

Theoretical Problems of the International Monetary System

by

HARRY G. JOHNSON*

INTRODUCTION

Since 1958, international economists have been greatly concerned with the problem of international monetary reform. Research and writing on this problem has taken one or other of two broad forms. Those economists most concerned with policy have concerned themselves with emphasizing the need for international monetary reform and propounding workable (negotiable) schemes for achieving it. International monetary theorists, on the other hand, have been concerned with the theoretical policy problems of achieving and maintaining balance-of-payments equilibrium in the present international monetary system of fixed exchange rates. They have also become concerned with the problems of the system as a monetary system.

This paper belongs to the latter category. It seeks to outline the main propositions of the analysis of international economic policy and policy problems that have been developed by economists working in this field in recent years. Part I is concerned with the economic policy problems of maintaining both full employment and balance-of-payments equilibrium, first for a single country on a fixed exchange rate, then for two or more countries linked in a multi-country international monetary system. Part II is concerned with certain features of the present international monetary system, viewed as a monetary system. The analysis of Part I is Keynesian, that of Part II classical, in approach. Both parts draw heavily on papers presented at the University of Chicago Conference on International Monetary Problems organized by R. A. Mundell, held at Chicago in September 1966.

I. PROBLEMS OF ECONOMIC POLICY IN A SYSTEM OF FIXED EXCHANGE RATES

1. The Single Economy in a World System

It is convenient to begin the analysis with the theory of economic policy in a closed economy, in which there is assumed to be price stability around the point of full employment, and on either side of full employment a rate of change of

* The author is Professor of Economics at the London School of Economics and at the University of Chicago.

To represent the policy problem of such a country, the IS-LM diagram must be revised, insofar as the IS curve is concerned, to transform the IS curve into an $I+G+X$, $S+T+M$ curve, where X represents exports and M imports at the assumed given exchange rate, X being assumed either constant or a decreasing function of national income (the latter on the assumption that a rise in income diverts production from the export to the home market), and imports being assumed to rise as national income rises. The trade balance must also be shown, in a separate quadrant, as a function of national income.

As mentioned, the situation of a country on a fixed exchange rate with a potential deficit in the trade account at full employment appears to pose a dilemma between full employment and a deficit, or international balance and abnormal unemployment. The solution provided in the immediate postwar period by James Meade [6] and other writers was to introduce the possibility of changes in the exchange rate. At a lower exchange rate (price of domestic currency in terms of foreign), given the satisfaction of certain elasticity or stability conditions, the trade deficit (surplus) associated with any particular level of income would be lower (higher). Hence, the country would achieve both objectives—full employment and a balanced balance of trade, or for short internal and external balance—by a proper combination of exchange rate adjustment and fiscal or monetary policy change. It should be noted that, if attention is concentrated on the fiscal and monetary policies required to maintain full employment of domestic resources, a devaluation designed to shift the relation between national income and the trade balance in a favourable direction would shift the $I+G+X$, $S+T+M$ curve upward. Consequently, to preserve exact full employment, a country seeking to correct an unfavourable trade balance by devaluation would have to counteract this shift in the trade-balance national-income relation either by a more restrictive monetary policy designed to shift the LM curve leftward to offset the rightward shift of the $I+G+X$, $S+T+M$ curve, or to correct the rightward shift of the $I+G+X$, $S+T+M$ curve by raising taxes or reducing government expenditure. In other words, such a country would have to accompany devaluation by a more restrictive fiscal or monetary policy. If it did not do so, the effect of its devaluation in its trade balance would be offset sooner or later by the inflationary consequences of the resulting excess demand for national output on domestic prices and therefore on the relative prices of the country's exports relative to its imports.

In the international monetary system as it has developed since the early post-war work on the theory of international economic policy, exchange rates have become for practical purposes virtually rigid, so that a country faced with the choice between balance-of-trade deficit and excess unemployment cannot resolve

the dilemma by resorting to devaluation combined with some mixture of fiscal and monetary policy change. At the same time, the alternative to devaluation examined by the writers in question, the use of controls to foster exports and restrict imports has been ruled out—at least in large part—by the growing aversion to using variations in controls to correct balance-of-payments disequilibria. As a result, it again appears that countries will be faced by a dilemma between balance-of-payments deficits and abnormal unemployment.

This dilemma has been dispelled by recognition that the balance of payments comprises two elements, the current account and the capital account, and that while the current account balance can be taken as a function of the level of national income and employment, the flow of funds on international capital account is a function of the level of domestic interest rates relative to foreign interest rates and that this interest rate level is a function of the “mix” of fiscal and monetary policy adopted to maintain full employment. Thus, while (in principle) the current account is determined by the exchange rate and the level of domestic activity, the capital account of the balance of payments can be adjusted to match the current deficit or surplus by a proper choice of the fiscal-monetary policy mix. A country that would have a current account deficit at full employment greater than its normal capital inflow, or surplus less than its normal capital outflow, can adjust the latter to the former by adopting a more restrictive monetary policy and a less restrictive fiscal policy; and vice versa. Thus the two objectives of policy—full employment and a balanced balance of payments—can be secured, despite the adherence to a fixed exchange rate, by a proper choice of the fiscal-monetary policy mix.

The problem and its solution are illustrated in Figure 1, which is drawn to depict the policy problem facing the United States in recent years, of a capital outflow greater than the current account surplus generated at the current exchange rate under full employment. In the Figure, LM_1 and IS_1 (actually $I_1 + G_1 + X_1$, $S_1 + T_1 + M_1$) represent the curves corresponding to an initial fiscal-monetary policy mix designed to secure full employment. At that level of income and employment, the current account surplus is T_1 , less than the capital outflow K_1 generated by the equilibrium domestic interest rate i_1 ; the country therefore has an overall deficit of $K_1 - T_1$. lowering By taxes, or raising expenditure, or both, the government can raise the IS curve to IS_2 ($I_2 + G_2 + X_1$, $S_2 + T_2 + M_1$, X and M being fixed by the full employment level of income); and by restricting the quantity of money it can raise the LM curve to LM_2 ; with this combination of policy changes, the interest rate i_2 corresponding to full employment is just such as to generate or lower capital outflow K_2 just equal to the current account surplus T_1 , and the country achieves its two objectives of internal and external balance.

