

Multiplier Effects and Credit Creation in the Euro-dollar Market*

The Euro-dollar market and in particular its impact on the world supply of credit is currently one of the most controversial and at the same time one of the most important topics of international finance. In an article published in the September 1970 issue of this Journal, Prof. Machlup quite vehemently attacked much of the established thinking on this subject and claimed that the disagreement was largely due to "the lack of conceptual clarity" and the "prevailing poverty of conceptualisation". "There has", he said, "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".

As is his wont, Prof. Machlup therefore sets out to provide his own conceptual framework. However, whereas in other fields Prof. Machlup's contributions to economic thought may be beyond dispute, several of the ideas and conclusions presented in this essay are somewhat questionable. This is certainly not due to lack of analytical power, but rather to what strikes us as fairly unrealistic assumptions about the nature and functioning of the Euro-dollar market, on which much of Prof. Machlup's analysis depends. Though consistent in itself, therefore, Prof. Machlup's analytical structure bears at a number of points very little resemblance to the realities of the Euro-dollar system. And the reason for this seems to be that, though avoiding many of the usual pitfalls, Prof. Machlup, like some other

* An essay suggested by Prof. Machlup's "Euro-dollar Creation: A Mystery Story", *Banca Nazionale del Lavoro Quarterly Review*, September 1970, pp. 219,60.

academic writers before him, is somewhat misled by the example of the US commercial banking system.

In such a system the banks' liabilities are at the same time the main payments medium of the economy. Apart from reserve requirements, the leakages out of the system are consequently small and the commercial banking sector's autonomous credit-creating power is correspondingly large. By expanding their credits the banks will contribute towards increasing aggregate demand and the income circulation, and this increased income circulation will necessarily be reflected in the banks' monetary liabilities and thus form the basis for a further round of credit expansion, and so on.

In this paper our basic contention is that this analogy of a largely self-contained commercial banking system, which seems to lie at the basis of Prof. Machlup's conceptual apparatus and analytical procedures, misses some of the most essential features of the Euro-dollar market. In the sections that follow we shall therefore try to show step by step how the model of endogenous credit creation in a relatively closed national banking system must be modified in order to arrive at a more realistic appraisal of the Euro-dollar market's credit-creating potential.

In Section I we argue that as far as its credit-creating power is concerned, the Euro-dollar system can at best be likened to a single, relatively small-sized bank within the US economy and not to the US commercial banking system as a whole. Section II points out that the bulk of the Euro-banks' dollar liabilities to non-banks are not of the current-account type and examines the implications that this has for the Euro-banks' credit-creating power. Section III emphasises the rôle of the Euro-dollar system as an interbank market linking up the various national banking systems. Section IV, which also brings into the picture the effects of central-bank deposits in the market, seeks to show that the traditional multiplier analysis and the concept of primary deposits are not adequate tools for dealing with the credit implications of international capital flows and suggests some alternative criteria. Section V deals with some peculiarities in Prof. Machlup's analysis of the balance-of-payments implications of Euro-dollar flows and in Section VI we take a brief look at the concept of the size of the Euro-dollar market.

I. Open versus closed circuits

Unlike the liabilities of the US commercial banking system, the Eurobanks' dollar liabilities do not form a relatively closed monetary circuit. As the BIS statistics indicate, borrowers and holders of Euro-dollar funds are scattered throughout the world, and it cannot be assumed that an autonomous expansion of Euro-dollar credits will mainly be reflected in an increase in the money incomes of those firms and individuals that keep their transaction balances in the form of Euro-dollar deposits. Moreover, even if it were unrealistically assumed that the bulk of non-bank Euro-dollar balances were used for current-account purposes, Euro-dollar deposits would account for only a very minor fraction of the world money stock.

It is thus readily apparent that the position of the Euro-dollar market in the world economy cannot be likened to the rôle of the US commercial banking system within the US economy but only to that of a fairly small-sized individual commercial bank, and even then only on the assumption that its deposit-holders are not concentrated in one geographic region but are spread fairly widely over the United States. Whereas the US commercial banking system taken as a whole has a virtual monopoly of deposit money within the US economy, the individual bank has to compete for funds with the other banks in the system (just as the Euro-dollar market has to compete with the conventional domestic credit sectors). And whereas, leaving aside the leakage of funds abroad, the commercial banking system's credit-creating power will be limited only by the leakage of funds into required reserves and into the currency circulation, the individual bank's ability to expand its credits by more than its free reserves will be narrowly circumscribed by the leakage of funds to the other banks in the system. The ability autonomously to expand its credits by a major multiple of its free reserves is only an attribute of the commercial banking system as a whole. The individual bank in general will be able to "create" credit only in line with the other banks in the system; the induced increase in deposits and credits will still occur, but it is mainly the other banks in the system that will benefit from it.

Translated into "Euro-language" this means that although an autonomous increase in Euro-dollar credits might potentially lead to

a large induced expansion of bank deposits and credits, most of this expansion would occur outside the Euro-dollar market in the conventional credit sectors. Assuming, for example, that 4 per cent of any increase in world deposit money is taken in the form of increased Euro-dollar balances (of the current-account type), and that an autonomous expansion of Euro-dollar credits of say \$1 million gives rise on average to an induced expansion in current-account deposits of \$2 million, only 4 per cent, i.e. \$80,000, of this induced expansion could be expected to take the form of a rise in Euro-dollar balances. This means that even if all Euro-dollar banks were simultaneously increasing their dollar credits, they could recoup only 8 per cent of their credit disbursements in the form of increased dollar deposit liabilities.¹ The fact that the Euro-dollar banks' activity may have potentially major effects on the total supply of credit in domestic plus foreign currency thus by no means implies that the Euro-dollar system commands a major endogenous credit multiplier potential.

Claims of larger multiplier effects are sometimes based on the argument that Euro-dollar credits are extended mainly to large international corporations which might hold a substantial part of their working balances in the form of dollar deposits with the Euro-banks; however, for a genuine multiplier effect to exist it does not matter whether the credit recipients hold their working balances with Euro-dollar banks, but only whether the individuals or firms to whom the credit recipients, directly or indirectly, make their payments do so. Euro-dollar credits to large international corporations seem to be mainly used for working capital purposes and there is no reason to assume that these funds are primarily employed for

¹ It may be noted that the numerical assumptions used in this example are roughly consistent with Klopstock's widely quoted and widely misunderstood statement that "... it appears that the Euro-bank multiplier is very low, lying probably in the approximate range of 0.50 and 0.90" (*The Euro-dollar Market: Some Unresolved Issues*. Essays in International Finance, No. 65, page 8, Princeton, March 1968). As Klopstock has explained to us, what he meant was that, after allowing for deposit multiplication, an autonomous increase in Euro-dollar deposits by say 100 million might eventually lead to a total increase in Euro-dollar credits of 60-90 million, in which connection (in contrast to our own example) "credits" exclude loans by US bank branches to their head offices, reserves kept in the United States against Euro-dollar deposits and transaction balances held in the United States. Using Klopstock's underlying assumptions about the size of the leakages, a deposit multiplier of about 1.05 to 1.09 is obtained (which signifies that an autonomous increase in Euro-dollar deposits of 100 would eventually lead to a further growth in deposits of 5-9).

