

The information in this chapter was last updated in 1993. Since the money market evolves very rapidly, recent developments may have superseded some of the content of this chapter.

Federal Reserve Bank of Richmond
Richmond, Virginia
1998

Chapter 5 EURODOLLARS

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THE NATURE OF THE EURODOLLAR

Eurodollars are bank deposit liabilities denominated in U.S. dollars but not subject to U.S. banking regulations. For the most part, banks offering Eurodollar deposits are located outside the United States. However, since late 1981 non-U.S. residents have been able to conduct business free of U.S. banking regulations at International Banking Facilities (IBFs) in the United States.¹ Eurodollar deposits may be owned by individuals, corporations, or governments from anywhere in the world, with the exception that only non-U.S. residents can hold deposits at IBFs.

Originally, dollar-denominated deposits not subject to U.S. banking regulations were held almost exclusively in Europe; hence, the name Eurodollars. Most such deposits are still held in Europe, but they also are held at U.S. IBFs and in such places as the Bahamas, Bahrain, Canada, the Cayman Islands, Hong Kong, Japan, the Netherlands Antilles, Panama, and Singapore. Regardless of where they are held, such deposits are referred to as Eurodollars.²

Banks in the Eurodollar market, including U.S. IBFs, compete with banks in the United States to attract dollar-denominated funds. Since the Eurodollar market is relatively free of regulation, banks in the Eurodollar market can operate on narrower margins or spreads between dollar borrowing and lending rates than can banks in the United States. This gives Eurodollar deposits an advantage relative to deposits issued by banks operating under U.S. regulations. In short, the Eurodollar market has grown up largely as a means of avoiding the regulatory costs involved in dollar-denominated financial intermediation.

¹ Dollar-denominated deposits at a U.S. IBF or a bank located outside the United States are Eurodollars, even if the IBF or the bank is affiliated with a bank whose home office is a non-IBF U.S. bank. See Terrell and Mills (1983), Key (1982) and Lichtenstein (1982) for discussions of IBFs.

² See Ashby (1978) for a historical discussion of Europe's declining share of the global Eurocurrency market.

THE SIZE OF THE EURODOLLAR MARKET

Eurodollar volume is measured as the dollar-denominated deposit liabilities of banks located outside the United States. For example, the Bank for International Settlements (BIS) defines and measures Eurodollars as dollars that have "been acquired by a bank outside the United States and used directly or after conversion into another currency for lending to a nonbank customer, perhaps after one or more redeposits from one bank to another."³

The sum of all dollar-denominated liabilities of banks outside the United States measures the gross size of the Eurodollar market. For some purposes, it is useful to net some interbank deposits out of the gross to arrive at an estimate of Eurodollar deposits held by original suppliers to the Eurodollar market. Roughly speaking, to construct the net size measure, deposits owned by banks in the Eurodollar market are netted out. But deposits owned by banks located outside of the Eurodollar market area are not netted out because these banks are considered to be original suppliers of funds to the Eurodollar market. For still other purposes, such as comparing the volume of deposits created in the Eurodollar market with the U.S. monetary aggregates, it is useful to further net out all bank-owned Eurodollar deposits. Doing so leaves only the nonbank portion of the net size measure, or what might be called the net-net size of the Eurodollar market.

The most readily accessible estimates of the size of the Eurodollar market were compiled by Morgan Guaranty Trust Company of New York and reported in its monthly bank letter, *World Financial Markets*.⁴ Morgan's estimates included data compiled by the BIS. However, Morgan's estimates were somewhat more comprehensive. Morgan reported estimates of the size of the entire Eurocurrency market based roughly on all foreign-currency liabilities of banks in major European countries, nine other market areas, and U.S. IBFs. Morgan stopped publishing its Euromarket data in 1988.

As of March 1988 Morgan estimated the gross size of the Eurocurrency market at \$4,561 billion; the net size was put at \$2,587 billion.⁵ Morgan also reported that Eurodollars made up 67 percent of gross Eurocurrency liabilities, putting the gross size of the Eurodollar market at \$3,056 billion.⁶ No net size

³ Bank for International Settlements 1964, p. 127. In principle, today the definition includes acquisitions by IBFs.

⁴ See Morgan Guaranty (January 1979, pp. 9-13) for a discussion of Morgan's method of measuring the size of the Eurodollar market. Other informative discussions of issues involved in measuring the Eurodollar market's size are found in Dufey and Giddy (1978, pp. 21-34) and Mayer (1976).