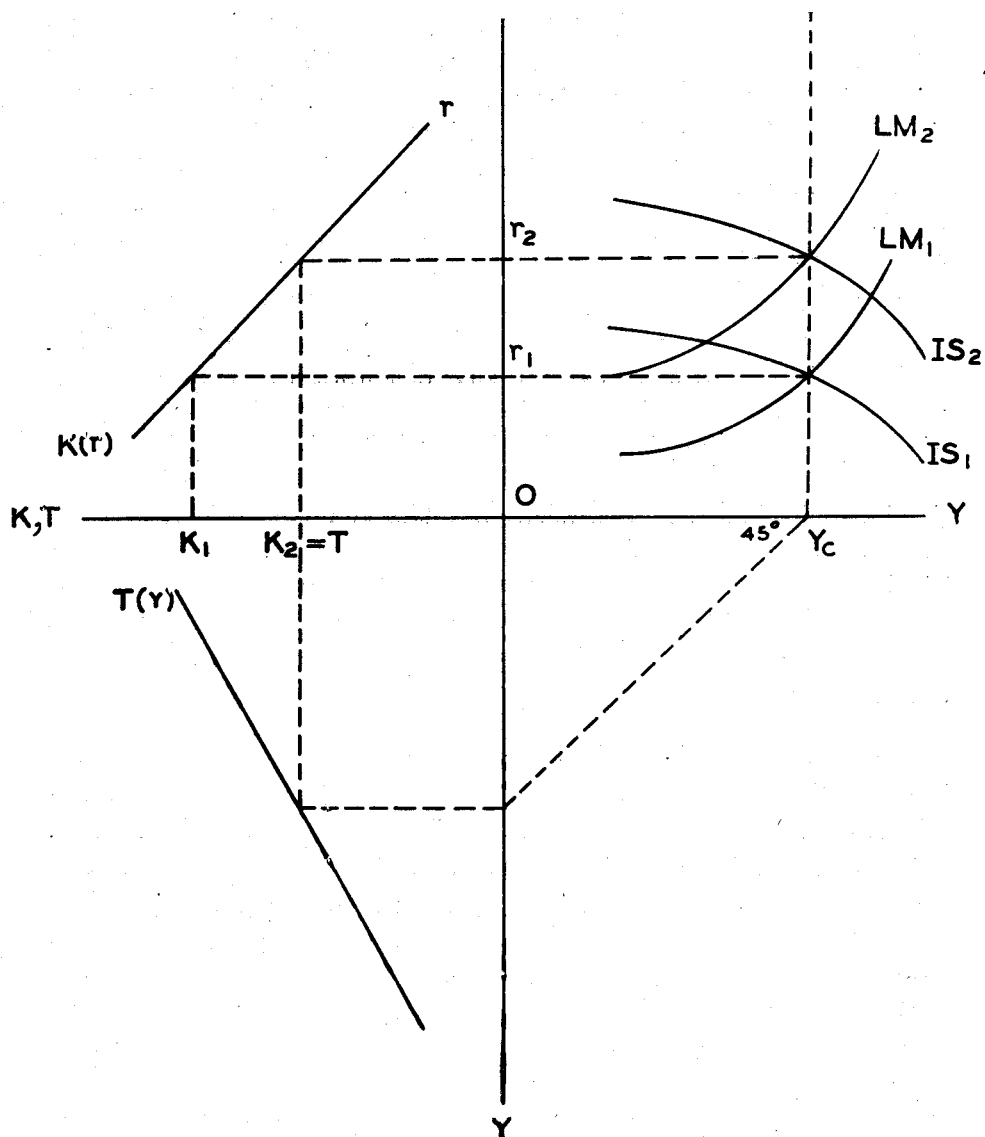


Figure 1

It is necessary to observe, however, that to continue to achieve these two objectives the country must continue to apply the fiscal and monetary policies represented by LM_2 and IS_2 ; by assumption, there is nothing in the situation to eventually restore a relationship between the domestic price level and foreign prices that will relieve the nation's policy-makers of the necessity of adopting this particular fiscal-monetary policy mix, regardless of any other policy objectives they may have. This is one of the major problems of the present international monetary system: it is possible to "finance" international deficit and surplus positions by the choice of an appropriate fiscal-monetary policy mix, but this fact does not mean that there is any mechanism of adjustment present in the system. On the contrary, there may be the opposite of an adjustment mechanism, for two reasons. First, presumably a country that would be in deficit at full employment gets that way because in fact at full employment its prices and wages rise faster than those of its competitors; hence if it succeeds by proper fiscal-monetary policy mix in maintaining full employment, its current account will tend to worsen over time and therefore it will be driven further into mixing fiscal expansion and monetary contraction, thereby piling up international debts (if it is a capital importer) or restraining its capital outflow at an increasing rate. Second, insofar as economic growth promotes international competitiveness, the higher level of interest rates it must maintain to keep its international accounts in balance will militate against a longer-run improvement in its competitiveness. (These propositions, however, obviously oversimplify the problem of restoring international balance.)

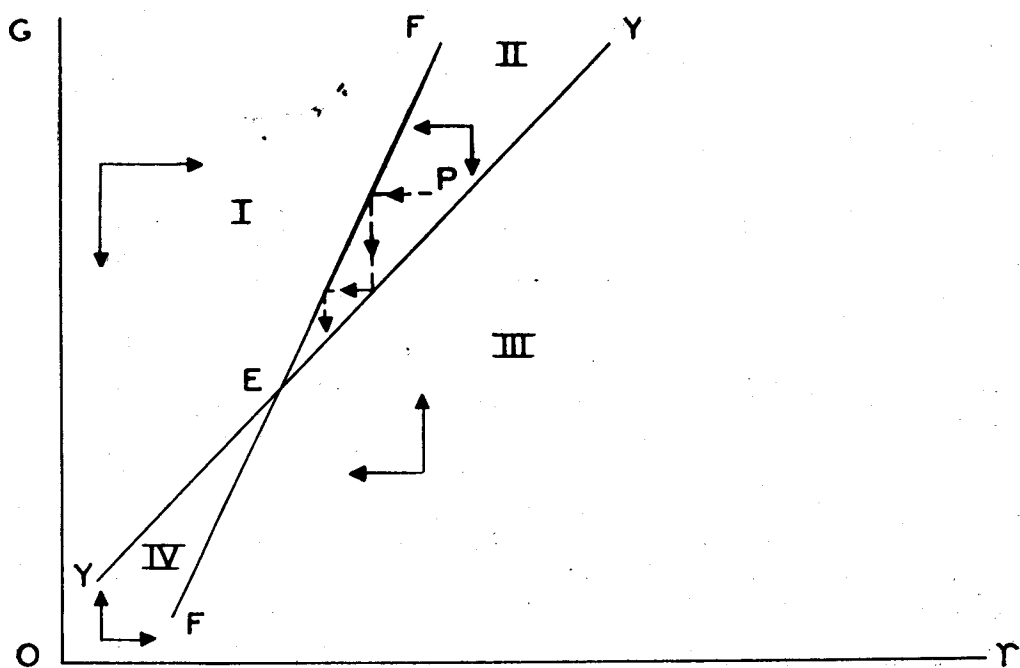
In the actual working of the international monetary system, however, there is a mechanism of adjustment at work, of the classical gold standard kind involving deflation in the deficit countries and inflation in the surplus countries. This is so because neither deficit nor surplus countries have been able, for various reasons to operate the fiscal-monetary policy mix technique anywhere near perfectly. The deficit countries have in practice had to undergo more unemployment than they would like, and the surplus countries have been unable to prevent their surpluses from having inflationary consequences for their domestic price levels. Since the deficit countries have been unwilling to push deflationary policies beyond the point of preventing prices from rising, the resulting system of "reluctant adjustment" [on this concept, *see*, 5, Chapter 3] operates via differences between deficit and surplus countries in their relative rates of inflation, with an average tendency to world inflation. Such an adjustment mechanism is bound to operate slowly, and to be vulnerable to temporary reverses associated with surges of inflationary pressure in the deficit countries such as have occurred in the United Kingdom and the United States in recent years.

The account of the problem of reconciling internal and external balance just outlined abstracts from two rather different aspects of the policy problem, which have figured in the literature of recent years. These may be termed "the assignment problem" [8, pp.70-77], and "the welfare problem" (a problem which has been given birth, but not christened, by several writers).