making payments to other large international corporations. On the other hand, for a multiplier effect to exist it is by no means necessary to assume (as Prof. Machlup seems to do on pp. 254-255 of his article) that the proceeds from the Euro-dollar credits are used only for payments to residents of the reporting European area (i.e. to residents of those countries whose banks can be considered as the principal intermediaries in the Euro-dollar market), or that the dollars are directly redeposited with Euro-banks. As already stressed, holders of Euro-dollar deposits are spread throughout the world; and, as far as the second point is concerned, it is quite possible that the dollar proceeds are first converted into national currency and are switched back into dollars and placed in the Euro-dollar market only at some later stage of the induced income circulation. Leaving aside for the moment the rôle of monetary authorities and certain other qualifications, all that is necessary for a multiplier effect to exist, however small it may be, is that the Euro-dollar credits add on a worldwide basis to aggregate demand and income circulation and that part of this increased income circulation be reflected in increased current-account balances with the Euro-dollar banks themselves.

The fact that an individual bank will in general only be able to "create" credits parallel with the other banks in the system does not, of course, rule out the possibility of large discrepancies existing between the rates of growth of individual banks. But, apart from regional or sectoral influences, these discrepancies in growth rates will reflect differing degrees of competitiveness, i.e. the ability to bid funds away from other banks, and have very little to do with autonomous credit-creating power. In the case of the Euro-dollar system, its ability to compete with the conventional credit sectors has not only been assured by its wholesale character and efficiency, but also by differences in regulations concerning reserve requirements, interest ceilings, etc. (In his article, Prof. Machlup himself gives, on pp. 242-245, an excellent account of these various factors). Apart from the novelty and the convenience of the services offered, it is mainly in these terms that the discrepancy between the extremely rapid growth of the Euro-dollar system and the not quite so rapid expansion of the conventional national banking sectors needs to be analysed.

At all events, contrary to Prof. Machlup's assertion on page 259, the fact that the total amount of credit outstanding through the

Euro-dollar market has never declined for any lengthy period of time cannot be taken as strong evidence of an autonomous credit-creating power in the Euro-dollar system as a whole. At times of rapid economic growth and creeping inflation even individual banks in most national banking systems experience a continuous increase in their balance sheets, even though they tend to be more subject to the influence of cyclical and structural developments than the Euro-dollar market with its high degree of international and functional diversification.

It may be added as a kind of footnote that in a more recent article² (which appeared after this essay was completed) Prof. Machlup tries to produce statistical evidence of endogenous Euro-dollar multiplication. By taking a figure of \$19.2 milliard for the 1969 inflow of dollar funds "from accounts in banks outside into accounts in banks inside financial Europe" and by showing that the bulk of these funds cannot have derived from a concurrent US payments deficit or US capital exports, Prof. Machlup purports to demonstrate that "perhaps more than one-half of all Euro-dollars now in existence have been 'made in Europe'".³ This approach seems, however, to be partly based on a misinterpretation of statistics. First, the figure of \$19.2 milliard, which is apparently taken from the BIS's Fortieth Annual Report (June 1970), refers to the total increase in the reporting European banks' ⁴ liabilities vis-à-vis non-residents, which term, of course, includes residents of the other reporting countries — for example in the case of the British banks, residents of France, Germany, etc. Thus, the table on page 156 of the BIS's Fortieth Annual Report shows that the bulk of this \$19.2 milliard was provided from inside the reporting European area and that only \$7.2 milliard, i.e. less than 50 per cent of Prof. Machlup's figure, came from the outside area. Secondly, as the BIS has repeatedly stated in its Annual Reports, the statistics from which this \$19.2 milliard is derived are to a large extent inflated by the double-counting which results when the dollar credit flows pass through more than just one bank within the reporting area on their way from the original suppliers to the ultimate users. Prof. Machlup

² "The Magicians and Their Rabbits", *The Morgan Guaranty Survey*, May 1971.

³ *Op. cit.*, pp. 8-10.

⁴ i.e. the banks of Belgium-Luxemburg, France, Germany, Italy, Netherlands, Sweden, Switzerland and the United Kingdom.

himself pointed out in his earlier article (pages 229-230) that this kind of redepositing cannot be considered as multiple credit creation. Last but not least, even after the elimination of double-counting a substantial part of the remaining figure reflects capital flows outside the United States; and like any other credit flows between or within countries other than the United States, irrespective of their currency denomination, these kinds of flows are largely independent of the current state of the US balance of payments. But even if all the funds were to be lent to the United States, they could be financed out of dollars stemming from past US payments deficits or out of other reserve assets. To show that the flow of new funds through the market cannot have derived from a simultaneous US payments deficit or a capital outflow from the United States thus in no way indicates that they must be the product of the market's endogenous multiplier potential.

It should be stressed that our disagreement with Prof. Machlup in this section is one of degree rather than a categorical one. Prof. Machlup does not deny that there are major leakages from the market nor do we deny that there might be some endogenous multiplier effects. However, in two articles published in the June 1971 issue of this Journal,⁵ the analogy of multiple credit creation in a national banking system is carried much further than Prof. Machlup himself would probably like to take it.

It is, of course, not possible to do full justice here to these two essays. Fratianni-Savona essentially seem to measure the endogenous credit-creating potential of the Euro-dollar market by taking as the multiplier the inverse of the ratio of those of the Euro-banks' assets vis-à-vis the United States which have the character of liquid reserves to all their other Euro-dollar assets, although they allow for the effect that an increase in Euro-dollar deposits might have on Euro-dollar credit rates and thus also on the size of this "reserve ratio". As a result, they come up with a multiplier of 7 for end-1964, one of 3 for end-1969, and after the large repayments by US banks in 1970-71 their multiplier would now even have to exceed the figure given for 1963. This would imply that the endogenous multiplier potential of the Euro-dollar market is larger than that of the US

⁵ GUIDO CARLI, "Euro-dollars: A Paper Pyramid?". M. FRATIANNI and P. SAVONA, "Euro-dollar Creation: Comments on Prof. Machlup's Propositions and Developments".

commercial banking system! Prof. Machlup himself refutes this kind of reasoning on pages 239-240 of his paper. We would only add in this context that the validity of this approach would presuppose that the dollars held by the Euro-banks for reserve purposes in the United States are the only kind of leakage out of the market. And this in turn would imply that the only form of money used in the world is Euro-dollar deposits and that there are no national currencies and no notes or coins in circulation!