⁵ Morgan Guaranty, November 1988, p. 13. Most of the growth of the Eurocurrency market has occurred in the last two decades. Dufey and Giddy (1978, p. 22) reports Morgan's earliest estimate of the gross size of the Eurocurrency market as only \$20 billion in 1964. See Dufey and Giddy (1978, Chap. III) for a discussion of the growth of the Eurocurrency market. On the net size, see Morgan Guaranty (November 1988, p. 13).

⁶ *Ibid.*

for the Eurodollar market was given. However, 67 percent of the net size of the Eurocurrency market yields \$1,733 billion as an approximate measure of the net size of the Eurodollar market.

M2 is the narrowest U.S. monetary aggregate that includes some Eurodollar deposits. M2 includes overnight Eurodollar deposits held by U.S. residents other than depository institutions and money market funds at branches of U.S. banks worldwide. As of May 1991, M2 measured \$3,396 billion; its Eurodollar component was \$17.8 billion.⁷ This comparison shows clearly that Eurodollar deposits account for a relatively small portion of monetary assets held by U.S. residents.

INCENTIVES FOR DEVELOPMENT OF THE EURODOLLAR MARKET⁸

By accepting dollar-denominated deposits and making dollar-denominated loans outside the United States and at U.S. IBFs, banks avoid some U.S. banking regulations. For example, IBFs and banks located outside the United States do not have to hold noninterest-bearing required reserves against their dollar-denominated deposits. Recently, reserve requirements have been eliminated on all time deposits in the United States and have been reduced from 12 to 10 percent on transactions deposits. However, U.S. bank regulations have been strengthened as a result of the banking problems encountered in the 1980s. Regulatory initiatives such as stricter capital standards, higher deposit insurance premiums, and more intense supervisory scrutiny have raised the cost of depository intermediation in the United States.

Eurodollar banks hold balances with banks in the United States for clearing purposes only and otherwise avoid reserve requirements. Moreover, there is no deposit insurance assessment on Eurodollars. Although stricter capital standards also have been imposed internationally, the regulatory cost of depository intermediation in the United States remains higher than in the Eurodollar market.

In most Eurodollar financial centers, entry into Eurodollar banking is virtually free of regulatory impediments, so banks intending to do Eurodollar business can easily set up in locations where tax rates are low. For example, Eurodollar deposits and loans negotiated in London or elsewhere often are booked in locations such as Nassau and the Cayman Islands to obtain more favorable tax treatment. In addition, various states in the United States have amended their tax codes to grant IBFs relief from local taxes.

⁷ Board of Governors of the Federal Reserve System 1991, pp. 1 and 7. At present, Eurodollars held by non-U.S. residents are not included in any of the U.S. monetary aggregates. As improved data sources become available, the possible inclusion of Eurodollars held by non-U.S. residents other than banks and official institutions could be reviewed. See Board of Governors of the Federal Reserve System (1980, p. 98).

⁸ See Dufey and Giddy (1978, pp. 110-12) for a historical discussion of the conditions that made large-scale growth of the Eurodollar market possible.

Foreign monetary authorities generally are reluctant to regulate Eurodollar business because to do so would drive the business away, denying the host country income, tax revenue, and jobs. Even if the U.S. monetary authorities could induce a group of foreign countries to participate in a plan to regulate their Euromarkets, such a plan would be ineffective unless every country agreed not to host unregulated Eurodollar business. In practice, competition for such business has been fierce, so even if a consensus should develop in the United States to regulate Eurodollar business, it would be extremely difficult to impose regulations on the entire Eurodollar market.

INSTRUMENTS OF THE EURODOLLAR MARKET⁹

The overwhelming majority of money in the Eurodollar market is held in fixed-rate time deposits (TDs). The maturities range from overnight to several years, although most are from one week to six months. Eurodollar time deposits are intrinsically different from dollar deposits held at banks in the United States only in that the former are liabilities of IBFs or of banks located outside the United States. The bulk of Eurodollar TDs are interbank liabilities. They pay a fixed, competitively determined rate of return.¹⁰

Another important Eurodollar instrument is the Eurodollar certificate of deposit (CD). Essentially, a Eurodollar CD is a negotiable receipt for a dollar deposit at a bank located outside the United States or in a U.S. IBF. From their introduction in 1966, the volume of Eurodollar CDs outstanding reached roughly \$50 billion at the beginning of 1980.¹¹ By late 1990, Eurodollar CD volume was around \$130 billion. The 1990 elimination of the 3 percent reserve requirement on nonpersonal time deposits and CDs in the United States has made the Eurodollar CD market a bit less active. As of spring 1992, volume had fallen to around \$116 billion.

