

The International Transfer of Capital and the Propagation of Domestic Disturbances Under Alternative Payment Systems*

1. Introduction

In July of 1971, shortly before President Nixon's dramatic move of August 15, the authors outlined a new system of international payments (Modigliani and Askari, 1971). In this plan, we rejected both the then existing regime of fixed and rigid parities and a system of floating rates in favor of a system based on official parities; but we proposed, as have many other economists before us (Williamson, 1965), that these parities be allowed to change gradually in time, subject to limitations on the maximum rate of change over time. Why recommend a "Complicated" plan with sliding parities; is it not simpler and more efficient to adopt floating rates? With floating rates, we need no rules or reserves and free market forces will determine the correct rate of exchange between currencies. The usual reason for eliminating floating exchanges from practical consideration is that, whatever the economic claims for it, it is unachievable politically, because governments insist on some sort of fixed parities. Especially, countries for which trade is a large portion of GNP are not ready to abandon the right to control the exchange rate because floating rates would leave them at the mercy of market forces and "destabilizing speculation". As a result, it has been argued that sliding parities is the maximum concession towards floating that one may hope to negotiate.

In this paper, we would like to develop briefly a different argument in favor of sliding pegs as compared to either extremes. The arguments rest on three propositions.

(*) The authors are respectively, Institute Professor at M.I.T. and Associate Professor of Economics at Wayne State University. They are very grateful to Profs. WILLIAM BRANSON, GEORGE HALM, CHARLES KINDLEBERGER and NIELS THYGESEN for some very helpful comments.

First, the international movement of capital benefits the world in so far as it tends to equalize social yields through the transfer of real resources from "surplus" countries, whose full employment national savings exceeds profitable domestic investment at the common yield to "deficit" countries, whose full employment national savings falls short of profitable domestic investment. Therefore, we would want an international payment system in which a differential in social yields across countries would lead to a transfer of *real* resources. However, we argue that with widespread wage and price rigidities, if countries are to retain the ability to pursue domestic stabilization goals, the required transfer of real capital from surplus to deficit countries cannot be achieved merely through a high mobility of private capital but it also requires appropriate adjustments in exchange rates. These considerations lead us to reject fixed rates in favor of at least gradual adjustments of exchange rates to achieve the transfer.

Second, given high mobility of private capital and assuming at first that no stabilization measures are taken, we show that cyclical disturbances in domestic demand resulting from transient changes in the propensity to invest or consume, that is from transient changes in "surplus", will lead to a larger change in aggregate demand of the rest of the world (ROW) under floating rates than under fixed rates. This is because fixed rates impose on the country in which the disturbance originates a behavior pattern which dampens its impact on the rest of the world. In other words, fixed rates tend to dampen the international propagation of cyclical disturbances.

Third, we argue that, under fixed rates, the disturbing country has the incentive to respond to the initial disturbance by using policies which are stabilizing both for *itself and* for the ROW; whereas, with floating rates, the disturbing country has more to gain by adopting policies which further destabilize the ROW.

We are thus led to the conclusion that a system of sliding pegs combines the advantages of short-run fixity in mitigating propagation of cyclical disturbances with long-run or structural changes in surplus or deficit.¹

¹ It has been argued that, because of the added exchange risk resulting from floating rates, a given differential in interest rates would lead to a smaller flow of capital under floating than under fixed rates. It is shown in 2 below that this argument has very little merit, at least with respect to movements of long term capital.

Needless to say, we recognize that the argument set out below is not sufficient to establish conclusively the superiority of some system of sliding parities. But we feel that our paper has at least the merit of calling attention to a set of issues that need to be thoroughly explored and understood in order to arrive at a balanced assessment of the merits and shortcomings of alternative payment systems.²

2. Capital Transfer and Domestic Stability under Alternative Payment Systems

In this section, we conclude that only with flexibility in exchange rates can the benefits of international mobility of private capital movements be reaped, without wastefully sacrificing the freedom of pursuing domestic stabilization goals.

Freedom of private capital movements benefits the world in so far as it tends to equalize social yields by transferring resources from surplus to deficit countries. This requires that two conditions be fulfilled. First, the social rate of return must equal, or at least be proportional to, the private rate. And second, the flow of financial capital must also lead to the transfer of real resources. However, for the transfer to occur, the current account balance (B) must equal the surplus or deficit to be transferred. Under the textbook version of the gold standard, hereafter the "ideal gold standard", the current account balance was supposed to adjust to the desired inflow and outflow of capital, despite the fixed parity, through the well-known mechanism of the fixed relation between a country's money supply and its gold reserves, coupled with a high degree of wage-price flexibility. For example, if the desired flow of capital from country A to country B increased, initially, this would result in a flow of reserves from A to B. However, this would lead to the contraction of the money supply in A and an expansion in B; and this in turn would result in a decrease in A's domestic