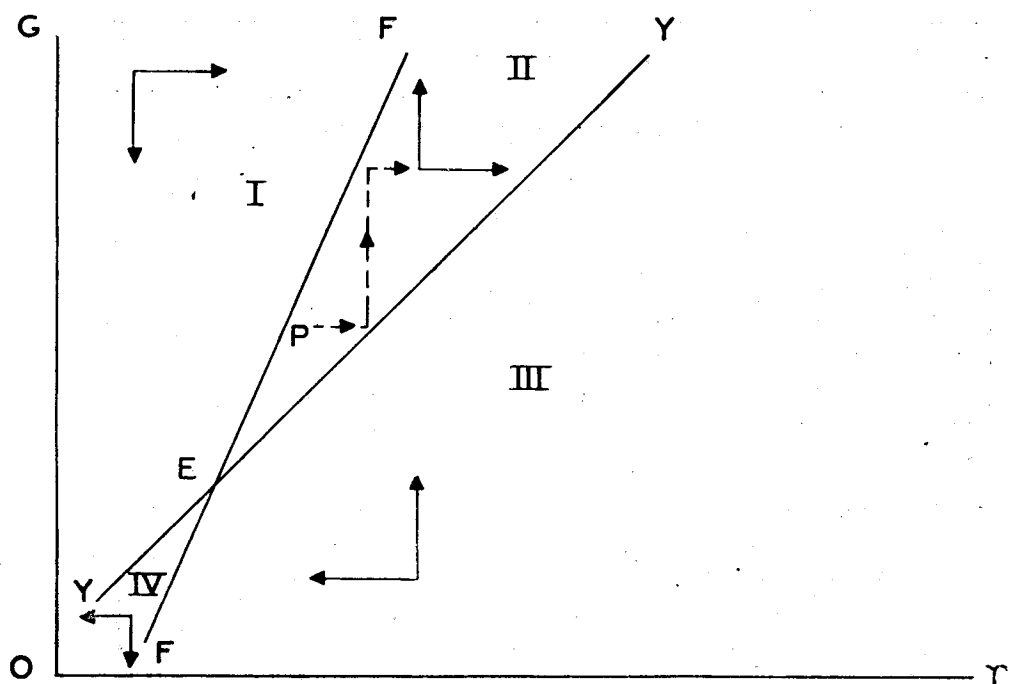
The assignment problem follows from the observation that governments typically assign responsibility for the pursuit of policy objectives separately to separate governmental institutions which control particular instruments of economic policy—typically the Central Bank, controlling monetary policy, is given responsibility for external balance, and the Treasury, controlling fiscal policy, is given responsibility for full employment. The assignment problem is, which objective should be assigned to which agency, to assure the most efficient operation of policy. This problem raises some complex issues in economic dynamics, arising from what may be termed "the feedback problem."

That problem is that the pursuit of its assigned objective by each policy agency may disrupt the pursuit of its own objectives by the other agency, and so provoke policy actions by that agency that disrupt the pursuit of its objectives by the first agency referred to, so that the pursuit of the objectives assigned to the agencies in fact leads away from rather than towards the attainment of the policy objectives sought. The solution to this problem, which has been provided by R. A. Mundell [10, pp. 227-257] is the "principle of effective market classification"—that each agency should be assigned the objective on which the policy instrument under its control has relatively the greatest influence, as contrasted with other objectives. In a fixed exchange rate system, this means assigning external stability to monetary policy, and internal stability to fiscal policy.

The analytical essence of the assignment problem is illustrated by the two parts of Figure 2. For simplicity, fiscal policy is represented by the variable G , for government injections of expenditure into the economy, and monetary policy by the variable r , representing the rate of interest. In each case the YY curve represents the combinations of increasing fiscal laxity and monetary stringency that will preserve domestic full employment, and the FF curve represents the combinations of increasing fiscal laxity and monetary stringency that will preserve equilibrium between the current and capital accounts of the balance of payments. The FF curve must slope upward more steeply than the YY curve, because a movement rightward along the YY curve implies no change in the current account (since the level of output and employment is held constant) but an improvement of the capital account due to the increase in the interest rate; to offset this and keep the overall balance of payments in balance, government expenditure must be increased still more, to worsen the current account



(a) FISCAL POLICY FOR INTERNAL BALANCE, MONETARY POLICY FOR EXTERNAL BALANCE



(b) MONETARY POLICY FOR INTERNAL BALANCE, FISCAL POLICY FOR EXTERNAL BALANCE

Figure 2

sufficiently to counteract the increased capital inflow. The intersection of the YY and FF curves at E shows the mix of fiscal and monetary policy required to achieve the two policy objectives of external and internal balance.

Now assume that the two objectives of economic policy are each assigned exclusively to one of the policy instruments, the controllers of the relevant instrument being instructed to operate their policy in the direction indicated by the relation between the actual state of the economy and the assigned target of full employment on external balance. Figure 2 depicts the two possible assignments, the internal balance to fiscal policy and external balance to monetary policy, and the converse ; in each case, the horizontal arrows depict the direction in which monetary policy will be moving, and the vertical arrows the direction in which fiscal policy will be moving, for the four states of the economy into which the YY and FF curves divide the diagram. (I = deficit and over-full employment, II = surplus and over-full employment, III = surplus and deficient demand, IV = deficit and deficient demand.) For assignment *a*), the arrows always point towards the policy equilibrium point E, indicating that under this assignment of targets to policy variables the operations of the policy authorities will converge on equilibrium. For assignment *b*), however, the arrows point away from the equilibrium in regions II and IV, indicating that equilibrium may be approached only in an oscillatory manner, or may not be reached at all, depending on the precise nature of the policy responses to disequilibrium. (A crude way of appreciating the dynamic difference between the two assignments, easily manageable in diagrammatic terms, is to assume that the fiscal and monetary policy authorities take turns in changing their policies, each changing its policy instrument so as to bring the economy onto the FF or YY curve, whichever corresponds to the policy objective for which it is responsible ; the dynamics of adjustment in the two assignment systems are illustrated by the dotted paths starting from the disequilibrium point P in region II.)

The assignment problem has occupied much attention in the literature ; but it should be noted that the problem is created by the assumption that administratively efficient government policy-making requires the assignment of one objective to each controller of a policy instrument, and that the problem could be avoided by intra-governmental coordination of the use of policy instruments, all being used jointly in pursuit of all policy objectives.

The welfare problem, in its most basic sense, derives from the fact that under the fixed exchange rate system the international flow of capital, in the sense of real resources as contrasted with international security purchases and sales, is determined by the deficits (surpluses) on current account that result from the relative international competitiveness of the various countries, given

their domestic price levels, employment policies, and exchange rates. Determination of international capital resource flows by these factors is to be contrasted with the classical mechanism of adjustment, under which domestic price levels (or exchange rates) would adjust so as to generate current account surpluses and deficits corresponding to desired international capital movements generated by the pursuit of maximum returns on investment. The resulting pattern of international capital movements obviously need not be anything like an efficient one, since there is no reason to expect that the real return on investment in countries with current account deficits is higher than that on investment in countries with current account surpluses; it may, on the contrary involve, a serious distortion of the allocation of new real investment resources, and a consequent welfare loss for the countries concerned and the world economy. Analysis of these welfare losses, however, has barely begun; and, indeed, the conceptual tools for dealing with the welfare aspects of investment problems remain to be developed. [for relevant analysis see 1, pp. 333-352 and 4, pp. 512-518]. Given the fact that the international monetary system governs the international movement of real capital in this fashion, there arises a problem in the welfare economics of second-best (or perhaps third-best): whether the international flow of financial capital should be accommodated to the real capital flows by the fiscal-monetary policy mix technique analysed above, or whether the accommodation should be achieved by the imposition of interest-equalization taxes or other controls on international capital movements designed (at least partially) to insulate monetary and fiscal policy from being dominated by the obligation to maintain international balance, much as the United States and the United Kingdom have been imposing in recent years². In the United States, at least, international monetary experts have an instinctive preference for freedom of international capital movements, and have tended to condemn the interest equalization tax and other interventions in international capital movements as undesirable interferences with economic efficiency and violations of the purposes of the fixed exchange rate international monetary system.

This argument, however, is questionable on two grounds. First, it can be objected that since private international capital movements are motivated by expected net private return, and since the relative net private return to gross social return is heavily influenced by taxes and other governmental policies, there is no *a priori* reason for placing much confidence in the principle of freedom of private international capital movements as a guarantor of economic efficiency in the international allocation of world investment resources. Second, and more important, the argument for freedom of capital movement assumes an international adjustment mechanism capable of achieving the real international trans-

² This part of the analysis draws heavily on a brilliantly reasoned recent paper by Franco Modigliani [7].

fers private individuals and enterprises want to make ; in the absence of such a mechanism, with the real transfers determined by countries' relative international competitiveness, the argument is essentially that countries' monetary-fiscal policies should be adjusted so as to induce the owners of capital to want to transact just the amount of international financial transfers that matches the pre-determined real transfers. This entails adjusting each country's rates of domestic investment and saving to the level of interest rates at which financial and real transfers balance; and there is no reason to think that this procedure is superior to controlling capital movements and allowing the rates of domestic saving and investment to be determined by government policy, or by private decisions operating in the context of some agreed budgetary policy. (These alternatives allow for the two possibilities that the government may wish to implement an overall growth policy by means of its fiscal policy, or that the population is content to fix budgetary policy by some criterion not related to growth, *e.g.*, a cyclically balanced budget, and to let the rate of growth be determined by private saving and investment decisions.)

