers.[2]

This article examines the main features of the Eurocurrency market and the theory and evidence bearing on the question of the relationship between the growth of Eurobanking and world inflation. The evidence examined does not lend support to the view that the Euromarket's growth has been a significant net source of liquidity and credit creation in the world. Indeed, it is more consistent with the alternative view that an acceleration in the growth of national moneys was sufficient to produce the recent upsurge in world prices.[3]

2. Early dissenting opinions from the view that the bank credit multiplier can usefully be applied to Eurobanking were Fred H. Klopstock, "Money Creation in the Euro-Dollar Market—A Note on Professor Friedman's Views," *Monthly Review*, Federal Reserve Bank of New York, January 1970, pp. 12-15, and Helmut Mayer, "Multiplier Effects and Credit Creation in the Euro-dollar Market," *Banca Nazionale del Lavoro Quarterly Review*, no. 98 (September 1971), pp. 233-62. The alternative view that the growth of Eurobanking is best explained in terms of competition with other nonmonetary financial intermediaries on the basis of relative risks and returns has been amplified most recently in John Hewson and Eisuke Sakakibara, "The Euro-Dollar Deposit Multiplier: A Portfolio Approach," *International Monetary Fund Staff Papers* 21 (July 1974): 307-28, and Gunter Dufey and Ian H. Giddy, *The International Money Market*, Prentice-Hall Foundations of Finance Series (Englewood Cliffs, N.J., 1978).

3. Recent studies of worldwide inflation that do not attach any particular significance to the growth of Eurobanking are David I. Meiselman and Arthur B. Laffer, eds., *The Phenomenon of Worldwide Inflation* (Washington, D.C.: American Enterprise Institute for Public Policy Research, 1975), and Norman S. Fieleke, "The Worldwide Inflation," *New England Economic Review*, Federal Reserve Bank of Boston, May/June 1976, pp. 3-29.

Main features of the Eurocurrency market

The Eurocurrency market consists of a group of international money markets where banks borrow and lend foreign currencies. In the early days of the market in the late 1950's, the only significant activity was in London, and Eurocurrency loans and deposits were denominated almost exclusively in U.S. dollars. Today, however, although the largest amount of activity continues to be in London and in U.S. dollars, a significant share of the market is in German marks, Swiss francs, U.K. pounds, and French francs; and banks located in Asia, the Caribbean area, the Middle East, and continental Europe engage substantially in the activity.

Eurocurrency deposits are almost exclusively time deposits that cannot be used as a means of payment. Before payments can be made to any third party, Eurocurrency deposits must usually be converted into demand deposits in a commercial bank in the home country.[4] Most deposits are typically not less than $1 million, and almost all have a clearly specified maturity and carry an explicit rate of interest. Although most Eurocurrency deposits are nonnegotiable, a small share consists of negotiable certificates of deposit (CD's) for investors that may wish to liquidate their holdings before maturity. Thus, a Eurocurrency deposit is simply a kind of liquid asset that competes with other money market instruments for the favor of investors.

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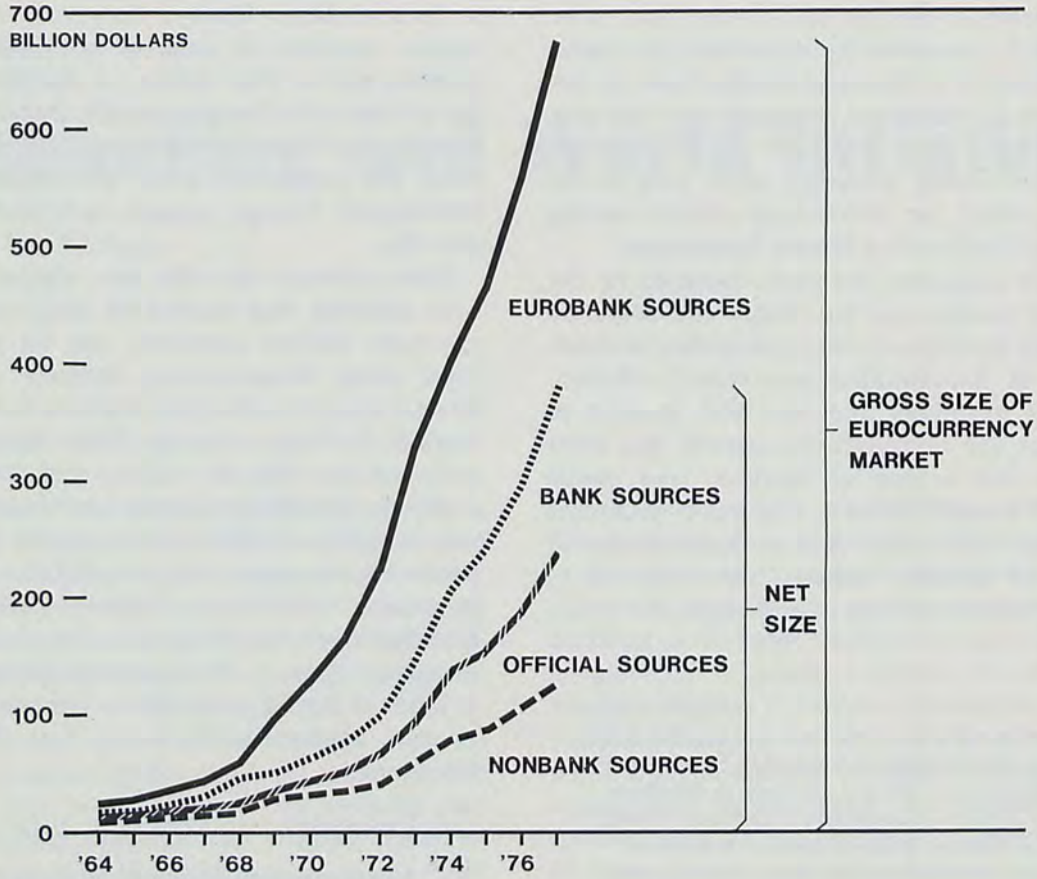
Eurobanking performs similar functions to, and competes with, the time account activities of domestic financial institutions. However, Eurobank-

4. Very small amounts of Eurocurrency deposits at some Canadian and other Euromarket banks are demand deposit accounts. In addition, many Eurocurrency deposits have maturities as short as one day or can be cashed on short notice. But the maturities of most of the deposits range from seven days to six months.

CHART 1

Nonbank entities are currently the source of less than a fifth of total Eurocurrency deposits



SOURCE: International Monetary Fund.

ing is currently generally free of government regulations in the form of reserve requirements, interest rate ceilings on deposits, fees for deposit insurance, and restraints on the allocation of credit. (Reserve requirements on Eurocurrency deposits in Germany are the main exception.) Its market is a highly competitive one, and its customers are generally large multinational corporations and official government agencies. Credit demands are often larger than any one bank cares to handle. Consequently, risks are often spread by syndicating loans or forming a consortium of several banks.

