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MACHLUP ON THE TRANSFER PROBLEM

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This paper intends to provide a comprehensive and critical survey of the valuable but neglected contributions of Fritz Machlup to the debate on the Transfer Problem. Machlup took three different and conflicting lines of approach to the problem in the course of his lifelong study of it. The third, which is of a basically monetary character, provides original results, especially in relation to the demand-oriented and quantitative approach that dominates in the standard literature.

I. INTRODUCTION

Fritz Machlup was born in Wiener Neustadt, Austria, in 1902. He studied economics at the University of Vienna in the 1920s; among his teachers were Ludwig von Mises and Friedrich von Wieser. Under the supervision of von Mises, Machlup presented his doctoral dissertation on the gold-exchange standard in 1923. The title of the dissertation was ''Der Goldkernwährung'' (''the gold-core standard,'' in Machlup's translation; see Machlup 1980, p. 116). The dissertation was published as a book in 1925.

From 1922 to 1932 Machlup worked in his family's cardboard-manufacturing business. He became a member of the Austrian cardboard cartel in 1927, retaining his academic links by serving as treasurer (later secretary) of the Austrian Economic Society and participating in von Mises' *Geistkreis* seminars.

In 1933 Machlup travelled to the United States on a Rockefeller scholarship and visited Columbia, Harvard, and the University of Chicago. There he met the leading economists of the day, among them Joseph Schumpeter and Frank W. Taussig at Harvard, and Frank H. Knight and Jacob Viner at Chicago. He also made lasting friendships with Milton Friedman, George Stigler, and many other ''rising stars'' (Haberler 1983, p. 11). Machlup held a professorship at the University of Buffalo

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from 1935 to 1947, with visiting positions at Cornell, Northwestern, Berkeley, Michigan, Harvard, and Stanford universities. During the war he served as Special Consultant to the Post-War Labor Problems Division of the Federal Department of Labor and in the Office of Alien Property.

In 1947, Machlup became professor of political economy at Johns Hopkins University, and wrote some influential books on pricing and industrial organization. He was visiting professor at Columbia University (1948), UCLA (1949), Kyoto and Doshisha universities of Japan (1955), and a Ford Foundation Research Fellow (1957–58). From 1960 to 1971 Machlup served as Walker Professor of International Finance and director of the International Finance Section at Princeton University. During that period he was a visiting professor at City University of New York, New York University, Osaka, and Melbourne.

Machlup was a consultant to the US Treasury from 1965 to 1977, having formed the Bellagio Group of academics to study international monetary problems in 1963. This group was the direct predecessor of the influential Washington-based financial advisory body, the Group of Thirty, which he joined in 1979.

> The American Secretary of the Treasury, Douglas Dillon, announced in 1963 that a thorough investigation of the international monetary system was planned, but without the help of academic economists, who, Dillon thought, could never agree on anything. Thereupon Machlup organized a committee of professors, later known as the Bellagio Group, to prove that theoreticians were very well able to agree on certain principles. Later, experts from central banks and other non-academic institutions participated in meetings of this group, which had a strong influence on the development of the international monetary system, especially on the transition from fixed to flexible exchange rates. The so-called Group of Thirty, under the leadership of Johannes Witteveen, is the successor of the Bellagio Group. In 1967 Machlup was offered the presidency of the Austrian National Bank, an indication of his outstanding reputation in the world of finance (Haberler 1983, p. 12).

In 1959 Machlup was appointed president of the Southern Economic Association. In 1966 he became president of the American Economic Association. After retiring in 1971, he joined the faculty of New York University, where he was active until his death in 1983. From 1971 to 1974 Machlup was also president of the International Economic Association.

Machlup worked in two main areas: industrial organization, with particular emphasis on the production and distribution of knowledge; and international monetary economics. This paper deals with the latter. Specifically, it purports to rescue from oblivion the history of Machlup's lifetime struggle with the classic Transfer Problem. Many an economist has had to come to grips with this problem, but, judging by the existing literature, none has done so with more intensity and depth than Fritz Machlup. Machlup began writing on the Transfer Problem in his youth in the 1920s and returned repeatedly to the subject until his death in the 1980s. If we combine his many writings on the Transfer Problem, we have a treatise on the subject, one such that no other economist has produced.

Machlup's writings show three lines of approach to the Transfer Problem. His writings in the 1920s and 1930s take the classical approach, based on the quantity

theory of money. Machlup claims there is an automatic mechanism that solves the Transfer Problem through the effect of capital exports on prices. The idea is that capital exports induce changes in relative international prices that, if undisturbed, set in motion corresponding transfers of real capital. Not unsurprisingly, Machlup changed his mind after becoming acquainted with John Maynard Keynes' *General Theory* in the 1940s. In his writings of the 1940s, and under the influence of Keynes (that is to say, of the Keynes of the *General Theory*, not the Keynes of the 1929 "The German Transfer Problem"), Machlup shifts the focus from the effects of capital exports on prices to the effects of capital exports on spending, so that the solution of the Transfer Problem depends on the existence of an automatic mechanism that may adjust spending to capital exports in the countries involved. In contrast to the "first Machlup," this "second Keynesian Machlup" is skeptical about the existence of such a mechanism. In this approach, the link between money and prices is nearly absent, and the decisive variable is spending. An interesting feature of this second approach is the confusion in the description of the diverging positions on the Transfer Problem. As we will see, Machlup is not alone on this: there are some important confusions in the characterization of the conflicting positions on the Transfer Problem in the standard literature (and even in such an outstanding figure as Bertil Ohlin) that I will try to clear up in this paper.

In contrast to Machlup's first and second approaches, where the key to the solution of the Transfer Problem lies on the demand side, in his third approach in the 1960s, demand conditions cease to figure at the forefront of the discussion, and monetary variables take prominence. It is true that this third Machlup harks back to the classical mechanism of price adjustment he had espoused in his first period, but, as we will see, this does not represent a return from the *General Theory* to the classical tradition. Certainly, Machlup acknowledges a connection between money capital exports and changes in price levels, but the solution of the Transfer Problem does not rely on it, as it did in his first approach. In this later period of his work, neither prices nor spending need to respond in an adjusting way to capital exports, so there is no guarantee that capital exports will be followed by the corresponding exports of real capital. The reason lies in the autonomy of money: money transfers induce changes in monetary variables that may prevent prices and/or spending from adjusting to the levels required to set in motion the flows of real capital necessary to solve the Transfer Problem. It is not that prices or spending are "sticky," but that there is no automatic mechanism whereby the monetary conditions resulting from autonomous money transfers should induce the adjustments in prices or spending needed to trigger the required flows of real capital. Thus, in the third Machlup, the Transfer Problem becomes a genuinely *monetary* problem. More specifically, in Machlup's third approach, the key to the solution of the Transfer Problem lies not in the conditions that determine the demand for goods, as in the first and second approaches, but in the conditions that determine the demand for reserve assets of the financial system.

It is from this third approach that Machlup, in the 1960s, diagnosed the problems of the US balance of payments. He claimed that the economics profession had failed to note that the persistent deficits in the US balance of payments after the war were but the manifestation of an underlying Transfer Problem, which would remain unsolved as long as it went on unnoticed. According to Machlup, the pressure on the dollar was not the consequence of the deterioration of the international competitive

position of the US or of bad domestic economic policies, but of the refusal of the international financial system to create international money and, thus, international reserve assets that could alleviate the strong international demand for the dollar as reserve asset. As Machlup views it, as long as the International Monetary Fund continues to act in accordance to what he calls the ''cloakroom rule for international reserves,'' (see Machlup 1965) a Transfer Problem will stand in the way of the adjustment of the US capital and current accounts, and, thereby, will eventually compromise the value of the dollar and the very foundations of the international financial system itself. Despite its originality and the many theoretical insights that can be derived from it, Machlup's explanation of the post-war dollar crisis remains basically unknown in the standard literature.

It is true that Machlup's ideas did not have much impact on mainstream economics until he moved to the US and wrote in English, and his writings in German were translated into English. However, as is evident by his bibliographical profile, Machlup became a prestigious economist and, especially since the 1950s and until his death in 1983, his opinions were well known and debated by the economics profession and in the highest economic institutions. It is unfortunate that, in particular, his work on the Transfer Problem has failed to receive the recognition that it deserves. Indeed, it is revealing that even in the otherwise excellent work of Flanders on the history of international monetary economics (Flanders 1989), the presentation of Machlup's contributions to the subject and, in particular, to the Transfer Problem consists of a brief summary of the main ideas of the second Machlup, that is, of the Keynesian Machlup of the 1940s.