The problem is illustrated in Figure 3, which is again drawn to represent the United States position of recent years ; for simplicity, it is assumed that fiscal policy initially adjusted to some structure of taxes and expenditure considered socially optimal, and that in order to obtain the level of domestic interest rates required for international balance the policy-makers increase government expenditure, financing it by additional borrowing, at the same time contracting the money supply to the extent required to prevent the increased government expenditure from raising aggregate income above the full employment level. On the right-hand side of the diagram, II represents the full employment investment demand curve, SS the full-employment supply curve of private real saving, and S'S' the full-employment supply curve of real saving less the real capital exports provided by the current account surplus. If there were no problem of balancing the current account surplus and the capital account deficit, equilibrium would be reached at the interest rate r , with rates of saving and investment respectively I_1 and S_1 , corresponding to the desires of savers and investors and an equilibrium interest rate r_1 . But at the interest rate r_1 , as shown on the left-hand side of the diagram, desired exports of financial capital K , would exceed the current account surplus T . In order to balance its balance of payments while maintaining freedom of capital movements, the policy-makers would have to increase government expenditure by the amount G , contracting the money supply simultaneously, to arrive at the level of interest rates r_2 at which $K_2 = T$, in the process increasing private domestic saving to S_2 while cutting domestic investment to I_2 .

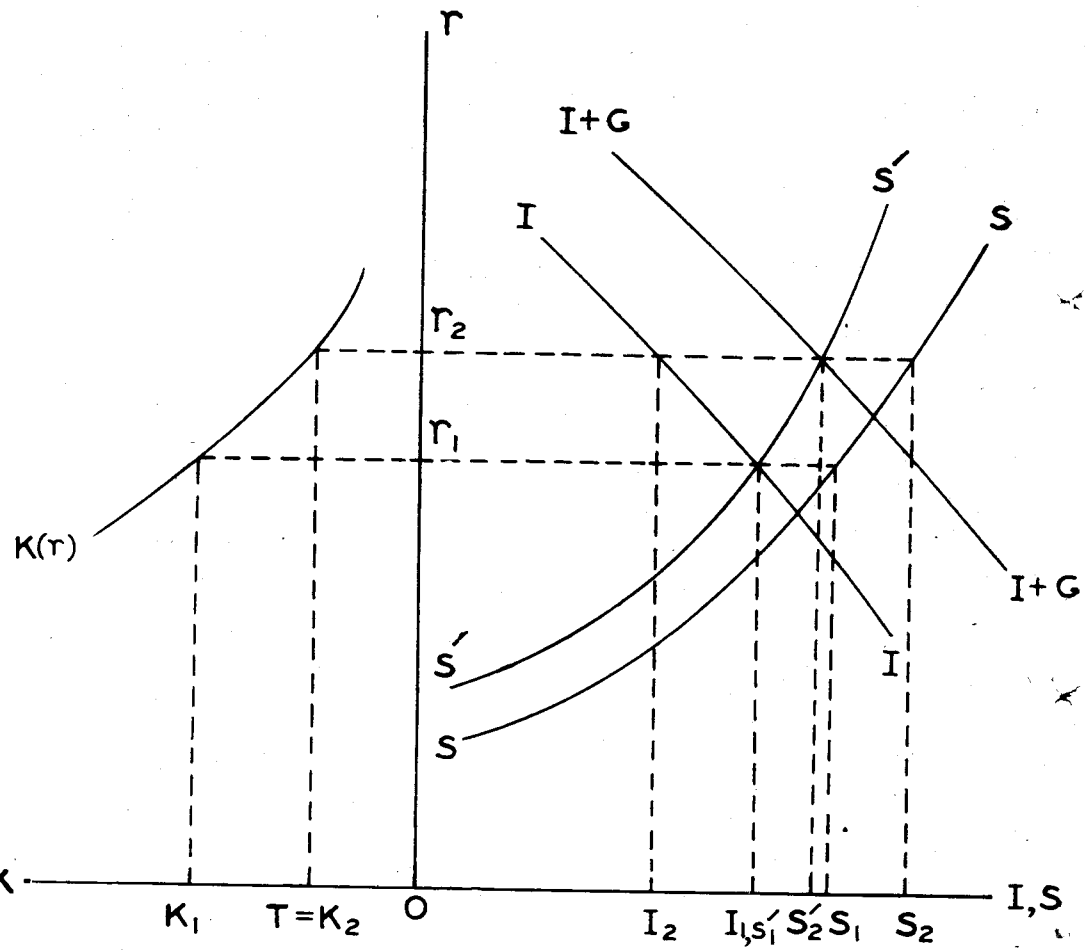


Figure 3

In the new equilibrium, domestically-invested saving exceeds domestic investment by $I_2 - S'_2$, this amount corresponding to purchases of government debt issued to finance increased government expenditure. This part of private domestic saving makes no contribution to increasing the future income of the economy, constituting merely the acquisition by savers of a future claim on income which has to be taxed away from the community at large; in fact, the real investment that contributes to future income has been reduced from I_1 to I_2 . By providing an alternative asset (government debt) with a private yield to which there corresponds no social yield, the policy-makers have made private real saving larger and private real investment smaller than they would otherwise be.

If, on the contrary, the authorities used controls on the export of capital to restrict such exports to the level $K_2 = T$, the economy could be kept at the initial equilibrium position, without the wastage of private saving in financing government expenditure. In this situation, it would appear that the government was preventing private individuals from undertaking profitable foreign investments in the amount of $K_1 - K_2$; but since in any case they can only be allowed to undertake foreign investments in the amount of K_2 , the real situation is that savers are forced to invest at home at the interest rate r_1 , instead of being bribed to invest at home by the offer of government debt yielding at the rate r_2 , this yield being obtained not from additional production but from additional future taxes on other income earners, at the expense of the reduction on potential future national income consequent on the reduction in real investment induced by the increase in interest rates to r_2 . The issue is therefore primarily one of redistribution between savers and taxpayers; and so far as efficiency is concerned, it is a question not of efficiency versus inefficiency in the international allocation of capital, but of inefficiency versus efficiency in the use of the domestic saving potential, the fiscal-monetary mix technique wasting that potential in additional debt-financed government expenditure, and the control technique using it for investment in increasing future national income.

It should be emphasized, however, that this is very much an issue of second-best welfare economics. The first-best solution for a country faced with this policy problem—on the crucial assumption, which has been questioned above, that private-profit-motivated international investment promotes efficient international allocation of new investment resources—would be a devaluation, to increase the current account surplus so as to permit the transfer of a large amount of foreign investment.

2. The International Economic System

The analysis of the single country in the world economy in the preceding section assumed that the policy-makers in the individual country can take the situation

in the rest of the world, and especially the level of foreign interest rates, as given. This assumption made it possible for the country to achieve internal and external balance simultaneously by resort to an appropriate mix of domestic, fiscal and monetary policy. When the analysis is extended, however, to include the interactions of national economic policies in a world economy of two or more countries, the situation becomes more complex. In the first place, it is no longer possible for a country to secure its domestic objectives of internal and external balance by use of its own policy instruments alone; it can always be frustrated by inconsistent use by other countries of their policy instruments. In the second place, because the balances of payments of all the countries in the world economy must sum to zero ("Cournot's Law"), the external balance objective of all countries will be achieved if all but one of them achieve it. Hence, whereas in the single country case examined previously there were two policy objectives requiring two policy instruments to implement them, in the n -country case there will be $2n-1$ objectives, requiring only $2n-1$ policy instruments; in other words, there will be one degree of freedom, or one spare policy instrument, in the system. This fact means that one country, and one country alone, can use one of its policy objectives for some other purpose; this poses the practical problem of which country will have this degree of freedom, or of how this degree of freedom can be used for some international purpose.

