Euro-Dollar Creation: A Mystery Story

This article will be about Euro-dollars and the "Euro-dollar market". We cannot intelligently talk about these matters before engaging in an extensive conceptual and theoretical preparation. There has been much confusion even among experts in the field, attributable probably to their courage, which led them to talk about the system before they had thought about it and to try to think before they had the necessary conceptual preparation.

The lack of conceptual clarity has contributed to serious differences in the experts' explanations of the fast growth of the Euro-dollar business and in their evaluation of it. Different writers have presented contradictory ideas about the sources and uses of the funds in question. One extreme position in this respect is that the bulk of Euro-dollar deposits are the result of multiple creation of credit by banks in a system of only fractional reserves; another extreme position is that all these deposits owe their existence to the decisions, on the part of owners and recipients of dollar balances, to deposit them with banks in Europe. Some writers see the source of most or all Euro-dollars in the deficit of the balance of payments of the United States; others have concluded that the growth of Euro-dollar deposits was not caused by, but has had certain effects upon the balance of payments of the United States. Most writers have judged the development and growth of the Euro-dollar market as healthy and beneficial for the economies concerned, others have pointed to considerable dangers, and a few have warned of an imminent collapse, of a "cataclysm" with catastrophic consequences. I shall not document any of these statements; their protagonists include some eminent economists.

If the present essay cannot reach definitive conclusions deciding all controversies on the subject, it will at least attempt to show why

some such conclusions cannot be obtained on the basis of the empirical evidence available at present and why certain conceptual obscurities have led us into blind alleys (1).

Flows and Stocks

The first thing to bear in mind is the fundamental distinction between *flow* concepts and *stock* concepts — flows per period and stocks at a moment of time. Production and consumption, imports and exports, sales and purchases, transactions and incomes are basic flow concepts. Inventories, capital, wealth, money stocks, claims and debts are basic stock concepts. Certain flow concepts have an implied reference to stocks; among the most essential of these are accumulation and depletion (of inventories, capital, etc.), profits and losses (considering differences in net asset values), creation and cancellation (of money), and turnover (of capital, money, etc.). And there are also a few ambiguous ones, which cause endless confusion; the chief culprits are loans and credit, either granted by period or outstanding at a moment, and deposit as an act, deposit as a claim, and deposit as a liability. Alas, loans, credit, and deposits are the chief subject matter of Euro-dollar talk.

The discussion of Euro-dollars and the Euro-dollar market involves several of the enumerated terms besides the three ambiguous ones. It is about transactions, turnover, debts and claims accumulations, money stocks, and even creation and cancellation of money. For, undoubtedly, many holders of claims vis-à-vis European banks that are denominated in dollars regard their holdings as perfectly liquid balances, which confers the quality of moneyness on these claims and which may make some of the growth of Euro-dollar deposits a creation of money.

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(1) I do not claim to have come out of the dark and to see things clearly myself. I may indeed be as confused as most others, or even more so. From several patent errors and misunderstandings I have been saved by friendly criticisms of an earlier draft of this paper received from Stanley W. Black, Benjamin Jerry Cohen, Arthur B. Hersey, Fred H. Klopstock, Burton G. Malkiel, Helmut W. Mayer and Alexander K. Swoboda. I am sincerely grateful to them. They are of course not responsible for any errors or obscurities that have remained in my paper, especially where I have stubbornly resisted their efforts to enlighten and convert me.

System and Market

The prevailing poverty of conceptualization in the current discussion shows itself in the thoughtless designation of the whole system of transactions, deposits, and so forth, as a *market*. A market is defined as a meeting (not necessarily a physical meeting) of people who offer something for sale, rent, or hire, with people who are interested in buying, renting, or hiring. There are, in fact, such market operations with regard to Euro-dollars; they are the new offers of, and bids for, credit in Euro-dollars, the new loans contracted during a market day, and the renegotiations of old loans. But there is very much more to the Euro-dollar system than a credit market: there are the loans outstanding, the assets held, the deposit liabilities owed, the creation, turnover, conversion, and cancellation of international money, a demand for working balances as well as precautionary and speculative balances of that money, and several other things that have little to do with a "market". It may be misleading to speak of the whole system as a market, since the market aspects of it is *only a part of the picture*.

Take, for example, the statement, literally quoted, that "the Euro-dollar market's estimated net size at the end of June 1969 was about $37 billion..." and that "Euro-dollar market growth exceeded 35 per cent in 1968...". How does one measure the "net size" and the "growth" of a market? For most markets total sales (rentals, hires) per period, or perhaps average sales per day over a period, would be an appropriate measure. Thus, new Euro-dollar loans contracted and old loans recontracted per day might be a measure of the size of the Euro-dollar market, just as the size of the stock market is measured by the turnover of shares of stock or by the value of shares sold. But the $37 billion at the end of June 1969 are not the amount involved in daily contracts. They are the sum of deposit liabilities (denominated in U.S. dollars) of banks and branches of banks operating in eight reporting European countries to nonbank depositors residing in the reporting area and to both banks and nonbank residents outside the reporting area.

The sum of deposit claims is a stock (or inventory) at a moment. Would anybody use the total value of shares of stock held by individuals and corporations as a measure of the size of the stock market? Would anybody use the sum of deposit claims against

American banks as the size of the American money market? Would anybody use the sum of foreign-currency balances held by individuals, corporations, and banks (and perhaps even central banks) on a certain day as a measure of the size of the foreign-exchange market? Would anybody, if I am permitted to add one more absurdity, use the total gold stock as a measure of the size of the gold market?

The ratios of sales per day to total stock are of course very different in the various systems and markets referred to in my rhetorical questions. I have to admit that the substitution of total loans outstanding for loans transacted per day is more acceptable than some of the palpably absurd hypothetical confusions would be. It is more acceptable because the amount of the new Euro-dollar loans contracted and old loans recontracted on a day may conceivably be closer to the total outstanding and because, as some of the Euro-dollar claims are in the nature of day-to-day loans, a decision *not* to call yesterday's loan may be regarded as a decision to grant a new loan. Moreover, there are a few other markets in which not the turnover but the total outstanding is used as the measure of their size. In the market for commercial paper, for example, and in the market for bankers' acceptances, the amounts of paper outstanding at a moment of time are taken as the relevant figures. There is, however, an essential difference between these credit markets and the Euro-dollar system: the analysis of the credit markets focuses on the particular credit instruments, whereas the analysis of the Euro-dollar system must comprise so much more: a large variety of dollar assets held by the European banks, and their dollar liabilities owed to various classes of creditors chiefly in the form of deposits. To take the total of these dollar liabilities as a measure of the size of the Euro-dollar *credit market* would be like taking the check-deposit balances which individuals and corporations hold in American banks ($208 billion in December 1969) as their "loans" to the banks (which in a legal sense they are), and like interpreting the decisions of the depositors not to withdraw their balances as decisions to grant (or renew) these "loans" every day. The deposit claims against American commercial banks were over $400 billions in December 1969, if both time and demand deposits, domestic and foreign (but not savings deposits) are counted; this figure is highly significant, but not as a measure of the size of the American money market.

My point is that there is indeed a market aspect of the Euro-dollar system; it is especially conspicuous where banks in Europe compete for deposits as well as for earning assets denominated in U.S. dollars. The changing interest rates for Euro-dollars constantly remind us of the market aspect of the system, with the banks offering as "attractive" rates as they can afford to pay the suppliers of funds and charging only slightly higher rates to place the funds. This, however, is only a part of the whole picture and, I submit, not the most crucial part. Words guide the attention of the audience; the use of the word "market" may divert attention from the important nonmarket aspects of the Euro-dollar system.

Loans and Money

To hold money is to hold perfectly liquid claims against the issuer (2), claims that are accepted as media of exchange by sellers of goods, services, and securities. To hold such claims is usually, in a legal sense, to have made a "loan", and this implies that the legal debtor has "borrowed".

However, to regard all the people who own deposit balances with commercial banks as lenders and suppliers of funds to the banking system is no more helpful for economic analysis than to regard those who carry bank notes in their wallets as lenders and suppliers of funds to the central banks, and those who have coins or currency notes in their pockets or purses as lenders to the treasury.

Every sophomore in "Money and Banking" is taught how to resolve this paradox of *having lent but still holding* money: in an economic sense the holder of money is not to be regarded as a lender, since what he has really "lent out" he can no longer have in his possession, and what he still possesses as a cash balance he cannot have lent out. The paradox is more difficult to resolve from the point of view of the issuer, that is, for the deposit bank and its having "borrowed"; the customary device for resolving it is to

(2) Coins are the only common currency that is not a legal claim against the issuer. Special drawing rights are international money for national monetary authorities without being claims against the issuing agency. These are exceptions. Another exception is gold, an international money for monetary authorities, but it has no "issuer", unless one wishes to give this name to the producer or to the first bank that acquires and resells it.

take all banks together as a group of institutions whose liquid liabilities are money to the individuals and corporations holding the deposit claims.

This device is not always understood by bankers, who (fortunately) cannot forget that they have "borrowed" from their depositors, even if the depositors, especially the owners of check-deposit balances, do not think of themselves as lenders. The device seems particularly hard to apply to an international banking system in which any bank in any country may offer especially attractive terms to depositors, foreign and domestic, in order to "borrow" dollar funds from them. Yet, the economic fact is that a holder of money has a choice of holding it in various forms: currency notes, bank notes, bank deposits denominated in domestic currency, or bank deposits denominated in foreign currency. In all these cases he is a "creditor" of the issuing institution in the legal sense only. From the economic point of view, he has not lent his money but has it in his possession and can use it any time for making payments to others. Hence, for purposes of certain kinds of analysis, one will have to suppress the notion that the existence of dollar deposit liabilities of European banks necessarily indicates an act of "borrowing" by the international banking system.