The paper is divided into five sections. In the first one, and in order to clarify the issues, I pay a short visit to the birthplace of the Transfer Problem, the Ohlin–Keynes dispute in *The Economic Journal* of 1929. In the second section I present the treatment of the Transfer Problem of the ''classical'' Machlup of the 1920s. The third section deals with the second Keynesian Machlup of the 1940s, and the fourth with the third Machlup of the 1960s, which is the Machlup who linked the debate on the Transfer Problem to the debate on the dollar crisis. The fifth section presents conclusions. In order to define with as much accuracy as possible the development of Machlup's thought on the Transfer Problem, I have chosen to discuss each of Machlup's approaches through an analysis of a representative work of the period.

II. THE TRANSFER PROBLEM IN THE OHLIN–KEYNES DEBATE OF 1929

The phrase ''Transfer Problem'' comes from the Dawes Committee of 1925. The Dawes Committee split the problem of Reparations into two: the *Budgetary* and the *Transfer* problems. The Budgetary Problem was the question as to whether Germany was able to *collect* the sums of money stipulated by the Dawes Committee; the Transfer Problem, by contrast, was the question as to whether the transfer of those sums of money from Germany to the victor countries was feasible. According to Keynes, even if the Budgetary Problem was solved, the Dawes plan posed an ''insurmountable'' Transfer Problem in that the transfer of the sums of money stipulated by the plan demanded a self-defeating devaluation of the German currency. Ohlin replied to

Keynes that the Dawes plan would not induce any fatal devaluation of the Reichsmark because it did not call for a dramatic reduction in German international prices. According to Ohlin, the income effects resulting from the payment of Reparations would automatically solve the Transfer Problem and preclude the devaluation of the Reichsmark. Let us define the position of each contender with more accuracy.

At first sight, the transfer of Reparations in money from Germany to the victor countries poses an obvious problem for the international value of the Reichsmark in that it involves a steep rise in the supply of Reichsmark to the foreign exchange markets. If this increased supply fails to be met by a balancing increase in demand, the value of the Reichsmark will be seriously compromised. It is true that the eventual devaluation of the German currency would make German goods cheaper for the victors, but it is no less true that it would also make dearer the currencies of the victors for Germany. If this latter effect is not balanced by the former, the devaluation of the Reichsmark in the foreign exchange market will make Germany unable to collect the sums of foreign currencies stipulated by the Dawes plan and, therefore, she will have to default. Thus formulated, the Transfer Problem essentially consists of a *monetary* problem; in fact, Keynes begins his classic paper of 1929 with such a monetary formulation of the Transfer Problem:

> The Dawes Committee divided the problem of the payment of German Reparations into two parts—into the *Budgetary* Problem of extracting the necessary sums of *money* [my emphasis] out of the pockets of the German people and paying them to the account of the Agent-General, and the *Transfer* Problem of *converting the German money so received into foreign currency* [my emphasis] (Keynes 1929a, p. 1).

As the Transfer Problem is a problem about the conversion of German money into foreign currencies—that is, a *monetary* problem—one expects from Keynes a discussion about rules or policies for the Agent General, or an alternative schedule of payments to that specified in the Dawes plan, or something of this sort. But this is not the case. Instead, a few lines after having formulated the Transfer Problem as a monetary problem, Keynes introduces a radically different new formulation, according to which the Transfer Problem arises in the *goods* markets and the key to solve it lies in the conditions that determine the demand for goods:

> If £1 is taken from you and given to me and I choose to increase my consumption of precisely the same goods as those of which you are compelled to diminish yours, there is no Transfer Problem (Keynes 1929a, p. 3).

Though Keynes sets his example in terms of individuals, it is obviously intended to refer to countries. According to this new formulation of the Transfer Problem, capital exports pose no Transfer Problem if utility maximization sets in motion a transfer of real capital equal to the initial transfer of money capital. The point is that the payment of Reparations will not undermine the value of the Reichsmark only if utility maximization leads the victor countries to increase their demand for exactly the goods that Germany releases from consumption upon paying Reparations. Of course, we are before the *General Theory* and before Sydney Alexander's absorption approach to the analysis of the balance of payments (Alexander 1952), so the multiplier effects of the changes in absorption are absent. We can enunciate Keynes' view in an alternative

way: capital exports pose no Transfer Problem only if absorption in the transfer-making country falls by the same amount as it grows in the transfer-receiving country, and the goods the demand for which falls in the transfer-making country are exactly the goods the demand for which rises in the transfer-receiving country.

This means that if the Dawes plan was to pose any Transfer Problem, the origin of it would be *not in the money, but in the goods markets*. It is crucial to note that, in this second formulation of the Transfer Problem, which is the one that prevails in the entire debate between Keynes and Ohlin, the changes in monetary variables, such as banking reserves, interest rates, or exchange rates, depend ultimately on the demand and supply of money required by commercial trade. If money transfers fail to set in motion the corresponding transfers of real capital, it is not because exchange or interest rates stand in their way, but because the conditions of the demand for goods do so. More specifically: if autonomous money transfers pose a Transfer Problem, it is because the goods that the transfer-making country releases from consumption are not the goods that the transfer-receiving country demands in excess.

As Keynes sees it, the fact in 1929 is that the Dawes plan is posing a Transfer Problem because the Reparation payments from Germany to the Allies are not being accompanied by an equivalent German surplus trade. This reveals that the transfers of money from Germany to the Allies are failing to set in motion the corresponding flows of real capital. This situation is unsustainable: if the German trade surplus keeps falling short of the German Reparation payments, Germany will be unable to collect the sums of foreign exchange demanded from her and she will thus default. As the size of the money payments that Germany has to make is determined by the Dawes plan, the only way to make ends meet is for Germany to run a surplus trade of the same size as the money payments demanded from her. The problem is that to arrive at this trade surplus, Germany would have to outsell her foreign competitors by a margin so large that she would have to either devalue her currency or cut her prices to very low levels. In both cases, her ability to obtain foreign exchange is compromised and, therefore, concludes Keynes, Germany is bound to default. Therefore, the Dawes plan poses an insurmountable Transfer Problem, which is already evident. Either the victors reduce their demands of money payments from Germany and/or accept payments in kind, or Germany will default (see Keynes 1919 [1995]).

Ohlin contended, against Keynes, that the income effects resulting from the payment of Reparations will eventually bring about the required surplus in the German balance of trade without significant devaluation or deflation, so the Dawes plan was feasible. I would like to stress that the formulation of the Transfer Problem that underlies Ohlin's reply to Keynes is of the same kind as Keynes' second formulation of the Transfer Problem; that is, demand-based. Thus, and not unsurprisingly, the debate between Keynes and Ohlin ends in a discussion about the relative importance of price and income effects on the demand for goods in which monetary variables passively adjust to the trade of goods. At the end of the day, Keynes' main point is that the Dawes plan *does* pose a Transfer Problem because the increase in the foreign absorption of German goods requires, one way or another, a self-defeating devaluation of the Reichsmark. Ohlin says, in contrast, that the automatic reduction in *income* consequent upon the payment of Reparations will increase absorption in the victor countries and decrease it in Germany in such a way that there is no need for price adjustments to set in motion the balancing flows of real capital from Germany to the victor countries. The

common, unchallenged premise in both authors is that the source of the Transfer Problem resides in the goods markets.

Even though both Keynes and Ohlin argue on the premise that the origin of the Transfer Problem lies in the demand for goods, neither of them pays much attention to the protectionist policies that were already in force by the time their respective papers were written. This is noteworthy, because, in principle, Germany's assets and, in particular, her foreign assets were to be confiscated by the victors (see Faith 1984). This means that, at least in principle, Germany did not have foreign assets from which she could obtain foreign exchange in order to pay for the Reparations. Thus, the only way Germany could get the sums of foreign exchange demanded by the Dawes plan was to purchase them with her goods; in other words, to run a persistent and large trade surplus. Oddly enough, neither Keynes nor Ohlin notice that the wave of protectionism sweeping the international goods markets made it almost impossible for Germany to arrive at the trade surplus required by the Dawes plan.

