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The extremely rapid growth of the Euro-dollar market and its increasing impact on the effectiveness of national economic policies have greatly heightened interest in this new branch of international finance. Yet, despite ample literature on the subject, it is a phenomenon that is still surrounded by much doubt and disagreement.

Although part of the difficulty in understanding the market may lie in its intrinsic abstractness, there also seems to have been excessive preoccupation in the past with the currency denomination of transactions and with institutional features. This has tended to divert attention away from some basic principles which would be typical of any international money or credit market and which have to be borne in mind if the general economic implications of the Euro-dollar market are to be properly appreciated. It may be useful, therefore, to set out at the start some of these principles.

In the first place, any flow of Euro-dollar credit, provided it does not take place between residents of one and the same country, represents an international capital movement. And the size of the Euro-dollar market tends to be governed by pretty much the same set of forces as governs the scale of international short-term capital movements in general, that is to say by differences in interest rates between different countries and exchange speculation.

Secondly, as far as the effects on official reserves, bank liquidity, the supply of credit, and aggregate demand are concerned, it is immaterial whether a given international capital flow is denominated in dollars or in any other currency.

Thirdly, some of the liquidity-creating or liquidity-destroying effects of the Euro-dollar market (which are quite often regarded as peculiar to this market) are simply a result of the role of the dollar as a reserve currency; such effects may arise whenever there is a flow of payments between the United States and the rest of the world, irrespective of whether the flow is on current or capital account or whether it is in dollars or some other currency.

Fourthly, from a balance-of-payments point of view the Euro-dollar market cannot be considered as a self-contained entity but always re-

mains part of the national markets. Thus, apart from official participation in this market (pages 12-13), a Euro-dollar flow cannot lead to an improvement (or deterioration) in one country's payments balance on an official-settlements basis without entailing a corresponding deterioration (or improvement) in another country's balance.

Disregard of these considerations would seem to lie at the root of much of the confusion which still surrounds the Euro-dollar market. Though they will not be explicitly spelt out again, they underlie much of the following analysis. The reader should perhaps be warned that this paper does not attempt to give a systematic account of the institutional features, logic, operation, or all the possible economic implications of the Euro-dollar market. It confines itself to some of the main questions that have been at the center of recent discussion. Some familiarity with the techniques and institutional setup of the market is assumed.

I. THE GROWTH OF THE EURO-DOLLAR MARKET AND THE SIZE OF THE EXTERNAL PAYMENTS DEFICIT OF THE UNITED STATES

One of the most interesting features of the growth of the Euro-dollar market in 1968 was that it occurred in a period when the balance of payments of the United States was statistically in surplus. To be sure, the surplus on an official-settlements basis was partly the result of the large pull-in of funds through the Euro-dollar market itself and the modest surplus on a liquidity basis owed much to special official financing operations; at the least, however, it can be said that the growth of the market accelerated sharply at a time when the balance-of-payments deficit of the United States was greatly reduced.

This is not to deny that certain links between the size of the American payments deficit and the growth of the Euro-dollar market do exist. Some central banks have found it convenient to place part of their reserve accruals in the Euro-dollar market, either in the shape of outright deposits or by using special swap arrangements. Furthermore, in historical perspective, it is probably true that, but for the reserve build-up made possible by the payments deficit of the United States, European countries would not have seen their way clear to go ahead in 1958 with the dismantling of exchange restrictions that has been an important condition for the development of the market. However, such controls would very likely also have been removed if the recovery of European official reserves had been based not on a payments deficit of the United States but on larger supplies of new gold or on other forms of reserve creation. It is quite conceivable, in fact, that in that case the stronger confidence in the dollar would have led countries to take a

larger part of their reserve accruals in the form of dollars. (This implies that the United States would have behaved as a reserve-currency country and would have been willing to accumulate gold or reserves beyond its own payments surplus.) Official placements in the Euro-dollar market would also, in this case, consequently have been greater. The essential thing was a sufficiently high degree of international liquidity, and in the event this happened to be provided mainly by the payments deficit of the United States.