Recently, fixed-rate, three-month Eurodollar CDs have yielded approximately 10 basis points below the three-month London Interbank Offered Rate (LIBOR).¹² LIBOR is the rate at which major international banks are willing to offer term Eurodollar deposits to each other. An active secondary market allows

⁹ Bank for International Settlements (1986, Chaps. 1 and 4), Dobbs-Higginson (1980, pp. 55-61), Dufey and Giddy (1978, pp. 228-32), and Stigum (1990, Chaps. 7, 18, 20, and 22) contain informative discussions of Eurodollar instruments.

¹⁰ See Stigum (1990, pp. 890-93) and Dufey and Giddy (1978, p. 227) for discussions of the tiering of Eurodollar deposit rates according to the perceived creditworthiness of issuing banks. *The Banker* (1987) has a discussion of tiering in the Euro-CD market.

¹¹ Bank of England, Financial Statistics Division, International Banking Group. This data includes all London foreign currency CDs. Almost all Euro CDs are issued in London, however, and almost all of these are denominated in dollars. Early descriptions of the London dollar CD market are found in Credit Suisse (1980) and "The London Dollar CD" (1973).

¹² This spread was calculated using data in Salomon Brothers (1990) and the DRI database.

investors to sell Eurodollar CDs before the deposits mature. Secondary market makers' spreads for short-term fixed-rate CDs have been 1 to 3 basis points for European bank dollar CDs and around 5 basis points for Japanese bank dollar CDs.¹³

Eurodollar CDs are issued by banks to "tap" the market for funds and are commonly issued in denominations of from \$250,000 to \$5 million. Some Eurodollar CDs, called Tranche CDs, are issued in very large denominations but marketed in several portions in order to satisfy investors with preferences for smaller instruments. The latter are issued in aggregate amounts of \$10 million to \$30 million and are offered by banks to individual investors in \$10,000 certificates, with each certificate having the same interest rate, issue date, interest payment dates, and maturity.

In the late 1970s Eurodollar floating-rate CDs (FRCs) and Eurodollar floating-rate notes (FRNs) came into use as means of protecting both borrower and lender against interest rate risk. By making their coupon payments float with market interest rates, these "floaters" stabilize the principal value of the paper. The market for FRCs is no longer active. The volume of FRNs outstanding fell from \$125 in 1986 to \$116 in 1990.¹⁴

Eurodollar FRNs have been issued in maturities from 4 to 20 years, with the majority of issues concentrated in the five- to seven-year range. Eurodollar FRNs tend to be seen as an alternative to straight fixed-interest bonds, but they can in principle be used like FRCs. Eurodollar FRNs have been issued primarily by banks and sovereign governments. FRNs issued by governments are not Eurodollars proper since they are not bank liabilities. Strictly speaking, they should be referred to as Eurodollar instruments together with the NIFs and Euro commercial paper discussed below.

Eurodollar FRCs and FRNs are both negotiable bearer paper. The coupon or interest rate on these instruments is reset relative to the corresponding LIBOR every three or six months. The rate is set below LIBOR for sovereign borrowers and above for U.S. banks. Yields on Eurodollar FRNs range from 1/8 percent under the London Interbank Bid Rate (LIBID) up to LIBOR.¹⁵ To determine LIBOR for Eurodollar FRNs, "the issuer chooses an agent bank who in turn polls three or four Reference Banks—generally, the London offices of major international banks. Rates are those prevailing at 11:00 a.m. London time two business days prior to the commencement of the next coupon period."¹⁶

¹³ Information on interest rate spreads in the Eurodollar market was provided by Robert Smith and Jean Walshe of First Boston Corporation.

¹⁴ See Bank for International Settlements, *International Banking and Financial Market Developments*.

¹⁵ LIBID, the rate at which major international banks are willing to take deposits from one another, is normally 1/8 percent below LIBOR.

¹⁶ Salomon Brothers 1980, p. 7.