The Eurocurrency market performs purely domestic intermediation when it substitutes for financial intermediation between savers and borrowers in the same country that otherwise would have taken place in a domestic market. A dramatic example of this occurred during 1969 in a period of tight money in the United States. As interest rates rose, Regulation Q interest rate ceilings on large CD's at commercial banks in the United States were left unchanged so as to restrict the growth of commercial bank credit. By restricting the growth of bank credit relative to total credit, it was hoped that credit extended to business borrowers could be affected selectively. But like most selective credit controls, this one was seriously weakened by the fungibility of credit. Besides tap-

ping the commercial paper market by issuing paper through their holding companies, banks borrowed large amounts in the Eurocurrency market from their foreign branches, which in turn obtained funds from large depositors that found interest rates in the U.S. CD market relatively unattractive.

The Eurocurrency market substituted for purely domestic financial intermediation to an unusual extent in this period because of the effect of Regulation Q ceilings. Regulation Q ceilings on large CD's have since been suspended. But because the relatively unregulated Eurocurrency market can offer higher deposit rates and lower loan rates than those in national markets, a large portion of Eurocurrency activity substitutes for purely domestic financial intermediation even in normal times.

The Eurocurrency market also performs international financial intermediation by channeling funds from savers in one country to borrowers in another. The most striking recent example of this has been the funneling of capital from members of the Organization of Petroleum Exporting Countries to borrowers in the oil-importing countries. Despite the massive amounts involved, the Eurocurrency market has efficiently provided investors and borrowers with deposits and loans in the currencies and maturities demanded while, at the same time, channeling the funds into productive uses.

The large amount of interbank depositing that takes place in the Eurocurrency market highlights still two more aspects of its functioning. As indicated in Chart 1, fully $300 billion of the $675 billion total of Eurocurrency deposits in 1977 was deposits made by other banks in the Euromarket and should be netted out in a consolidated balance sheet. In addition, of the remaining $375 billion in net deposits, $136 billion was owed to banks in national financial markets.

Like borrowing and lending between banks in the U.S. Federal funds market, this interbank borrowing helps to ensure a more efficient allocation of credit to ultimate users. A significant amount of interbank depositing also occurs because the Eurocurrency market provides a low-cost hedging facility for banks engaged in foreign exchange transactions. With the greater flexibility of exchange rates resulting from the shift from fixed rates to managed floating in 1973, the amount of this activity has grown.

Banks that have sold foreign exchange forward, net, exchange local currency for foreign currency and place the latter in the Eurocurrency market until such time as the foreign exchange is needed to make delivery on the forward commitment. Similarly, banks that enter into net commitments to buy foreign exchange forward cover their exchange risk by borrowing the foreign currency in the Eurocurrency market and exchanging it immediately for local currency. The attractive loan and deposit rates available in the Eurocurrency market make it a low-cost vehicle for banks to use in hedging their foreign exchange risk.

Credit creation versus credit intermediation

Although it is quite widely believed that the Eurocurrency market is capable of creating large amounts of money and credit in much the same way commercial banks create money and credit in national monetary systems, we have already seen that virtually all Eurocurrency deposits are not money in a medium-of-exchange sense; that is, drafts cannot generally be drawn on them for the purpose of making payments to third parties. So, as a rule, they ought not to be included in the means-of-payment, or *M*-1, definition of money—consisting of demand deposits plus currency. Even though it may be possible for banks in the Eurocurrency market to create credit, they generally do not create money.

Eurocurrency deposits do serve as near moneys, or close substitutes for the medium of exchange, because many of them can be converted into money on short notice, at little cost, and with little likely loss in value. However, many other short-term deposits and debt instruments are also relatively close substitutes for money. Eurocurrency deposits may have simply substituted for some of these rather than creating a net increase in the world stock of near money.

There are important differences between the credit-creating powers of nonmonetary financial intermediaries, such as Eurocurrency banks, and monetary financial intermediaries whose deposit liabilities actually serve as a means of payment. Commercial banks—and certain other financial institutions in the United States that offer demand deposit services—create money and credit easily and swiftly whenever there is a new injection of Federal Reserve money into the economy. This occurs, for example, whenever the Federal Reserve purchases securities in the open market or extends loans to member banks.

Thus, a Federal Reserve purchase of securities creates an equal amount of new money when the Fed's checks are deposited at commercial banks

and of bank reserves when the checks are cleared and the banks' accounts with the Fed are credited. In addition, this operation adds to the supply of credit in the economy without there having been any previous act of saving. It therefore has an expansionary influence through the new spending it permits, without there being an offset in the form of a decline in any other kind of spending.

Moreover, commercial banks are in a position to create money and credit on their own on the basis of the new reserves created by the Fed's purchase of securities. As the banks utilize their new reserves to purchase securities or make loans, they issue new money in the form of demand deposit liabilities. These demand deposit liabilities are automatically redeposited in the banking system as they are spent, moving from account to account and bank to bank.[5] This creation of new money by the banks adds further to the supply of credit and, dollar for dollar, has as significant an expansionary effect on aggregate spending as the original act of money creation by the Fed.

Nonmonetary intermediaries, such as Eurobanks, do not necessarily create credit in the relevant sense of adding to the economy's total supply of loanable funds, as monetary intermediaries do, but may only divert savings flows from the open market or from other nonmonetary intermediaries.

In contrast to the credit-creating powers of monetary intermediaries, nonmonetary intermediaries—such as savings and loan associations and credit unions (except for their NOW account activity), the time and savings account activity of commercial banks (except for automatic transfer accounts), and banks in the Eurocurrency market—have much more limited powers of credit creation. Indeed, in large part they perform only a credit-intermediating function. The deposits they issue are not money and, therefore, do not circulate as a medium of exchange. Rather, these nonmonetary intermediaries offer interest-bearing deposits that must be attractive to depositors. In doing so, they do not necessarily create credit in the relevant sense of adding to the economy's total supply of loanable funds, as monetary intermediaries do, but may only divert savings flows from the open market or from other nonmonetary intermediaries.

Yet, since deposits at nonmonetary intermediaries, such as banks in the Eurocurrency market, are liquid enough that they may be substituted for the actual medium of exchange, these intermediaries may be able to create credit to some extent. The process works as follows. Because nonmonetary intermediaries offer liquid interest-bearing deposits, holders of money may be induced to exchange any temporarily idle money balances for near-term time deposits with these intermediaries. As nonmonetary intermediaries lend out the money balances they have received, a net addition to the supply of credit is generated without there having been any previous saving by the public. The result is greater spending by borrowers without any reduction in spending elsewhere in the economy. In effect, nonmonetary intermediaries are able to create credit through increasing the rate at which a given stock of money is exchanged against goods and services, instead of by expanding the stock itself in the fashion of monetary intermediaries.