This perspective on bank deposits — seeing them as money balances held, rather than as loans made, by the depositors — is appropriate as long as individuals and nonbank corporations own the balances. It is less appropriate if other banks own them, and downright inappropriate if these other banks are on the same "liquidity level" as the bank that owes them. If there is a vertical structure of the banking system, where the deposit liabilities of one layer of banks are "higher-powered money" serving as the reserve balances for the next layer of banks, the view of these deposits as money for their holders including the banks holding them as reserves is still appropriate. For example, the deposit liabilities of the Federal Reserve banks are the money and reserve balances of the member banks in the United States — not loans granted by member banks to the Federal Reserve banks. Likewise, the deposit liabilities of the member banks are money owned by individuals and nonbank corporations but also money and reserve balances of nonmember banks — not loans granted by individuals, corporations and nonmember banks to member banks. However, for interbank

deposits among banks of the same level this conceptual framework is inadequate.

To give an illustration, if Member Bank A of New York makes a loans to Member Bank B of New York, it transfers some of its Federal Reserve balances to, and will hold a deposit claim against, Bank B. It would be theoretically messy if we were to regard this deposit claim as money, and it would be an unsound practice if the managers of Bank A regarded it as money and as part of its primary reserve. Certainly, they would not be permitted to count it among the money assets that satisfy its legal reserve requirements. And the deposit liability of Bank B to Bank A would likewise be excluded from the statistics of the money stock of the United States; interbank deposits of this sort are "netted out".

Applying these theoretically reasonable and practically sound principles to the structure of the Euro-dollar system, one should insist on strict distinctions between the holding of dollar assets of perfect moneyness and near-moneyness, on the one hand, and holding dollar claims (loans) and securities of lesser degrees of liquidity, on the other. Likewise, the dollar liabilities of European banks have to be neatly classified as to the degree of moneyness they have for their holders. The criterion of moneyness is immediate availability without loss for use in discharge of debt. (It should be noted that not only demand deposits but also several kinds of time deposits may qualify as money).

This criterion is undoubtedly met with respect to the Euro-dollar deposits owned by individuals and nonbank corporations. The viability and stability of the Euro-dollar system largely depends on the share of deposit balances held by individuals and nonbank corporations doing business for which these deposit balances are wanted or needed. The transactions demand for these dollar balances is the stable element; the investment or asset demand for deposit balances, which is a function of relative earnings of interest, and the speculative demand, which is largely a function of expectations regarding exchange-rate changes, are more volatile elements. In any case, there is a demand for Euro-dollar deposits which is a "demand for money to hold" — and not a" supply of Euro-dollar loans".

The figures reported for the size of the Euro-dollar market include deposit claims of banks against the banks in the eight reporting European countries. Only for the deposits owned by

residents of the "inside area", that is, of the eight European countries, are separate figures available for the holdings by nonbanks and banks. Thus the $37 billions which have been mentioned before, and the even larger figures reported for more recent dates, contain claims by banks as well as nonbanks. (And, as will be shown below, there may be some double counting in the statistics of bank claims). The inclusion of interbank deposits, if only of banks operating in the "outside area", prevents us from knowing what part of Euro-dollar deposits should be regarded as loans and what part as money, from an economic, not legal, point of view. (This distinction may be judged as utterly foolish by many practical bankers, but I submit that it makes a significant difference whether the creditor thinks he has made a loan which he must collect before he can use his funds for making payments or whether he thinks he is holding cash).

Credit versus Money

This brings us to a distinction which most economists understand clearly when they talk about domestic credit creation. The main points are (1) that a credit from a nonbank lender to a nonbank borrower is not "credit creation", because the resulting claim cannot be used as money but simply indicates that spending power has been transferred from one who refrains from using it to one who intends to use it; (2) that additional bank credit to a nonbank borrower constitutes credit creation because the borrower can use new spending power which no one has given up; (3) that the act of creation of bank credit on one day may create money virtually for eternity; and (4) that the supply of credit must not be confused with the supply of money, particularly since credit in this context is a flow concept while money is a stock concept.

If commercial banks, having unused lending capacity, are making new loans (more loans than are being repaid) on Monday, the banks are thereby increasing the supply (or the quantity supplied (3)) of credit — but only Monday, not necessarily also

(3) An increase in supply is represented by a shift in the supply function; an increase in the quantity supplied, by a movement along a given supply function. Thus, the "supply" is increased if, with given demand, new loans are taken only at terms more favorable to borrowers. The "quantity supplied" is increased if new loans are actively sought by borrowers, that is, if the demand for loans is increased and, with given supply, is met at terms more favorable to lenders. It is largely a question of where the initiative lies: either lenders try to place more funds or borrowers seek to obtain more funds. In the first case, the supply of loans is increased spontaneously; in the second case, an increase in the amount of loans supplied is being induced by the increase in demand.

Tuesday or any subsequent day. If the funds so lent stay as additional balances on demand deposits with the banks of the system, the banks will have also increased the supply of money, not only for Monday but also for Tuesday, Wednesday, and all subsequent days, as long as demand deposits do not decline either as a result of a reduction in credit outstanding or because of an outflow from the system as a result of net payments to other countries.

How does this apply to the Euro-dollar system? If Euro-banks extend to nonbank borrowers new loans denominated in Euro-dollars, they increase the supply (or quantity supplied) of credit in the Euro-dollar market, but only on the day the loans are made. If the proceeds of the loans stay in the system in the form of Euro-dollar deposits (not of the borrowers, except perhaps for a fraction of their borrowing, but of some of their immediate, secondary, or subsequent payees), the supply (stock) of Euro-dollar deposits, an international money or near-money, will have increased for as long as it does not decline again. It may decline either as a result of a reduction of the loan portfolios of the Euro-banks or as a result of a net outflow from the Euro-dollar banking system to any of the national banking systems. (Such an outflow, if it is not to the United States, would imply conversion into other national currencies).

It can be reasonably said for any banking system, including the Euro-dollar banking system, that it increases the supply of *credit* on the day when it increases its combined loan portfolio (including securities, but excluding loans to other banks of the system). It increases the supply of *money* for that day and any day thereafter as long as its combined liquid deposit liabilities (excluding those to other banks of the system) stay at the volume enlarged through the extension of the loan portfolio and are treated as "cash on hand" or "cash assets" by those who hold them.

It will be advisable to keep these differences between the supply of credit as a flow and the supply of money as a stock firmly in mind and to question any statement about "supply" in the Euro-

dollar market that is silent about exactly what is or was supplied. The economist's term "supply of money" is admittedly confusing in that it does not refer to the function (of one or more variables) that is usually denoted by the word "supply" but rather to the amount of money existing at the moment, the given stock of money. Even more reason, however, for being careful about keeping the supply of Euro-dollar *credit* and the supply (i.e. stock) of Euro-dollar *balances* strictly apart.

The analogous distinction is required also regarding the demand side. The demand for Euro-dollar *credit* is a demand for loans denominated in Euro-dollars, a new flow of funds to borrowers who seek these funds to pay them out (or, in some instances, to hold them as balances needed in their business) and who find them cheaper or easier to obtain than funds from alternative sources. The demand for Euro-dollar *deposit balances* is a demand for money or near-money to hold in this particular form because of a combination of advantages over holding cash in other forms. Interest earned on the deposits, savings in conversion-and-reconversion costs, and greater convenience in various respects are among the major advantages (4).

One of the snares in the analysis of the Euro-dollar system is that many writers identify the demand for Euro-dollar balances with the supply of Euro-dollar credit. The former, however, is a demand for *holding a stock of money*, whereas the latter is a supply

(4) The traditional terminology of monetary theory may be charged with inconsistency in its use of supply and demand for stocks of money. The *supply* of money is understood as a given stock without reference to the intentions which individual decision-makers are assumed to have with regard to supplying anything or supplying more of it or less. The *demand* for money, on the other hand, is understood as an aggregation of the amounts of cash balances which it is assumed the millions of households and firms would want to hold at various levels of prices of goods, services, and securities. The entire stock of money in existence is, of course, held by all individuals and firms together, but some of them may feel that they are holding as an average cash balance a little more (or a little less) than they would like to go on holding at given prices, transactions, incomes, and recurring expenditures. Thus, the aggregate amounts of money balances demanded may be larger (or smaller) than the amounts "supplied" (actually held) and this excess (or shortfall) would express itself in increased (or reduced) disbursements which would pull up (or depress) prices to higher (or lower) levels than those prevailing at the moment.

If there are alternative forms of holding cash — for example, bank notes, check-deposits or time deposits, in domestic banks or in foreign banks, denominated in domestic money or in foreign money — the demand for each particular money will be a more complicated function involving alternative benefits and opportunity costs. This is one of the difficulties surrounding the notion of the demand for Euro-dollar balances.

of *credit* on a day, a *flow* of funds per period. This supply of credit does not originate from those who have a demand for money balances, as analysts seem to assume. Some of the statistical investigations of the "Euro-dollar market" look into the "sources" of funds by classifying the holders of Euro-dollars deposit claims. To be sure, the fact that there are people willing to hold deposit claims makes it possible for banks to supply loans which they could not supply otherwise; however, holders of the deposits need not have been the suppliers of the funds that have been or are being offered to borrowers. If banks find that they are able to extend Euro-dollar loans and if the borrowers use the funds obtained for payments that initiate chains of transactions leading to an increased demand for working balances in Euro-dollars, the eventual holders of the enlarged balances are surely not those who have supplied credit. Their deposits should, therefore, not be regarded as the "sources of funds lent out" in the Euro-dollar credit market (5).