By contrast, both Keynes and Ohlin came very close to noting that, even though it is true that money is the instrument of trade, it is no less true that money flows not only in order to mediate the exchange of goods, but also in order to yield interest. This implies that the "needs of banking" do not have to coincide with the "needs of trade" and, therefore, that the flow of money capital does not have to be the mirror image of the flow of real capital. Moreover, the profitability of the money business may set constraints on the flow of money in commercial trade, and require, under certain circumstances, its contraction; look, for instance, at the closing paragraph of Keynes' 1929 paper:

> But the retention of "transfer protection" may be desirable from other points of view than Germany's. Addressing the shareholders of Barclay's Bank last January, Mr. F.C. Goodenough said: "It will be of great importance that the amount to be fixed should be not only acceptable to the Allies, but such as will obviate, as far as possible, forcing Germany into excessive industrial competition with the rest of the world through compelling her people to accept too low a standard of living." If Mr. Goodenough is right, some measure of "transfer protection" should be retained (Keynes 1929a, p. 169).

The "transfer protection" clause of the Dawes plan stipulated that the conversion of Reichsmark into foreign currencies should be stopped if the exchange rate of the Reichsmark came too close to a certain lower boundary. The passage just quoted shows that the "transfer protection" clause provided "protection" not only to "Germany," but also to the Dawes plan against German default and, in particular, to the industrial interest of the victor countries against German "excessive industrial competition." To the extent that the Dawes plan requires a large and persistent German trade surplus, which is to be achieved by flooding the international markets with cheap German goods, it does not bring very good news to the industrial interest of the victor countries; as a matter of fact, it poses a threat to it.

This passage provides a good place to look at the relevance of the Transfer Problem, as it shows that, ultimately, its theme is the fundamental question of the relationship between the monetary and the real sides of the economy. This can also be seen in the debate on the Transfer Problem in which the French economist Rueff joined Keynes and Ohlin. This three-party debate was published in 1929 in *The Economic Journal* in an issue after the one that published the classic papers of Keynes and Ohlin. In this short

debate, the Transfer Problem is formulated as the question as to whether the trade balance automatically adjusts itself to the autonomous changes in the state of the balance of capital. Rueff and Ohlin answer in the positive to this question, which implies that there is a mechanism of adjustment between the real and the monetary sides of the economy. By contrast, Keynes claims there is no such automatic mechanism; this implies that economic policies that otherwise look very beneficial and smart may be doomed to fail because there is no automatic mechanism to guarantee the coordination between the balance of capital and the balance of trade:

> Historically, the volume of foreign investment [''foreign investment'' means here ''net capital exports''] has tended, I think, to adjust itself—at least to a certain extent—to the balance of trade, rather than the other way round, the former being the sensitive and the latter the insensitive factor. In the case of German Reparations, on the other hand, we are trying to fix the volume of foreign remittances and compel the balance of trade to adjust itself thereto. Those who see no difficulty in this—like those who saw no difficulty in Great Britain's return to the gold standard—are applying the theory of liquids to what is, if not a solid, at least a sticky mass with strong internal resistances (Keynes 1929a, p. 167).

III. MACHLUP'S ''CLASSICAL'' APPROACH TO THE TRANSFER PROBLEM: ''Foreign Debts, Reparations and the Transfer Problem,'' 1928

Machlup was still living in Austria when the debate about the German Reparations broke out. In his 1980 autobiographical paper, Machlup describes himself as a ''fanatic anti-inflationist'' in the 1920s (Machlup 1980, p. 128), but the fact is that he did not hesitate to take pen in 1928 against the monetary policy proposals of the governor of the Reichsbank, Hjalmar Schacht, despite the fact that he regarded them as ''anti-inflationary.'' Let us look into this curious chapter of Machlup's intellectual biography.

In 1927, Schacht said the Reichsbank should stop issuing new Reichsmark in exchange for the US dollars the Dawes loan was sending to Germany. According to Schacht, this monetary policy was bound to be inflationary and had to be stopped. He proposed going back to the Currency Principle and regulating the issue of Reichsmark in accordance with the fluctuations of only the gold reserve of the Reichsbank, which excludes the reserves of foreign currencies as security for the issue of Reichsmark. However, the rationale that Schacht offered for his proposal was not entirely in line with the monetary theory underlying the Currency Principle. The reason why Schacht contended that the Reichsmark that were being issued against the incoming flow of US dollars were inflationary was not that those Reichsmark were not backed up by gold, but, rather, that they were not being put to ''productive uses.'' Since, according to Schacht, the new money is being put to unproductive uses, it is the duty of the Reichsbank to stop printing new Reichsmark against the Dawes loan in order to prevent Germany from returning to the abyss of inflation and economic catastrophe (as in 1923):

> Since the Reichsbank recognizes that it has the responsibility for maintaining an adequate circulation of means of payment of stable value, it cannot tolerate that just anybody in Germany can at his own discretion add to the increase of our foreign financial commitments (Schacht 1927; quoted in Machlup 1928 [1966], p. 402).

The German politicians may keep borrowing from the US and spending the money unproductively, but the Reichsbank is not going to contribute to that debauchery by issuing any more new Reichsmark against the Dawes loans. We should not forget that Schacht would have gladly gone on issuing new Reichsmark against the security of the Dawes loans if those new Reichsmark had been devoted to ''productive'' uses, regardless of their gold cover.

Machlup agrees with Schacht that the issue of new Reichsmark against the Dawes loans poses a serious problem for the German economy insofar as the new money is not devoted to productive uses, and concurs with him that the new money is being used to build ''public parks and churches, well-lit streets and highways, modernized and smokeless railroad trains, sport arenas and swimming pools'' (Machlup 1928 [1966], p. 400).

Schacht and Machlup agree that this represents a waste of resources for a country like Germany, which has to build not swimming pools but factories in order to produce goods for exports, out of which she can derive the income required to pay for the imports from the US, for Reparations, and, last but not least, for the principal and interest of the Dawes loans. German authorities have preferred to ignore the difficult situation of their country and are accumulating a mass of external debt which is not being devoted to transforming Germany into an industrial power, but into an amusement park. Add to this that the victor countries are raising trade barriers against foreign goods, and we have a grim outlook for the German economy.

Oddly, Machlup takes issue with Schacht's anti-inflationary monetary policy proposal on the grounds that it is anti-inflationary! Interestingly enough, the point that the ''fanatic anti-inflationist'' Machlup wants to make against Schacht is that there is a sort of inflation that, far from being destabilizing, is stabilizing and *necessary* for economic growth. This ''healthy'' inflation holds the key to solving the Transfer Problem posed by the Dawes loans. If the Dawes loans are prevented from causing inflation in Germany, they are prevented from giving rise to the price differential that will open the door to the transfer of real capital goods from the US to Germany.

Thus, the anti-inflationist Machlup takes a stand against the anti-inflationary plans of Schacht not because Schacht is wrong to believe that the application of the Currency Principle will contain inflation, but because *inflation is not to be contained*. The reason is that it is the first step in the automatic mechanism that will bring to Germany the US capital goods required to rebuild the German economy. If US goods do not become cheap for Germany (and German goods dear for the US), the Dawes loans will not be followed by the deficit in the German trade balance (alternatively, surplus in the US trade balance) that represents the import into Germany of the US real capital goods required to rebuild the German economy. If the Reichsbank adopts a restrictive monetary policy that prevents the Dawes loans from inflating prices in Germany in relation to the US, the transfers of money from the US to Germany will not be followed by the transfer of real capital. In order to support his contention, Machlup explains how price fluctuations of the sort envisaged in Hume's specie flow mechanism solve the Transfer Problem:

> Sequence analysis of the Process Involved in an Inflow of Capital: Receipt of a Foreign Loan. 1. Foreign loan is arranged and dollar balances are received; 2. The dollars are sold to the central bank, which issues marks to pay for them; 3. This

> increases domestic circulation; 4. Incomes and prices increase; 5. This stimulates imports (restrains exports); 6. To pay for the imports, dollars are bought from the central bank, which receives marks in exchange; 7. This again reduces domestic circulation; 8. Incomes and prices decrease again; 9. The dollar remittances for the imports use up the dollar balances (Machlup 1928 [1966], p. 404).