Although official funds have played an important part, the bulk of the growth of the Euro-dollar market in recent years has resulted from the supply of private funds for deposit in the market. These can derive from only three sources: (1) placement on the Euro-dollar market of dollar balances otherwise held in the United States; (2) a worldwide increase in the proportion of liquidity or wealth held in the form of dollars; (3) a general increase, both inside and outside the United States, in this liquidity or wealth itself. Part of this latter increase may of course itself be due to the expansionary impact, if any, of the Euro-dollar market on the overall supply of credit, although the extent to which the market can pull itself up by its own bootstraps in this way seems quite often to have been exaggerated in the literature. (See Section II.)

The interrelationship between the growth of the Euro-dollar market and the external payments deficit of the United States will largely depend on how and to what extent these three sources are influenced by the deficit. As regards the first of the three sources, the payments deficit of the United States has probably tended to retard the growth of the market, since, by being responsible for the restraint program and possibly also to some extent for the tighter money-market conditions in the United States, it has held down transfers of funds by American residents from the United States to the Euro-dollar market. As far as residents of other countries are concerned, transfers between the United States and the Euro-dollar market will be influenced mainly by relative yields, but the ability of the Euro-dollar banks to offer higher deposit rates than banks in the United States is due rather to the interest-rate ceilings imposed under Regulation Q and certainly not to the payments deficit of the United States.

With regard to the second source of private funds, the decisions of individuals and firms as to what proportion of their liquidity and wealth to hold in dollars will be guided primarily by considerations of yield. Now it may be true that the American balance-of-payments deficit, by making for easier credit policies abroad, while, if anything, contributing to the credit tightness in the United States, has tended to keep interest

rates on domestic currency deposits low relative to those on Euro-dollar deposits. On the other hand, however, willingness and ability to take advantage of the higher interest rates on Euro-dollars will depend on the state of confidence in the dollar (or distrust of other currencies), as reflected in conditions in the forward markets. But confidence in the dollar and its strength in the forward market, which are of course closely related, will if anything be negatively affected by a payments deficit on the part of the United States. In this limited respect it could even be contended that it is not because of the American payments deficit that the Euro-dollar market has expanded, but in spite of it. Although in 1968, for example, the flow of funds out of other currencies into dollars was not so much a question of confidence in the dollar as of doubts about sterling and the French franc, without the payments deficit of the United States (and with no other form of liquidity creation) other currencies would have been even more crisis-prone and the movement into dollars would no doubt have been even greater.

Finally, as far as the third source is concerned, it can probably be said that the payments deficit of the United States has tended to increase the liquidity and wealth (expressed in current dollars) of residents of other countries by making for easier credit conditions and policies, and by stimulating, at least in money terms, the growth of gross national products. The deficit may thus in this way have made an indirect contribution to the growth of the Euro-dollar market. Here again, however, an increase in international reserves through some other form of reserve creation would have had a similar effect.

To sum up, it can be said that an important condition for the growth of the Euro-dollar market has been a sufficient supply of international reserves. In the past few years this has been provided chiefly by the balance-of-payments deficit of the main reserve-currency country, that is, the United States. In this sense the American deficit has undoubtedly contributed to most of the official funds and, in an indirect way, for instance by making the monetary authorities' attitude with respect to short-term capital outflows more lenient, or even encouraging, probably also to a sizable part of the private funds in the market. At the same time it is important to note that a similar influence would have been exerted if the reserve creation had not been based on a balance-of-payments deficit of the United States but, for example, on larger supplies of new gold, except that in that case the Euro-dollar market might have expanded even faster. The reason for this is, first, that there would probably have been no official measures curtailing the flow of funds from American residents to the Euro-dollar market and, second, that confi-

dence in the dollar and thus the willingness to hold dollars without forward cover in terms of national currency would have been greater.