Despite what its title suggests, Carli's essay seems to us to be valid as an analysis of the potential inflationary effects of a US payments deficit rather than of the endogenous multiplier potential of the Euro-dollar market. In fact, Carli's recommendations for controlling the inflationary impact of the market are all but one (which concerns the imposition of compulsory reserve ratios on the banks' Euro-dollar business) measures to reduce the US payments deficit. Thus the Euro-dollar market, apart from adding at times to the US payments deficit, itself enters the picture only when Carli says that the expansionary effects of a US payments deficit are likely to be greater when the dollars supplied by it are placed in the Euro-dollar market than when they are converted into national currencies (page 104). The explanation given is that, unlike foreign currency lending, credit expansion in domestic currency is subject to central-bank control. Quite apart from the fact that the central banks are free to subject the banks' foreign currency business to the same rules as govern that in domestic currency, this explanation is not fully satisfactory for the following reasons. The Euro-banks can use these new funds only in one of two ways. Either they hold them, as they largely did in 1969, in the United States and in this way in fact counteract the inflationary impact of the deficit in the other items of the US balance of payments. Or they lend them outside the United States and in that case a conversion into national currency will, in general, still occur and what Carli says about the possibility of controlling its monetary impact applies after all. The chances that the dollars might remain part of a Euro-dollar income circulation outside the United States seems to us, for the reasons indicated in this and the next section, to be very remote.

This, of course, is not to deny that by increasing the flows of funds from easy to tight credit areas, by leading at times to a net capital outflow from the United States, by attracting central-bank

deposits, by strengthening inter-bank competition, by facilitating the circumvention of credit ceilings, reserve requirements or controls on the domestic banks the Euro-dollar market may quite often add to the growth of credit (we will discuss these relationships in more detail in Section IV of this paper), but this is quite different from the proposition that the Euro-dollar banks taken as a whole can to a large extent create their own resources simply by expanding their credits.

II. Credit intermediation versus credit creation

Even to compare the rôle of the Euro-dollar banks within the world economy to that of an individual commercial bank within a national economy is not completely valid, since in contrast to the deposit liabilities of US commercial banks Euro-dollar deposits are not generally used as a payments medium. Some minor exceptions apart, no cheques can be drawn on Euro-dollar deposits; before such deposits can be used for payments purposes, they first have to be converted into a deposit with a bank located in the United States. This point is a vital one for a proper understanding of the working of the Euro-dollar system, since it implies that acquiring a Euro-dollar deposit is in many ways much more like investing in Treasury bills, commercial paper, or certificates of deposit than holding an interest-free demand deposit with a bank in the United States.

The money-market character of Euro-dollar deposits is also emphasised by their highly standardised form and their anonymity. As in the case of other money-market assets, the very liquidity of Euro-dollar deposits does of course make it easier for investors to keep interest-free or low-earning working balances down to an absolute minimum, but they cannot be considered as current-account balances as such. And it is primarily with these other money-market instruments (including certificates of deposit) that Euro-dollar deposits have to compete, not with interest-free demand deposits in the United States. US certificates of deposit and commercial paper are, it may be added, more liquid than Euro-dollar deposits of a corresponding maturity, since Euro-dollar deposits are not negotiable, a fact which is partly reflected in their higher interest yields.

Contrary to what Prof. Machlup implies, therefore, Euro-dollar deposits do involve a conscious act of lending, in the sense that they entail the conversion of money into an asset which cannot be used as such for payments purposes and which has to be converted back into money if a payments need should arise. This is true even for the bulk of non-bank sight deposits, which in the case of the London Euro-dollar banks account, anyway, for less than 5 per cent of total liabilities. This is not to say that Euro-dollar deposits are not used for current-account purposes at all: what is meant is that this is only a relatively insignificant aspect of the Euro-dollar system. After a recent visit to Euro-dollar banks in London Klopstock summed up his findings as follows: "Current-account deposits are a negligible fraction of total dollar liabilities... There is some abuse in London of call deposit accounts for current-account payments, but it is not widespread".⁶ It should, moreover, be mentioned that the figures for non-bank sources, as given by the BIS in its estimate of the size of the Euro-dollar market, include a large volume of trustee funds placed by banks on behalf of, i.e. at the risk of, their customers. These types of deposit are certainly far removed from current-account balances.

The fact that Euro-dollar deposits meet an investment rather than a payments need and form part of the financial rather than the income circulation has important implications for the Euro-dollar banks' credit-creating power. Let us assume for the sake of simplicity that there are only two groups of banks — the "commercial banks", all of whose liabilities have the character of money, and the "savings banks", whose liabilities answer an investment need and cannot be used for payments purposes without first being converted into a deposit with a commercial bank.

A genuine credit multiplier effect occurs only to the extent that the use of the credits adds to the income circulation (no matter whether in real or only in money terms), which will be reflected in the form of larger deposits with the "commercial banks" and thus provide the basis for a further round of credit creation. There may, of course, also be an induced increase in deposits with the "savings banks" to the extent that the expansion in money incomes resulting from the increased income circulation gives rise to a growth of

⁶ Quoted from a private letter to the author.

savings that partly takes the form of larger deposits with the "savings banks". Nevertheless, it would not be right to consider the activity of the "savings banks" as part of a credit multiplier process, since when re-lending the funds such banks do not add to the income circulation but simply prevent a leakage from the income circulation from taking place; in a sense the "savings banks" are only "intermediaries", the credits being "created" by their depositors, i.e. by the savers themselves. The situation is of course quite different in the case of the "commercial banks". The funds deposited with them do not leave, but remain part of, the income circulation; and, as Prof. Machlup emphasises, the placement of these deposits does not imply a conscious act of lending and they are not credits in the usual sense of the term. When, therefore, the "commercial banks" re-lend these funds, they do create credit and do add to the income circulation.

Like most other banks, the Euro-dollar banks combine elements of both types of bank, but it should be clear from what has already been said that in their Euro-dollar business the savings-bank element is predominant. This is certainly true of all trustee funds and all direct deposits by private individuals in the market, and also of most Euro-dollar placements by firms, which appear to use Euro-dollar deposits mainly as a substitute for holding other types of money-market assets. In fact, at the end of 1970, out of an estimated \$16 milliard of dollar deposits held by non-banks (including trustee funds placed by banks) with the banks of the reporting European countries, \$4-5 milliard at the outside could be regarded as meeting a payments rather than an investment need. This is quite a small fraction of the world money stock and, limiting oneself to the Euro-banks' dollar liabilities vis-à-vis non-banks, the implication would be not only that the Euro-dollar system's autonomous credit multiplier potential must be very modest indeed but also that the market's contribution to total "credit creation" (as opposed to "intermediation") is not very important.⁷ Before drawing any definite conclusions, however, we must leave the analogy of a national banking

⁷ For an excellent discussion of the question of multiplier effects in the Euro-dollar market, see also F. H. Klopstock, "Money Creation in the Euro-dollar Market - A Note on Professor Friedman's Views", *Monthly Review* of the Federal Reserve Bank of New York, January 1970.

system and take a look in the next two sections at the Euro-dollar market's rôle as an international interbank intermediary at its impact on international capital flows and at the effects of central bank participation in the market.