The problem of achieving external and internal balance in a two-country international system is illustrated in Figure 4; in the figure unprimed symbols refer to country 1 (again represented so as to conform to the recent situation of the United States) and primed symbols to country 2 (the rest of the world). Each country's imports are presumed to be a function of its national income, the IS curves being drawn to incorporate the full-employment level of imports by (exports to) the other country. The international flow of financial capital is assumed for simplicity to be a function of the interest rate differential between the two countries.

The figure represents one possible position of international economic policy equilibrium. The monetary and fiscal policies of country 1 inherent in the locations of the IS and LM curves generate full employment in that country with the interest rate r_1 , while the policies inherent in the locations of $I'S'$ and $L'M'$ generate full employment in country 2 with the interest rate r'_1 . The difference between the full employment imports of the two countries gives country 1 a current account surplus of T , while the interest-rate differential $r'_1 - r_1$ generates a financial capital flow from country 1 to country 2 of K_1 , just equal to the trade surplus T .

Two important propositions are evident from the construction of the figure. The first is that the achievement of international policy equilibrium is possible

only if countries 1 and 2 are prepared to harmonize their economic policies, in the sense of establishing the relationship between r and r' required to balance the international financial capital flow and the real resource flow created by the difference between the full-employment imports of the two countries. To put the point another way, country 2 could always frustrate a fiscal-monetary policy mix adopted by country 1 in pursuit of internal and external balance, by adopting a laxer fiscal policy and tighter monetary policy than would produce an interest rate in that country consistent with the interest rate generated by country 1's policy mix (in terms of the figure, such a policy would shift $I' S'$ and $L' M'$ to the left, maintaining their intersection at income Y_e). Second, there is obviously an infinite number of combinations of fiscal-monetary policy mixes in the two countries that would balance the financial capital flow with the real resource transfer—because both countries could relax fiscal policy and tighten monetary policy in such a way as to preserve the required interest rate differential, and conversely. This means that one country could peg its interest rate level at any desired level, internal and external balance for the two countries together being preserved by an appropriate fiscal policy in that country and fiscal-monetary policy mix in the other; alternatively it could fix its fiscal policy, for example, by insisting on maintaining a balanced budget for a fixed level of government expenditure, internal and external balance for the world economy being preserved by an appropriate fiscal policy in the other country and appropriate monetary policies in both³.

The presence of the degree of freedom associated with Cournot's Law gives rise to what has been termed "the redundancy problem" (one redundant policy instrument). This problem, it should be noted, was absent from the classical gold standard mechanism, because the basing of national money supplies on an overall fixed total of world gold reserves prevented countries from pursuing independent monetary policies—the gold constraint absorbed the degree of freedom. It arises in the present international monetary system because national monetary policies have been cut free of the gold constraint.

There are two possible solutions to the redundancy problem, each of which raises difficulties that have been reflected in acrimonious disputes between surplus and deficit countries in recent years. One would be to allow one country to absorb the degree of freedom, and to govern one of its policy instruments by other objectives than external and internal balance; this was essentially the solution advocated by many Americans in the early years of the dollar deficit, when they pressed for U. S. monetary policy to be used for full employment while

³ In a previous essay on this point, I erroneously implied that the country enjoying the degree of freedom could use it to receive a desired structure of its balance of payments, *e.g.*, size of current account deficit and matching capital inflow [3, Chapter 8, p. 149]. This is incorrect: the balances on trade account are fixed by the relative price levels of the countries.

tacitly assuming that fiscal policy should go on being determined by Congressional authority. The difficulty with this solution, as experience shows, is that other countries will want the freedom of policy that can by necessity only be allowed to one of them. The other solution would be to agree on an internationally desirable use of the one degree of freedom, for example, by agreeing on an average level of world interest rates desirable from the point of view of world growth. The difficulty with this solution, as experience also shows, is essentially the same: that countries differ strongly in their views of what is desirable. Specifically, there has been a persistent disagreement between the Americans who have favoured low rates of interest, and the Europeans, who have favoured high rates of interest. Moreover, the dispute has been thoroughly entangled in a more basic dispute over who should bear the burden of longer-run adjustment to international disequilibrium, the Europeans favouring a more deflationary system that would throw a larger share of the burden on the deficit countries, and the Americans and British favouring a more inflationary international monetary system.

The redundancy problem is inherent in the logic of the international monetary system, given the assumption that countries have the objectives of internal and external balance and control of their monetary and fiscal policies. In practice, however, the system has been struggling in part with two problems that are the converse of redundancy. In the first place, not all countries have the capacity to use fiscal and monetary policy in the required mixes: the United States only adopted the principle of using fiscal policy for control purposes with the tax cut of 1964, and its ability to use fiscal policy is considerably restricted by the constitutional division of powers; similarly, Western Germany lacks the central authority to use fiscal policy in this fashion. Secondly, countries do not, in fact, confine themselves in their international economic policies to the objective of external balance, which all can pursue consistently. Instead, they have other balance-of-payments objectives, relating to the composition of their international accounts, which may well be inconsistent with those of other nations, and moreover impossible to pursue with the policy instruments they have available. As particular examples, both Canada and the Western European countries regard their current account deficits as undesirable—which means the adoption of an objective with respect to the size of other countries' current account surpluses not necessarily consistent with those countries' objectives—and seek to correct these deficits by balance-of-payments policies (such as import-substitution) which are inappropriate to the problem (since a remedy requires increasing domestic saving or reducing domestic investment) but which may nevertheless aggravate the balance-of-payments problems of the countries with current-account surpluses matched by capital outflows. In addition, many countries are particularly

averse to American investment within their borders, and seek to limit or prevent it by policies that are inconsistent with American policies towards foreign investment by US residents and corporations.

II. PROBLEMS OF THE INTERNATIONAL MONETARY SYSTEM

1. The Instability of the Gold Exchange Standard

The present international monetary system is a gold exchange standard, that is, a system in which countries maintain fixed exchange rates by means of holding of international reserves that include a national currency—specifically the United States dollar—in substitution for the basic international reserve—gold—which is in inadequate supply. The rate of growth of the stock of gold available for holding as monetary reserves (new gold production less private hoarding and other non-monetary usage plus Russian gold sales) has in the postwar period fallen substantially short of the rate of growth of demand for international reserves by countries other than the United States, and these countries have made up the difference by accumulating reserves of dollars, which are convertible on demand into gold. These dollars, in turn, have been supplied through the medium of a sustained United States balance-of-payments deficit.

An international monetary system of this kind is inherently unstable, in the sense that the passage of time inevitably erodes the foundation of the system on confidence in the convertibility of the dollar, by steadily reducing the ratio of the United States gold reserves to US dollars held as international monetary reserves by other countries and—at least eventually—steadily reducing the absolute amount of gold reserves held by the United States. The reason is that, if other countries hold reserves of dollars and gold in a fixed ratio, and their demand for reserves increases more rapidly than the supply of monetary gold, their demand for additional gold reserves can only be satisfied by allowing them to absorb a disproportionate share of the new gold supplies, and if their demand for additional gold is large enough its satisfaction will require not only the new gold supplied but also a drawing on the United States gold reserves. Since dollars held by other countries as reserves are increasing faster than the world stock of monetary gold, while the United States gold reserves must be increasing less fast or actually decreasing, the ratio of the United States gold reserves to US dollar liabilities to the monetary authorities of other countries must be falling over time. That is, the international liquidity position of the United States must be steadily weakening, thereby undermining the objective basis for confidence by the rest of the world in the unlimited convertibility of their reserve dollars into gold.