These propositions need not apply to Euro-dollar deposit claims by banks. Bank claims against other banks may well be the result of the depositor bank having transferred existing funds to the bank that has borrowed.

Redepositing

For years I have been puzzled by the assertion that "redepositing" was playing a great role in the increase of Euro-dollar deposits. Some writers used this term in connection with the catchword "pyramiding of deposits". Both these expressions call forth an association with the theory of multiple credit creation. This theory,

(5) The proposition that the holders of bank deposits need not have been the suppliers of funds offered to borrowers can be made plausible by a simple analogy. Assume that a gang of forgers of currency notes disposes of them by loans to all sorts of borrowers. The notes are spent by the borrowers and continue to circulate without anybody discovering the forgery. The notes will have become part of the cash balances held by individuals and corporations. These holders of the forged notes are surely not the same people as those who supplied initially the funds for the loans.

Sources-and-uses-of-funds analyses can be very enlightening for individual firms and individual banks, though even there the findings will differ according to the period chosen. For the economy as a whole or a large sector of it, over a period in which the money stock has increased, such analyses can be misleading if the words are given their literal meaning.

as the reader hardly needs to be reminded of, holds that drawings on check deposits will not reduce either the total of deposit liabilities of all banks taken together or the total of their reserves as long as the recipients of checks or cash currency *redeposit* with banks of the same group or system; as a result all banks in the system, moving approximately in step with one another, can extend additional loans without losing reserves. The "pyramid" was an analogy for the increasing extension of deposits "based" on a given foundation of reserves.

I have at last found out that this was not the notion of redepositing and pyramiding which the writers on Euro-dollars had in their minds. In what they meant to convey no pyramiding was involved at all, and the redepositing was neither by the depositors nor by their payees nor by any subsequent payees, but rather by the European banks which had received dollars and were placing them with other banks in other countries in Europe or Asia. To illustrate, let us assume that Mr. X of Kuwait has deposited U.S. dollars with a London bank, which has re-lent them to a bank in Milan, which in turn has re-lent them to a bank in Zurich, which in turn has lent them to a nonbank customer, Mr. Y, in Brazil, who has used them to buy Euro-bonds. The chain of relending will have left its trace in a statistics of dollar assets and liabilities: the London bank has a claim against the Italian bank and a deposit liability to the resident of the Middle East; the Italian bank has a claim against the Swiss bank and a deposit liability to the London bank; and the Swiss bank has a claim against its nonbank customer in Brazil and a deposit liability to the Italian bank. The three banks may be regarded as intermediaries between Messrs X and Y; the spread between the interest rate paid by Y and the rate received by X was divided among the three banks. From the point of view of economics the jump in Euro-dollar deposits as a result of the multiple intermediation is not a significant development; it is merely a matter of statistics, and of low relevance at that. Interbank deposits, even if the banks are in different countries, ought to be reported separately from deposit liabilities to nonbank customers.

The desirability of reporting Euro-dollar deposits net of interbank deposits was soon recognized. Interbank deposits were "netted out" not only within each country but, quite properly, also within the eight reporting European countries regarded as the "inside area"; but they are still counted in the statistics of the "Euro-

currency market" if the deposit liabilities are to, and the deposit claims held by, banks in the "outside area", that is, banks located in countries other than the eight reporting European countries (6).

Euro-Dollars and Federal Funds

One often hears that the Euro-dollar market is "like the Federal Funds market". There are, of course, similarities, but also essential differences; the analogy may mislead more than help those who try to understand the Euro-dollar system.

The major similarity is that a New York bank seeking in a hurry to increase its reserve with the Fed (Federal Reserve Bank) may borrow from another bank either in the United States or in Europe. In either case the borrowing bank acquires reserves which another American bank loses. In one case the lending bank gives up some of its reserves because it has more than it needs at the moment. In the other case the bank losing reserves does not give them up intentionally but rather because it is drawn upon by a European bank which has an account with it and has lent dollars to the borrowing bank or to a European branch of the borrowing bank.

Another similarity is that both the Federal Funds market and the Euro-dollar market are highly competitive. The banks that wish to borrow in these markets have to offer competitive rates. This does not mean that the rates will be the same. That Federal Funds and Euro-dollars are substitutes for some larger American banks in need of reserves means only that a rise in the interest rate for Federal Funds may induce some of these banks, especially those with European branches, to tap the Euro-dollar market.

The dissimilarities between the two markets are quite significant. The Federal Funds market is exclusively national in that lenders as well as borrowers are residents of the United States (though this includes New York agencies of foreign banks); the Euro-dollar market is essentially international, with the contracting parties more often than not residing in different countries. The Federal Funds

(6) These are United Kingdom, France, Italy, Switzerland, Belgium, Western Germany, Netherlands, and Sweden, listed in the order of their banks' short-term liabilities denominated in dollars in December 1969.

market consists chiefly of American banks, both as lenders and as borrowers, but also of dealers in government securities and some Federal agencies; the parties in the Euro-dollar market include virtually all types of people and institutions: individuals, small businesses, large corporations (nonfinancial as well as financial), commercial banks, investment bankers, central banks, government agencies, insurance companies, mutual funds, international corporations, international organizations.

The typical maturities of the loans in the two markets are very different. In the Federal Funds market the largest part of the lending is over night, with only smaller portions of day-to-day or demand obligations and loans with specified maturities of less than 15 days and some also a little longer (chiefly to dealers in government securities). In the Euro-dollar market as much as three-fourths of the loans are on terms between several days and six months. Even interbank loans — for example, the liabilities of American banks to their foreign branches — are for longer periods than those prevailing in the Federal Funds market.

The most significant differences, however, concern the effects of the operations in the two markets, especially the effects on total reserves of American banks with the Fed, on required reserves with the Fed, and on total deposit liabilities of the banks lending or borrowing.

The Federal Reserve Banks can control the total of their liabilities by controlling the total of their assets. The largest part of their liabilities are the reserves of American banks. No amount of interbank borrowing in the Federal Funds market can affect the size of these reserves; they merely change hands. This holds in principle with regard to the Euro-dollar market, as long as the lending and borrowing is limited to nonofficial parties and no foreign central bank gets into the action. Borrowing by American banks from European banks merely transfers to the borrowing banks some of the reserves of those other American banks with which the lending European banks hold their American dollar balances. However, some of the lending banks or their debtors in Europe may meet their payments by buying from a European central bank dollars which the central bank has held with the Federal Reserve Bank of New York rather than (as more usual) with a commercial bank in New York. In this case, foreign official liabilities of the Fed are transformed into liabilities to domestic banks, and

total bank reserves with the Fed are thus increased. It is well known that certain European central banks occasionally have placed in the Euro-dollar market substantial amounts out of their dollar holdings and have thereby financed some of the loans to American banks. Indeed, there have been times when central banks used the official swap arrangements — the "central-bank-swap network" — to borrow from the Federal Reserve the dollars with which they financed the outflow caused by the lending by European to American banks. In such instances, the American borrowing in the Euro-dollar market did, though indirectly, produce an increase of the banks' total reserves with the Fed.

The effects on required reserves may also be different. Lending and borrowing among American banks leave required reserves unchanged since any resulting interbank deposits are not subject to reserve requirements. When American banks, however, borrowed in the Euro-dollar market and the resulting debts took the form of nondeposit liabilities, especially to their own overseas branches, these liabilities were (before August 1969) not subject to reserve requirements; at the same time, the corresponding banks of the European lenders found their foreign deposit liabilities, and consequently their required reserves, reduced. The net effect was a reduction of total required reserves. The new reserve requirements, imposed in August 1969, on increases in liabilities to overseas branches changed this situation, which had prevailed throughout the period of rapid increase in American borrowing, 1966 to 1969.

The effects which the activities in the two markets have on total deposit liabilities are most unlike, unless considerations are confined to operations induced by American borrowing. The statements asserting that the Euro-dollar market is "like the Federal Funds market" were perhaps meant to refer only to loans taken by American banks. However, if they are understood to refer to the bulk of all operations, one must point out that the activities in the Euro-dollar market are likely to lead to large and lasting increases in total deposit liabilities of the banks involved, whereas activities in the Federal Funds market do not as a rule have this effect. The lending and borrowing of Euro-dollars has resulted in a growth of dollar deposit liabilities of European banks that has astounded most observers and alarmed many. No such growth of deposit liabilities of American banks can be attributed to the working

of the Federal Funds market (7). The difference is probably due to the fact that the Federal Funds market is a market, and only a market, whereas the Euro-dollar market is a part of a much more complex system. The lending and borrowing that has taken place in the Federal Funds market, say, in 1968 and 1969, has not resulted in any lasting increase in the stock of money or near-money held by anybody. The activities that have taken place in these years in the Euro-dollar market have had such results.