Step 4 is not well defined, as Machlup does not specify whether the rise in domestic circulation and prices is accompanied by a rise in *real* income. All we know is that *money* income rises when circulation and prices rise. Machlup is obliterating here a fundamental question which he will take up later in the 1940s.

As we see, for the Machlup of 1928, the key variable for the solution of the Transfer Problem is the price level. The solution requires letting money flows work out the price differentials that set in motion the corresponding flows of real capital. Needless to say, no monetary policy or any foreign loan can save Germany from bankruptcy if Germany devotes her money to unproductive uses. To put it another way: Machlup agrees with Schacht that the productive use of the resources placed at the disposal of Germany is *conditio sine qua non* of the economic reconstruction of Germany. His point against Schacht is that the productive use of the Dawes loans should not be accompanied on the part of the Reichsbank by a *restrictive*, but by an *expansionary* monetary policy. Such a policy will certainly bring about inflation in Germany, but this inflation will bring over to Germany the US capital goods required to rebuild the German productive structure. Provided that the US loans are devoted to productive uses, the Reichsbank should set no barriers to the conversion of US dollars into Reichsmark and should let inflation follow its course:

> If a central bank instead of following the currency principle and of acting as an exchange-stabilization fund, reduces domestic credit to offset the effects of the increase in its foreign-exchange holdings, it prevents an increase in domestic circulation, incomes, and prices, and hence the increase in imports. In other words, it prevents the economy from obtaining the goods which foreign countries make available to it through their loans. The dollars, for example, instead of being used for buying goods from abroad, remain idle in the central bank's reserve. Then, of course, President Schacht can say, as he did on October 21, 1926, before the Committee on Inquiry (Enqueteausschuss): 'We have no need for these reserves' (Machlup 1928 [1966], p. 410).

Machlup agrees with Schacht that the initial inflationary stage of the mechanism of solution of the Transfer Problem will be followed by a deflationary stage in which German (money) incomes and prices will fall. However, and here we have the other point that Machlup intends to make, the state of the German economy after the solution of the Transfer Problem and the corresponding deflationary adjustment will be better, not worse. Germany will have acquired the productive goods on the basis of which she can relaunch her economy. Schacht has failed to note that the Dawes loans pose a Transfer Problem that would be made worse by a restrictive monetary policy.

We could say that, according to Machlup, the Transfer Problem posed by the German Reparations can be solved only if another and previous Transfer Problem is solved: that posed by the Dawes loans to Germany. Without the aid of the US, Germany cannot rebuild her productive system and become a net exporter of goods. If Germany is to

produce much and cheaply in order to arrive at the trade surplus required by the Dawes plan, she must first rebuild her industrial capacity. This requires huge imports of capital goods from the US, and, in turn, this requires not offsetting the inflationary effects of the Dawes loans on German prices and incomes. Unfortunately, this insightful approach of the young Machlup to the German Transfer Problem came at a time when he was little known in the profession; thus, quite naturally, neither Keynes nor Ohlin make any mention of it in their classic 1929 pieces. It is unfortunate that it remains equally unknown in the contemporary standard literature on the Transfer Problem.

Machlup embraces, against Schacht, the mechanism of solution of the Transfer Problem that Ohlin correctly attributes to the Quantity Theory tradition (see Ohlin 1929, pp. 173–174) and that relies on changes in international relative prices induced by money flows. It is clear that the early Machlup's mechanism of solution of the Transfer Problem was in the Quantity Theory tradition, which Ohlin calls the ''classical barter theory'' (Ohlin 1929, 174).

IV. MACHLUP'S KEYNESIAN APPROACH TO THE TRANSFER PROBLEM: ''Capital Movements and Trade Balance,'' 1942

Machlup came back to the discussion of the Transfer Problem in the 1940s. The influence of the *General Theory* is clearly visible in his new approach to the question. For Machlup during this period, the solution of the Transfer Problem does not depend any more on *price* adjustments of the sort envisaged in 1928, but on adjustments in aggregate *spending*. Machlup's framework is Keynesian in that he adopts the premise that aggregate spending determines aggregate income, and in that it relies on multiplier effects. The problem is not any longer whether autonomous money flows induce price changes that set in motion the corresponding flows of real capital, but whether the changes in aggregate spending resulting from autonomous money flows lead to the corresponding transfers of real capital:

> Machlup's book [of 1943] constitutes, I believe, the earliest attempt to present systematically a full treatment of the international adjustment mechanism based explicitly on Keynesian foundations, specifically, on the multiplier mechanism (Flanders 1989, p. 287).

Nevertheless, Machlup's framework is not totally Keynesian, as he does not establish a link between autonomous capital exports, changes in the supply of money, and, thereby, changes in the interest rate. Thus, Machlup does not establish a link between capital exports and the interest rate, and, thereby, investment spending. Likewise, he does not analyze the effects of capital exports on the state of the liquidity preference, and, thus, leaves aside another essential line of argument of the *General Theory.* Accordingly, though Flanders' labeling of the Machlup of the 1940s as Keynesian is basically sound, that label has to be qualified.

Here is how Machlup formulates the Transfer Problem in his 1942 paper:

> An entirely different matter is spontaneous foreign lending. *Here it is the demand for foreign balances and securities which undergoes a change and calls for equilibrating adjustments*. . . . Scrutiny of this problem will throw light upon an old controversial

> issue, an issue which bears some resemblance to the question of which came first, the chicken or the egg. The question of whether capital movements lead the trade balances, or trade balances direct the capital movements, has given rise to much discussion and it was somewhat bewildering that experts should arrive at opposite answers. (Machlup 1942 [1966], p. 451).

He then presents a catalog of the different positions on the problem:

> The classical view was that capital movements were the cause and trade balances the effect. The opposite tenet is that the trade balance is the cause and capital movements the effect (Machlup 1942 [1966], p. 451).

Machlup mentions Keynes as the main representative of the anti-classical tenet that the trade balance is the cause, and capital movements the effect, and quotes from his 1929 paper:

> This view was more prevalent first in Germany. Today, however, the outstanding representative of this theory is Keynes, and, hence, it is now widely held. Keynes opposed the theory of the adjustment of trade balances to capital movements on the ground that foreign trade was not easily adjustable; one must not apply, he said, 'the theory of liquids to what is, if not a solid, at least a sticky mass with strong internal resistances' (Machlup 1942 [1966], p. 451).

To the best of my understanding, Machlup is attributing two different views to Keynes in these two passages. As I held above when dealing with the Ohlin–Keynes debate of 1929, the correct description of Keynes' position on the Transfer Problem is the one given in the second passage: that ''Keynes opposed the theory of the adjustment of trade balances to capital movements on the ground that foreign trade was not easily adjustable.'' This means that Keynes did not hold that ''the trade balance is the cause and capital movements the effect,'' as Machlup says in the first passage. As he correctly notes in the second passage, the contention of Keynes in 1929 was very different: there is no automatic mechanism to guarantee the adjustment of the trade balance to autonomous money flows. This means that Keynes' position on the Transfer Problem never was that ''the trade balance is the cause and the capital movements the effect,'' because that would have amounted to admitting the existence of an automatic mechanism of adjustment between the trade and the capital balances. All that Keynes conceded to Rueff and Ohlin in 1929 is that experience shows that the *influence* of capital flows on the trade balance is stronger than the *influence* of the trade balance on capital flows, but no more than this. His position remains that ''foreign trade is not easily adjustable''; that is to say, there is no automatic mechanism to adjust the trade balance to autonomous money flows.

Machlup's catalog of positions on the Transfer Problem contains further confusions that are to be undone. Here is Machlup's list of the economists who held the ''classical'' view on the Transfer Problem:

> Hume, Thornton, Wheatley, Ricardo, Longfield, Torrens, Joplin, J.S. Mill, Cairnes, Bastable, and Nicholson. . .. Among modern representatives of this view are Taussig, Wicksell, von Mises, Cassel, Angell, Ohlin, Iversen, and many others. With some

> qualifications Haberler may also be counted among the adherents of this view (Machlup 1942 [1966], p. 451, note 8).