III. The interbank character of the market

So far we have followed Prof. Machlup's procedure and disregarded the interbank aspect of the Euro-dollar market. It is now time to move one step closer to reality. The important point to be appreciated is that the Euro-dollar market operates first and foremost as a link between the various national credit systems, and therefore the bulk of the Euro-banks' external dollar liabilities and assets are vis-à-vis other banks, whereas taking the market over the whole of its life direct deposit-taking from or lending to non-residents other than banks has been rather the exception. At the end of 1970 over 80 per cent of both external dollar liabilities and assets of the banks of the eight European countries which furnish Euro-currency statistics were vis-à-vis other banks. To net out all these interbank positions or dismiss them as irrelevant, as Prof. Machlup seems to recommend (in the paragraph starting at the bottom of page 230 and ending on page 231), would in fact give a thoroughly meaningless and incomplete picture of the market, not only as regards its balance-of-payments and reserve implications but also as regards the impact on the international allocation of credit and on credit creation. Of course, if one were seeking to measure the world stock of deposit money or to present a consolidated balance sheet showing the intermediary rôle of all banks in all currencies in the world taken together, all interbank positions, including those of the Euro-dollar system, would have to be netted out. But if the aim is to show, as in the case of the Euro-dollar statistics, the intermediary rôle of the Euro-dollar banks alone, it is only interbank deposits within the reporting area which to some extent have to be netted out, whereas the taking of funds from and the lending of funds to outside banks is an essential and integral part of the Euro-dollar market's rôle as an international money and credit market. Even as far as the reporting (i.e. the inside) area itself is concerned, it is necessary to take account of the banks' rôle as suppliers and users of Euro-dollar funds. The only thing that should be excluded is the

duplication that arises when the dollar funds flow through several banks within the reporting area before being lent out to their ultimate users; since each bank reports its assets and liabilities, one and the same credit chain would be counted several times over in the Euro-dollar statistics under both assets and liabilities.⁸ This will not however, be the case to the extent that the banks themselves create Euro-dollar funds by switching (with or without forward cover) domestic or third-currency funds into dollars or consume Euro-dollar funds by switching them into domestic or third currency. By way of illustration, let us take the example of a dollar credit flow from bank X, either directly or through other banks, to bank Y (both located within the reporting area), with X providing the dollar funds by switching out of domestic currency into dollars and bank Y using them by switching them into domestic currency. If the interbank position between X and Y were to be completely netted out, and nothing added in instead, this Euro-credit flow would not be reflected in the Euro-dollar statistics at all. The obvious solution therefore is to include bank X's switching into dollars under sources of Euro-dollar funds, and bank Y's switching out of dollars under uses. (That in fact is the principal meaning of "bank sources" and "uses" in the table in BIS Annual Reports showing the "net size of the Euro-dollar market").

To sum up, in order to present an adequate picture of the rôle of the Euro-dollar market, every credit outstanding through the Euro-dollar banks should ideally be shown once and once only under both sources and uses of Euro-dollars. The only feasible and fairly meaningful way to achieve this is to show vis-à-vis the outside area all positions (a reasonably complete statistical break-down between banks and non-banks is in any case not available) but

⁸ A similar situation arises when the funds are lent to banks outside the reporting area and are redeposited by those banks with banks in the reporting area. Although these kinds of circular flows will tend to increase the BIS's figure for the size of the Euro-dollar market, they cannot of course be considered as part of a genuine multiplier process, since they do not on the whole affect the total supply of credit to non-banks. It might be argued therefore that from a certain standpoint these types of circular flows should be excluded. However, whether desirable or not, such exclusion is at present impossible owing to a lack of sufficiently detailed statistics. Moreover, as we shall try to demonstrate in the following section, it cannot in any event be assumed that any increase in the Euro-dollar market's consolidated balance-sheet total, whether the assets and liabilities are vis-à-vis banks or non-banks, represents a corresponding addition to the total world supply of credit to non-banks.

vis-à-vis the inside area only positions vis-à-vis non-banks and vis-à-vis those banks which (in the sense indicated above) must be considered as original suppliers and ultimate users of Euro-dollar funds.

Even in the consolidated balance sheet obtained in this way positions vis-à-vis banks will predominate. This by no means signifies, however, that the bulk of the Euro-dollar banks' activity is irrelevant from an economic point of view. In fact — and here we are in sharp disagreement with Prof. Machlup — it makes little difference whether the Euro-dollar banks borrow from or lend to non-banks directly or whether they do so only by way of other banks. If we take the example of a capital flow from country A through the Euro-dollar banks to country B, it is not of great import from a balance-of-payments point of view (apart from differences in statistical treatment) or as regards the impact of the capital flow on the monetary base of the two countries whether it is the banks of A and B that are lending and borrowing the funds or the non-banks that are doing so direct.

Moreover, as in the case of non-bank deposits, it is conceivable that part of the "bank sources" of Euro-dollar funds is also the result of the Euro-banks' own lending activity; thus a genuine credit multiplier effect would occur to the extent that these bank sources of Euro-dollars have as counterpart on the supplying banks' debit side current-account liabilities (in domestic currency) to non-banks. To illustrate, let us assume that the Euro-dollar banks lend to residents of country B and that these residents switch the funds into domestic currency; the resultant increase in the income circulation will then be reflected in a rise in the current-account liabilities of the banks of B, which might switch part of these funds back into dollars and place them with Euro-dollar banks, where they provide the basis for a further round of credit expansion.

The actual empirical importance of this type of multiplier effect may be doubtful. Nevertheless, the important point that has to be borne in mind is that multiplier possibilities arise in the case of both bank and non-bank sources of Euro-dollar funds. The explanation is, of course, that the funds supplied and used by the banks themselves also originate from, and are ultimately lent to, non-banks. To say that the funds are obtained by the Euro-dollar banks from banks and re-lent to them is in fact only a way of saying that the original non-bank suppliers and the ultimate non-bank users are not known. If, for example, a borrowing bank switches Euro-dollar

funds into domestic currency, the funds become absorbed in its general pool of resources and it is impossible to tell which of its domestic-currency credits they serve to finance. And in the case of a bank outside the reporting European area it is even impossible to tell whether it lends the dollars direct to non-banks or switches them first into domestic currency.

If anything, it could be argued that a consolidated balance sheet of the Euro-banks' Euro-dollar positions such as the BIS attempts to provide in its estimate of the "net size of the Euro-dollar market" does not do full justice to the Euro-dollar market's rôle as an international interbank money market. Since redepositing between banks is usually associated with an increase in maturity transformation, it tends to augment the liquidity of the non-bank sector and may thus add indirectly to aggregate demand. And to the extent that no such maturity transformation is involved, the banks themselves might feel more liquid since they tend to regard their deposits with other Euro-dollar banks as liquid reserves, while at the same time they may count on being able to prolong their own liabilities towards other banks. The obvious answer is that the consolidated balance sheet of the Euro-banks' Euro-dollar activity cannot by itself give a full picture of the Euro-dollar market and that it is also necessary to look at the total gross positions. In any case, to net out indiscriminately all interbank positions outside and inside the reporting area or to leave them out of account as irrelevant is really to miss the very essence of the Euro-dollar market.