Euro-Dollars and Nonmember-Bank Deposits

Having found one proposed analogy rather unhelpful, I may propose an analogy that fits the Euro-dollar system much better, though by no means perfectly: The system of nonmember banks in the United States has certain rather important features in common with the Euro-dollar system.

One of the features they have in common is that the banks in both systems use deposit balances with member banks of the Federal Reserve System as primary reserves, without themselves being subject to control by the Fed. Both the Euro-dollar system and the American nonmember-bank system are, so to speak, additional layers in the "pyramid" of dollar deposits.

The "pyramid" metaphor has long been used in explaining the structure of the monetary system of the United States. Gold certificates and other obligations of the U.S. Government serve as reserves for the mutual settlements among the Federal Reserve Banks; deposit liabilities of the Federal Reserve Banks serve as reserves for the member banks; deposit liabilities of the member banks serve as primary cash reserves of nonmember banks; and deposit liabilities of nonmember banks are part of the money stock in circulation. (The simile of the inverted pyramid gives a poor description of this structure since its top floor is much narrower than the third floor). Now, like the American nonmember banks, the European banks that are active in the Euro-dollar business use deposit liabilities (and perhaps also nondeposit liabilities) of member

(7) A qualification is needed: as banks with relatively less opportunities to expand their loans lend some of their excess reserves to relatively more expansive banks, total creation of credit and deposit money is accelerated.

banks as primary reserves against their own dollar liabilities. (To continue using the metaphor, the Euro-banks share the fourth floor with the American nonmember banks).

Deposit balances with the Federal Reserve Banks are often regarded as high-powered money, because they function as "basis" for the low-powered money issued by the member banks. To the extent that the latter becomes again a "basis" for liquid bank liabilities, it assumes the character of another layer of high-powered money. That is to say, in the hands of nonbanks, deposit balances with member banks are low-powered money; however, as cash reserves for American nonmember banks and for European banks engaging in Euro-dollar deposit banking, the deposit balances with member banks are high-powered money giving rise to additional supplies of deposit liabilities by the nonmember and Euro-banks.

This similarity between American and European nonmember banks may help demonstrate the capacity of the Euro-dollar system to increase the stock of dollars. No one doubts that the nonmember banks create additional dollars in the United States. Any payment from a depositor of a member bank to a depositor of a nonmember bank transforms the cash balance of the payor into a reserve balance of the payee's nonmember bank, which may serve as the basis for loans by the latter as long as the stream of payments is not reversed. Likewise, any payment from a depositor of an American bank to a depositor of a Euro-bank transforms the cash balance of the payor into a reserve balance of the payee's European bank, which may serve as the basis for dollar loans by the latter as long as the stream of payments is not reversed (8).

The deposit liabilities of the commercial nonmember banks in the United States are part of the U.S. money stock. The dollar deposit liabilities of the European banks, on the other hand, are not included in any statistics of the money stock of any country. Yet, if they are regarded as money assets by their holders, they probably

(8) One of my critical readers has offered the following interesting comment: "The analogy between American and European nonmember banks could be carried further: they both have interest-bearing time deposits, and the stream of payments that allows credit creation to go on includes payments from money holders to the banks to acquire interest-bearing deposits. The analogy breaks down on the matter of what proportion of total deposits are interest-bearing time deposits".

Another of my critics has commented on differences in the ways in which checks of American and European nonmember banks are cleared. Such differences, I believe, would not destroy the heuristic value of the analogy.

should be included, though one would have to decide to which country's money stock they ought to be added: to that of the country in which the holder of the deposit claim resides, to that of the country in which the bank or bank branch is located, or to that of the country in whose currency the deposit balance is denominated. If dollar notes, issued by a Federal Reserve Bank, circulate abroad, they are still counted among the money stock of the United States. This is unavoidable because it is not known in what amounts and in which countries these bank notes are held. If dollar deposits are owed by foreign banks and owned by foreign residents, this is ascertainable and it seems obvious that they are not part of the money circulation of the United States. It would probably be most reasonable to count these balances among the money stock of the depositor's country. As it is, they are completely left out; as "stateless" money they escape national enumeration by the monetary census takers.

Primary and Derivative Deposits

The genesis of Euro-dollar deposits is as difficult to ascertain as that of deposits in commercial banks in general. For most of the 19th and the first third of the 20th century, bankers believed that deposits came into existence only by people depositing currency (bank notes and coins) and that the banks were able to make loans only thanks to the reserves received, which they had to pay out again to the borrowers or their payees. When an economist occasionally attempted to enlighten the bankers by pointing to the fact that the total of their deposit liabilities had grown to a multiple of currency in circulation, they replied that this had been due to a chain of acts of saving and depositing the currency by the people and of lending and paying it out again by the banks; they thought that all deposits had been "primary" and all lending had been possible only to the extent to which primary deposits had been received. I suspect that the stubborn rejection of the theory of money creation by commercial banks was overcome eventually thanks to the spread of university education. Those who learned the theory before they became practical bankers found it easier to grasp and accept. Today the power of the commercial banks as a group to create additional deposits by granting additional credit is no longer questioned.

That this power should extend to the creation of credit and deposits denominated in foreign currency is a novel thought, which is again resisted by most practitioners. Just as most bankers fifty years ago indignantly rejected the insinuation that they were fabricating domestic money, most bankers in the Euro-dollar system today cannot bear the thought that they are able to fabricate, and are in fact fabricating, foreign money. How could one believe that honest bankers in London, Zurich, Frankfurt, and Milan were busy creating U.S. dollars? A preposterous idea close to malicious libel — except for those who have thought it through in a class room, rather than in the board room of a bank.

A few monetary theorists have been impressed by the denial of dollar creation on the part of respected members of the Euro-banking community. For several years academic commentators on the Euro-dollar system have been engaged in a controversy about the causes of the growth of Euro-dollar deposits, some attributing all or most of it to credit creation, others denying that any credit creation has been involved, and a third group in the middle accepting the hypothesis in principle but arguing that only a very small part of the growth has been the Euro-banks' own creation.

The old distinction between primary and derivative deposits has disappeared from most textbooks in monetary theory, perhaps because the process of credit creation is now more generally understood without the help of these concepts. The distinction should perhaps be revived now that the process of Euro-dollar creation is being questioned. A primary deposit is one that increases at the same time the total deposit liabilities and the total cash reserves of the group of banks under consideration. A derivative deposit is one that owes its existence to a simultaneous or preceding extension of the loan-and-securities portfolio of any banks in the group (country, region, or system); it increases the total deposit liabilities but not the total cash reserves of the group.

If a holder of a demand or time deposit in New York transfers it to a dollar account with a bank in Europe, or makes a payment to a holder of a dollar account with a bank in Europe, both the dollar deposit liabilities and the dollar cash reserves of the European banks will be increased. The increase is therefore regarded as due to a primary deposit. If the Euro-bank with its newly acquired dollar cash reserve extends a dollar loan, it is possible that the borrower and those to whom he pays, and those to whom they

pay, keep some or all of their receipts on dollar accounts with some banks in Europe. In this case some or all of the dollar cash reserves of the European banks as a group remain in their possession, and the net increase of their total dollar liabilities will have to be attributed to the dollar loan extended. This second increase in dollar deposit liabilities of European banks will be regarded as derivative.

It is unquestioned that a European bank, paying high interest rates on its dollar deposit liabilities, will not keep unnecessarily large amounts of dollar cash reserves on hand; it will want to use them to acquire assets earning higher yields, preferably short-term dollar claims. As long as the dollar cash reserves stay within the system as the borrowers and their subsequent payees prefer to keep dollar balances with European banks, additional Euro-dollar loans will be extended by each of the banks receiving the deposits derived from the loans made by other banks within the system. The process of additional credit creation may continue for several intra-system transfers of the cash reserve, or it may end after one or two banks, or it may not even get started. If the very first loan, granted by the bank that received the primary deposit, goes to a borrower outside the system, say, an American bank, there will not even be a "second" deposit. However, if it goes to a corporation doing business in both Europe and overseas, the chances are high that a sequence of additional Euro-dollar loans will be engendered.

Thus, it is possible that there has been a substantial amount of dollar creation by banks in Europe; but it is also possible that Euro-dollar creation by Euro-banks has been responsible for only a *small* portion of the growth of Euro-dollar deposit liabilities. Available statistics, unfortunately, cannot decide this controversial question, for reasons which will be explained later. Inquiries of bankers are useless, because bankers cannot know whether deposits received derive from the lending activities of other banks; after all, their depositors do not know whether the dollar checks they deposit have been received from payors who had obtained dollar loans from Europeans banks. Practically all deposits look to the banker like primary deposits, even when they are indirectly offshoots of his own loans to other customers. This extreme case, however, of a borrower making payments to other customers of the same bank need never occur: each borrower may make payments to firms keeping their deposit balances with other banks, and all banks may

experience a growth in what they believe to be primary deposits but what in fact are deposits derived from loans by any of the banks in the group or system.

Statistical evidence could prove at best the complete negation of the hypothesis of dollar creation by European banks, namely, if all dollar assets held by these banks were in the form of perfectly liquid claims against New York banks and no dollar loans to European borrowers were outstanding, so that the dollar deposit liabilities of European banks would be covered 100 per cent by demand-deposit balances with New York. Since this is definitely not the case, a statistical disproof of the credit-creation hypothesis is excluded.