This problem, which may be termed the “long-run confidence problem”, is illustrated in Figure 5. The northeast quadrant shows the international reserve

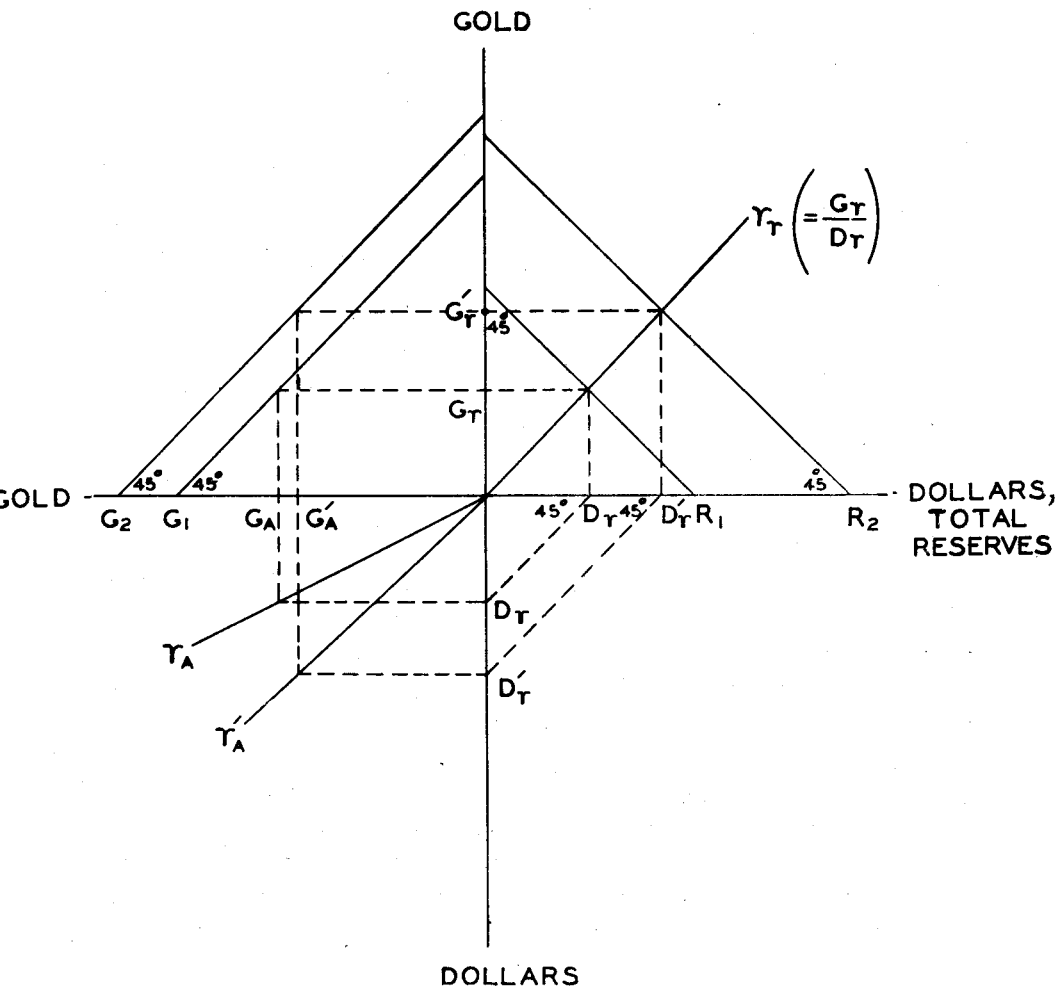


Figure 5

position of countries outside the United States (the rest of the world). Initially, these countries hold R_1 of international reserves, divided between D_r of dollars and G_r of gold according to the desired international assets ratio r_r . The north-west quadrant shows the total world gold stock, initially G_1 , divided between rest of the world holdings of G_r and the United States gold reserves G_a . The southwest quadrant (to which the dollars held by the rest of the world are transferred diagrammatically by means of a 45° line in the southeast quadrant) shows the international liquidity position of the United States; initially the United States holds G_a of gold reserves and has D_r of dollar liabilities outstanding, and hence has a ratio of gold reserves to dollar reserve liabilities given by the slope r_a with reference to the vertical axis.

Now suppose that, as a result of new gold production, the world monetary gold rises from G_1 to G_2 , while as a result of world economic growth the total reserves demanded by the rest of the world rise by a greater proportion, from R_1 to R_2 . If the rest of the world maintains the same ratio of gold to dollars in its reserves as previously prevailed, its dollar holdings rise to D_r' , while the United States gold reserves fall to G_a' , the United States ratio of gold to reserve dollar liabilities falling to r_a' ⁴. The United States international liquidity position would necessarily deteriorate; and it would continue to deteriorate so long as the rest of the world's demand for reserves grew faster than world gold supplies and it maintained its initial ratio of gold to dollars in international reserves.

The deleterious effects of the worsening of the United States international liquidity position on confidence in the convertibility of the dollar, and hence on the usability of the dollar as an international reserve currency, could be avoided in two ways. First, this deterioration might be regarded as acceptable or even desirable by the rest of the world, on the grounds that the United States possessed a disproportionate share of the initial world gold stock. This was in fact the case up to about 1958. But for the rest of the world to accept a steady deterioration of the United States liquidity position while continuing to hold and use dollars as international reserves would amount to a deliberate decision to accept the progressive substitution of dollars for gold as the basic international reserve since it would imply a decreasing expectation that dollars would be encashed into gold. Moreover, eventually the United States would run out of gold reserves from which to supplement the contribution of new gold supplies to the reserves

⁴ The United States gold reserves G_a' might initially rise rather than fall by comparison with their initial level G_a , if the rate of increase of reserves demanded by the rest of the world or the ratio of gold to dollars held by the rest of the world were sufficiently small; but ultimately, as the total reserves of the rest of the world increased relative to the world gold stock, the increase in the rest of the world's demand for gold would come to exceed the increase in world gold supplies and the United States reserves would have to fall.

of the rest of the world, and at that point the rest of the world would be forced to accommodate its gold-dollar ratio to the rate of increase of world gold supplies.

The second alternative would be for the rest of the world to progressively reduce its ratio of gold to dollar reserves held, so as to enable the United States to maintain its international liquidity position (ratio of gold reserves to dollar liabilities) intact. Since that would involve a steady reduction in the absolute level of gold reserves held by the rest of the world, it too would involve a deliberate decision to substitute dollars for gold as the basic international reserve. Moreover, eventually the United States would come to hold all the world's gold stock, and thereafter its liquidity position would deteriorate as a result of the disparity between the rates of growth of the rest of the world's demand for reserves and the world gold stock.

Thus both of the solutions to the long-run confidence problem just discussed involve the ultimate substitution of the dollar for gold as the world's international reserve money. This solution the rest of the world is not prepared to accept. The alternative, of which many variants have been proposed in recent years, and towards which the monetary officials of the leading countries have been working, is to develop a credit-money substitute for gold on an international basis, in place of the national credit-money substitute, the US dollar, heretofore employed for this purpose.

Figure 5 can also be used to illustrate another aspect of the long-run confidence problem of the international monetary system, the problem as it has appeared to the United States policy-makers in recent years, in the form of the so-called "dilemma of the deficit". To provide the rest of the world with its desired increase in international reserves $R_2 - R_1$, the United States must run the requisite deficit on its balance of payments (official settlements basis) of $D_r' - D_r + G_a - G_a' = R_2 - R_1$. The apparent dilemma is that if the United States runs this deficit its international liquidity position will deteriorate and its gold reserves fall, whereas if it takes policy measures to terminate the deficit to prevent these consequences, the result will be to prevent the reserves of the rest of the world from growing as rapidly as desired and therefore probably provoke policy changes injurious to world trade and economic growth. The apparent dilemma, however, is a spurious one, since the US can create dollars for the rest of the world to hold as reserves not only by running a deficit but by purchasing foreign currencies with dollars, a procedure that would add equally to its international liabilities and assets and hence would not weaken (in fact, would arithmetically strengthen) its international liquidity position. This solution, however, might raise new problems, since to keep the system going the United States would have to sell

gold as well as dollars for foreign exchange to be held in its own reserves, and the rest of the world might not regard foreign exchange backing of dollar reserves as being as good as gold backing; and it might distrust the power that large holdings of foreign currencies might give to the United States monetary authorities in the foreign exchange markets.