Attention has so far been focused on the supply side of the market, because it is on this that recent discussion has centered. It might be argued, however, that by dint of the tighter credit in the United States and the effects of the program of balance-of-payments restraint on the foreign subsidiaries of American firms the country's external deficit has also contributed to the growth of the market by strengthening the demand for Euro-dollar loans. But by the same token it could be said that, if the United States had been running a payments surplus, credit conditions would have been tighter in other countries and there would consequently have been a greater demand for Euro-dollars from residents of countries outside the United States and non-American-controlled corporations. Instead of a credit flow from the rest of the world through the Euro-dollar market to the United States, there might then have been a credit flow from the United States through the Euro-dollar market to other countries.

The point that needs to be brought out is that one factor stimulating the growth of the Euro-dollar market, and international flows of short-term capital in general, is international differences in the degree of credit tightness; the direction in which these differences run is in itself not of prime importance. (This is not to belittle, however, the important role played by Regulation Q in the development of the Euro-dollar market.)

II. THE EURO-DOLLAR MARKET AND CREDIT CREATION

One of the most intriguing questions regarding the Euro-dollar market concerns its impact on the world supply of credit. How, and how far, has the Euro-dollar market tended on a global basis to affect the rate of credit creation?

In answering this question, it is convenient to distinguish between the banks' credit base or total lending potential (as essentially determined at any point of time by the amount of central-bank money in the system, by the currency/deposit ratio, and by reserve requirements) and its actual degree of utilization for the granting of credit.

Moreover, to simplify matters it is initially assumed that there is an internationally consistent system of reserve requirements in the sense that reserve requirements are the same in all countries and that the flow of credit through the banks, whatever its source or direction, is subject once, and once only, to such reserve requirements. This means that all interbank liabilities, whether vis-à-vis foreign or domestic banks, are free from reserve requirements, whereas bank liabilities to non-

banks, irrespective of whether they are towards domestic residents or foreigners or are in domestic or foreign currencies, are subject to a uniform reserve requirement. These unrealistic assumptions will be dropped later in this section (page 14).

Finally, it is assumed throughout this section that the monetary authorities do not intervene to offset the effects of international payments flows on their countries' monetary base. The policy implications of the Euro-dollar market will be discussed in the concluding section of this essay.

(a) *The Impact of the Euro-Dollar Market
on the Overall Credit Base*

Euro-dollar credit flows may occur either within the same country or between different countries. In the first case the monetary liabilities of the central bank are not affected and the credit base remains unchanged. Expressing their domestic liabilities and assets in dollars instead of in domestic currency does not increase the overall lending potential of the banks. In the second case the flow of Euro-dollar credit represents an international capital movement and, like international capital movements in general, will reduce the credit base of the capital-exporting country and increase that of the capital-importing country. From a global standpoint, therefore, there is here again no net change in the banks' credit base. Before drawing the conclusion, however, that the Euro-dollar market consequently cannot affect the overall lending potential of the banks, it is important to note three major exceptions.

The first of these concerns capital flows between reserve-currency countries and the rest of the world. Let us assume that a private holder of dollars transfers his balances from the United States to a Euro-dollar bank in London. If the Euro-dollar bank now re-lends these funds outside the United States to a resident of, say, country *B*, the official reserves and the credit base will go up in that country. But to the extent that the monetary authorities of *B* take this reserve increase in dollars and not in gold there will be no corresponding reduction in the credit base of the United States, private holdings of dollar assets simply being replaced by foreign official holdings. From an overall point of view, therefore, the banks' aggregate credit-granting potential has been increased. The only exception is an increase in dollars held with the Federal Reserve, which in its effect on the credit base of American banks would be equivalent to a foreign gold purchase. On the other hand, the same effect as in the case of an outright increase in foreign official holdings of dollars would occur: if the foreign central banks purchased nonmarketable U.S. Government paper and the U.S. Treas-

ury did not sterilize the proceeds of the sale but used them to finance the American budget; or if the foreign monetary authorities used their dollar accruals for making repayments to the International Monetary Fund, and the U.S. Treasury used the proceeds from its concomitant sale of special paper to the IMF for financing the budget of the United States; or, of course, if the foreign monetary authorities converted their dollar accruals into gold, provided that, contrary to our assumptions, the Federal Reserve offset the impact of this gold purchase on the credit base of the United States.