How large are in fact the dollar cash reserves which banks in Europe are keeping as a proportion of their dollar liabilities? We have been told of ratios as low as 3 per cent, but we do not know precisely what was compared with what. We know that the European branches of American banks hold what they consider "perfectly liquid" claims against their head offices in amounts between $12,000 million and $14,000 million; however, these are interest-bearing claims, largely in the nature of short-term or even call loans, not demand-deposit balances. Whether one may regard these dollar assets as cash reserves is not easy to decide.

No matter, however, whether the ratio of dollar cash reserves to dollar deposit liabilities of Euro-banks is high or low, the fact that the total of deposit liabilities is a multiple of the cash reserves is no positive proof of the hypothesis of credit creation. *Any* ratio may be consistent with the old cloak-room theory, according to which banks can never lend more than they have received as primary deposits. A statistical "reserve multiplier" is no evidence for a positive credit multiplier.

The Reserve Ratio as the Inverse of a Multiplier

The required or self-imposed reserve ratio of commercial banks — the ratio of cash reserves to deposit liabilities — determines the upper limit of bank-credit creation. With a reserve ratio of 20 per cent (or 1/5) of the banks' deposit liabilities, these liabilities can grow only to 5 times cash reserves; with a ratio of 3 per cent (or 1/33) of deposits, the growth limit is 33 times reserves. A naive

interpretation would suggest that the banks as a group can create additional deposits — additional to the primary ones — in amounts 4 times or 32 times, respectively, the deposits originally received, and that they have in fact done so when these reserve ratios actually obtain.

This potential creation of additional bank credit presupposes, however, that the banks as a group do not lose any of their combined cash reserves as a result of the extension of their loans. This would mean, in the Euro-dollar system, that all borrowers were using the borrowed funds for payments to persons who keep their accounts in dollars with banks of the same group and who in turn make payments to others who hold dollar deposit balances with the same group of banks. Any net payments to "outsiders" — to individuals or firms who hold their money balances in another form — encroach on the cash reserves of the group or system of Euro-banks. Yet, while such outflows will lower the growth limit of deposits created by loans, it need not reduce the statistical ratio of reserves to deposits. For it is an arithmetically trivial fact that the same ratio can be the outcome of an increase in deposits or of a decrease in reserves.

Assume that U.S. $100 million are received by banks in London (or any other European place) as primary deposits, perhaps from corporations that are transferring their own dollar balances from New York, or from some who have received dollars in payment for goods or securities sold in the United States, or from some who are converting other currencies into dollars. The banks obtaining these primary deposits will surely not keep a dollar cash reserve of 100 per cent against their dollar deposit liabilities and will, accordingly, proceed to make dollar loans. If the borrowers or their payees use the funds to make dollar payments to the United States or to convert the dollars into other currencies, the lending banks — not only individually but collectively as a group — will find their dollar cash reserves reduced by the amounts of these out-payments. Their loans, therefore, will not add to the dollar deposit liabilities of the Euro-dollar banking system but, instead, deplete their dollar cash balances with the New York banks. If the Euro-dollar loans are used entirely for out-payments of the sort mentioned, the dollar cash reserves may go down to $20, 10 or 3 million, depending on what fractional reserve is regarded as the minimum required. The eventually attained reserve ratio would be the inverse

of a statistical multiplier, but not of a multiplier indicating a process of credit creation.

If every dollar loan by European banks or branches during the past ten years had been at the expense of dollar cash reserves, it would be difficult to explain the rapid increase in Euro-dollar deposits, but it would not be impossible. With some strain of the imagination, it is conceivable that all or most Euro-dollar balances have been primary deposits, and none or only insignificant amounts have been derived from the Euro-dollar loans extended by European banks. The available statistical evidence does not rule out this interpretation, but to make it plausible one would need some positive evidence that the net transfers of balances from American to European banks and other dollars supplied to European banks from certain items of the payments deficit of the United States in any particular year came close in magnitude to that year's increase in Euro-dollar deposits.

There is a question whether conversions of nondollar reserves and nondollar deposit liabilities into dollar reserves and dollar liabilities, respectively, should be regarded as increases in primary dollar deposits. The answer is affirmative at best regarding *existing* nondollar deposit liabilities: if their owners convert them into dollars so that both nondollar deposits and nondollar reserves are transformed into dollars by purchases from central banks, one can say that no dollar credit creation has taken place. However, if the conversion is initiated by banks, swapping some of their reserves in domestic money against dollars offered by the central bank, this transformation of cash reserves does not by itself create dollar deposit liabilities. Any subsequent increase in such liabilities can only be the result of dollar loans made by the banks as they utilize their increased dollar-lending capacity.

To some extent, even the strict cloak-room theory of bank lending cannot deny that the world supply of loans and the total amount of deposit balances are increased by the Euro-banks loaning-out most of the dollars received through primary deposits. If $1,000 million are transferred by depositors from banks in New York to banks in Europe, the former as a group will not lose any reserves and will have no change in total liabilities. (Before August 1969 their lending capacity may even have increased as a result of the transfer, because some of it may have been from deposit liabilities subject to reserve requirements to liabilities to their own branches

abroad, which until that time were not subject to reserve requirements). The European banks, receiving new dollar cash reserves of $1,000 million against an equal amount of deposit liabilities find their lending capacity increased even if they count on losing a dollar of cash for each dollar lent. (Whether they will loan out the full $1,000 million or only less will depend on the dollar cash-reserve ratio which they want to maintain. The maturities of their loans will depend on whether the new liabilities are on demand or time deposit. But the fact that they will supply additional short loans approaching the $1,000 received can hardly be denied). And all this without any of the additional credit creation assumed by some theorists and denied by most practitioners.

The Growing Preference for Euro-Dollars

No matter whether the bulk of Euro-dollars has been the European banks' own creation or has come from other sources, there must have been reasons for their owners to hold increasing amounts of them, and reasons for banks and nonbanks to place and seek Euro-dollar loans in preference to available alternatives. Many of the reasons derive from institutional practices, regulations, and restrictions.

As far as the holders of Euro-dollar deposits are concerned, the increase in their preference over holding either dollar balances (or dollar securities) in the United States or balances in their own currencies with their domestic banks is explainable chiefly by a combination of higher interest rates, lower transactions costs, greater convenience, and lower risks (exchange risks or risks of inconvertibility). Not all of these variables may have been operative all the time, and some may at times have had the opposite sign, reducing rather than increasing the attractiveness of holding Euro-dollars. That interest rates on dollar deposits in European banks have in recent years been higher than on dollar deposits in the United States and higher also than on domestic currency deposits in European banks is largely the result of regulations imposed by the authorities and of conventions agreed among the banks under cartel arrangements in several countries. Transactions costs, likewise, may be lower partly because certain regulations and conventions applying to residents' accounts do not apply to transactions by

nonresidents and partly because conversion-and-reconversion costs between dollars and other currencies are kept high by official regulations and cartel arrangements among banks.

Among the reasons why some large American banks have preferred to accept funds through their European branches has long been the fact that their liabilities to their own foreign branches were free from the reserve requirements which they had to meet for deposit liabilities to individuals and corporations. (Reserve requirements work like a tax on deposit liabilities, since they imply holding a legal reserve that does not earn interest). An added reason for seeking loans through their European branches has been Regulation Q, which prevented American banks from paying competitive interest rates on time deposits (certificates of deposit) and thus caused them to lose large amounts of these deposits.

Among the reasons why some European banks prefer to seek funds denominated in dollars are their conventions and agreements with other banks in their countries designed to control and limit competition; the Euro-currency business is a clearly demarcated field in which competition can be allowed without leading to a breakdown of the cartel constraints on the rest of their banking business. Among the reasons why some European banks have preferred placing dollar loans have been, in several countries (especially Germany and Italy) attractive swap arrangements offered by their central banks which, by making dollars available in exchange for domestic bank reserves, reduced the banks' lending capacity in domestic money and increased their lending capacity in dollars. Limitations in some countries on interest rates charged on loans to residents have also increased the attractiveness of making loans in dollars or other foreign currencies.

It is probably an exaggeration to attribute the growing preference for dollar loans and dollar deposits in European banks *entirely* to interferences with free and unlimited competition and to the (sometimes very clumsy) attempts of monetary authorities to control the foreign-exchange and money markets. That the dollar has become the foremost international transactions currency, that the largest part of the rapidly expanding world trade is invoiced and paid for in dollars, that the capital and money markets of the United States are the largest in the world, and that the elasticities of supply and demand of dollars both in the exchange markets and in the money markets are much higher than those of any

other currency — these are facts that must weigh heavily in explanations of the growing use of the dollar in the banking business outside the United States.

It has been said that the dollar has become the most suitable currency for international transactions and thus the best money to hold by firms engaged in international transactions, and that the City of London has developed a system providing not only the lowest transactions cost but also payment of interest on all kinds of deposit balances. Thus, dollar transactions in London seem to be the ideal combination of currency and location — which may go a long way toward explaining why London banks, including the London branches of American banks, are the largest Euro-dollar depositories. These advantages may explain a more or less steady growth of Euro-dollar deposits along with the growth of world trade and international capital movements. However, they can hardly explain the explosive increase of Euro-dollar deposits at certain times, especially in the first half of 1969. The causes for an upsurge of this sort can probably be found in the artificial conditions which were produced by the control devices of the authorities and the conventions among the banks and became "acute" in particular situations.