² To illustrate this point, we note that, in interpreting our analysis as supporting a system of sliding parities, we are *implicitly* making the value judgment that international propagation of domestic disturbances is undesirable. Yet, as WILLIAM BRANSON has pointed out to us, shifting a part of the burden of domestic disturbances to the rest of the world may actually be desirable, as it tends to dilute the impact of disturbances. While this is a plausible value judgment in making a choice between alternative payment systems, it is still essential to understand their implications with respect to the incidence of disturbances.

price level and an increase in B's, without any significant change in employment and real output, and thus finally to an increased current account surplus of A and deficit of B. Thus, the initial flow of reserves would, in short order, give rise to a transfer of real resources.

Under floating rates, exactly the same effect can be achieved, despite price rigidities and without interfering with any desired price and employment policy, because the increased desire of A's nationals to move capital to B, increases the price of B's currency in terms of A's; that is, it leads to a depreciation in A's exchange rate, which in turn makes A's goods cheaper for B's nationals and B's goods more expensive to A's nationals. This leads, under normal conditions, to an increase in A's current account surplus and a fall in B's and thus to the desired real transfer.

But if the exchange rate is fixed and wages and prices are rigid, at least downward, there is no method by which the current account balance can be changed except through domestic policies, consciously aiming at either unemployment or inflation, both of which are clearly inconsistent with the goal of domestic stability. Indeed, the current balance could be made *more* favorable only by an initial reduction in income and employment, decreasing imports, and could be *less* favorable only through an expansion of aggregate demand raising employment and income and/or prices. It is easy to see that under these conditions, if there were no capital movement, domestic full employment and price stability and balance of payment equilibrium could generally not be reconciled under a regime of fixed parities. For there would be a "unique" level of income and employment that would make imports equal exports and this level would not coincide with full employment at the current price level except by pure chance. This is the basis on which many economists today would advocate floating rates.

More recently, it has been shown, notably through the work of Mundell (1963), that, once we allow for the movement of private capital, in response to interest rate differentials, balance of payments (BP) equilibrium and domestic stability goals can be reconciled with each other, even in the presence of fixed parities. The argument is as follows:

(i) it is true that, given a target level of income, \hat{Y} , there

will be associated with it a unique current account balance, \hat{B} ;

- (ii) but balance of payments equilibrium no longer requires $B=0$. It requires only that \hat{B} be offset by an equal inflow of capital if negative, or outflow of capital if positive. But the net outflow of capital, FL, depends on the relation between domestic and foreign rates, r and r_f respectively. Hence, given r_f and \hat{B} , there will exist some level of r , say \hat{r} , for which $FL=B$ and hence, BP is zero; given \hat{Y} , this level can be achieved by an appropriate money supply.
- (iii) A given r will uniquely determine the level of domestic investment, K . But this level can be reconciled with \hat{Y} , independently of the private propensity to save, through an appropriate fiscal policy — including taxation (T) and expenditure (E).

Formally, we have the standard identity:

$$Y = C(T, Y) + E + K(r) + B(Y)$$

where: $C(T, Y)$ denotes consumption, a function of taxes and income. More conveniently: Let $S_p = Y - C - T$ and $S_g = T - E$, then,

$$Y - C - T = S_p(T, Y) = E - T + K(r) + B(Y) = -S_g + K + B$$

Given a target \hat{Y} , and the consequent \hat{r} needed to make $BP=0$, we can achieve that \hat{Y} through any fiscal policy program which satisfies $S_p(T, \hat{Y}) = E - T + K(\hat{r}) + \hat{B}$. Thus, we have one equation in the two variables, T and E , which can be readily satisfied by choice of an appropriate combination of E and T .

All this is true. However, it hides one fatal flaw. Under this system, *one loses all the benefits that were supposed to result from the free movement of private capital*. Indeed, the given \hat{B} , resulting from the historically received price levels and fixed parities, now determines the amount of capital to be moved rather than B being determined by the flow of real capital that needs to be transferred in order to equate returns across countries, as would be true under the textbook version of the gold standard or floating exchanges.

Furthermore, in order to maintain full employment, fiscal policies must be used to *force* domestic saving, $S_p + S_g$, into *matching* $K(\hat{r})$, the rate of domestic investment which is profitable at the world rate \hat{r} , plus the given \hat{B} . This task is to be accomplished by increasing or reducing consumption through taxes and by varying the extent to which savings is offset by the government deficit. Under this system, it is again true that the rate of return will tend to be equalized across countries, but basically by each country forcing saving to match the rate of investment that is profitable at the (somehow given) common rate \hat{r} , rather than through the transfer of real capital from "surplus" to "deficit" countries, as defined earlier.