In terms of this analysis, the question of whether the growth of Eurobanking has actually led to credit creation turns basically on whether Eurocurrency deposits have substituted for money balances or for other near moneys instead. If Eurocurrency deposits have substituted primarily for money, the growth of Eurobanking would have generated an increase in the supply of credit and aggregate spending unless this effect had been offset by a reduction in national money stocks brought about by restrictive central bank policies. Since Eurocurrency deposits are not generally included in the monetary aggregates that serve as policy targets for central banks, the reduction in the growth of national money stocks required to offset the potential inflationary effects of credit creation in the Eurocurrency market might not have been forthcoming. Although some countries count some Eurocurrency deposits in *M*-1 (and then only to the very minor extent that they are demand deposits) or in their broader monetary aggregates

5. The amount of demand deposits monetary intermediaries create will be some multiple of the Government money entrusted to them—a large (but finite) multiple if there are no legal reserve requirements and a smaller one if they are constrained by such requirements. A complete analysis also takes into account the loss of bank reserves available to support demand deposits due to currency drains, increases in excess reserves, and increases in reserves legally required for near moneys.

that include various time and savings deposits, the great bulk of such deposits does not appear in any national monetary statistics.

On the other hand, if Eurocurrency deposits have substituted primarily for other near moneys, the growth of Eurobanking would simply have diverted flows of credit to different channels without expanding the total supply of credit. Even in this view, however, if the growth of Eurobanking has been at the expense of the domestic time deposit functions of commercial banks, reserves would be freed in domestic banking systems since time deposits are generally subject to legal reserve requirements (currently 8 percent on large time deposits in the United States). If central banks did not "mop up" these excess reserves, U.S. and foreign banks could create more monetary liabilities and, therefore, additions to the supply of credit even in this case.

The Federal Reserve and other central banks generally implement policy by setting targets for one or more monetary aggregates and then varying interest rates for the purpose of achieving these targets. They tend to stabilize credit markets in the very short run, but over somewhat longer periods, credit market conditions are allowed to tighten or ease in line with cyclical movements in the demand for money and credit. Over short periods, any excess of reserves in national banking systems resulting from competition with banks in the Eurocurrency market would tend to be withdrawn by central banks in order to keep interest rates from falling.

Longer-run effects in the case where Eurocurrency deposits substitute primarily for large domestic time deposits would depend on what monetary aggregates were being followed. In the United States the Federal Reserve has tended to give equal weight to *M*-1 (demand deposits plus currency) and *M*-2 (*M*-1 plus time and savings accounts at commercial banks except large negotiable CD's) in its targeting. If Eurocurrency deposits have substituted primarily for large CD's, which are not included in either of these aggregates, the demand for *M*-1 and *M*-2 would not have been affected; therefore, the possibility of achieving a desired level of aggregate spending by using these monetary aggregates as intermediate targets would also have been unaffected.

Three types of evidence

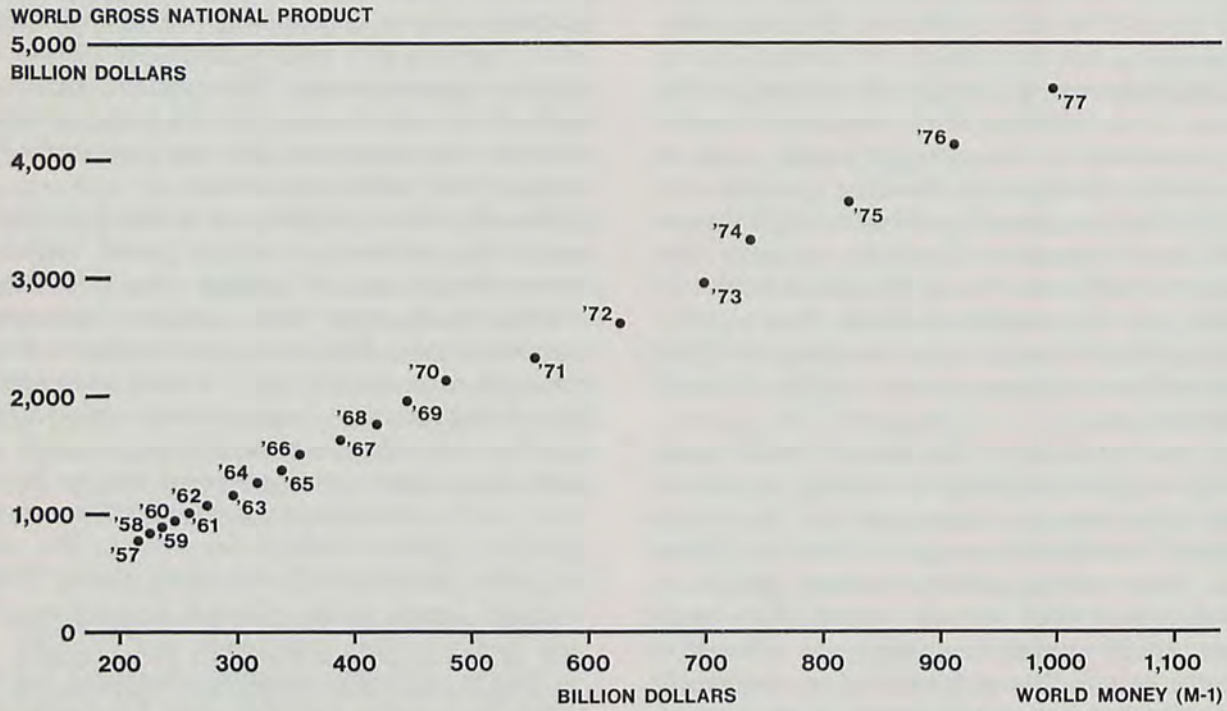
The growth of Eurobanking could have led to inflationary credit creation if Eurocurrency deposits had substituted primarily for money and central banks did not modify their money stock targets to offset this effect. The result would have been an increase in the amount of expenditures supported by any level of *M*-1 money balances or, alternatively, an increase in the rate of turnover of the world's *M*-1 money stock, with likely inflationary consequences. The present section examines evidence bearing on this basic question of whether Eurocurrency deposits have substituted primarily for holdings of money.

An absence of regulations in the Eurocurrency market has allowed it to offer lower spreads between borrowing and lending rates and, thus, attract business away from domestic nonmonetary intermediaries. But since Eurocurrency deposits are not a radically new kind of near money relative to existing instruments in national money markets, nor do they offer dramatically higher rates of return than other near moneys of similar liquidity, they need not have created any significant net substitution against demand deposits. In the case of countries without well-developed money markets, perhaps access to the efficient Eurocurrency market has permitted businesses and financial institutions to economize on money balances somewhat more than before. But since they have always had access to domestic money markets in such financial centers as New York and London, this effect also need not have been very significant.