A certain part of the 1969 explosion of Euro-dollar lending and borrowing — though it was not a large part — was the combined result of the low ceiling rate which American banks under Regulation Q could pay on time certificates of deposit (C/D's) and the high interest rates produced by the restrictive monetary policy of the Federal Reserve. When market rates of interest rose above the maximum 6-1/4 per cent which banks were allowed to pay on time deposits, some holders of C/D's let them run off and transferred their dollars to European banks (and indirectly to European branches of American banks), which were paying much higher rates, at times as much as twice the C/D rate in the United States. These transfers of dollar deposits gave the European banks demand deposits with New York banks, which they promptly "lent" to those of the American banks that were borrowing in the Euro-dollar market. The Euro-banks were paying competitive interest rates to their dollar depositors and charging competitive interest rates on their loans to American banks. The change in the position of the American banks was concentrated on the liability side of their balance sheets: a switch from deposit liabilities owed

to nonbanks at low interest rates to liabilities owed to banks in Europe at high interest rates.

This call for a "change of partners" in a silly square dance was almost entirely a matter of regulation by the authorities. It involved decisions and actions by many thousands of people; it helped some of the largest cash holders to avoid losing the high yields earned on liquid funds; it deprived smaller cash holders of the chance of earning competitive rates on their holdings, since they could not avail themselves of the roundabout way of avoiding the effects of the regulation. Unnecessary transactions cost, unproductive uses of resources, and discrimination against owners of small bank deposits are among the consequences of the regulation of interest rates on bank deposits.

The Change of Partners

The case of "change of partners" is interesting because it illustrates several cause-and-effect relationships in what I have called a "square dance" and others have called a "merry-go-round" or "dollar round trip". In actual fact the case was not very important quantitatively: according to the reported statistics, the withdrawals of time deposits from American banks and placements of these dollars with European banks was, in 1969, not much more than one-fourth of the dollars which American banks borrowed from European banks, chiefly from their own branches.

Moreover, instead of saying that the American banks borrowed dollars in Europe because they were losing dollars to depositors withdrawing their time deposits, one may with equal justification say that the American banks' borrowing in Europe were bidding up interest rates for Euro-dollars so much that owners of time deposits with American banks found the temptation of the higher earnings irresistable and tansferred their dollars to Europe. In other words, the round-trip did not always start with the eastbound voyage, but often with the westbound one.

Finally, most of these voyages are made by telecommunication rather than air transportation, so that the return trip may be simultaneous with the outward journey. The trouble with observation of rapid movements is that the observer gets a blurred picture. Only a slow-motion sketch can help him to see and analyse the

process — and many of those who have watched the "real" show will protest that the slow sequence with intervals between single steps is unrealistic. Just as a slow-motion film can show a hurdler stop motionless in mid-air, a slow-motion sequence will make a banker hold a non-earning demand deposit much longer than any real banker ever would.

Let us then trace, in slow-motion technique and in bookkeeper's language, the steps in an eastbound transfer of dollars hitherto kept on time deposit with banks in New York, and then the steps in a westbound transfer of Euro-dollar lent to banks in New York; whereby we make the stipulation that neither the Federal Reserve Banks nor any central banks in Europe get into the act. (We shall later make different stipulations in order to see different effects).

Holders (residents or nonresidents) of time deposits in New York, letting their certificates of deposit run off, deposit the proceeds with banks in Europe. The latter will now have demand-deposit balances in New York. An imaginary consolidated balance sheet of the American banks will show a reduction of their time-deposit liabilities to private nonbank residents and nonresidents and an increase of demand-deposit liabilities to foreign banks; hence, no change in assets and only a change in the composition of liabilities. An imaginary consolidated balance sheet of the European banks will show an increase in dollar demand-deposit claims against New York banks and an equal increase in dollar time-deposit liabilities to nonbank nonresidents.

The European banks with their increased dollar cash reserves on deposit with their correspondent banks in New York will be eager to place them in the loans market. Some American banks will have lost reserve balances with the Fed to those other American banks which have the accounts of the European banks. The reserve losers could, in the Federal Funds market, borrow directly from the reserve gainers; or they could obtain the needed reserve balances by selling securities; or they could take the Euro-dollar loans offered by the European banks and thus, indirectly, get back the reserve balances which the New York correspondents of the European banks have gained from them. If this last alternative is chosen, the situation will look as follows: The American banks will have no change whatsoever in their assets and only a change in the composition of their liabilities, in that what originally were time-deposit liabilities to nonbank residents and nonresidents (and then,

for a moment, were demand-deposit liabilities to foreign banks) are now nondeposit liabilities to foreign banks, including their own branches. The foreign banks will have maintained the increased amount of their dollar time-deposit liabilities to nonbank non-residents but will have transformed their momentary holdings of demand-deposit claims into short-term nondeposit claims against American banks. (The consolidated balance sheets have, of course, netted-out all interbank deposits).

The end-results of the complete round trip are, for the American banks, only the change of partners together with a change in the maturities of obligations; for the European banks, an increase in dollar assets — their loans to American banks — and an increase in dollar liabilities. Noteworthy, however, is that this increase is the result of the capital movement from the United States to Europe, and *not* of the return trip of the dollars, *not* of the Euro-dollar borrowing by American banks.

And what are the effects upon the balance of payments of the United States? The outflow of private capital of resident owners of deposits from the United States is a deficit item on capital account, financed by an increase in liquid liabilities to foreign banks; hence, a deficit on "liquidity basis". This deficit is neither increased nor reduced by the American borrowing in the Euro-dollar market. To the extent that nonresidents withdrew time-deposit balances from American banks, the transactions were entered "below the line" as reductions in liquid liabilities to nonofficial foreigners, just like the offsetting increases in liquid liabilities to the foreign banks which received their deposits; hence, neither the withdrawal by nonresident depositors nor the subsequent borrowing by American from European banks affected the balance of payments of the United States.

Central Banks Joining the Act

The stipulation in the foregoing sketch was that no central bank gets into the act. This was not a severe restriction on the generality of the results, because under the circumstances assumed there was no reason for any intervention by any central bank. The Federal Reserve evidently did not want to increase the reserve balances of the member banks; and the European central banks were not faced

with either an excess supply of dollars or an excess demand in the foreign-exchange market. However, we now want to see the effects of central-bank intervention. In order to make it sensible, we assume that American banks, with domestic lending opportunities exceeding their lending capacity, want to borrow from European banks, including their own branches, more dollars than are being withdrawn from their time-deposit liabilities to nonbank residents and nonresidents. In other words, the westbound traffic is much heavier than it would be if only dollars with return tickets were going home.

European central banks may have various reasons for supplying dollars out of their reserves to the Euro-dollar market. For example, they may not like the interest rate for Euro-dollars to rise too high under the impact of the American demand for loans; they may not want to see the exchange rate of the dollar rise, as it might if banks or private owners of domestic currencies were seeking dollars to take advantage of the higher interest rates; they may have accumulated large amounts of dollars which they would be glad to dispose of, to place with more attractive yields, or perhaps to "hide" by swapping them out of their portfolio into the portfolios of commercial banks; or they may want to mop up some excessive domestic liquidity, which their previous purchases of dollars may have created. Any one of the reasons may induce them to sell dollars outright or temporarily through swaps with commercial banks (sales with repurchase agreements).

The immediate effects on the balance sheets of the European banks are reductions of cash reserves in domestic currency and increases in demand-deposit claims against American banks. The effects on the balance sheets of the American banks depend on the form in which the central banks have been holding the dollars. If the dollars have been deposit claims against commercial banks in the United States, we see a simple switch from American deposit liabilities to official foreign holders to deposit liabilities to foreign banks. If the dollars in the reserves of the central banks have been claims against the Federal Reserve Bank of New York, the American banks will now be the holders of these claims, that is, they will have obtained increased reserve balances with the Fed (not, however, through their borrowing in Europe but as a result of the sales by central banks to commercial banks in Europe). If the dollars held by the central banks have been U.S. Treasury notes or bills which they liquidate when they intervene in the market, we must ask who

has bought the Treasury securities; if the Fed bought them, the member banks obtained additional reserve balances as in the case just mentioned; if American nonbank residents bought them, the member banks' deposit liabilities to residents are reduced by the same amount by which their deposit liabilities to foreign banks are increased. (We need not consider the case of the member banks buying the Treasury securities, because we have assumed that the banks were seeking additional liquidity and thus not prepared to buy securities).

In our slow-motion sketch of the process we have stopped the sequence with the sale of dollars by central banks to commercial banks in Europe, and have not yet come to the Euro-dollar lending to American banks. We may hold this position a little longer to consider the effects these dollar sales have on the balance of payments of the United States. In all four cases, liquid liabilities (assuming that the Treasury securities had maturities of one year or less) to official foreign holders were transformed into liquid liabilities to foreign banks. Hence, the liquidity balance of payments was unchanged, and the official-settlements balance was improved as a result of the sale of dollars out of official reserves to commercial banks (including branches of American banks) in Europe.

Now at last we allow the sketch to proceed to the next step: European banks lend to American banks the dollars they have acquired from their central banks. This merely transforms dollar demand-deposit claims of European banks into nondeposit claims against American banks; or, from the American point of view, demand-deposit liabilities into nondeposit liabilities to European banks. Thus, the actual borrowing by the American banks in Europe causes no change in their reserve balances or any other assets, and only a change in the composition and maturity of their liabilities; furthermore, it causes no further change in the balance of payments of the United States, either on liquidity basis or on official-settlements basis; and finally, it causes no increase and no decrease in Euro-dollar deposits in European banks (including the branches of American banks) provided interbank deposits are netted out and only balances owed to nonbank holders are counted.