Let us check this list of "classicals" against the one given by Ohlin in his 1929 paper against Keynes:

> Indirectly, however, it is probable that a certain shift of the terms of exchange will take place. The increased buying power in A will to some extent affect also the prices of its export goods and its "import-competing" goods in an upward direction, while the corresponding classes of goods tend to become cheaper in B. In that way the readjustment of the balance of trade is made easier. Note that the price changes are quite different from those assumed by the classical barter theory which seems to underlie Mr. Keynes' analysis. Mill and after him Edgeworth, Taussig and many of their followers would say that *B must offer its goods on cheaper terms of exchange in order to induce A to buy more* (Ohlin 1929, p. 174).

The first thing that strikes the eye is that Machlup places Ohlin in the classical school together with Mill and Taussig, while Ohlin himself regards Mill and Taussig as representatives of the classical theory that he intends to refute in his 1929 paper! What Ohlin calls the "classical barter theory" is, as we have just seen, the classical theory based on the Quantity Theory, which claims that the Transfer Problem is solved through the effects of capital flows on international relative prices. In order to avoid misunderstandings, let us remember that the view of Ohlin against Keynes in 1929 was that the mechanism that solves the Transfer Problem works through the *income* and not through the *price* effects of capital flows on the demand for goods. Ohlin stated this view in order to refute the classical theory, "which *seems* to underlie Mr. Keynes' analysis" (my emphasis) that the mechanism of solution of the Transfer Problem works through the effects of capital exports on prices.

In his catalog of positions on the Transfer Problem, Machlup does not even mention Ohlin's income mechanism of solution. Likewise, he overlooks Ohlin's criticism of the classical theory on the Transfer Problem that, as a matter of fact, Machlup himself had espoused in his 1928 polemic with Schacht. Moreover, Machlup fails to notice that Ohlin (mistakenly) includes Keynes among the subscribers of the classical view. In order to remove the confusion promoted by Machlup and Ohlin, let us remember that the main contention of Keynes' 1929 paper is that the Reparations stipulated by the Dawes Committee pose a Transfer Problem because *there is no automatic mechanism whatsoever* to guarantee the adjustment of the trade balance of Germany to the capital exports demanded from her. This means that Ohlin was wrong to attribute to Keynes the view that the only way to solve the Transfer Problem posed by the Dawes plan was to force the price differentials that, according to the classical theory, would solve the problem. This was not Keynes' view in 1929. His contention was that even forcing the price differentials required by the classical theory would be a self-defeating policy. For the Keynes of 1929, there is no mechanism whatsoever to solve the Transfer Problem posed by the Dawes plan; or, to put it in an alternative way: for the Keynes of 1929, the only way to solve the Transfer Problem posed by the Dawes plan was to end the Dawes plan.

> And there is also the compromise view that "there is no apparent *a priori* reason why the dependence should not be as much in one direction as the other" [Machlup is here

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> quoting Viner, 1952, p. 364]. We shall see that certain patterns of thinking seem to enforce a one-way dependence only, to the exclusion of any possibility of "the other" dependence, and yet, we shall find that these apparently contradictory patterns of thinking are reasonably acceptable and reconcilable (Machlup 1942 [1966], p. 451–452).

It should be noted that Machlup has given us not three but four different positions on the Transfer Problem. First, we have the classical position, according to which there is an automatic mechanism of solution of the Transfer Problem that works through the effects of capital exports on prices. Secondly, we have Ohlin's position in 1929, according to whom the "classics" are right to hold that there is a mechanism of solution of the Transfer Problem but wrong to hold that it operates through price effects; for Ohlin, the mechanism operates through income effects. In opposition to both the "classics" and Ohlin, we have Keynes in 1929, who holds that there is no automatic mechanism to solve the Transfer Problem (at least, the one posed by the Dawes plan), as the trade balance is not a "liquid," but a "sticky mass" (we might have here an historical antecedent of the neo-Keynesian models of "sticky prices"). Finally, there is Machlup's conciliatory position that "there is no apparent *a priori* reason why the dependence should not be as much in one direction as the other."

The terms of this relation of dependence are, obviously, the capital account and the current account (mainly, the trade balance) of the balance of payments. The statement that there is "dependence" in both directions means there must be some connection between the real and the monetary sides of the balance of payments—and of the economy in general. However, the Transfer Problem, first formulated by the Dawes Committee in 1925 and first debated by Keynes and Ohlin in 1929, was not whether there is a connection between trade and money flows (nobody disputes this general assertion), but whether there exists an automatic mechanism to adjust trade flows to autonomous money flows. Let us, therefore, leave aside Machlup's equivocal attempt at reconciliation and focus on the problem at stake, which Machlup formulates now in Keynesian terms:

> Reasoning in terms of a spontaneous change in the domestic demand for foreign assets [that is, a spontaneous capital export], we find that everything will depend on whether this change is at the expense (or in favor) of (a) idle funds, (b) bank debts, (c) domestic investment, or (d) consumption. In the first two of these cases the spontaneous change in foreign lending may in fact not merely be balanced but also neutralized by the opposite accommodating change in foreign lending. In the last two cases, however, the balancing is not neutralizing (Machlup 1942 [1966], pp. 451–452).

Options (a) and (b) lie in the realm of the "financial economy," whereas (c) and (d) lie in the realm of the "real economy"; the Transfer Problem now is whether spontaneous capital exports have adjusting effects on (c) and (d). The problem is whether the diminution of banking reserves and/or the expansion of credit induce adjusting changes in consumption and investment such that the initial spontaneous money capital exports are followed by real capital exports of the same size. If they do, we have a mechanism of solution of the Transfer Problem; if they do not, foreign investment projects may pose a Transfer Problem and, thus, fail. The expression "balancing of spontaneous foreign lending" refers to the source of the money that feeds capital exports. Adopting the terminology of Machlup, we could reformulate

the Transfer Problem as the question about whether or not there exists a mechanism whereby ''spontaneous foreign lending'' is accompanied by ''neutralizing balancing.'' Machlup considers that the ''balancing'' of autonomous capital exports is ''neutralizing'' if the collection of the money exported does not induce a contraction in domestic consumption and/or investment spending. By contrast, if the collection of the money spontaneously exported induces a contraction of home investment and/or consumption, then the ''balancing'' of money exports is not ''neutralizing,'' which means they have real effects—in particular, adjusting effects on the current account of the balance of payments in addition to the obvious effects on the capital account.

As Machlup puts it, the primary point of adjustment of the real economy to money capital exports is not the trade balance, but domestic spending; the adjustment of the trade balance follows from the prior adjustment of domestic spending. Accordingly, the Transfer Problem can be formulated as follows: is there a mechanism that guarantees that capital exports induce a contraction in aggregate spending in the transfer-making country and/or an expansion in the transfer-receiving country that influence the trade balance? If so, can we be sure that the contraction in aggregate spending will induce a trade surplus large enough to balance the capital export? Will consumption and investment fall in the capital exporting country or rise in the capital importing country so as to adjust the trade balance to capital exports? If there is a mechanism whereby capital exports must induce changes in aggregate spending that lead to a trade surplus of the same size as capital exports, there is a mechanism of solution of the Transfer Problem. If there were not such a mechanism, capital exports may pose an unsolvable Transfer Problem:

> There is nothing which assures equality between spontaneous capital exports and the changes in investment and consumption expenditures; nor is there any equality between the changes in these expenditures and the improvement in the trade balance. Therefore, important as the relationship may be for the explanation of reality, the quantitative relationship between spontaneous capital export and improved trade balance is rather uncertain. On the other hand, the net capital export (together with a possible gold inflow) is necessarily equal to the improvement of the trade balance. This equality follows directly from the definitions of the items involved; the statement cannot be wrong; but whether this statement is very useful in the explanation of actual phenomena is another matter (Machlup 1942 [1966], p. 454).

As we see, Machlup does not reach a definite answer. His final position is that there is nothing to guarantee that the change in the position of the domestic financial system consequent upon capital exports will induce adjusting changes in domestic aggregate spending, nor is there anything to guarantee that even if those adjustments took place, the trade balance should respond with a surplus large enough. This means that autonomous capital exports may give rise to a Transfer Problem—or perhaps not.