Three types of specific evidence help to shed light on the question of whether the expansion of the Eurocurrency market might have led to an uncontrolled credit and liquidity creation that could have helped fuel world inflation. The first is the relationship between the aggregate value of spending and the stock of money (*M*-1) in industrial countries during the period in which the Eurocurrency market emerged and experienced its most rapid growth. If Eurocurrency deposits have substituted primarily for time deposits or other near moneys, inflation in the value of total output of these countries should be explainable largely by the growth in their aggregate stock of *M*-1 money. On the other hand, if Eurocurrency deposits have substituted to any significant degree for money, then the value of the countries' total output should have risen faster than their total stock of money; and the effect of the Eurocurrency market's growth on the aggregate value of output should have been particularly evident in the periods when the mar-

CHART 2

Upsurge in "world" spending is well tracked by the growth of "world" money



NOTE: The "world" is defined here as the Group of Ten countries plus Switzerland. The values of world output and world money are obtained by summing dollar values for these countries at 1973 exchange rates.

SOURCE: International Monetary Fund.

ket was expanding most rapidly, such as 1968-70 and after 1972.

The relationship between the aggregate dollar value of output and the quantity of money, or *M*-1, for the Group of Ten countries plus Switzerland at exchange rates prevailing in 1973 is shown in Chart 2. Few of these countries include any Eurocurrency deposits whatsoever in their definitions of *M*-1. Acceleration in the growth of these measures of the value of "world" output and the stock of "world" money is evident after the midsixties. Moreover, there appears to be a tight fit in the relationship between the expansion in world money and the value of world output. In addition, even though Eurocurrency deposits spurted in 1968-70 and after 1972, observations for these years do not appear to be significantly further from the average relationship than those for other years.

This visual impression of the unimportance of the Eurocurrency market for world inflation is confirmed by more rigorous statistical analysis. A multiple regression equation was used to explain the value of world output, using world money, the stock of Eurocurrency deposits held by nonbank entities (also valued at 1973 exchange rates), and an index of world interest rates as the explanatory variables. The index of world interest rates is needed to account for the normal tendency of businesses and households to economize on the amount of money they hold in relation to total transactions when interest rates are higher.

By entering the stock of Eurocurrency deposits as a separate variable in the regression equation, their effective substitutability for money balances is tested directly. If the measured response of the value of world output to the growth of Eurocurrency deposits is the same as that for world *M*-1,

then Eurocurrencies ought to be treated as perfect substitutes for money and added directly to world *M*-1. On the other hand, if Eurocurrencies have behaved as less than a perfect substitute, the regression analysis tells us how much less.

Our estimated regression equation gives a measured response of the value of world output to nonbank holdings of Eurocurrency deposits that is not significantly different from zero.

Only nonbank holdings are included in the stock of Eurocurrency deposits, interbank and central bank deposits being netted out, as is done for national money stocks. Partly for this reason, the maximum potential role for the Euromarket in contributing to world inflation is not very large. Even if Eurocurrency deposits have behaved as perfect substitutes for world *M*-1 and, hence, should be added directly to it, the increase in nonbank holdings would account for only $107 billion of a total increase of $788 billion in our measure of this monetary aggregate from 1964 to 1977. With something close to a doubling of the world price level in this period, the growth of the Euromarket could at most account for only about 25 percent of actual inflation.

In fact, however, our estimated regression equation gives a measured response of the value of world output to nonbank holdings of Eurocurrency deposits that is not significantly different from zero.[6] This piece of evidence is, therefore, consistent with the view that, rather than having substituted for money to any significant degree, Eurocurrency deposits have substituted for time deposits or other near moneys.

A second type of evidence is whether the relationship between the amount of *M*-1 money held in various countries and the variables that determine the amount of it that the public wants to hold—such as income and interest rates—has been affected by the growth of the Eurocurrency market. If the growth of the market has been inflationary, the substitution of Eurocurrency deposits for money should show up as downward shifts in the amount of money balances needed to support any level of income, given interest rates, in particular countries.

Available studies of the determinants of the demand for money in various countries do not lend support to the notion that Eurocurrency deposits have significantly substituted for holdings of money balances. Where shifts in the demand for money have occurred, they have been due to sources other than expansion of the Eurocurrency market. In the United States, for example, no statistically significant change in the relationship between *M*-1 and the income and interest rate variables that determine the demand for it can be associated with the rapid growth of the Eurocurrency market in the 1960's.[7] Although there have been some significant shifts in the relationship between money holdings and spending in the United States recently, there is no evidence that they have been related to Eurocurrency deposits per se.

Available studies of the determinants of the demand for money in various countries do not lend support to the notion that Eurocurrency deposits have significantly substituted for holdings of money balances.

Thus, in 1974-76 the annual growth of *M*-1 was 4 to 5 percentage points lower than would have been predicted on the basis of past relationships, the shortfall being concentrated in money holdings of the business sector. The explanation for this shortfall appears to be that the record-high interest rates in 1973 caused major U.S. corporations to adopt new techniques to manage their cash balances more efficiently, triggering abrupt declines in their holdings of money. In late 1978 and early 1979, a similar phenomenon occurred once again, this time with smaller businesses and households perhaps participating to a greater degree than in the previous episode. Those adopting improved cash management techniques during these two epi-

6. See the Appendix for the methodology and data sources used in estimating this regression equation.

7. Specifically, no significant differences between demand for money functions fitted for the periods 1952-61 and 1962-72 can be found in the United States, as reported in Stephen M. Goldfeld, "The Demand for Money Revisited," *Brookings Papers on Economic Activity*, 1973, no. 3, pp. 577-638.

sodes apparently increased their holdings of near moneys, including Eurocurrency deposits. But it appears to be the high interest rates in these periods, not growth of the Euromarket per se, that caused the reduction in holdings of money.

The available evidence on the behavior of the demand for money in other countries is similar. There is no evidence of instability in the demand for money in the United Kingdom prior to the 1970's. In 1971 the growth of the money stock slowed very significantly relative to economic activity, as the Competiton and Credit Control reforms of that year allowed banks to increase the variety of their interest-bearing near moneys and offer more competitive interest rates on them. Near-money deposits in the internal U.K. market grew at the expense of the medium of exchange, but the demand for money once again stabilized in the United Kingdom after 1973.[8]

Two more countries for which relevant evidence is available are Germany and Canada. In neither case have researchers found evidence of a significant shift in the demand for money during the emergence and rapid growth of the Euromarket in the 1960's.[9]

A third type of evidence relates to the maturity structure of Eurocurrency deposits. If Eurocurrency deposits are available for shorter maturity, at the same or better interest rates, then the public's demand for money would tend to be diminished because of the enhanced liquidity of available near moneys. The public would shift its deposits from demand accounts at monetary intermediaries to time accounts at Eurobanking institutions, and the lending power of the latter institutions would be increased without there being any decrease in the credit-creating powers of the monetary intermediaries. On the other hand, if the liquidity of Eurocurrency deposits is similar to that of the time deposits being made available by competing nonmonetary intermediaries in national markets, Eurocurrency deposits—because of their more attractive interest rates—would likely be substituted for the other near moneys.