The results of this analysis are different from those reported by the most experienced Dollar-Eurologists in the profession. If I may assume that my analysis is correct, what can have caused the

differences in our findings? I submit that most analysts have looked at too many things at the same time instead of isolating each process from all the other processes going on simultaneously. They have wanted to see everything at once and have thereby failed to sort things out neatly in clean and sterilized mental operations.

Cash Assets and Loans: An Information Gap

One of the most troublesome questions in Euro-dollar lending to American banks concerns the liquidity of these loans. The compilers of Euro-dollar statistics have provided no judgments regarding the liquidity of the dollar assets which banks and bank branches hold in the form of claims against American banks; the data do not separate demand-deposit claims, time-deposit claims, and non-deposit claims. Moreover, it ought to be made clear to what extent the transformation of dollar demand-deposit claims into dollar loans to large American banks involves a reduction in the liquidity position of the lending banks. When a bank in Europe makes a seven-day loan to the Chase or the First National City Bank, does it feel less liquid than if it had kept all its funds on demand deposit with its permanent correspondent bank in New York? When a large American bank takes a call loan from one of its European branches, will the latter treat this as a perfectly liquid claim, perhaps even a part of its cash reserve? This blurring of the borderline between cash assets and loans clouds both the statistical and the theoretical picture.

The application of monetary theory in statistical analysis of developments in banking in the United States is greatly helped by the availability of operational definitions of "legal" reserves of commercial banks. Years ago these reserves consisted only of deposit balances with the Federal Reserve; now U.S. currency is also included. Nothing else, not even demand-deposit balances with other American banks, can be counted as legal reserve. While a bank in a smaller city will perhaps treat its current-account balance with its correspondent banks in New York and Chicago as cash, and while any bank that has lent out some of its excess reserve over night in the Federal Funds market will for internal deliberations include this claim in its cash position, monetary analysts take their statistical data from the reports of the Federal Reserve Board, and

these data are not affected by what any banks may regard as cash. The legal reserves, as reported in the official statistics on member banks of the Federal Reserve System, contain no deposit claims other than those against the Federal Reserve Banks and no loans whatsoever, however liquid.

The statistical data about the dollar assets of banks in Europe are not that pure. In some countries even the central bank lacks the information that would be needed for a clear analysis of the cash position of the commercial banks in the country. (I was told that the Swiss National Bank does not get all the data required for such an analysis — and Switzerland has been the largest net lender of dollars on short term among the eight countries in the Euro-currency system). For most countries we know at best total dollar assets, or short-term dollar assets, unclassified with respect to liquidity or maturity (9). If demand-deposit claims of Swiss banks against New York banks, call loans to banks in London, seven-day loans to banks in Milan, and 90-day loans to large corporations in Belgium are lumped together as short-term dollar claims against nonresidents, it becomes impossible to separate cash reserves and loans. The data compiled by the United States for its balance of payments allow statisticians to make somewhat finer distinctions than would be possible from the reports of the European banks, but a clear separation of the European banks' holdings of New York balances payable on demand from those other dollar claims into which these cash balances are transformed through the banks' loans and investments seems difficult, if not impossible, on the basis of available information (10).

What would be needed for a clean analysis are detailed reports classifying the dollar assets of European banks by country, and for each country by category of debtor (central government, provincial governments, central bank, commercial banks, other banks, other financial institutions, nonbank corporations, etc.) as well as by maturity (demand, over-night, weekend, seven days, and so forth).

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(9) The *Bank of England Quarterly Bulletin*, Vol. 10 (No. 1, March 1970), pp. 31-49, contains a detailed breakdown of liabilities and claims in nonsterling currencies of banks in the United Kingdom, with the classifications asked for in the text.

(10) One authority on the subject wrote to me that the dollar assets reported by European banks included at best 1 per cent in the form of demand deposits with American banks; another, however, was willing to confer upon the claims of American bank branches in Europe against their head offices the designation of perfectly liquid dollar assets.

Similar classifications would be needed for dollar liabilities: by country, by category of creditor, and by maturity. Yet, even the most detailed breakdown by objective criteria would be insufficient for a full interpretation of the "moneyness" of the banks' liabilities in the eyes of their holders. This deficiency has long been known from American experience with gradual, but sometimes rapid, switches between time and demand deposits. Some theorists have long held out against the inclusion of certain more liquid types of time-deposit balances in the stock of money or near-money. The same resistance exists now with respect to the moneyness of Euro-dollar time deposits. Perhaps the resistance to their inclusion in the money supply is justified, but this is difficult to know. In order to find out, one would have to learn the motivations and expectations of the holders of these balances. Survey research could possibly provide answers, though any answer would be good only for the time of the inquiry and might be inapplicable a few months later.

In addition or in lieu of survey research of samples of depositors, we should have sample studies of dollar accounts held with several large banks in London and other European centers. We could find out what share of total dollar balances is on current account of more or less permanent customers showing considerable turnover and relatively stable or increasing maximum, minimum, and average balances; what share is in the nature of time deposits of stable groups of customers showing little turnover; and what share is on merely temporary deposits of transient customers. Other categories of deposit balances may also prove significant.

These types of information would be needed also for an educated estimate regarding the extent to which the Euro-dollar deposits now in existence may have been derived from credits extended by European banks. Only if there is a demand for Euro-dollar deposits to hold as money or near-money — for transactions, precautionary, or speculative purposes — can it be expected that Euro-dollars received in payment or obtained through loans or through conversion of other currencies will continue to be held as liquid balances. For only in this case can European banks create additional dollars through their own lending operations.

Theoretical Propositions

No amount of data, however, can provide a conclusive answer to the question of the genesis of the growing amounts of Euro-dollar deposits unless we get a better theoretical understanding regarding the effects of various kinds of actions and transactions. Those who deny that there has been a good deal of multiple credit creation through the lending activities of the European banks must offer plausible alternative hypotheses and hints pointing to the sources of all those primary deposits that could have added up to the recorded total volume of existing Euro-dollar deposits. This presupposes that we are agreed on which kinds of transaction can and which cannot produce dollar deposit balances with European banks. Some analysts, however, who deny that bank credit creation has contributed much to the growth of Euro-dollar deposits deny also the quantitative importance of the very transactions that could have produced primary dollar deposits with European banks; and the transactions to which they attach great importance could not, as I see the working of the system, have produced any primary dollar deposits.

Several of the types of transactions in question are closely associated with effects on the reserve balances of American banks and on the balance of payments of the United States. I therefore propose to formulate a few propositions about the effects which various types of transactions have on all these scores. Some of my statements contradict the views of several of my fellow analysts. These statements should provide clear targets for their criticism, so that we may soon be able to straighten things out and disentangle some of the nests of confusion, theirs, mine, or ours. The propositions will refer to entire banking systems, not to individual banks; thus, when I say "European banks", I mean all of them taken as a group, and when I say "American banks" I likewise mean all of them combined in a consolidated balance sheet.

Proposition 1: Dollar deposit liabilities of European banks to nonbank depositors increase when the latter are credited on their dollar accounts for U.S. dollars deposited, which they may have (a) received in payment for exports of goods and services sold to residents of the United States, (b) received in payment for securities

sold to residents of the United States, or (c) withdrawn from their deposit balances with American banks. In all these cases the European banks receive dollar cash reserves, which they will try to use for acquiring earning assets (loans or securities) but which they must hold at least momentarily. Again in all three cases — except if the depositors are nonresidents of the United States who have withdrawn from American banks time deposits payable in less than one year — the increase in American liquid liabilities to nonofficial foreigners is financing deficit items on (a) current account, (b) long-term capital account, and (c) short-term capital account in the balance of payments of the United States. The American banks will have no reduction in their total reserve balances but only a redistribution of balances among individual banks, and no change in their total deposit liabilities but only changes in their composition (as foreign banks have taken the place of domestic or foreign individuals and corporations).

Proposition 2: Dollar deposit liabilities of European banks to nonbank depositors may or may not increase beyond the level reached as a result of the transactions described in Proposition 1. They will *not* increase further if American banks borrow from the European banks just the amounts of dollar cash reserves which the latter had obtained from the described transactions. These loans transform the dollar cash reserves of the European banks into interest-earning short-term nondeposit claims against American banks. They do *not* change total reserve balances of American banks, though they redistribute them again; they do *not* change the balance of payments of the United States either on liquidity basis or on official-settlements basis; and they do *not* change the total of Euro-dollar deposits of nonbank holders, though there may be much interbank lending with consequent increases in interbank deposits.

Proposition 3: Euro-dollar deposits of nonbank holders will be further increased, without any associated increase or reduction in total dollar cash reserves of Euro-banks, if these banks make dollar loans to nonbank residents of countries other than the United States who use them for payments to firms or persons keeping dollar deposits with banks or branches of banks within the eight European countries. As long as no payments are made to residents of countries

other than this inside area, and the dollar balances are not converted into other currencies, and no loans are made to American banks, the dollar cash reserves continue to be held by a succession of different European banks (11).