V. MACHLUP'S MONETARY APPROACH TO THE TRANSFER PROBLEM: ''The Transfer Problem: Theme and Four Variations,'' 1963

Although Keynes believed there was no reason why there should be a significant scarcity of dollars after the war (see Keynes 1946 [1980]), the fact is that by the 1950s the

profession had already noticed that the massive US capital exports after the war were leading to a serious deterioration of the position of the US balance of payments. This process eventually culminated in the suspension of the convertibility of the dollar in 1971. As a reputed international economist, Machlup took active part in the debates on the dollar crisis. In the 1960s, he formulated an original analysis of the process, on the basis of which he challenged the conventional wisdom and advanced his own proposals for the reform of the international monetary system. Machlup's analysis of the dollar crisis provides not only a novel diagnosis of it, but also his most original and interesting incursion into the Transfer Problem, as he establishes a direct link between the good old Transfer Problem and the difficulties in the US balance of payments. Regrettably, the standard literature has not paid to this contribution the attention that it deserves.

> When a rough outline of this book was shown to a fellow economist [Machlup refers to his 1966 book, where he collected—and translated, when necessary—his favorite writings in international economics], he questioned the wisdom of including my essays on the transfer problem, a "dead issue" of only historical interest. As is often the case with questioning attitudes, this challenge to my judgment has proved very fruitful. It prompted me to do more work, historical as well as theoretical, and to write two new essays in addition to my earlier three statements" (Machlup 1966, p. 368).

Robert Triffin formulated the problem posed by the massive post-war US capital exports in the shape of a dilemma. If, on the one hand, the US cuts capital exports in order to adjust the capital account to the current account, and, thus, to restore equilibrium to the balance of payments, it is, by the same token, cutting the supply of the main reserve asset for the international financial system: the US dollar. The resulting general shortage of liquidity would pull the world economy into a general contraction. The world needs a steady supply of dollars to satisfy its growing demand for liquidity, and the US current account must respond to this demand. But, on the other hand, the continuation in the expansion of the supply of dollars in the face of an insufficiently large surplus in the US current account necessarily tilts the US balance of payments towards the deficit, and, thus, compromises the value of the dollar. In a nutshell: under the present international monetary system, the only way to provide the world with liquidity and avoid a general recession is to expand the supply of dollars, but, as the supply of dollars is not a direct function of the US current account, it follows that expansion of the supply of dollars in accordance not with the state of the US current account, but in relation to the world demand for liquidity, must at some point compromise the value of the dollar. Briefly stated, this is Triffin's Dilemma (see Triffin 1960 [1962]).

Basically, Machlup agreed with Triffin that the then-prevailing system was not sustainable in that it put too heavy a burden on the dollar. This is why he concurred with Triffin on the convenience of providing the international financial system with some kind of *international* (and not *national*) currency, which may serve as reserve asset as well. According to Machlup, the international monetary system is acting in accordance with the erroneous "cloakroom" theory of banking, which he described as follows:

> Older students of money and banking surely remember the cloakroom theory of commercial banking. It was a theory that gave bankers—shocked by the insinuation that the commercial banking system was able to "create" credit and thereby increase the supply of circulating media—new confidence and a confirmed belief in their own

> innocence. They were convinced of their incapacity to do anything as wicked, tricky, or magic as create credit, let alone money. After all, did not every banker know that he stood to lose reserves in amounts equal to those by which he extended his loans or investments? Did it not follow that banks could never lend more than they had been able to borrow from their depositors who, having confidence in the bankers' probity and liquidity, had put cash at their disposal? Was it not therefore clear that banks were similar to cloakrooms in that they received deposits of their clients' paraphernalia and were obliged to return them on demand? (Machlup 1965, p. 337)

This cloakroom theory of banking implies a definite rule for the management of the international financial system, which Machlup calls the ''cloakroom rule for international reserves'':

> The cloakroom theory of banking contended that banks were unable to create means of circulation. A cloakroom rule is adopted if the banks' power to create money is recognized and deliberately suppressed. The International Monetary Fund was advisedly reduced to a cloakroom function because the nations were fearful of excessive creation of monetary reserves. The contracting governments confined the functions of the IMF to that of a warehouse and rental agent for a collection of currencies, and prohibited it from becoming a manufacturer of circulating deposit liabilities (Machlup 1965, p. 354).

However:

> This limitation can no longer be maintained in a world determined to maintain fixed exchange rates, to employ monetary expansion to promote economic growth, and to adhere to the rule that the supply of money ought not to expand much faster than the monetary reserves. In such a world the stock of international reserves will have to be increased year after year. The future need for international reserves can be met most cheaply and most efficiently by deposit creation of an international reserve institution. The danger of excessive reserve creation by such an institution can be averted by explicit constraints and responsible management (Machlup 1965, p. 354).

As we will see, the source of the dollar crisis lies in the adherence of the international financial system to the cloakroom rule for banking. The refusal to issue an international reserve currency places too heavy a burden on the US dollar, which is required to sit in the vaults of the central banks as reserve asset at the same time that it is required to circulate in trade. The persistent excess of the deficit in the US capital account over the surplus of the US current account, which is but yet another instance of the Transfer Problem, reveals, for Machlup, that the demands placed on the dollar as reserve asset are excessive:

> Far from being a dead issue, the transfer problem is alive and kicking; indeed, it is one of the most troublesome economic problems of our days, though it is now seldom discussed under that name; but its name is not important—it has had several aliases in history. Now, if competent economists have failed to recognize that the balance-of-payments problem of the United States at the present time (1963) is essentially a problem of adjusting the balance on current account to the heavy payments obligations for foreign aid, military expenditures, and investments

> abroad—in short, a transfer problem—it was evidently important that someone take pen in hand and attempt clarification(Machlup 1966, p. 368).

Machlup approaches the analysis of the dollar crisis from his previous work on the Transfer Problem and asks: Why does the US trade surplus systematically fall short of US capital exports? What is preventing US capital exports from bringing about the equivalent surplus in the US balance of trade? For him, this is the key problem. As he sees it, in the absence of an international reserve currency, the only way to sustain the continuous expansion in the supply of dollars is a compensating surplus in the US trade balance. Without this surplus, the only source of expansion in the supply of dollars is the US gold reserve; no wonder that this reserve is rapidly falling and thereby compromising the value of the dollar. In the absence of an international reserve currency, either the surplus in the US trade balance becomes large enough to sustain the current volume of US capital exports, or the US gold reserve will fall to such a point where the system will collapse. Thus, concludes Machlup, the refusal of the international financial system to issue an international currency is causing a Transfer Problem which prevents the adjustment of the US current account to the capital account and puts an unsustainable pressure on the value of the dollar.

> All sorts of diagnoses were made: that the United States had pursued unsound monetary and fiscal policies, that it had allowed wage rates and labor cost to be pushed up excessively, that monopolistic corporations had tried to make inordinately high profits, that industry had priced itself out of the market, that the growth of the economy was too slow relative to that of other countries, that the dollar was overvalued and a fundamental disequilibrium had developed (Machlup 1962 [1966], p. 391).

According to all these diagnoses, what was preventing the adjustment of the US current and capital accounts, and leading to an overall deficit in the US balance of payments, was, to put it in the terms of the Dawes Committee, a budgetary problem. The problem was that the competitive position of the US in the world markets did not leave room for a trade surplus of the size required to sustain the current level of US capital exports. The competitive position of the US did not enable it to obtain the sums of money required to sustain the deficit in the capital account. Machlup challenges this view: the problem is not that the US lacks the ability to collect the sums of money required to supply the world money markets with liquidity; the problem lies, rather, in the *transfer* of that money. According to him, the competitive position of the US industry, and, therefore, the ability of the US to make money in international trade, has not deteriorated, a view in opposition to, for instance, Triffin (see Triffin 1960 [1962], p. 21). The dollar crisis is the result of a Transfer Problem; the ultimate reason why US capital exports are failing to bring about a corresponding trade surplus is the refusal of the international financial system to issue an international reserve asset. This keeps a large part of US capital exports stagnant in the reserves of the foreign central banks and, thereby, away from circulation in trade. This is why the level of US exports looks too low:

> There is, of course, much truth in some of the diagnoses; in particular, it is true that in some countries, Italy for example, industrial exports had become cheaper because

> labor productivity had increased faster than wage rates; and it is true that in other countries, France for example, industrial exports had become cheaper because devaluation of the currency had reduced labor cost in terms of foreign money. But these are not sufficient explanations of the situation in the United States; had it not been for the large foreign remittances, there would not have been any difficulties. We have only to note that commercial exports from the United States were as high in 1960 as they had ever been, and in 1961 were at record height. Hence, apart from the bad year 1959, the ''gap'' [the excess of the deficit in the US capital account over the surplus in the US trade balance] *cannot be attributed to a deterioration of the competitive position of American industry* [my emphasis; against Triffin]. If one points to the fact that the excess of payments over the trade balance has been larger since 1958 than it had been before, one should also point to the fact that the payments, on donations and on U.S. capital accounts, have likewise been larger than in most of the earlier years. Thus, the difficulties are primarily those connected with the transfer problem (Machlup 1962 [1966], p. 391).