A secondary market exists in FRNs. The spread quoted on FRNs in the secondary market is generally 10 cents per \$100 face value for the liquid sovereign issues. Other spreads are quoted on an indicative basis and are somewhat higher.

Note Issuance Facilities (NIFs) became a significant Eurodollar instrument in the mid-1980s.¹⁷ A NIF is a medium-term, usually five- to seven-year arrangement between a borrower and an underwriting bank under which the borrower can issue short-term, usually three- to six-month, paper known as Euro-notes in its own name. Under such an arrangement, the underwriting bank is committed either to purchase any notes the borrower cannot sell or to provide standby credit at a predetermined spread relative to some reference rate such as LIBOR. Underwriting fees are paid on the full amount of the line of credit, regardless of the amount currently drawn. The fee is 5 basis points for top borrowers and ranges up to 15 basis points for worse credit risks. The notes are issued with face amounts of \$100,000, \$500,000, or more.

Well-regarded borrowers can issue Euro-notes at around LIBID. Top borrowers can issue at yields 1/16 or 1/8 percentage point below LIBID. Euro-notes are comparable investments to Eurodollar CDs.

When the market initially matured around 1985, nonbank corporate borrowers accounted for roughly 60 percent of NIFs arranged. Most borrowers were from countries in the Organisation for Economic Co-operation and Development. As of April 1986, about \$75 billion of NIFs had been arranged, with only an estimated \$10 to \$15 billion having been drawn. Most paper was placed with smaller, non-underwriter banks. In 1985, about one-third or more of placements may have been with nonbank investors, including money market funds, corporations, insurance companies, wealthy individuals, and central banks.

Since mid-1984, facilities similar to NIFs have been arranged without underwriting commitments. In the second half of 1985, new non-underwritten agreements equaled new NIFs arranged. Non-underwritten agreements have become much like U.S. commercial paper programs: note issuance has been separated from the standby arrangement, notes are issued in shorter odd maturities, and notes can be marketed quickly. Under such an arrangement, a bank is simply a marketing agent. Euro-notes issued under such conditions are known as Euro commercial paper. The volume of newly arranged NIFs declined from \$40 billion in 1985 to \$4 billion in 1990, while Euro commercial paper outstanding rose from \$17 billion in 1986 to \$70 billion in 1990.¹⁸ Recently strengthened risk-based capital requirements have, in part, induced the shift to Euro commercial paper because they have raised the regulatory cost associated with NIFs. Euro

¹⁷ Material on NIFs was taken from Bank for International Settlements (1986, Chap 1). Melnik and Plaut (1991) discuss NIFs and Euro commercial paper programs.

¹⁸ See Organisation for Economic Co-operation and Development (1991, p. 77) and Bank for International Settlements, *International Banking and Financial Market Developments*.

commercial paper yields range from LIBID minus 25 basis points for top-rated sovereigns to LIBOR plus 30 for low-rated corporations.¹⁹

For most U.S. corporations, the U.S. commercial paper market probably remains a cheaper source of funds than Euro commercial paper. For some non-U.S. corporations, however, Euro commercial paper may be as cheap as U.S. commercial paper because of the premium that foreign issuers pay in the U.S. commercial paper market. Like the U.S. commercial paper market, the secondary market for Euro commercial paper is relatively underdeveloped. If a client needs to sell paper before maturity, he will almost always sell it to the dealer who sold him the paper initially. Any trading usually occurs in the first few days after the paper is issued. Trading is most frequent in the sovereign sector, which accounts for about 20 percent of Euro commercial paper outstanding.

INTEREST RATE RELATIONSHIPS BETWEEN EURODOLLAR DEPOSITS AND DEPOSITS AT BANKS IN THE UNITED STATES

Arbitrage keeps interest rates closely aligned between Eurodollar deposits and deposits with roughly comparable characteristics at banks located in the United States.²⁰ This is illustrated in Figures 1 and 2. Figure 1 compares yields on federal funds and overnight Eurodollar deposits. Figure 2 compares yields on Eurodollar CDs and CDs issued by banks located in the United States.