Proposition 4: Dollar deposit liabilities of European banks to nonbank depositors will also increase when holders of nondollar balances convert them into dollars. The banks may execute such conversion by purchasing dollars from central banks, especially if they find lending dollars more attractive than loans in domestic currency. The switch of dollars from official to nonofficial holders leaves the balance of payments of the United States unchanged on liquidity basis but improves it on official-settlements basis. However, the conversion of nondollars into dollar balances on deposit with European banks need not be associated with purchases of dollars from central banks. In order to remove the short position in dollars created by the conversion of liabilities, the banks may gradually, in the process of renegotiations and renewals of loans, change their denomination from European currencies to dollars. Thus, it is possible that assets as well as liabilities are converted into dollars without anything changing in the positions of either European or American banks or in the balances of payments of any of the countries concerned.

Proposition 5: Most residents of the eight European countries receiving U.S. dollars in payment for (a) exports of goods and services to residents of the United States, (b) sales of securities to residents of the United States, and perhaps also (c) withdrawals from deposits held with American banks, sell their dollar proceeds for domestic currency. Some of the banks purchasing these dollars may find that they have better uses for dollars than for domestic reserve balances. If so, they will not resell the surplus of dollars acquired over dollars sold, as they normally would, to the central bank. The effects upon the balance of payments of the United States are exactly the same as stated in Proposition 1. Although the European banks are now ready to offer dollar loans, there is

(11) To illustrate: Euro-dollar loans may be made to purchasers of Euro-dollar bonds issued by large corporations which keep the proceeds from the bonds on interest-paying dollar accounts with European banks until they use them for payments for direct investments to payees who again hold dollar balances with European banks.

as yet no increase in Euro-dollar deposit liabilities to nonbank holders. Such an increase will not come about if all the dollar loans are made to American banks; it will come about if dollar loans are made to nonbank residents of the Euro-dollar countries, as described in Proposition 3.

Proposition 6: Euro-dollar deposits may also increase, together with dollar cash reserves of European banks, as a result of payments or of loans received from residents of countries other than the United States and the eight European countries. The payments may be for goods and services or for securities bought from residents of the Euro-banking area; alternatively, they may be liquid funds from residents in the outside area placed with the Euro-banks. These funds may come in various currencies to be converted into dollars in the foreign-exchange market of the inside area or they may arrive already as U.S. dollars. In the latter case the European banks merely take the place of residents of the outside area in holding dollar claims against Americans; if these residents of the outside area have been holders of less than perfectly liquid assets in U.S. dollars, their act of liquidating and depositing them with European banks constitutes an outflow of private short-term capital from the United States which is financed by an increase in liquid liabilities to nonofficial foreigners and is, therefore, a deficit item in the balance of payments on liquidity basis, but not on official-settlements basis. If the residents of the outside area have been holding dollars through banks located in their area, the liquid liabilities of the United States are merely moved into another geographic category and the balance of payments on any definition is not affected. If, however, the depositors from the outside area convert other currencies into dollars, it makes a difference whether the dollars are acquired from a central bank — which evidently acquired them in the process of financing a payments deficit of the United States some time in the *past* — or from private suppliers in the foreign-exchange market disposing of dollars received as part of the *current* payments deficit. In the first case the records will show no change on liquidity basis but an improvement on official-settlements basis; in the second case the depositing of the dollars with European banks, leading to an increase in liquid liabilities to nonofficial foreigners, will be the first record of the financing of the present payments deficit of the United States. One may say, however, that the purchase

of these dollars for deposit with Euro-banks makes it unnecessary for the central bank to purchase them, and, hence, that it prevents the deterioration of the official settlements balance that would otherwise occur.

Creation of Euro-Dollars

Some of the propositions, which I offered for criticism and amendment by analysts with more insight, may be found to be false and others perhaps irrelevant. Assuming, however, that they are relevant and correct, we may ask whether they can help us to obtain an impression about the extent to which the growth of Euro-dollar deposits has been a result of multiple credit creation.

Propositions 1, 4, and 6 describe transactions resulting in an increase of Euro-dollar deposits that cannot be attributed to the dollar-lending activities of European banks and bank branches. This is perhaps a good way of distinguishing (in pure theorizing, not in statistical operations) between primary and derivative bank deposits: primary deposits would have come about also if no bank had been making any loans or investments. All other deposit balances are derivative, the result of the banks' "autonomous" decisions to acquire earning assets. The first task in estimating the magnitude of the Euro-dollar growth that has been due to bank credit creation would therefore be to obtain estimates of the primary deposits. Of course, our enumeration of transactions resulting in primary deposits may have been incomplete. Any empirical analysis would first have to make sure that *all* the sources of primary Euro-dollar deposits have been "covered".

It may be instructive to look for a moment at the increase of dollar deposits with commercial banks within the United States and to ask how that increase is explained by monetary analysts. From the end of 1966 to the end of 1969, demand deposits (exclusive of interbank deposits) increased by $40,000 million, time deposits by $33,900 million, and nondeposit borrowings by $12,900 million, together $86,800 million. Adding the increase in interbank deposits and in the capital accounts of the banks, we find that the total liabilities and capital accounts of commercial banks in the United States increased over the three years by about $100,000 million. In the same period total loans outstanding of these banks increased

by $75,900 million, securities holdings by $20,300 million, and Federal Reserve balances by $3,500 million, which also adds up to about $100,000 million. An accountant or statistician might conclude that the various depositors and lenders (plus, to some small extent, the owners of the banks' equity) had supplied the funds which the commercial banks used to make all these loans, to purchase the securities, and to increase their balances with the Fed. Now, I ask, would any economic analyst make such a statement?

I doubt that we can find many naive souls who would take the accounting figures of the American bank statements as information about the "suppliers" of the funds "lent" to the banks and "used" by them to make all these loans and investments. The official analysts in the Federal Reserve Banks and of the Board of Governors would certainly not try to explain the growth of bank deposits in this fashion. In their reports they leave no doubt that the increase in the reserve balances was *not* due to the commercial banks' decisions to "use" funds "received from their depositors" for "making deposits" with Federal Reserve Banks but, on the contrary, that the increase was due to actions of the Federal Reserve Banks creating claims against themselves chiefly by purchasing securities in the open market. They do not question, furthermore, that the commercial banks by making loans and purchasing securities created claims against themselves, claims which individuals and corporations now hold in the form of demand and time deposits.

This explanation does not rule out the possibility that now and then a few primary deposits of treasury currency have contributed for a few weeks to the growth of total deposits. In the longer run, however, the amounts deposited were smaller than the amounts of currency which depositors drew from the banks, lowering thereby their deposit claims. It is, for the American banking system, more plausible to state that *virtually all* deposits in the commercial banks (taken as a group) have been created by the activities of the banks and not by any spontaneous actions of depositors.

To what extent does this explanation of the growth of deposit liabilities of commercial banks apply to the European banking system and, in particular, to the growth of its dollar liabilities? If we were to take all commercial banks of the financially developed world together — America, Europe, and the "outside area" — and all their business in any currency — U.S. dollars, Euro-dollars, and any other currencies — it would be sensible to regard their aggregate

deposit liabilities to nonbank holders as the result of their own credit-creating activities. However, if we cut up the world into various segments and look separately at the commercial banks in selected countries of Europe and at their deposit liabilities denominated in U.S. dollars, "inflows" from the other segments must be given a special place in the explanation of the observed growth. But to explain the entire growth by inflows from other segments would be just as wrong as to explain it entirely as the result of the Euro-dollar lending by the Euro-banks.

The differences between complete aggregation, partial aggregation, and complete disaggregation can be made quite clear to students of the American banking system if one reminds them of the difference between the individual bank and the system as a whole. What the individual bank sees as balances received from its depositors, the analyst of the system as a whole sees as balances created by the Federal Reserve Banks and the commercial banks themselves. If we invite the analyst to look at only one district, rather than at the whole country, he will have to accept an intermediate position: he will have to explain the growth of the deposit liabilities of the banks of that particular district as the combined result of inflows from the outside and creation by the banks inside. Of course, "inflows" will at times be negative, that is, there will be net outflows to other districts. This fact constitutes perhaps a significant difference between the banks in a district in the United States and the Euro-dollar business of the Euro-banks. For it seems that during the last ten years there have been no net outflows and only net inflows of funds into the Euro-dollar system; at least this is the impression one receives from reading the reports of the organizations that have kept track of what they call the Euro-currency "market".

The impression may be a wrong one, largely because the reports are couched entirely in terms of inflows of funds, without any mention being made of the possibility of endogenous creation of Euro-dollar credit, let alone, any attempt to measure the relative magnitudes of such creation. Since it is highly probable that inflows vary considerably over time, and by no means improbable that at times they are negative, the view that endogenous creation must have been very significant at least during certain periods has strong support from general monetary theory.

Other Euro-Currencies

The exposition in this article has been in terms of Euro-dollars rather than Euro-currencies. This narrowness of scope will, I hope, be forgiven, especially in view of the fact that the magnitudes of deposit liabilities denominated in other Euro-currencies are so much smaller. We have statistics of six Euro-currencies besides the Euro-dollar: the German mark, the Swiss franc, the pound sterling, the Dutch guilder, the French franc, and the Italian lira. That is to say, banks in European countries other than the homes of these currencies have deposit liabilities denominated in these currencies. But in the six currencies together the deposit liabilities were, in December 1969, only 18 per cent of total Euro-currency deposits; the largest of the six was the German mark, with Euro-mark deposits amounting to 8.3 per cent of the total, and Euro-sterling, Euro-guilders, Euro-French francs, and Euro-lire together amounting to 2.6 per cent of the total. In view of the relative size and in view of the associated problems of American borrowing and the payments deficit of the United States, the restriction of the discussion to the Euro-dollar system will, I trust, be understood.

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