Accordingly, the reason why the current supply of dollars to the world money markets is not sustainable is not that the US economy is not competitive enough to export as much as required to sustain the current level of money transfers from the US to the rest of the world. Rather, US dollar exports fail to return to the US in exchange for US goods. The problem lies not in the supply side, but in the international demand side. More interestingly: the problem lies not in the *real* economy, as the usual diagnoses hold, but in the *financial* economy. Machlup is not against the accumulation of dollar balances as banking reserves; as long as there is congruence between the volume of trade and banking reserves, there is nothing to object to holding in reserve balances of such a good quality currency as the dollar. His point is, rather, that the adherence of the international monetary authority to the cloakroom theory of banking is forcing the world to holding too many dollars as reserve asset, and is, thus, putting an unsustainable pressure on the dollar.

> The dollar shortage of the early postwar years, an excess demand for dollars to pay for imports to Europe, was thus replaced by another type of dollar shortage, a demand for dollars to build up the foreign-exchange reserves of monetary authorities. This situation could not go on forever. As the United States, by its continuing remittances in excess of its trade balances, created dollar liabilities year-in year-out, the time had to come when the central banks of Western European countries had accumulated all the dollar reserves they wanted. And as the further supply of dollars was no longer absorbed with eagerness but only out of courtesy and friendly accommodation on the part of the different central banks dollar shortage had given place to dollar glut. The excess supply of dollars—of short-term liabilities by the United States—became apparent in 1958, when some holders of dollar reserves began converting them into gold. Thus, after some twelve years of extraordinarily large foreign remittances, transfer difficulties had arisen—but almost no one recognized them as such (Machlup 1962 [1966], pp. 390–391).

The interesting point in this passage is that the money markets impose restrictive conditions on the trade of goods. Here, Machlup, in contrast to his writings of the 1920s and 1940s, acknowledges that the origin of the Transfer Problem that threatens

the value of the dollar lies not in the price or income effects on the demand for goods resulting from capital exports, but in the fact that money, in addition to being the means of trade, is the raw material of the banking industry, which has to hold *reserves* of money in order to do business. This breaks the symmetry between financial and commercial monetary flows and opens the door to the Transfer Problem. Let me stress how, in contrast to the Machlup of the 1920s and 1940s, and to the formulation of the Transfer Problem that prevails in the Ohlin–Keynes debate of 1929, the question for the Machlup of the 1960s is no longer whether the price or income effects of capital exports on the demand for goods will bring about an equilibrating trade surplus. The problem is that the need to hold money in reserve, in order to guarantee the value of the circulating medium, stands in the way of the flow of money, and, thus, poses a conflict between the reserve requirements of the financial system and the liquidity requirements of trade. A country may have the money—that is, it may be able to solve the Budgetary Problem (Machlup believes that the US was able to do so in the 1960s)—at the same time that the solvency of the financial system may stand in the way of the flow of that money and, thus, pose a Transfer Problem.

VI. CONCLUSION

Machlup devoted considerable time and effort to the analysis of the Transfer Problem during his lifetime; indeed, he might very well be the economist who has devoted the most time and effort to the problem in the history of economics. He not only tried different approaches to the subject, but also derived interesting implications from it. From the study of his works, we can draw the following conclusions:

1) Machlup took three different approaches to the Transfer Problem. We have first the ''classical'' (that is, Quantity Theory-based) approach that he took in the 1920s before he came in contact with the *General Theory.* The influence of the *General Theory* led him to take a different approach in the 1940s. In this second approach, the eventual mechanism of solution to the Transfer Problem would work through the effects of capital flows on aggregate spending rather than on international price differentials. In the end, Machlup does not provide a definite answer about the existence of such a mechanism. In the 1960s he shifted the focus from the real to the monetary side of the problem, and took an approach that stressed the autonomy, and even the preponderance, of the monetary over the real variables. This third approach is especially interesting in that it places the origin of the Transfer Problem not in the conditions that determine the demand for goods, as in the standard literature as well as in the classic debate between Keynes and Ohlin, but in the dynamics of the money markets. This third approach is considerably richer than the one that prevails in the standard literature, which, basically, is quantitative and demand-based, and, as a result, tends to obliterate the influence of the monetary forces at play.
2) Despite the repeated revisions of his works during his lifetime, Machlup did not reach a satisfactory conciliation between the conflicting aspects of his different approaches to the Transfer Problem. In particular, he did not arrive at a satisfactory articulation between his diverging but demand-based approaches of the 1920s and 1940s and his monetary approach of the 1960s.

3) Even in the 1940s, when his sympathy with the *General Theory* was at its highest, the effects of capital exports on the money supply, and, hence, on the interest rate, as well as the effects of the changes in the interest rate on production and employment, did not receive much attention and did not play any significant role in Machlup's discussion of the Transfer Problem. However, the effects of capital flows on the interest rate and the subsequent effects of the changes in the interest rate on production were at the center stage of the *General Theory* and of the debate between the Currency and the Banking schools, a theme with which Machlup was well acquainted since his youth (see Machlup 1980, p. 117). Despite all this, his treatment of the Transfer Problem fails to pay adequate attention to the role of the interest rate in the process of adjustment to international capital flows. This is a line of research that the author of this paper intends to pursue in the future.

REFERENCES

Alexander, Sydney. 1952. "Effects of a Devaluation on a Trade Balance." *International Monetary Fund Staff Papers* 2 (April), pp. 263–278.

Baldwin, Robert E., et al. 1965. *Trade, Growth, and the Balance of Payments: Essays in Honor of Gottfried Haberler.* Chicago: Rand McNally & Company.

Bhagwati J., et al. 1971. *Trade, Balance of Payments and Growth.* Amsterdam: North Holland.

Drummond, Ian M. 1987. "Reparations." In *The New Palgrave: A Dictionary of Economics*. London: Palgrave MacMillan, pp. 149–151.

Eichengreen, Barry. 1987. "Transfer Problem." In *The New Palgrave: A Dictionary of Economics*. London: Palgrave MacMillan, pp. 684–685.

Eichengreen, Barry. 1992. *Golden Fetters. The Gold Standard and the Great Depression, 1919–1939*. Oxford, UK: Oxford University Press.

Faith, Nicholas. 1984. *Safety in Numbers*. London: Hamish Hamilton Ltd.

Flanders, M. June. 1989. *International Monetary Economics 1870–1960. Between the Classical and the New Classical*. Cambridge, UK: Cambridge University Press.

Fullarton, John. 1844 [1969]. *On the Regulation of Currencies*. New York: Augustus M. Kelley.

Haberler, Gottfried. 1983. "Fritz Machlup: In Memoriam." *The Cato Journal* 3 (1): 11–14.

Hagemann, Harald. 2005. "Dismissal, Expulsion and Emigration of German-Speaking Economists after 1933. *Journal of the History of Economic Thought* 27 (4): 405–420.

Hume, David; in Rotwein Eugénie. ed. 1955. *David Hume. Writings on Economics*: Edinburgh: T. Nelson and Sons.

James, Harold. 2002. *The End of Globalization: Lessons from the Great Depression* Cambridge, USA: Harvard University Press.

Johnson, Harry G. 1956. "The Transfer Problem and Exchange Stability." *Journal of Political Economy* LXIV: 212–225.

Kent, Bruce. 1989. *The Spoils of War: The Politics, Economics and Diplomacy of Reparations. 1918–1932*. Oxford, UK: Oxford University Press.

Keynes, John Maynard. 1919 [1995]. *The Economic Consequences of the Peace*. New York: Penguin Books.

Keynes, John Maynard. 1929a. "The German Transfer Problem." *Economic Journal* XXXIX (March): 1–17.