IV. Credit creation and international capital flows

So far we have implicitly followed Prof. Machlup's analytical procedure in yet another respect by limiting our analysis of the Euro-dollar market's credit implications to the uses side of the market. In fact, taking the example of a capital flow from country A through the Euro-dollar banks to country B, Prof. Machlup considers only the expansionary effects of the Euro-dollar banks' lending to country B and neglects the tightening effects which the capital exports, i.e. the transfer of funds to the Euro-dollar banks, might have on country A. Here again the bias in Prof. Machlup's thinking is to be attributed to his tendency to compare the Euro-dollar market to a self-contained national banking system instead of comparing it, as would be more appropriate to illustrate the Euro-dollar banks' rôle

within the world economy, to an individual bank within such a system. It goes without saying that any increase in deposits with the system as a whole will boost the banks' lending potential; an increase in the deposit liabilities of an individual bank, however, will affect the banks' overall lending capacity only to the extent that these funds do not come out of the reserves of some other bank within the system. The concept of primary deposits can only be applied to the system as a whole and is not very helpful in analysing the growth of the deposit liabilities of an individual bank within such a system. Similarly, for purposes of analysing the Euro-dollar market's impact on the world supply of credit and its endogenous multiplier potential, it would be misleading to consider as primary deposits, as Prof. Machlup seems to recommend (see page 257), every increase in deposits that cannot be attributed to the market's own lending activity.

Any increase in the total amount of credit outstanding through the Euro-dollar market will result from one or other of the following four types of capital flow:

- (a) a capital flow from the rest of the world through the Euro-banks to the United States;
- (b) a capital flow from the United States through the Euro-banks to the rest of the world;
- (c) a capital flow through the Euro-banks between third countries;
- (d) a circular flow from a given country to the Euro-banks and back again to the same country.

Let us consider these four types of capital flow one by one:

(a) A capital flow from the rest of the world through the Euro-dollar market to the United States will usually take the form of a conversion of domestic or third currencies into dollars, the depositing of the dollars with the Euro-banks, and the re-lending of these funds by the Euro-banks to US bank or non-bank residents. Also to be included in this category are funds re-lent by the Euro-banks outside the United States but used for the financing of transactions (such as imports from the United States or foreign investment by US firms) that would otherwise have been financed by the United States.

Like any other payments flow, no matter in what currency, to a reserve-currency country, Euro-dollar lending to the United States will tend to reduce the total supply of credit to non-banks. The reason for this is that to the extent that the foreign central banks finance their resultant reserve losses out of dollars held in the form of US bank deposits or US money-market assets,⁹ the capital flow to the United States will not increase the monetary base of the US economy (apart from possible changes in the maturity structure of US banks' liabilities and possible changes in required reserves); and even if the foreign central banks were to draw on their gold stock, the US authorities would normally offset the expansionary impact of their gold purchases on the domestic money supply. On the other hand, the capital outflow will automatically also tend to tighten the supply of credit in the capital-exporting countries. Although some of the tightening effects might be offset by the monetary authorities, the fact remains that in the case of a capital flow to the United States an increase in the amount of dollar credit outstanding through the Euro-banks (irrespective of whether their liabilities or assets are vis-à-vis banks or non-banks) will tend to reduce the total supply of credit to non-banks. By the same token, the "Euro-dollar deposit multiplier" will tend to have negative effects since, by tightening up credit and slowing down the growth of the money supply in the rest of the world without exerting a corresponding expansionary impact on the United States, this type of Euro-dollar flow will entail an induced slow-down in the growth of Euro-dollar deposits.

There may be an analogy to this in a national commercial banking system when a non-bank depositor transfers his balances from bank A to bank B, and when bank B employs the funds, for example, to purchase government securities and the government uses the proceeds to reduce its indebtedness towards the central bank. The increase in bank B's balance-sheet total will thus go together with a reduction in the monetary base of the economy. To the extent that bank A was originally fully lent up it will now have to call in some of its loans and thus potentially initiate a process

⁹ The question of official dollar funds deposited directly with the Federal Reserve, which is treated at length in Prof. Machlup's paper, may be disregarded; these consist purely of working balances and are negligible.

of multiple credit contraction, which may be reflected also in an induced decrease in bank B's deposit liabilities.

It should be stressed that the conclusions drawn above remain valid irrespective of whether the Euro-banks' assets vis-à-vis the United States have the character of reserves or of investments (although both Prof. Machlup and the Fratianni-Savona paper put a lot of emphasis on such a distinction). The crucial point is that an increase in Euro-dollar lending to the United States does not lead to a major increase in the total supply of credit to US non-banks; if it did, an expansion in the Euro-banks' claims on the United States, even if purely for reserve purposes, would be not different from lending to other countries, except perhaps that US residents' marginal propensity to hold Euro-dollar deposits¹⁰ is smaller than that of the rest of the world. Similarly, from an analytical standpoint it is immaterial whether the rest of the world finances the capital flow to the United States out of a simultaneous deficit in the other items of the US balance of payments or out of reserves accumulated in the past; in the former case an expansionary effect will be prevented, while in the latter case an actual tightening effect will occur.

Capital flows to the United States were a dominant feature of the Euro-dollar market during parts of 1965, 1966, 1968 and 1969.

(b) A capital flow from the United States through the Euro-banks to the rest of the world will occur when US or non-US residents (banks or non-banks) shift their dollar assets from the United States to the Euro-banks and the Euro-banks re-lend these funds, before or after conversion into domestic or third currency, outside the United States (provided the funds are not used to finance transactions that would otherwise have been financed by the United States). A special case which falls into this category, though not treated as a capital outflow in the balance-of-payments statistics, is the transfer by foreign official monetary institutions of their dollar holdings from the United States to the Euro-dollar market, i.e. the placement of official reserves with the Euro-banks.¹¹

¹⁰ i.e. the percentage of any increase in current-account balances which is taken in the form of Euro-dollar deposits; or as regards banks, the percentage of the counterpart of any increase in their current-account liabilities to non-banks which they will use for Euro-dollar placements.

¹¹ For a more systematic analysis of the effects of central-bank participation in the Euro-dollar market, see the author's *Some Theoretical Problems relating to the Euro-dollar Market* (Essays in International Finance, No. 79, Princeton, 1970, pp. 12-14).

Capital flows from the United States to the rest of the world tend to increase the total supply of credit to non-banks. The reasoning is the same as in the case given under (a) above, but with the signs reversed; to the extent that the foreign central banks keep their resultant reserve accruals in the form of US money-market assets the capital outflow will on the whole not reduce the monetary base of the US economy, while it will have an expansionary impact on that of the rest of the world. In this case, therefore, an increase in the Euro-dollar market's consolidated balance-sheet total will tend to be connected with an expansion in total credit to non-banks (the same effect without an autonomous increase in the total amount of credit outstanding through the Euro-dollar market will of course occur when, as in 1970-71, the Euro-banks shift their assets from the United States to the rest of world).