MATURITY STRUCTURE OF FOREIGN-CURRENCY LIABILITIES WITH NONBANK DEPOSITORS OF U.K.-BASED BANKS AND OF SIMILAR DEPOSITS IN U.S. BANKS

(As of May 1978)

Maturity	Euro-currency deposits, London market (Percent)	Large time accounts at U.S. banks[1] (Percent)
Less than 1 month	55.4	47.6
1 month to less than 3 months	24.1	25.5
3 months to less than 6 months	11.9	18.0
6 months to less than 1 year	4.7	5.1
1 year or over	3.9	3.8
All maturities (Billions of dollars)	$32.8	$123.4

1. Negotiable certificates of deposit plus nonbank repurchase agreements.
SOURCES: Bank of England.
Board of Governors, Federal Reserve System.

A comparison of the maturity structure of Eurocurrency deposits held by the nonbank public in the London market and that of large time accounts at U.S. banks is shown in the accompanying table. Regulation Q prohibits U.S. banks from issuing CD's with original maturities of less than 30 days. Since these certificates are negotiable, however, money managers wanting a CD maturing in less than 30 days can purchase one in the market. Moreover, current regulations allow short-term investors to purchase a U.S. Government security from a U.S. bank for as short a period as a day, with an agreement to sell it back at a certain price. The investor is able to earn slightly less than the Federal funds rate on his money. These security repurchase agreements give short-term investors the equivalent of highly liquid interest-bearing deposits, similar to Eurocurrency deposits, so they are included here in the maturity distribution of large time deposits at U.S. banks.

The notable aspect of the table is the similarity of the maturity distributions for Eurocurrency deposits and money market instruments made available to large depositors by U.S. banks. The proportions of deposits with maturities of one to three months or six months or more are almost identical. Eurobanking institutions do exhibit a

8. M. J. Artis and M. K. Lewis, "The Demand for Money in the United Kingdom: 1963-1973," *The Manchester School* 44 (June 1976): 147-81, and "Demand for Money in Major OECD Countries," *OECD Economic Outlook, Occasional Studies*, January 1979, pp. 35-57.

9. Michael J. Hamburger, "The Demand for Money in an Open Economy: Germany and the United Kingdom," *Journal of Monetary Economics* 3 (January 1977): 25-40, and Kevin Clinton, "The Demand for Money in Canada, 1955-70: Some Single-Equation Estimates and Stability Tests," *Canadian Journal of Economics* 6 (February 1973): 53-61.

somewhat higher proportion of deposits with maturities of less than one month and a correspondingly lower proportion of three- to six-month deposits. To this extent, Eurocurrency deposits would appear to be slightly more liquid than large time accounts at U.S. banks.

But the effective liquidity of Eurocurrency deposits compared with large U.S. CD's plus repurchase agreements is overstated by a comparison based solely on maturities. Most large U.S. CD's, compared with only 5 to 10 percent of Eurocurrency deposits, are negotiable in a secondary market. Taking this factor into account, the effective liquidity of Eurocurrency deposits is probably no higher than that of large time deposits at U.S. banks. It would appear, therefore, that Eurocurrency deposits, rather than substituting for money holdings on account of superior liquidity relative to other near moneys, have primarily substituted for time deposits on the basis of relative risks and returns.[10]

Growth of the Euromarket explained

Eurocurrency deposits have substituted for and grown faster than other near moneys mainly because of a freedom from regulations that has allowed the Eurocurrency market to offer more attractive loan and deposit rates. Similar business hours, proximity to the market, and political anonymity are undoubtedly important considerations for some borrowers and depositors. But in a world of very large transactions and modern communications technology, competitive rates appear to be the decisive factor bringing the majority of participants into the market.

In recent years, lending rates in the Eurocurrency market have generally been half a percentage point to 1 percentage point or more below such rates in national money markets; and deposit rates at Eurobanks have exceeded corresponding domestic interest rates by a quarter of a percentage point to a full percentage point or more. (See Chart 3.) However, in periods when capital controls have prevented relatively free movement between internal and external markets, lending rates in the Eurocurrency market have moved above rates in the domestic market; and deposit rates at Eurobanks have at times been less than national rates on deposits of similar maturity.

Eurocurrency deposits have substituted for and grown faster than other near moneys mainly because of a freedom from regulations that has allowed the Eurocurrency market to offer more attractive loan and deposit rates.

Eurobanking institutions have several advantages over financial intermediaries in national money markets. First, the costs of intermediation are lower because banks (with the main exception of those in Germany) are not required to maintain any legal reserves against Eurocurrency deposit liabilities. By contrast, their competitors in domestic markets are required to set aside assets in non-interest-bearing accounts as reserves with the central bank. In the United States the reserve requirement on large CD's is now 8 percent. At current levels of interest rates, this constitutes a significant "tax" on U.S. banks. Given the current market rate of interest of about 10 percent on large U.S. CD's, a bank accepting Eurodollar deposits can offer nine-tenths of 1 percent more than U.S. banks and still end up with the same amount of interest cost per dollar of lendable funds.[11]

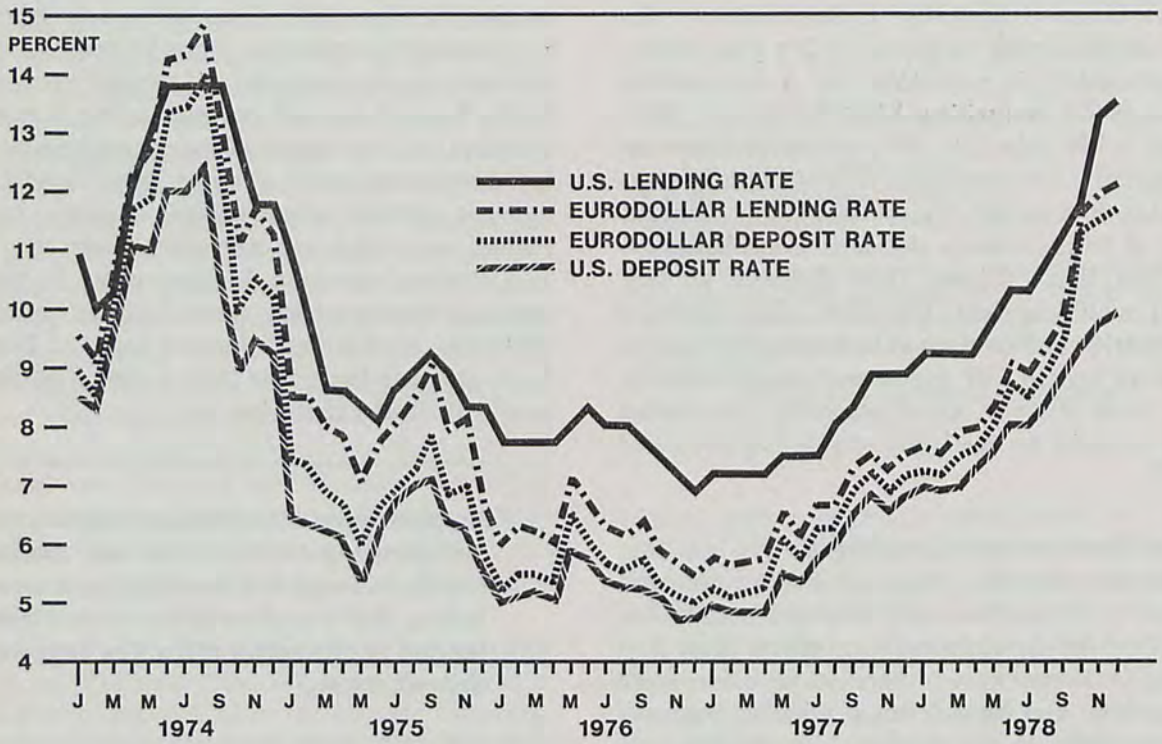
10. Instead of comparing the maturity structure of Eurocurrency deposits with that of large time accounts at domestic banks, an alternative approach for assessing the net contribution of Eurobanking to liquidity creation would be to compare the degrees of maturity transformation performed in the large time account function of domestic banking and in Eurobanking. If, because of its relatively unregulated character and, hence, attractive rates, Eurobanking has displaced a portion of time account activity of domestic banks, then the net effect on spending (aside from that due to differences in reserve requirements) would be expansionary when the liquidity of assets relative to liabilities is lower in Eurobanking. Since it is not possible to isolate the maturities of the asset component of the portion of domestic time account activity that may have been displaced by Eurobanking, accurate measurement of this alternative approach is not feasible. However, a recent study has shown that Eurobanking appears to be similar to overall U.S. commercial banks' activity (demand deposits and small time and savings deposits included) in the quantity of maturity transformation performed. See Jane Sneddon Little, "Liquidity Creation by Euro-banks: 1973-1978" *New England Economic Review*, Federal Reserve Bank of Boston, January/February 1979, pp. 62-72.