As is apparent from the previous paragraph, under the Mundell system, the three conventional tools of stabilization policy are to be used to achieve three targets: full employment \hat{Y} , balance of payment equilibrium ($BP=0$), and desired distribution of domestic resources between the public sector, E and the private sector. It is, however, impossible to choose and achieve a *target* level of domestic saving, as would be possible either in a closed system — where BP is not a target — or under floating rates — where BP always and automatically takes care of itself through the rate of exchange seeking the level which clears the foreign exchange market. (The same is true for the ideal gold standard, where prices adjust automatically to a level consistent with full employment and no transfer of reserves).

Even in the fixed parity, rigid price system, it is possible to pursue an independent target for domestic saving but only by recourse to additional tools. These tools include direct control of capital movements (though such controls are likely to be more effective in preventing capital outflows than in forcing capital inflows); devices for opening a wedge between foreign and domestic rates — interest equalization taxes, differential fiscal incentive to borrowing abroad; and devices affecting the relation between the cost of capital and domestic market rates — such as the investment tax credit and loans at subsidized reduced rates.

Another device that has been increasingly used to insulate the domestic from the international capital markets and to insure that capital movements match the trade balance B , is that of a "dual"

exchange system, with a fixed parity for "commercial" transactions and a floating rate for "financial" transactions (sometimes coupled with exchange controls designed to limit domestic and/or foreign transactor's access to the financial market). In so far as the authorities succeed in insulating completely the two markets, it is possible, with this device, to insure that capital movements precisely match and offset B , independently of domestic monetary policy. This only requires that the monetary authority sell (or buy) on the financial market an amount of foreign exchange equal to the surplus (or deficit) on the commercial account.³ But even with these devices, it still remains true that with fixed parities we lose the benefit of international capital movements in that such movements are determined by B instead of B being determined by desirable movements of capital.

We must conclude, therefore, that under fixed exchange rates the mobility of private capital is desirable in that it permits the achievement of high employment and price stability even when these are inconsistent with current account balance; but it is not helpful in bringing about a transfer of real resources from would-be surplus to would-be deficit countries. This transfer can be achieved only if the mobility of private capital is accompanied by enough long-run exchange flexibility to permit the current account balance to accommodate, at least gradually, the needed real flows.

In light of the above it is paradoxical that fixed rates have been advocated in part by those who have stressed the desirability of international capital movements as a device for achieving an optimum allocation of capital across countries. They have recommended fixed rates on the grounds that certainty of exchange rates enhances capital movements by reducing the risk, and thus increasing the responsiveness of investors to differential rates of return. We have already shown that under fixed rates, the movement of capital is entirely determined by whatever happens to be the surplus or deficit in the current account balance and therefore cannot, in fact, be enhanced by the alleged reduction of risk entailed by fixed exchange rates.

But beyond that, the conclusion that fixed exchange rates

³ In so far as the two markets cannot be totally insulated, the movement of rates on the financial market will tend to cause partial movements, in the same direction, in the *effective* commercial rate, causing this rate to float within some limits, around the official commercial rate.

reduce the risk of long term foreign borrowing and lending is open to serious question, once we take into account that (i) under floating rates, the average annual rate of change of the exchange rate between two countries is approximated by the difference in the average rate of change of the price level in the two countries, and (ii) that even under formally fixed parities, exchange rates can, in practice, be kept fixed only if price levels move roughly parallel. If the price levels move at significantly different rates, then the parity will have to be adjusted. This adjustment, even if discontinuous, will have to be roughly of the same size as the movement that would occur through market forces under floating rates.

It follows that if the price levels of the borrower and lender country move roughly parallel, the rate of exchange will tend to remain constant under floating as well as under a fixed exchange regime. In this case, under either regime, the risk of the return to the lender and the cost to the borrower, measured in real terms (the only relevant measure), will be the same as in the case of a domestic transaction and will be given by the uncertainty of changes in the common price level, with (unanticipated) increases benefitting the borrower at the expense of the lender. If, on the other hand, the price levels in the long-run move at different rates, then the outcome, under either regime, will depend on the denomination agreed upon by the parties. If the contract is denominated in the currency of the lender, then the risk to the lender is the same as in the case of domestic lending (i.e. determined by the uncertainty of the domestic price level); on the other hand, the borrower stands to reap a gain (or loss) equal to the average rate of inflation of the domestic price level minus the average rate of depreciation of his currency relative to the lender's currency. But, as just noted, in the long-run, this rate of depreciation must tend to equal the excess of the rate of inflation in the borrower's country, say \dot{p}_b , over the rate of inflation in the lender's country, say \dot{p}_l ; hence the borrower's gain can be approximated by $\dot{p}_b - (\dot{p}_b - \dot{p}_l) = \dot{p}_l$. In other words, under either regime, in the long-run the risk to both parties is given by the uncertainty of the lender's price level. Similarly, one can establish that, if denomination is in the borrower's currency, the risk to both parties is given by the uncertainty of the borrower's price level. We can conclude, therefore, that under either regime, there is risk in international lending and borrowing just as there

is in the corresponding domestic transaction. This risk can be minimized by denominating the contract in the currency of the country whose price level is expected to remain stable (strictly speaking, more predictable) which need not be either the lender's or the borrower's; and by doing so, the risk of international borrowing and lending can be made equal or smaller than that of a purely domestic transaction.