It may well be, of course, that the monetary authorities of *B* would wish to hold their dollars in a different form from that in which they were originally kept by the private holder in the United States, which might amount to some shift in liquidity preference. Although this may have some impact on the overall lending potential of American banks, the impact could be expansionary as well as contractionary and is, moreover, likely to remain relatively small. (See pages 27-28.)

The example of the expansionary effects of a capital outflow from the United States through the Euro-dollar market to the rest of the world is sometimes taken as evidence that the Euro-dollar market tends to increase the world supply of credit. It should be noted, however, that this effect is not peculiar to the Euro-dollar market. It simply arises out of the reserve-currency role of the dollar and may occur whenever there is a payments outflow, whether for goods and services or on capital account and no matter in what currency, from the United States to the rest of the world.

Moreover, exactly the reverse effect—a reduction in the credit base of the banks outside the United States without a corresponding increase in that of the banks within the country—will occur, to the extent that there is a flow of payments to the United States which is financed by the central bank concerned out of the reserves which were held or would otherwise have been held in the form of dollars. The question is, therefore, whether the existence of the Euro-dollar market has been inclined to cause, on balance, a net flow of payments to or from the United States. Now there can be little doubt that, by facilitating the foreign borrowing of American banks, the Euro-dollar market has, at least in 1968 and 1969, given rise to a net flow of payments to the United States. (See Section IV.) Since part of this flow was certainly at the cost of foreign official holdings of dollars, the net impact of the Euro-dollar market on the supply of credit has on this score been a contractionary one. In fact, in view of the huge volume of Euro-dollar borrowing by banks in the United States, one of the main effects of the Euro-dollar market in those two years has been its tendency to re-absorb the bank

liquidity created abroad by the payments deficit of the United States, without bringing about a correspondingly large increase in the credit potential available to the American economy. This point is illustrated perhaps by the complaints voiced by some European countries about the unduly restrictive effects the pull of the Euro-dollar market has been exerting on their domestic monetary conditions, while at the same time the American monetary authorities do not seem to have felt that, apart from the evasion of reserve requirements, the Euro-dollar borrowing of American banks has to any large extent enabled them to escape the consequences of the domestic credit squeeze.

Somewhat similar effects may occur in the case of capital flows between third countries if the capital-exporting country finances the outflow of capital from its dollar reserves while the capital-importing country converts its dollar accruals into gold. In that event there will be a reduction in the credit base of the banks both in the capital-exporting country and in the United States. If, on the other hand, the capital-exporting country draws on its gold reserves while the capital-importing country accumulates dollars, there will be an expansion in the credit base of the banks both in the capital-importing country and in the United States. Here again it makes no difference whether the capital flows go through the Euro-dollar market or not. Such repercussions of payments flows outside the United States on the domestic credit base are undoubtedly one of the reasons why, contrary to our assumption, the American authorities usually automatically neutralize the domestic monetary impact of changes in the official gold stock.

Let us now return to the example of a transfer of private dollar balances from New York to London. If these funds are re-lent by the Euro-dollar banks to American residents, the original capital outflow from the United States is offset by a capital inflow and, under our assumption of an internationally consistent system of reserve requirements, there will have been no change in the credit potential available to the American economy. Since it is essential to an understanding of the working of the Euro-dollar market, it may be useful to go into this point in a little more detail.

Two alternatives are possible. The first is for the funds to be lent by the Euro-dollar banks to banks in the United States. In that case, instead of their original liability of 100, subject to a 10 per cent reserve requirement, towards a nonbank, the banks in the United States will now have a liability of 90, free from reserve requirements, to a Euro-dollar bank (the 10 per cent reserve requirement being met by the Euro-dollar bank itself). Apart from a possible change in the maturity

structure of their liabilities, the liquidity and, more particularly, the free reserves of the banks in the United States will not be affected.