11. Interest cost per dollar of lendable funds for the U.S. banks is:

$$i_{cost} = i_{CD}\ [1/(1 - \text{reserve requirement})].$$

CHART 3

Eurobanks offer more competitive lending and borrowing rates



NOTE: The U.S. lending rate is calculated as the prime rate of Morgan Guaranty Trust Company, adjusted upward by 15 percent to reflect prevailing compensating balance requirements. The Eurodollar lending rate is the representative average rate for three-month loans to prime borrowers, while the deposit rate is prime banks' bid rate for three-month deposits in London. The rate on three-month negotiable certificates of deposit issued by Morgan Guaranty Trust Company was used for the U.S. deposit rate.

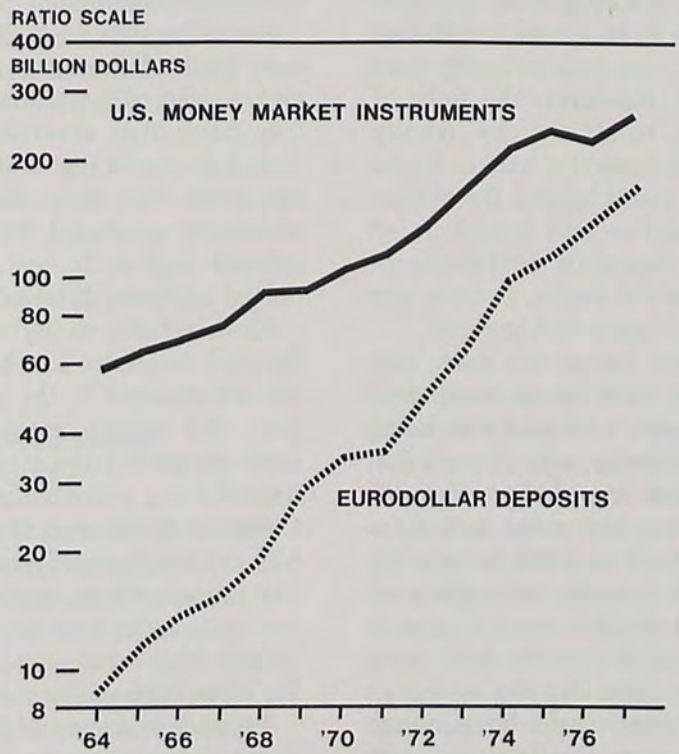
SOURCE: Morgan Guaranty Trust Company of New York.

Eurobanking institutions are able to offer loans at lower interest rates and deposits at higher rates than those in internal markets because of a number of other advantages as well. Regulation Q prohibits U.S. banks from issuing time deposits with original maturities of less than 30 days. Although security repurchase agreements and negotiable CD's allow some circumvention of this rule, costs are likely to be increased for U.S. banks and their customers. Banks outside the United States are not assessed Federal Deposit Insurance Corporation fees on their deposits, nor are they subject to other regulatory constraints, such as requirements to meet the needs of the local community in the allocation of credit. Banks accepting Eurocurrency deposits can also take advantage of low-tax locations and keep expenses low by making large, standardized loans to "name" borrowers with a minimum of credit analyses and paperwork. Finally, the market appears to be more competitive than national banking markets, which has the effect of further reducing the spread between deposit rates and loan rates.

On the other hand, those who make deposits or obtain loans in the Eurocurrency market are subject to political and economic risks to which they might not otherwise be exposed. Thus, a country whose currency is being used to denominate loans

CHART 4

Growth rates of the Eurodollar market and the U.S. money market began to converge after 1974, indicating a more stable share for Eurodollar deposits



NOTE: U.S. money market instruments include large negotiable certificates of deposit; U.S. Government securities maturing within one year (excluding holdings of financial institutions and U.S. Government entities); and commercial paper, bankers acceptances, security repurchase agreements, and money market mutual funds held outside banks and other financial institutions. Eurodollar deposits include those held by nonbank entities and central monetary institutions.

SOURCES: Bank of England.
Board of Governors, Federal Reserve System.
International Monetary Fund.

and deposits could restrict the ability of Eurobanking institutions and other foreigners to dispose of or transfer demand deposits in its own monetary system, perhaps for balance-of-payments reasons. Without free access to the ultimate means of payment, or clearing balances, Eurobanking activity could not continue. But this risk is quite low. Even while imposing other controls on capital flows, governments have rarely gone so far as to restrict the use of nonresident transactions balances.

Other kinds of risks may have loomed larger in the minds of potential participants. For example, the safety of Eurobanking activity may be questioned because the banks deal in large unsecured loans that frequently involve a long chain of transactions. In addition, there is no single institution to which individual banks can automatically turn as a lender of last resort. However, the bulk of Eurocurrency business is conducted by wholly owned affiliates of leading domestic banks. These parent banks must legally stand behind the obligations of their foreign branches and would do so in any case to maintain depositor confidence in their own institutions. Central banks, in turn, are available to act as lender of last resort to them.