THE RELATIVE RISKINESS OF EURODOLLAR DEPOSITS AND DOLLAR DEPOSITS HELD IN THE UNITED STATES²¹

There are three basic sources of risk associated with holding Eurodollars. The first concerns the chance that authorities where a Eurodollar deposit is held may interfere in the movement or repatriation of the principal of the deposit or the interest paid on it. But this risk factor does not necessarily imply that Eurodollar deposits are riskier than dollar deposits held in the United States. Rather, the relative riskiness can depend on the deposit holder's residence. For U.S. residents, Eurodollars may appear riskier than domestic deposits because of the possibility that authorities in the foreign country where the deposit is located may interfere in the movement or repatriation of the interest or principal of the deposit. On

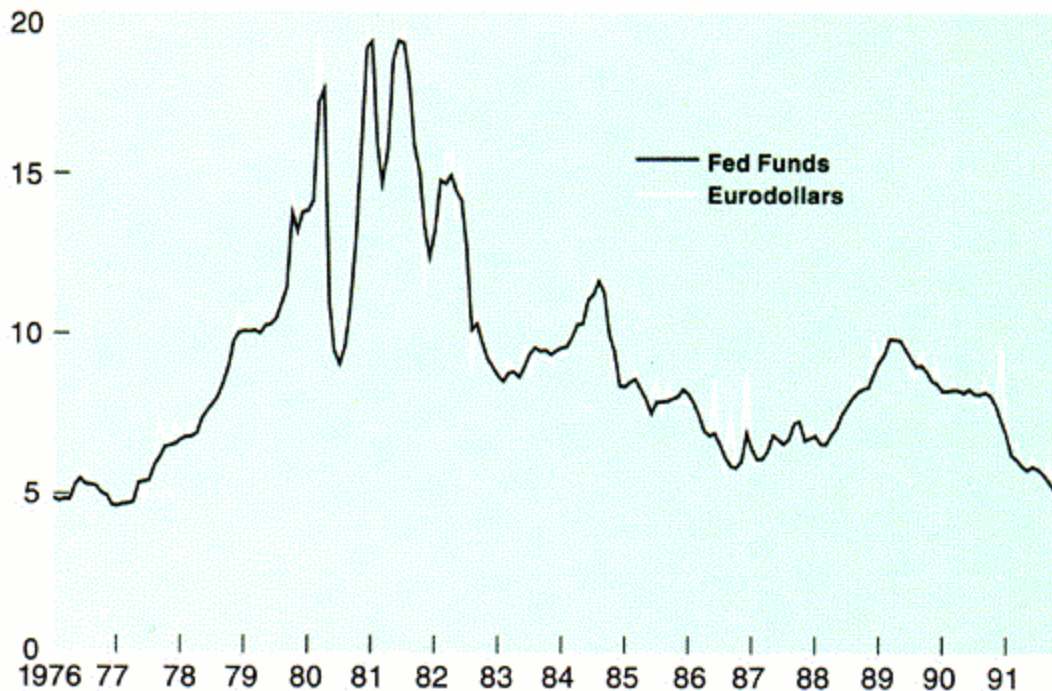
¹⁹ Andersen 1990, p. 65.

²⁰ See Kreicher (1982) for a detailed discussion of Eurodollar arbitrage.

²¹ See Dufey and Giddy (1978, pp. 187-90) and Tyson (1980) for more discussion of the riskiness of Eurodollars.