The foregoing analysis has been concerned with the long-run confidence problem of the present dollar exchange standard system, on the assumption that the system is working properly, in the sense of providing additional international reserves to the rest of the world at the rate at which demand for such reserves is increasing. In principle, this outcome could be secured by the pursuit of appropriate fiscal and monetary policies by the member countries of the international monetary system, on the lines analysed in Part I of this article, interest rates in the United States and elsewhere being so aligned that the United States capital outflow exceeded its current account surplus by just enough to provide the rest of the world with the desired increase in gold and dollar reserves. Such close coordination of national economic policies, however, would be difficult to achieve in practice; and in fact in recent years the policy combinations adopted by the United States and Western Europe have resulted in an outflow of reserves from the United States larger than desired by the Western European countries. These countries have attempted to force the United States to change its policies to correct the situation, by taking a higher proportion of their reserve increments in gold rather than in dollars and so aggravating the U.S. loss of gold reserves. In essence, from the point of view of the European countries United States policy has been led by the pursuit of domestic full employment into generating an increase in the world supply of international reserves that is inflationary for the world economy, and the European countries have reacted by using drawings of gold from the U.S. reserves to put pressure on the United States to desist from generating world inflation.

The situation resulting from this conflict of objectives may be termed "the short-run confidence problem", or—because the method of disciplining United States policy by withdrawing gold if carried too far might produce an international liquidity crisis—"the crisis problem". Mundell has shown in a forthcoming paper [9]⁵ that the crisis problem is a particular case of the assignment problem, and that the present assignment of control over the amount of dollars outstanding to the size of the United States gold reserves and of the objective of world price stability to the rest of the world's (specifically, Europe's) control over the size of the United States gold reserves entails a particularly unstable policy

⁵ The diagrammatic analysis presented below is adapted from that of Mundell, who is the originator of it.

system, whereas the assignment of world price stability to the United States monetary policy and of the maintenance of the proper ratio of gold reserves to dollars outstanding to the rest of the world's control over the United States gold reserves would result in a stable world policy system.

The logic of this analysis is illustrated in Figure 6, where dollars outstanding are measured on the vertical axis and European (rest of the world) gold holdings are measured on the horizontal axis, a decrease in these holdings implying an equal increase in the United States gold reserves; OR represents the world stock of gold reserves. The curve RR' represents the relation between dollars outstanding and the gold stock available to the rest of the world when the United States maintains a fixed ratio of gold reserves to dollars. The line SS' (with a slope of -45°) represents the fixed total of gold and dollars required to maintain world price stability; this line is to be interpreted as the sum of the United States domestic money supply required to circulate the maximum US income consistent with price stability, and the gold and dollar reserves required by the rest of the world to back a domestic money supply there consistent with price stability. (More generally, the total represented by the SS' curve can be considered the amount required as the United States domestic money supply and rest-of-world reserves required for world price stability on the average.) The solid arrows indicate the directions of motion of the international policy system in disequilibrium situations, when the United States monetary authorities respond to the US gold reserve in controlling the supply of dollars and the rest of the world responds to the inflationary or deflationary implications of US monetary policy by withdrawing gold from or depositing it in the US reserves; the arrows indicate a possibility of instability in the northeast and southwest quadrants. The dashed arrows indicate the directions of motion of the international policy system when the assignment of instruments to targets is reversed; in this case the system must be stable.

As with the assignment problem discussed in the previous Part, however, the analysis relies on the unrealistic assumption that each policy agency (here, each national monetary authority) acts in disregard of the effects of its actions on the problem facing the other, and therefore on the other's policy actions, in spite of the fact that both economic logic and practical experience will demonstrate the interdependence of their policy problems. In this respect, the assignment problem analysis is subject to the same criticism as the literature on duopoly problems that makes use of the reaction curve concept, a literature to which in fact it bears a close analogy. In reality, the gold reserve policies of the European countries in the recent past have been carefully designed to put pressure on the United States by threatening an international liquidity crisis without actually

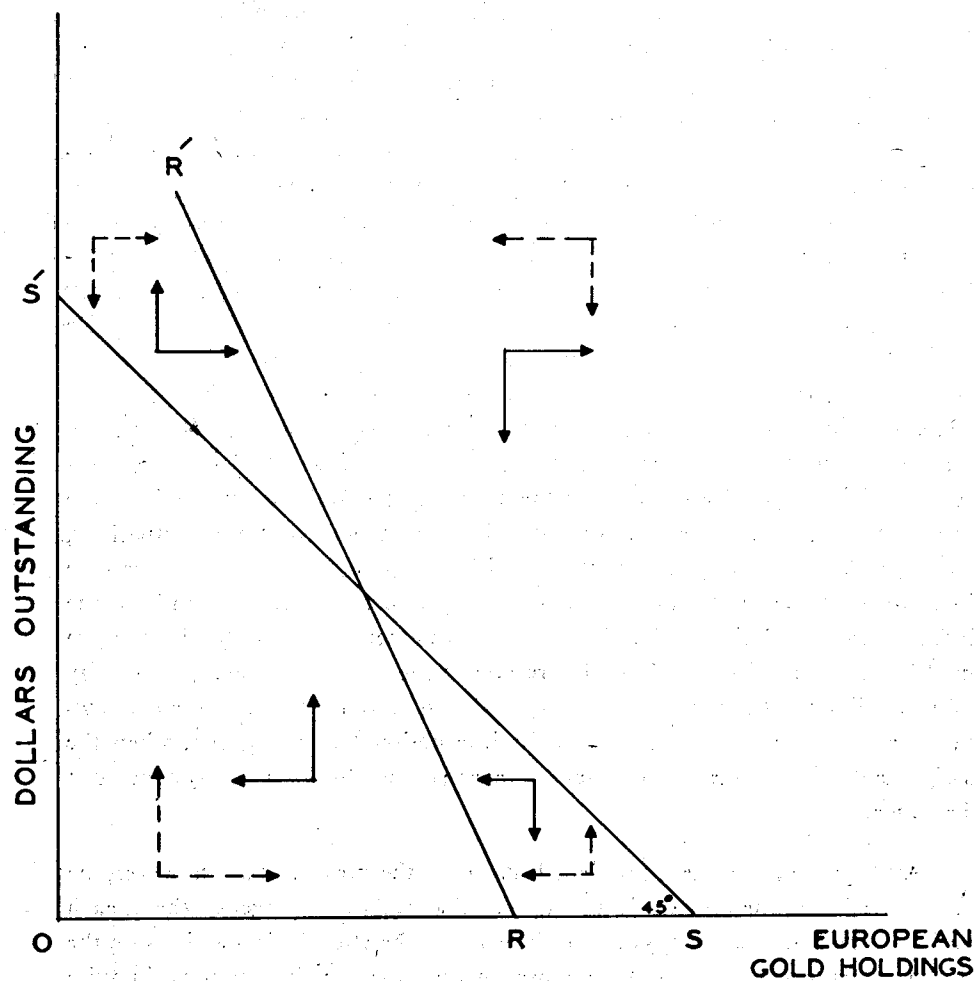


Figure 6

either bringing such a crisis about or running the danger of so doing; and there is little probability of such a crisis occurring, because it is in the interest of no country that it should.