In fact, private or official transfers of dollar holdings from the United States to the Euro-banks, except in so far as they result from the market's own activity, come closest to Prof. Machlup's concept of primary Euro-dollar deposits. If these funds are re-lent outside the United States (as is assumed here) they will tend to give rise to multiplier effects, though for the reasons indicated in Sections I and II of this paper these effects will usually be fairly small. Moreover, the size of the multiplier potential will be further reduced if the capital-importing countries — as was to a large extent the case in 1970-71 — neutralise the expansionary impact of the capital inflow on the domestic monetary base. On the other hand, a special type of multiplier effect which has no parallel in national markets will occur when, as in 1970-71, central banks re-deposit with the Euro-banks part of the reserves accruing to them as a result of the Euro-dollar outflows from the United States. In that case the effect on official reserves and on monetary bases will be correspondingly larger than the capital outflow from the United States.

(c) A capital flow from country A through the Euro-banks to country B (where neither A nor B is the United States) will have fundamentally the same effect as any other capital flow, no matter in what currency, between third countries: the monetary base and the official reserves will tend to contract in the capital-exporting country and to expand in the capital-importing country. The only difference made by the fact that the funds pass through the Euro-dollar market is that there will momentarily be an increase in the

US banks' demand-deposit liabilities to the Euro-banks, whereas in the case of a direct capital flow from country A to country B the transfer of US official liabilities from the account of the central bank of A to the central bank of B may be a direct one. The impact of Euro-dollar flows between third countries on the total supply of credit to non-banks is somewhat less clear-cut than that of capital flows to or from the United States. Under normal circumstances, however, the net effect will tend to be an expansionary one since, in the absence of exchange rate uncertainties and major international differences in rates of inflation, the yield differentials which will usually motivate a capital flow from country A to country B will in general reflect differences in the degree of credit tightness. Thus the slow-down in domestic credit expansion resulting from the capital outflow and from the concomitant reduction in the monetary base in country A will usually be smaller than the acceleration in credit expansion associated with the capital inflow and the increase in the monetary base in country B. To illustrate this, it may for example be assumed that the banks of A had originally had substantial excess liquidity which they had invested in sterilisation paper issued by the central bank, so that the export of these funds will now have only a minor effect on the domestic credit supply, and that the banks of B had originally been completely lent up so that they will fully utilise the increase in their reserves to expand credit.

Although it can therefore in general be assumed that, by increasing the flows from easy credit areas to tight credit areas, the Euro-dollar market tends to augment the world supply of bank credit and thus also the overall income circulation, this by no means necessarily denotes the existence of an endogenous Euro-dollar credit multiplier potential. The existence of such a multiplier potential would presuppose that the "marginal propensity" to hold Euro-dollar deposits was the same in both countries. This is hardly likely to be the case, however, since the size of this marginal propensity will be influenced to some extent by yield differentials, and these differentials are favouring Euro-dollar deposits in the case of country A but Euro-dollar borrowing or withdrawals of Euro-dollar deposits in the case of country B. It is thus conceivable that the induced slow-down in the growth of Euro-dollar deposits resulting from the relatively modest tightening in country A's domestic credit

supply will be less than offset by the induced acceleration in the growth of Euro-dollar deposits caused by the relatively large increase in the credit supply of B. In these circumstances an increase in the Euro-banks' balance-sheet total would be associated with an increase in the world credit supply and at the same time with an induced slow-down in the growth of Euro-dollar deposits; in other words, the Euro-dollar multiplier effect would be negative.

The situation will be different again if the capital flow from country A to country B is caused by exchange rate speculation or if the interest rate differentials reflect differences in rates of inflation rather than differences in the degree of credit tightness. Then it is quite possible that the capital flow will be from the tight credit area to the easy credit area and that the autonomous increase in the Euro-banks' consolidated balance-sheet total will give rise both to a decline in credit to non-banks and to an induced reduction in (or slow-down in the growth of) Euro-dollar deposits.¹²

Finally, it is necessary to take into account the rôle of central banks. Where the central banks have autonomous targets for the domestic money supply and thus neutralise the effects of capital outflows or inflows on the domestic monetary base, the increase in credit outstanding through the Euro-dollar market will not affect the total supply of credit to non-banks. And — leaving aside for the moment central-bank deposits in the Euro-dollar market — there will also be no multiplier effects. All that the Euro-dollar market does in these circumstances — apart from being perhaps a policy nuisance — is to bring about an international redistribution of official reserves. If it is only the central bank of the capital-importing country which offsets the impact of the capital flow on the domestic monetary base, the increase in the Euro-banks' consolidated balance-sheet total will even be associated with a decline in credit to non-banks and negative multiplier effects.

The situation is further complicated if central banks themselves hold, either directly or through the BIS, part of their official reserves in the Euro-dollar market. Thus it is conceivable that the monetary

¹² Here again the analogy of a transfer of deposits from bank A to bank B in a national banking system applies. Such a transfer may increase or reduce the total supply of credit in the economy. In the case of a reduction, the autonomous increase in deposits with bank B will tend to bring about a multiple contraction of credit which will probably also be reflected in some induced decline in bank B's deposit liabilities.

authorities of the capital-importing country, while neutralising the domestic monetary consequences of the capital inflow, place the resultant reserve accrual in the Euro-dollar market. When that happens, the increase in credit outstanding through the Euro-dollar market might tend to lead both to a reduction in the credit supply and to induced increases in Euro-dollar deposits and official reserves. Exactly the opposite negative multiplier effects combined with an increase in the credit supply might of course occur if the monetary authorities of the capital-exporting country, while offsetting the tightening effects of the capital outflow, were to finance the reserve loss out of their Euro-dollar holdings.

(d) The impact on the supply of credit and the multiplier potential of circular flows of Euro-dollar funds from a given country through the Euro-banks and back again to the same country (little difference being made by whether the Euro-banks are located inside or outside that country) will depend on a variety of circumstances. It will, for example, tend to be positive when the Euro-dollar flows have the effect of circumventing credit ceilings or reserve requirements. For purposes of illustration, let us assume that the banks of country B are subject to credit ceilings and that the non-bank sector consequently covers its credit needs by borrowing abroad in the Euro-dollar market. The resultant capital inflow will of course be reflected in increased current-account deposits with the banks of B, but since the latter cannot lend out these funds at home they may redeposit part of them in the Euro-dollar market, with the Euro-banks re-lending the funds to the non-bank sector of country B, etc. In that case the Euro-dollar multiplier effects would in a sense take the place of the domestic deposit multiplier.

Another example of circular flows, which was of some significance before the introduction in 1969 of a reserve requirement on US banks' Euro-dollar borrowings, is the transfer by central banks of dollar holdings from New York to London with these funds being re-lent by the London banks to banks in the United States. Circular flows of this kind had the effect of reducing the reserve obligations of US banks and led to an improvement in the US official settlements balance without giving rise to an official settlements deficit in the rest of the world.