FIGURE 1

Yields on Federal Funds and Overnight Eurodollar Deposits

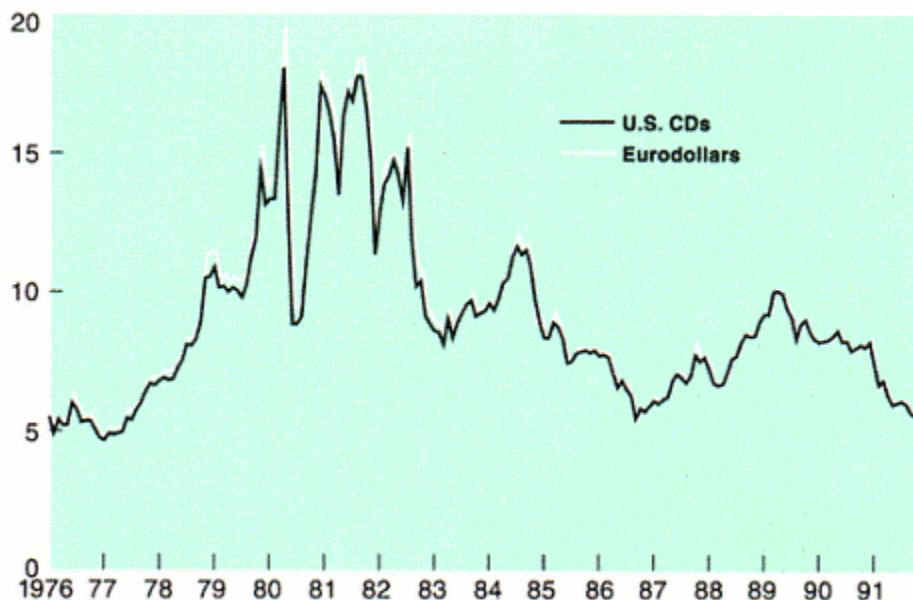


the other hand, some foreign residents may feel that the U.S. government is more likely to block their deposits than the British government. Consequently, they may perceive greater risk from potential U.S. government interference by holding dollar deposits in the United States than by holding Eurodollar deposits in London.

A second element of risk associated with Eurodollars concerns the potential for international jurisdictional disputes. For example, uncertainty surrounding interaction between United States and foreign legal systems compounds the difficulty in assessing the likelihood and timing of payment on Eurodollar deposits in the event of an issuing bank's failure. A third type of risk associated with holding Eurodollars concerns the soundness of deposits at banking offices located in foreign countries relative to banking offices located in the United States. Eurodollars can be riskier than deposits held in the United States because deposits held in the United States can carry explicit deposit insurance of some kind while Eurodollar deposits generally do not. Also, in the event of a financial crisis, banks located in the United States are more likely to be supported by the Federal Reserve System, whereas neither the support of the Federal Reserve nor that of foreign central banks for Eurodollar banking activities is certain.

FIGURE 2

Yields on U.S. and Eurodollar Three-Month CDs



Compounding the three basic risk factors identified above is the greater cost of evaluating foreign investments than domestic investments. Acquiring information on the soundness of foreign banks is generally more costly than assessing the soundness of more well-known domestic banks. This means that for a given level of expenditure on research, investors must generally accept more ignorance about the soundness of a foreign bank than a domestic bank. If a depositor resides in the United States, a given expenditure on research generally yields more information about the safety of deposits located in the United States than in the Eurodollar market. But if a depositor resides outside the United States, the reverse may be true. Having said this, it must be pointed out that financial disclosure required by regulatory authorities abroad is generally not as great as in the United States.

Assessing the safety of Eurodollar deposits is made easier by the fact that many banks in the Eurodollar market are branches of and bear the same name as a bank whose home office is in the United States. For example, a London branch of a U.S. bank is an integral part of its corporate parent. In many cases, however, foreign offices bearing the name of a U.S. bank, usually in a slightly altered form, have been set up as subsidiaries rather than branches. Under most legal systems, a branch cannot fail unless its head office fails, but a subsidiary can fail even if its

parent institution remains in business. Technically, even if a foreign office bears the name of a U.S. bank in some form, the parent institution may not be legally bound to stand fully behind the obligations of its foreign office. This suggests that a foreign office named after a parent U.S. bank may not be as sound as its namesake, although the parent bank unquestionably has great incentive to aid the foreign office in meeting its obligations in order to preserve the bank's good name.²²

On the whole, it is difficult to assess the relative riskiness of Eurodollar deposits and dollar deposits held in the United States. Some factors affecting relative risk can be identified, but their importance is difficult to measure. What is more, perceived relative riskiness depends on the residence of the depositor.

SUMMARY

From the depositor's point of view, Eurodollars including those at U.S. IBFs are close substitutes for dollar deposits at non-IBF banks located in the United States. Eurodollar deposits are attractive because they are free of most regulatory burdens imposed by U.S. authorities. In fact, the tremendous growth of the Eurodollar market in the last two decades has largely resulted from efforts to move dollar financial intermediation outside the regulatory jurisdiction of the United States.

Host countries have competed eagerly for Eurodollar business by promising relatively few regulations, low taxes, and other incentives. Even the United States, through IBFs introduced in 1981, is now competing for Eurodollar business. Financial intermediation in U.S. dollars will continue to move abroad or to IBFs as long as incentives exist for it to do so.

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²² See Mendelsohn (1984), Stoakes (1985), and *American Banker* (1987) for discussions of a case where a large U.S. bank refused to make good on the deposits of its Philippine branch after they were frozen by Philippine exchange controls. Also see Dufey and Giddy (1984) on this issue.

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