2. New International Reserve Assets

As mentioned in the preceding section, many critics of the dollar exchange standard system have advanced proposals to reform the system by supplementing or replacing the reserve currencies—dollars, and to a far lesser extent sterling—by a new international reserve asset to be created by an international credit operation; and the “Group of Ten” leading industrial countries have for some years been working out the details of a scheme of this kind.

One of the major problems raised by the proposal to create new international credit money is that of how the new money is to be distributed, and how the member countries of the international monetary system are to share in whatever benefits result from the operation. (Other, more technical problems concern the mode of co-existence of the new reserve asset with gold and the reserve currencies, and the determination of the amount and rate of increase of the new reserve asset.) This problem, which raises some fundamental issues in monetary theory, has been termed (not altogether happily) “the seigniorage problem”, by analogy with the long-standing historical practice of royal mints of using the monopoly of the coinage to extract a profit from the coinage of bullion.

To appreciate the issues involved in the seigniorage problem, it is convenient to begin with the nature of the social saving involved in the substitution of credit money for commodity money. Consider first a commodity money system in which the monetary commodity is producible at constant cost in terms of other commodities in general. Such a system would have a stable price level; and as its output grew, it would have to devote a fraction of its real resources equal to the product of the rate of growth and the ratio of money to income to the production of commodity money. Now suppose that a monetary authority were able to substitute a non-interest-bearing paper money for the commodity money, the issue of paper money being assumed to entail negligible cost. There would be a once-over social saving equal to the real value of the existing stock of money, the resources embodied in which could be directed to more profitable uses, and a continuing social saving equal to the resources formerly used to provide the additional money required by economic growth. The once-over social saving could alternatively be represented by the flow of interest on the real resources initially embodied in the money stock; and the seigniorage accruing to the monetary authority from the use of paper rather than commodity money would at any point of time be equal to the interest on the existing money

stock plus the rate of growth of that stock. The monetary authority could not, however, dispose of both these items at will. It could either use the interest on the existing money stock for its own purposes, investing the growth of the money supply in additional interest-bearing assets ; or it could spend the resources put at its disposal by the issue of new money, sacrificing the growth of interest receipts on the money stock.

This analysis clarifies two aspects of the contemporary debate over the seigniorage problem. First, it is widely believed, especially among those who wish to tie international monetary reform to the provision of additional aid to the less developed countries, that the creation of a new international reserve asset involves the generation of pool of real resources, which pool constitutes the benefit from international monetary reform that must be equitably shared. This would be true, if the alternative to international monetary reform were a commodity money system ; but the actual alternatives lie among different systems of providing international credit money (including the present dollar exchange system), so that the problem is not to dispose of a social saving generated by the substitution of credit for commodity money, but to determine the distribution of the seigniorage generated by the issue of non-interest-bearing paper money⁶. This seigniorage arises from the transfer of real resources from the holders of money to the monetary authority ; and it is obvious that it would always be possible to redistribute the seigniorage to the holders of money in such a way as to exactly compensate them for the real resources they surrender. This could be done in either of two ways: by paying interest on money equal to the yield on the investment of the real resources surrendered in return for money, and by giving money as a gift to those who demand additional quantities of it (that is, to those who desire additional money to hold as reserves—clearly not to those who would spend it).

The foregoing observation leads to the second point, that the seigniorage generated by the creation of new international reserve money could be distributed in two alternative ways : through the distribution of the interest proceeds of the investment of the new reserve asset, and through the gift of additions to the stock of the asset to members of the international monetary system. In concrete terms, the seigniorage could be distributed either by rules governing the distribution of the income derived by the authority responsible for managing the new reserve asset, or by rules governing the distribution of additions to the stock of the asset. Concretely, if it were desired to channel the seigniorage to the less

⁶ It may be noted in passing that the Hart-Kaldor-Tinbergen proposal for an international commodity reserve money entails sacrificing the social saving from the substitution of credit, for commodity money, in return for the dubious gains of a price-support scheme for the producers of primary commodities. For a critique of this proposal, see [2, Chapter 7].

developed countries, this could be done either by investing the funds in commercial assets, paying no interest to holders and distributing the income from investments as grants to less developed countries according to some income-distribution rules or by paying no interest to holders, and investing additions to the funds in non-interest-bearing perpetual loans to the less developed countries according to some loan distribution rule ; or by some mixture of the two methods. Alternatively, if it were desired not to redistribute income among the member countries, this could be achieved by investing commercially and paying interest to holders of the new reserve assets, or by distributing new assets to those countries that wished to hold them, as described above.

The method adopted for handling seigniorage, however, would make an important difference to the efficiency of international monetary reform, for a reason not yet introduced into the analysis⁷. The holding of non-interest-bearing money involves the sacrifice of the yield on real assets in which the money could alternatively be invested, with the result that at the margin money-holding must yield a service of convenience sufficient to compensate for the loss of interest, even though the additional money holdings required to reduce the convenience yield to zero could be provided at no social cost. The extraction of seigniorage by the issue of non-interest-bearing international reserve assets therefore entails an unnecessary social loss, by restricting the holding of international reserves to less than the socially optimal level. It follows that the socially optimal system of international reserve creation should either pay interest at commercial rates on holdings of international reserves, or distribute new reserves free to would-be holders of additional reserves, rather than extract seigniorage by in effect taxing the use of international reserves and distribute this seigniorage according to some ethic of international equity.

In conclusion, it may be remarked that the analysis of seigniorage and the social saving from substituting paper for commodity money presented in this section explains the development of the use of national currencies as international reserves. Such currencies compete with gold for the reserve role by offering as attractive interest-bearing substitute for non-interest-bearing commodity money ; in so doing, they both suit the convenience of the reserve-holding countries and promote the optimization of international reserve holding. This suggests both that any attempt to return to the gold standard, as recommended by various European writers on international monetary reform, would be inevitably doomed to failure, since the incentive to find interest-bearing monetary substitutes for gold would

⁷ The ensuing argument depends crucially on the assumption that new international reserves are provided at a rate just sufficient to stabilize the world price level. A rising world price level would impose a tax, and a falling world price level yield a return, on holdings of non-interest-bearing money.

remain ; and that the creation of a new international reserve asset may not be successful in replacing dollars and sterling as international reserves, if the provisions for supplying the asset in question are too heavily dominated by the attempt to extract seigniorage.

REFERENCES

1. Hause, John, "The Welfare Costs of Disequilibrium Exchange Rates" *Journal of Political Economy*, Vol. LXXIV, No. 4, August 1966.
2. Johnson, Harry G., *Economic Policies Towards the Less Developed Countries*. (Washington, D.C. : The Brookings Institution, 1967).
3. Johnson, Harry G., "The Objectives of Economic Policy and the Mix of Fiscal and Monetary Policy under Fixed Exchange Rates" in W. Fellner *et al*, *Maintaining and Restoring Balance in International Payments*. (Princeton : Princeton University Press, 1966).
4. Johnson, Harry G., "The Welfare Costs of Exchange Rate Stabilization" *Journal of Political Economy*, Vol. LXXIV, No. 5, October 1966.
5. Johnson, Harry G., *The World Economy at the Crossroads*. (Oxford: The Clarendon Press, 1965).
6. Meade, J. E., *The Theory of International Economic Policy*, Vol. I—*The Balance of Payments*. (London : Oxford University Press, 1951).
7. Modigliani, Franco, "International Capital Movements, Fixed Parities, and Monetary and Fiscal Policies". Unpublished Manuscript, October 1966.
8. Mundell, R.A., "Appropriate Use of Monetary and Fiscal Policy for Internal and External Stability", *International Monetary Fund Staff Papers*, Vol. 9, No. 1, March 1962.
9. Mundell, R.A., "The Crisis Problem". Forthcoming in the Proceedings of the Chicago Conference on International Monetary Problems.
10. Mundell, R.A., "The Monetary Dynamics of International Adjustment Under Fixed and Flexible Exchange Rates", *Quarterly Journal of Economics*, Vol. LXXIV, No. 2, May 1960.