The Eurocurrency market has grown more rapidly than national money markets as more borrowers and lenders have come to regard it as being virtually as safe. As familiarity with the market has grown and the market has performed well, perceived risks have fallen; and more and more activity has been shifted to it in order to take advantage of more favorable interest rates. Data on the relative size of the market are consistent with the view that participants in the market have gone through such a learning process. In 1964, as shown in Chart 4, Eurodollar deposits held by nonbank entities and central monetary institutions were only one-sixth as large as their holdings of U.S. money market instruments. By the late 1960's this fraction had risen to one-third, and by the early 1970's it had reached one-half. Since 1974, however, the growth rates of the two markets have been more nearly convergent, with Eurodollar deposits nearing 70 percent of the size of the corresponding U.S. money market.

Summary and conclusions

Some analysts have suggested that the coincidence of rapid growth of the Eurocurrency market and an acceleration of inflation in industrial countries has not been accidental. Although, with only rare exceptions, Eurocurrency deposits are not money in the medium-of-exchange sense, they nevertheless might be closer substitutes for money than many other near moneys. In that case, an expansion of the Eurocurrency market would lead to an increase in the supply of credit in the world economy without there having been any previous saving on the part of the public. This would have an expansionary impact on aggregate spending similar to that which occurs when commercial banks create new demand deposits by expanding credit. On the other hand, if the Eurocurrency deposits have substituted for other near moneys instead, the effect would be simply to divert flows of credit to different channels.

Since Eurocurrency deposits are not a radically new kind of financial asset but appear to have grown primarily because of the competitive edge they have over otherwise similar interest-bearing time deposits in regulated national markets, it does not seem that they should have substituted for nationally produced demand deposits to any significant degree. Indeed, this presumption is supported by three different types of evidence.

First, inflation in the overall value of output of industrial countries can be explained completely by the acceleration in the growth of their own aggregate *M*-1 money stock. Statistical analysis that tests an alternative model in which Eurocurrency deposits can potentially add to total liquidity, and therefore to the supply of credit, indicates no significant response of world spending to growth of the Eurocurrency market. This suggests Eurocurrency deposits have not added to total liquidity by substituting for money but, rather, have substituted for other forms of near money instead.

Second, a survey of the available studies of the demand for money in industrial countries does not support the idea that Eurocurrency deposits have significantly substituted for holdings of money balances. Where shifts in the relation between money holdings and the value of transactions have occurred, as in the United States and the United Kingdom, they have been due to sources other than the growth of the Eurocurrency market.

Third, if Eurocurrency deposits were more liquid than competing near moneys, the public's demand for money would tend to be diminished because of the enhanced liquidity of available near moneys. However, an examination of the maturities of Eurocurrency deposits, as well as other factors bearing on their liquidity, does not indicate that the

effective liquidity of Eurocurrency deposits is any higher than that of competing deposits at U.S. banks.

Overall, the evidence surveyed does not lend support to the view that Eurocurrency deposits are substantially closer substitutes for money than other available assets and that the Euromarket's growth has, therefore, been a significant net source of liquidity and credit creation in the world. Rather than being creators of "stateless" money outside the reach of national monetary authorities, Eurobanking institutions are better seen as efficient nonmonetary financial intermediaries that compete with their more highly regulated counterparts in national markets. In addition to efficiently channeling funds from initial lenders to ultimate borrowers, both within and between countries, they also provide low-cost facilities for hedging against foreign exchange risk.

The substitution of Eurocurrency deposits for near moneys has indeed freed up reserves in national banking systems to the extent that such near moneys were subject to reserve requirements. Unless these effects had been offset by central banks, the excess of bank reserves could have supported a potentially inflationary expansion of money and credit in the world. Since approximately three-fourths of Eurocurrency deposits are denominated in dollars, effects on reserves have been largest in the U.S. banking system. However, to the extent that central banks followed as intermediate targets the more narrowly defined monetary aggregates that do not include large time deposits, as has been true in the United States, an offset to these reserve effects would have automatically taken place.

Appendix
Estimation of the "Moneyness" of Eurocurrency Deposits

Using a standard log linear form for the relationship between the amount of money demanded and expenditures and interest rates, Eurocurrency deposits are allowed to take on any degree of "moneyness" (between zero and 1) equal in value to the coefficient λ. Since the data are annual averages, the money market is assumed to clear at every point in time, with the amount of money demanded equal to the available stock. When expenditures and money are measured in nominal terms, expenditures are most reasonably treated as the dependent variable. This is because over annual periods the nominal money stock is best treated as exogenously determined by the monetary authorities, with interest rates influencing the amount of spending created per unit of money balances.

The resulting equation is:

(1) $\ln GNP = \beta_0 + \beta_1 \ln (M\text{-}1 + \lambda E) + \beta_2 \ln i$,

where GNP is the dollar value of the gross national product of the Group of Ten countries plus Switzerland, M-1 is the aggregate dollar value of the narrowly defined money stock for these countries, and E is the dollar value of nonbank holdings of Eurocurrency deposits—all valued at 1973 exchange rates. (The year 1973 was chosen as one in which exchange rates were close to equilibrium levels.) The variable, i, is the average of short-term interest rates in the various countries weighted by their relative money stocks. The anticipated signs of both β_1 and β_2 are positive.

To distinguish between the effects of world M-1 and Eurocurrency deposits, we first transform $M\text{-}1 + \lambda E$ into $M\text{-}1\ (1 + \lambda E/M\text{-}1)$. Then recognizing that the natural logarithm of 1 plus a fraction is, to a very close approximation, equal to the fraction itself, we have $\ln (M\text{-}1 + \lambda E) = \ln M\text{-}1 + \lambda E/M\text{-}1$. Thus, in the equation to be estimated, $\ln M$-1 and E/M-1 can be entered as separate variables; and the coefficient of E/M-1 is, to a very close approximation, equal to the response of spending to a change in the log of money, β_1, times the degree of moneyness of Eurocurrency deposits, λ. (The size of the down-

ward bias created by this approximation is less than 2 percent of the estimated coefficient of E/M-1.) The resulting regression equation, estimated by ordinary least squares for annual observations and using the Cochrane-Orcutt transformation to correct for first-order serial correlation, is:

$$(2)\quad \ln GNP = \underset{(7.25)^{**}}{2.03} + \underset{(19.1)^{**}}{.891} \ln M\text{-}1 + \underset{(5.09)^{**}}{.0673} \ln i + \underset{(.423)}{.281}\, E/M\text{-}1.$$

$\bar{R}^2 = .999$; Durbin-Watson = 2.22; rho = .888.

This equation was estimated for the years 1957-73 to avoid the effects of the shift in the demand for money that was known to have occurred in the United States after 1973 for reasons unrelated to growth of the Eurocurrency market. The t statistics in the parentheses indicate that "world" M-1 and "world" interest rates are statistically significant variables for explaining "world" spending, with the effects appropriately signed, but that Eurocurrency deposits are not.[1] Although the estimated coefficient for the Eurocurrency variable is positive, its t statistic shows that it is not significantly different from zero. Thus, the best estimate of the degree of moneyness of Eurocurrency deposits, λ, is also not significantly different from zero. The correct interpretation is not that Eurocurrency deposits are not near money but, rather, that such deposits have substituted primarily for other near moneys having a similar degree of liquidity so as to result in no significant net addition to liquidity from Euromarket expansion.