Keynes, John Maynard. 1929b. "Mr. Keynes' Views on the Transfer Problem. III. A Reply." *Economic Journal* XXXIX (September): 404–409.

Keynes, John Maynard. 1936. *The General Theory of Employment, Interest and Money.* London: Macmillan.

Keynes, John Maynard 1946 [1980]. '' The Balance of Payments of the United States.'' In *The Collected Writings of John Maynard Keynes. Volume XXVII. Activities 1940–1946. Shaping the Post-war World: Employment and Commodities*. London: Macmillan, Cambridge University Press for the Royal Economic Society. Originally published in *Economic Journal* LVI (1946).

Kindleberger, Charles P. 1966. *Europe and the Dollar*. Cambridge, USA, and London, UK: The Massachusetts Institute of Technology Press.

Kregel, Jan, ed. 1989. *Recollections of Eminent Economists*. New York: Macmillan and New York University Press.

Lester, Richard. 1946. ''Shortcomings of Marginal Analysis for Wage-Employment Problems.'' *American Economic Review* 36 (March): 63–82.

Machlup, Fritz. 1928a [1966]. ''Währung und Auslandsverschuldung: Bemerkungen zur Diskussion zwischen Schacht und seinen Kritikern.'' *Mitteilungen des Verbands österreichischer Banken und Bankiers* X: 194–208. Revised English version entitled ''Foreign Debts, Reparations and the Transfer Problem,'' in Machlup, 1966.

Machlup, Fritz. 1928b [1966]. ''Transfer und Preisbewegung.'' *Zeitschrift für Nationalökonomie* I: 555–560. Revised English version entitled ''Transfer and Price Effects, '' in Machlup, 1966.

Machlup, Fritz. 1932. ''Die Theorie der Kapitalflucht.'' *Weltwirtschaftliches Archiv* 36: 512–529.

Machlup, Fritz. 1943a. *International Trade and the National Income Multiplier*. Philadelphia, USA: The Blakiston Company.

Machlup, Fritz. 1943b [1966]. ''Capital Movements and Trade Balance.'' In Machlup, 1943a. Revised English version in Machlup, 1966, pp. 445–464.

Machlup, Fritz. 1943c [1966]. ''The Transfer Problem: Income Effects and Price Effects.'' In Machlup, 1943a. Revised English version in Machlup, 1966, pp. 425–432.

Machlup, Fritz. 1954 . ''Dollar Shortage and Disparities in the Growth of Productivity.'' *Scottish Journal of Political Economy*. Volume 1, Issue 3, October 1954, pp. 250–267

Machlup, Fritz. 1956 . The Terms-of-Trade Effects of Devaluation upon Real Income and the Balance of Trade. *Kyklos* Volume 9, Issue 4, November 1956, Pages: 418–452

Machlup, Fritz. 1963 [1966]. ''Das Transferproblem: Thema und vier Variationen.'' *Ordo* XIV: 139–167. Translated into English as ''The Transfer Problem: Theme and Variations,'' in Machlup, 1966, pp. 374–395.

Machlup, Fritz. 1964. *International Payments, Debts and Gold*. New York: Scribner.

Machlup, Fritz. 1965a. ''The Cloakroom Rule of International Reserves: Reserve Creation and Resources Transfer.'' *Quarterly Journal of Economics* LXXIX 3 (August): 337–355.

Machlup, Fritz 1965b. ''Adjustment, Compensatory Correction and Financing of Imbalances in International Payments.'' In Baldwin et al., 1965.

Machlup, Fritz. 1966a. ''The Need for Monetary Reserves.'' *Banca Nazionale del Lavoro Quarterly Review* XIX 78 (September), pp. 175–223

Machlup, Fritz. 1966b. *International Monetary Economics*. London: George Allen & Unwin. Revised edition of Machlup, 1964.

Machlup, Fritz. 1966c. ''International Monetary Systems and the Free Market Economy.'' *Princeton University, International Finance Section, Department of Economics. Reprints in international finance No. 3 Reprinted from International Payments Problems: A Symposium*, Washington, American Enterprise Institute, 1966

Machlup, Fritz. 1966d. ''World Monetary Debate–Bases for Agreement.'' *Princeton University, International Finance Section, Department of Economics. Reprints in international finance* No. 4 Reprinted from *The Banker*, Vol. 116, (September).

Machlup, Fritz. 1967. ''From Dormant Liabilities to Dormant Assets.'' *Princeton University, International Finance Section, Department of Economics. Reprints in international finance* No. 8 Reprinted from *The Banker*, Vol. 117 (September).

Machlup, Fritz. 1968a. ''The Transfer Gap of the United States.'' *Banca Nazionale del Lavoro Quarterly Review* XXI 86 (September), pp. 195–238.

Machlup, Fritz. 1968b. "The Price of Gold." *Princeton University, International Finance Section, Department of Economics. Reprints in international finance* No. 10 Reprinted from *The Banker* 118 (September).

Machlup, Fritz. 1969 . "Speculations on Gold Speculations." *American Economic Review, Papers and Proceedings* Vol. LIX No.2 Papers and Proceedings of the Eighty-first Annual Meeting of the American Economic Association (May, 1969), pp. 332–343

Machlup, Fritz. 1970a. "On Terms, Concepts, Theories and Strategies in the Discussions of Greater Flexibility of Exchange Rates." *Banca Nazionale del Lavoro Quarterly Review* XXIII 92 (March), pp. 3–22

Machlup, Fritz. 1970b. "Eurodollar Creation: A Mystery Story." *Banca Nazionale del Lavoro Quarterly Review* XXIII 94 (September), pp. 219–260.

Machlup, Fritz. 1971. "The Book Value of Monetary Gold." *Princeton University, International Finance Section, Department of Economics. Essays in international economics* No.91.

Machlup, Fritz. 1980. "My Early Work on International Monetary Problems." *Banca Nazionale del Lavoro Quarterly Review* 133: 113–146. Reprinted in Kregel, 1989, pp. 17–72.

Machlup, Fritz. 1983. "The Political Economy of Inflation." *The Cato Journal* 3, 1(Spring): 15–21.

Metzler, Lloyd A. 1942. "The Transfer Problem Reconsidered." *Journal of Political Economy* L (June): 497–514.

Muns, Joaquín. 1978. *Crisis y reforma del sistema monetario internacional*. Madrid, Spain: Instituto de Estudios Fiscales, Ministerio de Hacienda.

Ohlin, Bertil. 1929a. "The Reparation Problem: A Discussion." *Economic Journal* XXXIX (June): 172–182.

Ohlin, Bertil. 1929b. "Mr. Keynes' Views on the Transfer Problem. II. A Rejoinder." *Economic Journal* XXXIX (September): 400–404.

Ormazabal, Kepa M. 2008. "Una mirada crítica al debate Ohlin-Keynes sobre el problema de la transferencia." *Información Comercial Española* 845 (Noviembre–Diciembre): 73–93.

Pigou, A. C. 1932. "The Effect of Reparations on the Ratio of International Exchange." *Economic Journal* LXII (December): 532–543.

Rueff, Jacques. 1929. "Mr. Keynes' Views on the Transfer Problem. I. A Criticism." *Economic Journal* XXXIX (September): 388–399.

Samuelson, Paul. 1952. "The Transfer Problem and Transport Costs: The Terms of Trade when Impediments Are Absent." *Economic Journal* LXII: 278–304.

Samuelson, Paul; 1954. "The Transfer Problem and Transport Costs II." *Economic Journal* LXIV: 264–289.

Samuelson, Paul. 1971. "On the Trail of Conventional Beliefs about the Transfer Problem." In Bhagwati et al., 1971.

Schacht, Hjalmar H. 1927. *Eigene oder Geborgte Währung?* Leipzig, Germany: Quelle. [Quoted from Machlup, 1966.]

Tooke, Thomas. 1844 [1996]. *An Inquiry into the Currency Principle*. London School of Economics Scarce Tracts in Economics, no. 11. London: Routledge & Kegan Paul.

Triffin, Robert. 1960 [1962]. *El oro y la crisis del dólar.* Fondo de Cultura Económica: México DF. Originally published in English as *Gold and the Dollar Crisis. The Future of Convertibility*, New Haven, USA: Yale University Press.

Viner, Jacob. 1955. *Studies in the Theory of International Trade*. London: George Allen & Unwin.