The second possibility is for the Euro-dollar banks to lend the 90 direct to American nonbank residents. Assuming a marginal currency/deposit ratio of 1 : 4, this would mean that, instead of having a liability of 90 to the Euro-dollar banks, the banks in the United States now have a liability of 72 to nonbanks, 18 being withdrawn into the currency circulation. Compared with the situation prevailing before the flow of funds through the Euro-dollar market, the banks in the United States have lost 28 in cash reserves but at the same time their required reserves have fallen by 2.8 (that is, by $[100 - 72] \times 0.1$). The consequent decline of 25.2 in free reserves would also have occurred if the credit of 90 had been extended by the banks in the United States themselves instead of through the Euro-dollar market, except that in that case it would have consisted of a decline of 18 in cash reserves and an increase of 7.2 in required reserves. Here again the diversion of the credit flow through the Euro-dollar market has no effect on the credit potential available to the economy of the United States.

The contention that the Euro-dollar market has an expansionary effect is often based on the fact that in the case of a transfer of dollar balances from the United States to the Euro-dollar market the credit offer by the Euro-dollar banks will increase, while, as long as these funds are not re-lent by the Euro-dollar banks, there will be no reduction in the resources available to the banks in the United States. It is doubtful, however, whether this effect (which is usually lumped together with the reserve-currency effect of the dollar) is of any practical significance. For one thing, it takes only a few hours, or often even less, for the funds to be re-lent by the Euro-dollar banks. Secondly, the banks in the United States are fully aware of the difference between, say, a certificate-of-deposit liability and a current-account liability to a bank. Once the funds have in fact been re-lent by the Euro-dollar banks to, say, an American nonbank resident, there will, as shown in the numerical example given above, be a reduction in the free reserves of the banks in the United States; or if the latter are fully loaned up, they will have to reduce their own loans by the full amount of the loan made by the Euro-dollar bank.

Moreover, from the numerical example given above it can be seen that it makes no difference for the credit potential available to a country whether the Euro-dollar bank lends to the banks or directly to nonbank residents of that country. In fact, to the extent that they lend to nonbanks they can be regarded for analytical purposes as part of the country's banking system, since transfers from that country to the Euro-

dollar market are in that case no different in their effect on the credit base from interbank transfers within the country itself. A further point is that this example applies not only to the United States but to capital flows from, say, country *B* to the Euro-dollar market and back again to country *B*. It also applies to the overall effect of a capital flow from country *B* through the Euro-dollar market to country *C* on the combined credit base of those two countries (as long as neither of them is the United States), since for this purpose they can be conceived of as a single country.

The second major exception to the rule that the Euro-dollar market will not affect the overall credit base of the banks concerns the participation of central banks in the market. Basically, this is simply a special case of capital flows between the United States and the rest of the world. It is important in this context to distinguish between outright deposits by central banks in the Euro-dollar market and swaps of dollars against domestic currency with the domestic banks. Another relevant consideration is whether the alternative to the Euro-dollar deposits or the swaps was holding the reserves in the form of dollars in the United States or holding them in the form of gold.

Let us assume first of all that the central bank of country *C* transfers its dollar reserves from New York to London. While this transfer will have no effect on the banks of country *C*, its impact on the rest of the world will otherwise be exactly the same as that of an outflow of private capital from the United States. To the extent that the Euro-dollar banks lend these funds to residents of country *B*, which takes the resultant increase in its reserves in the form of dollars, the credit base of the economy of the United States will not be affected, but in *B* the credit base will go up. Outright deposits by central banks of their reserves in the Euro-dollar market will therefore tend to have an expansionary impact on the supply of credit. Insofar as the central banks of the countries whose residents borrow these funds in the Euro-dollar market redeposit their resultant reserve accruals in this market, there will even be a certain multiplier effect. The likelihood of this happening would be particularly great if the funds were to flow back to country *C* (in effect, if countries *B* and *C* were only one country).

If, on the other hand, the funds deposited in the Euro-dollar market by the central bank of country *C* were re-lent to residents of the United States or of country *D*, whose central bank converts its dollar accruals into gold, no net expansion in the banks' lending potential will ensue. In the first case there will be no change anywhere, and in the second case an increase in *D* will be offset by a decline in the United States.

To the extent that the central bank of *C*, in making its deposit in the