For the U.S. economy at least, the elasticity of the demand for money is lower with respect to real output than it is to prices, the latter having an elasticity close to 1. So, the above equation relating world GNP to world money could be misspecified to some extent because it constrains both elasticities to the same value. A misspecification would be corrected, however, if world money, Eurocurrency deposits, and world GNP are deflated by the world price level, P. The last was obtained by dividing world GNP by the value of world GNP at 1975 prices (all calculated at 1973 exchange rates). When world money is expressed in real terms, it is real money that is most appropriately the dependent variable, with real output and interest rates being treated as exogenous. The estimated regression equation in this form (with country interest rates now weighted by relative real GNP's) is:

$$(3)\quad \ln M\text{-}1/P = \underset{(-2.41)^{*}}{-1.57} + \underset{(12.3)^{**}}{1.03} \ln GNP/P - \underset{(-4.73)^{**}}{.0766} \ln i + \underset{(.689)}{.478}\, E/M\text{-}1.$$

$\bar{R}^2 = .997$; Durbin-Watson = 1.92; rho = .831.

A similar conclusion holds. The real GNP of the world and world interest rates are statistically significant variables in explaining the demand for real world money, with the effects appropriately signed; but the appropriate Eurocurrency variable is not, and its estimated effect now has a different sign. (If Eurocurrency deposits substitute for money, the response of real money balances to the Eurocurrency variable should be negative while that of nominal GNP, as in equation 2, would be positive.) In addition, the elasticity of the demand for real money with respect to the real output also appears to be close to 1 for the industrial countries as a whole. Thus, there does not appear to be a misspecification involved in equation 2. Indeed, equation 2 may be preferred because it allows no chance of a spurious correlation between the dependent variable and E/M-1; such a possibility exists in equation 3 because M-1 is contained in both variables.

No official data exist on the size of the Eurocurrency market prior to 1964, so data for the years 1957-63 were estimated. Growth of the market in those years could not have been very large in absolute terms, nor was it probably highly variable. As shown in Chart 1, nonbank holdings of Eurocurrency deposits were only $9 billion in 1964 and were then growing at about $1 billion a year; they had expanded to over $60 billion by the end of 1973. Moreover, according to close students of the subject, the major preconditions for an

1. The symbols ** and * indicate a significant t statistic in the theoretically expected direction at the 1-percent and 5-percent levels, respectively, on the basis of a single-tailed test.

active Eurocurrency market simply did not exist prior to about 1957.[2] Consequently, the size of the market must have been next to nothing in 1957. If 1964-65 growth of the market is extrapolated backward, we get an estimated size of nonbank deposits of about $1 billion in 1957, consistent with this view.

For both economic and statistical reasons, we feel that the larger sample period of 1957-73, even though it includes partly estimated Eurocurrency deposit figures, provides a fairer test of the contribution of the growth of the Eurocurrency market to world inflation than does the 1964-73 sample period involving only official data. In the first place, the larger sample period captures the acceleration of world inflation to which growth of the Euromarket may have contributed, while the smaller one does not. World inflation was between 2 and 3 percent in every year prior to 1964 but had accelerated to over 7 percent by 1973.

Second, besides providing a highly desirable increase in degrees of freedom, the larger sample has markedly less collinearity between the Eurocurrency deposit variable and the other explanatory variables—particularly interest rates. So, regression analysis is better able to discriminate between the competing hypotheses.

Third, we believe the estimated Eurocurrency deposit figures for the years prior to 1964 can be regarded as being reasonably firm, based as they are on both an extrapolation of growth and separate information on the size of the market at the beginning of the period.

2. See, for example, Gunter Dufey and Ian H. Giddy, *The International Money Market*, Prentice-Hall Foundations of Finance Series (Englewood Cliffs, N.J., 1978), pp. 110-11.

For these reasons, we have stressed the results for the larger sample period. However, equations fitted only to the years 1964-73 yield conclusions that are not appreciably different. The estimated coefficients for the Eurocurrency variable are still not significantly different from zero, even at the 10-percent level, and the size and significance of the other coefficients are about the same as before.[3]

The source of the data for money supplies, nominal and real gross national products, interest rates, and exchange rates was various issues of the IMF's *International Financial Statistics*. The size of nonbank holdings of Eurocurrency deposits is for the broadly defined market and was taken, with permission, from "The Eurocurrency Market and World Economic Stability," an International Monetary Fund memorandum dated June 21, 1978, that was prepared by a Research Department working group. The currency composition of nonbank Eurocurrency deposits was estimated from the overall ratios in the narrowly defined market that were reported by the Bank for International Settlements in various issues of its Annual Report.

3. The estimated regression equations for the 1964-73 period are:

$$\text{(2a)}\quad \ln GNP = \underset{(9.60)^{**}}{2.05} + \underset{(24.1)^{**}}{.879}\ \ln M\text{-}1 + \underset{(3.87)^{*}}{.0503}\ \ln i + \underset{(1.89)}{1.10}\ E/M\text{-}1.$$

$\bar{R}^2 = .999$; Durbin-Watson = 3.52; rho = .650.

$$\text{(3a)}\quad \ln M\text{-}1/P = \underset{(-4.41)^{**}}{-3.48} + \underset{(12.6)^{**}}{1.27}\ \ln GNP/P - \underset{(-4.90)^{**}}{.0618}\ \ln i - \underset{(-1.26)}{.833}\ E/M\text{-}1.$$

$\bar{R}^2 = .997$; Durbin-Watson = 3.21; rho = .691.

Regulatory Briefs

Review of Recent Actions of the Board of Governors of the Federal Reserve System

• **DISTRIBUTION OF EXAMINATION REPORTS OF DATA PROCESSING CENTERS** henceforth will be made to all insured serviced institutions only when the conditions noted could adversely or materially affect the serviced institutions. This represents a change from the prior policy, which required routine distribution of all such reports to all firms serviced.

Also, the reports distributed will be limited to the examiner's conclusions, recommendations, and comments. Matters of a proprietary or competitive nature relating to the data center will be excluded from report comments distributed to serviced institutions.

• **ELIMINATION OF DEPOSIT RATE CEILINGS** over the next ten years is proposed in a bill before the U.S. Senate. The plan has been endorsed by the three Federal bank regulators.

The plan proposes to phase out the savings rate ceilings by raising them one-quarter of 1 percentage point every six months beginning in 1982 and continuing through 1989. All rate limits would be completely removed as of January 1, 1990, unless there were "an extreme economic emergency threatening the solvency of financial institutions."

The proposal would allow the Federal regulators to delay a scheduled increase during the phaseout period. However, the increase would have to be "made up" within 12 months.

Another provision of the proposed legislation allows thrift institutions to invest up to 10 percent of their assets in consumer loans and also to expand other asset powers.