If, on the other hand, the Euro-dollar flows simply serve to circumvent restrictions on interest rates (such as Regulation Q) or

are due to the greater competitiveness of the Euro-banks, their impact on the total supply of credit and the concomitant multiplier effects will tend to be small. They may, however, have a major effect on the share of total credit flows which is "intermediated" by the banks or a given group of banks.

A special type of circular flow would occur if the central bank of country B, while neutralising the expansionary impact of residents' Euro-borrowing, placed its reserve accruals in the Euro-dollar market and the Euro-banks re-lent these funds to residents of country B. Here again there would be no effect on the total supply of credit to non-banks, but there would be a multiplication of country B's official reserves.

The main conclusions to be drawn from this section are as follows:

(1) In their impact on the total supply and international distribution of credit and official reserves, Euro-dollar flows are not different from any other capital flows irrespective of the currency in which they are denominated. The Euro-dollar market makes a difference only in so far as it may affect the size and/or direction of international capital flows by increasing the international mobility of capital; to the extent that its effect is limited to denominating in dollars capital flows that would otherwise have occurred under some other currency denomination, its economic consequences are quite negligible. Thus, what has been said in this section about credit and multiplier effects applies, for example, only to that part of the 1968-69 capital flow to the United States and of the corresponding 1970-71 reflux which would not have occurred in the absence of the Euro-dollar market.

(2) Even after netting out all types of duplication, an increase in the Euro-dollar market's consolidated balance-sheet total cannot be taken as a pro tanto increase in the world supply of credit to non-banks. In some cases it may go together with an even larger expansion in the total supply of credit to non-banks; in others it may bring about a decline in the world supply of credit to non-banks or have no effect at all. What effects will actually occur will principally depend on the following factors:

(a) the direction of the capital flows (i.e. whether they are from or to the United States, or between third countries);

(b) the cause of the capital flows (i.e. whether they are induced by differences in the degree of credit tightness or by exchange rate speculation, etc.);

(c) the types of borrower or lender (i.e. whether the borrowers or depositors are central banks or private residents); and

(d) the attitude of the monetary authorities towards the monetary consequences of capital inflows or outflows (i.e. whether they neutralise these consequences or let them take their course).

(3) A positive multiplier effect will normally occur only when the activity of the Euro-dollar market adds to the total supply of credit to non-banks. There is, however, one important exception to this rule; it appertains to the placement of official reserves in the Euro-dollar market. When such placements are made, multiplier effects may occur even in the absence of a positive effect of the market on the supply of credit, though what would be multiplied in this context is of course not the supply of ultimate credit to non-banks but official reserves.

(4) Traditional multiplier theory and the concept of primary deposits are quite inadequate for explaining the growth of the Euro-dollar market or for analysing the market's contribution to total credit creation. There is no such thing as a relatively stable multiplier potential attached to every autonomous increase in Euro-dollar deposits, since such an increase will in general not lead to a corresponding expansion of the world monetary base — depending on the use of the funds it might even tend to reduce it. This is not to deny that at times — as in 1970 — when both the Euro-dollar market contributes to a capital outflow from the United States and the central banks tend to place their resultant reserve accruals in the Euro-dollar market multiplier effects may be of major importance. However, 1970-71 was the first time in the history of the market that such a constellation was of major importance. Moreover, for policy purposes central-bank deposits must be considered as exogenous to the market. Endogenous credit creation of the more conventional type, such as occurs in relatively self-contained national commercial banking systems (and on which most of Prof. Machlup's analysis is based), is certainly only a fairly minor aspect of the Euro-dollar market.

V. The Euro-dollar market and the US balance of payments

So far we have dealt only with those points on which our disagreement with Prof. Machlup is mainly due to different assumptions about the nature and the working of the Euro-currency market. However, in major parts of his essay we also find it difficult to agree with his analytical procedure as such.

On pp. 247-250 Prof. Machlup quite emphatically draws the conclusion that the US banks' Euro-dollar borrowing in 1969 affected neither the size of the US balance-of-payments deficit on the liquidity or the official settlements basis nor the volume of dollar deposits in European banks. In order to facilitate understanding of this at first sight highly surprising conclusion — Prof. Machlup himself stresses that the "results of his analysis are different from those reported by most experienced Dollar-Eurologists in the profession" (pp. 249-250) — it may be helpful to outline briefly his analytical method. Prof. Machlup conceptually dissects the 1969 Euro-dollar flows into two separate stages: firstly, the transformation of private or official dollar balances held in the United States into dollar balances held with banks in the Euro-dollar market, with the Euro-dollar banks keeping the counterpart of the increase in their liabilities in the form of interest-free working balances with banks in the United States; and secondly, the transformation by the Euro-dollar banks of these interest-free working balances (which show up as demand-deposit liabilities in the US banks' accounts) into loans to US banks at Euro-dollar rates of interest. Although Prof. Machlup himself realises that this division into two stages is purely a conceptual device, he treats the two stages independently as though there were no causal relationship between them — or to be more precise, he disregards the first stage and refers only to the second, viz. the conversion of demand deposits into non-deposit claims, which obviously has no effect on the US balance of payments however measured. In this very limited and superficial sense his conclusions are of course correct and, contrary to what Prof. Machlup asserts, no "experienced Dollar-Eurologist" would disagree with him. But where there certainly would be disagreement is in thinking that this is a very meaningful way of looking at things. There can be no doubt that the pressing demand for Euro-dollar funds on the part of US banks and the resultant sky-rocketing of Euro-dollar rates

were largely instrumental in inducing the rapid growth in Euro-dollar deposits in 1969. And to the extent that the funds attracted from the United States to the Euro-dollar banks were owned by US residents or had been in non-liquid form, they added to the liquidity deficit, while to the extent that the dollars came out of foreign official reserves this flow of funds improved the official settlements balance. To neglect these causal relationships has nothing to do with "sorting things out neatly in clean and sterilised mental operations" but is simply giving a highly irrelevant account of what actually happened. Applied to developments in 1970, Prof. Machlup's line of argument would signify that the US banks' debt repayments had no effect on the US balance of payments since they implied only the conversion by the Euro-dollar banks of loan claims into interest-free demand deposits with the US banks, and that it was the re-lending of these interest-free working balances to non-US residents which then gave rise to the US payments deficit. This type of argument is in fact reminiscent of the motorist who, after killing a pedestrian, defended himself by saying that it was not his fault that the man ran into his car just before he happened to die.

Prof. Machlup's procedure of conceptually dissecting the Euro-dollar credit flows into two parts (i.e. firstly the conversion of official or private dollar balances into demand deposits held by the Euro-dollar banks with banks in the United States, and secondly the re-lending by the Euro-dollar banks of these funds either to US residents or to non-US residents) and his treatment of each of these stages in isolation as if there were no causal relationship between the two mars a substantial part of his paper. This applies in particular to the section called "Theoretical Propositions" (pp. 253-257) in which Prof. Machlup sums up some of his findings. Taken literally, all these propositions are, in a trivial sense, correct and by no means controversial as Prof. Machlup seems to think. But since they refer only to a few isolated aspects, they are liable to give a misleading impression of the economic implications of the Euro-dollar market as a whole. And matters are made worse because Prof. Machlup, as already mentioned in Section IV, omits some of the aspects of the market's activity which would conflict with his theory of the market's endogenous multiplier possibilities, while on the other hand he introduces some distinctions which are quite irrelevant. Thus it makes little difference as far as the working of the multiplier effect and the market's impact on the US balance of

payments are concerned whether the funds are provided by (lent to) residents of the reporting European countries or of the outside area (other than the United States); nor does it matter very much whether the banks or the non-banks themselves effect the conversion into or out of dollars (Prof. Machlup refers only to the conversion by non-banks). Similarly, for analytical purposes is it really necessary to differentiate between the cases where non-bank conversions into dollars prevent an increase in official reserves and those where they cause an actual decline?

To give just one example, in proposition I (pp. 253-254), which refers only to stage I of the credit flows, Prof. Machlup states that the momentary increase in the Euro-dollar banks' dollar cash reserves resulting from a transfer of foreign-held funds into the Euro-dollar market will under certain conditions finance various deficit items in the US balance of payments. But how significant is this effect? The Euro-banks try to keep their interest-free Euro-dollar transaction balances with US banks down to a strict minimum, and at the end of the day these interest-free working balances are quite small. Klopstock in a recent paper¹³ argues that once these working balances have reached a minimum size they tend to remain stable despite a further increase in the banks' credit volume, which would imply that the actual importance of the effect mentioned by Prof. Machlup is close to zero. Showing that the funds flowing through the Euro-banks may for a very short time take the form of interest-free working balances with US banks is certainly pertinent for an understanding of the mechanics of the market, but it is not very helpful to treat these working balances as if they represented the ultimate use (or original source) of the Euro-dollar funds.

VI. Euro-dollar semantics

As used, for example, by the BIS, the term "size of the Euro-dollar market" is a shorthand notation for the outstanding amount of Euro-dollar credit channelled through the banks of eight reporting European countries. Contrary to what Prof. Machlup seems to suggest, this concept is not limited to the deposits aspect of the market but seeks to measure the rôle of the reporting banks as

¹³ "The Wiring of the Euro-dollar Market", *Euromoney*, August 1970.

intermediaries in foreign currency (i.e. in dollars). Prof. Machlup objects to this kind of evaluation of the market's size on two main grounds.

The first springs from the fact mentioned earlier that he likens the Euro-banks to the US commercial banking system, whose liabilities have to a large extent the character of money and are in a certain sense mainly the result of the banks' own lending operations. We have already argued in the preceding sections that this comparison is misleading and that in their relations with non-banks the Euro-banks, on their liabilities side, have rather the character of savings banks. But even if Prof. Machlup were right, it would still be justifiable and of interest, in view of the rôle of the Euro-dollar market as an international money and credit market, to give a geographical break-down of the "sources and uses" of Euro-dollar funds, i.e. a geographical break-down of the main groups of deposit-holders and loan-takers. In the case of a capital flow from country A to country B it is not of little significance for balance-of-payments purposes whether the funds were created as a result of the Euro-banks' own activity or not. For other purposes, of course, a break-down by maturity as suggested by Prof. Machlup would also be valuable (it is unfortunately only available for the UK banks) but this does not mean that any other information about the market is of no consequence.

Prof. Machlup does concede, it may be added, that the market for commercial paper or for bankers' acceptances can be measured by the total amount outstanding. The reason he gives — that here the analysis focuses on particular credit investment — can also be applied by analogy to the concept of the "Euro-dollar market", since this term refers to particular groups of banks or to a particular aspect of the banks' activity, i.e. intermediation in foreign currency. Moreover, we have already argued that the holding of Euro-dollar deposits is much more akin to the holding of commercial paper, bankers' acceptances, etc., than to the holding of interest-free demand deposits with US commercial banks.

Prof. Machlup's second basic objection to measuring the size of the market on the basis of total credits outstanding is that the concept of the size of a market should apply rather to total sales over a given period of time. On this point, too, we find it difficult to agree, because we feel that there are many criteria which may be applied in measuring the size of a market — the number of partici-

pants, geographical spread, the volume of turnover, the value of turnover, etc.; the criterion chosen will depend on one's analytical objective and the properties of the market. When talking about credit markets, an economist will generally have in mind not the bargaining aspect, which seems to dominate Prof. Machlup's concept of a market, but the market's rôle in allocating capital from savers to investors, irrespective of how this is done technically. In the case of long-term credit this rôle may be conveniently measured in aggregate terms by the yearly net increase in the total amount of credit outstanding through the market. In the field of short-term credit — which includes the Euro-dollar market — where most of the credit relationships are renegotiated at least once a year, it might be more appropriate to take the total amount outstanding. For it would clearly be misleading to say that the market has contracted when, after expanding, say, from 15 to 20 million in the previous year, the total amount of credit outstanding had gone up only from 20 to 22 million in the current year. Nevertheless, it is not of vital importance which of these two criteria is adopted since the one can easily be derived from the other. Incidentally, taking the Euro-dollar market over the whole of its life, the two criteria (i.e. the stock concept and the flow concept) coincide.

The analogy of a commodity market as used by Prof. Machlup does not seem to be a very helpful one: once fish are sold, they disappear from the market, are consumed and cannot be recalled by the vendor. Credits, in contrast, are not sold by savers to investors; in the case of short-term funds the total amount could theoretically be withdrawn at short notice or shifted to other borrowers. This consideration, which might become of some importance in the event of a confidence crisis or at times of exchange rate speculation, is undoubtedly one of the main reasons why in the case of the Euro-dollar market the term "size" has always been applied to the amount outstanding.

The criterion suggested by Prof. Machlup, i.e. "new Euro-dollar loans contracted and old loans recontracted per day", although perhaps somewhat more satisfactory from the point of view of terminological perfectionism, is not very relevant for analytical purposes. For an economist concerned mainly with the credit and balance-of-payments implications of the Euro-dollar market it would, for example, not make much sense to say, at a time when the total amount of Euro-dollar credit outstanding was increasing, that

the Euro-dollar market had contracted simply because there had been less redepositing between the reporting banks or because the average maturity of the loans had lengthened. Terminology is not an end in itself; the only criterion is its usefulness and relevance.

Finally, Prof. Machlup objects to the use of the term "market" as such, since "there is much more to the Euro-dollar system than a credit market". This is of course quite true, but we of course all recall from our high-school days that the ancient Romans already used the device of "pars pro toto", i.e. naming a thing after only one of its most significant aspects. And there can be no doubt that from an economist's point of view the most important aspect of the Euro-dollar market, like any other credit market, is the rôle it plays in allocating capital. Language always involves a good deal of abstraction and if the postulate that every name should fully describe the phenomenon to which it refers were taken to its extreme, mankind would have to forgo the use of words altogether.

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Basle.