The proposition that fixed exchanges reduce the risk of long term international lending and borrowing could still be true to the extent that fixed parities reduce the uncertainty of price level movements in the more stable countries. This proposition would not be very easy to establish empirically and certainly does not command much a priori plausibility, at least if one is to judge from the experience under the fixed parity regime of the postwar period. Furthermore, proper account would have to be taken of the costs of more stable prices and parities as they affect the levels of employment and interfere with international flows of commodities and capital. Last but not least, if one holds that uncertainty in real returns is a major deterrent to capital movements, the most promising approach toward eliminating, or at least minimizing, the risk to lenders *and* borrowers from both exchange rates *and* price level changes is to create an appropriate international unit of account with constant purchasing power in terms of internationally traded commodities, as we have explicitly proposed elsewhere.⁴

In summary, for international capital movements to contribute most effectively to the optimum international allocation of capital, without interfering with domestic stabilization policies, we need a set of institutions (including possibly an international stable purchasing power numéraire) which make desired capital movements highly sensitive to differences in international real rates of return, and enough long-run exchange rate flexibility to permit the current account balance to accommodate at least gradually these desired movements.

⁴ An operational scheme for achieving this goal, in the context of a symmetrical international payment system in which the international medium of exchange and store of value is an intangible like the SDR, was set forth in MODIGLIANI and KENEN (1966). This scheme could be readily incorporated in the proposal, which follows closely the basic line set forth in the above mentioned paper, recently put before the Group of Twenty by the United States. In a more recent joint paper (MODIGLIANI and ASKARI, 1971), we have proposed an alternative scheme suitable for an asymmetric international payments system in which the dollar would be *de jure* inconvertible.

3. Implications of Alternative Payment Systems for the Propagation of Disturbances⁵

Let country A have a transient change in surplus, arising from variations in national saving or in the rate of domestic investment. For the sake of concreteness, let us assume a cyclical or transient decline investment (K) in country A. We want to examine to what extent the disturbance is propagated to the rest of the world under alternative payment systems. Initially, we will assume that the country does not take any discretionary measure designed to counteract the effect of the disturbance on income.

Under a system of fixed exchange rates, the first effect is a fall in income and a propagation effect through a decline in imports. In addition, because of the fall in income, if M were unchanged, the interest rate (r) would have to fall. The fall in imports improves the current account balance (B); but the fall in r increases FL ; and if FL is sufficiently responsive, it will increase more than the fall in imports, so that the balance of payment (BP) will deteriorate. This will force country A to raise r by reducing the money supply. And clearly, the burden on country A and on the ROW will be greater the larger FL' ,⁶ because the larger FL' , the more one has to bring r back toward its original level; but this needed upward movement in r will lead to a further fall in investment and income beyond that resulting from the original disturbance. In the limiting case when $FL' = \infty$, r has to be restored to its original level, and therefore, in terms of the usual Hicksian IS—LM analysis, Y will fall by the full shift of the IS curve.

Under a system of floating rates, on the other hand, the money supply can be left unchanged, since changes in the exchange rate will always insure balance of payment equilibrium. The impact

⁵ RICHARD CAVES (1962) has also looked, from a different perspective, at the propagation of disturbances. Also EGON SOHMEN (1969) has, using the same framework, analyzed the behavior of income and employment under flexible exchange rates.

⁶ In this paper, we look at capital movement purely as flow. But in modern analysis, economists view capital movements as flows that adjust stocks (function of relative interest rates) to the desired levels. However, in our analysis we are looking at the short-run and as such FL' is essentially a flow that is generated by the desired stock adjustment. This implies that FL' will not, in general, be constant overtime but for our purpose, it can be considered as given at a point in time; thus, FL' represents the *initial* flow response to the differential.

effect of the fall in investment is again a fall in income which reduces imports, improving the current balance, and a decline in interest rates, increasing capital exports to an extent depending on FL' , and thus deteriorating the balance on the capital account. If FL' is high so that the increase in FL exceeds the improvement in the current account balance, there will occur a depreciation of A's currency. This will improve A's net exports in domestic currency and thus support its income; and, provided the Marshall-Lerner conditions hold, it will reduce further the net exports of the ROW.

Now what can we say about the relative impact effect of the transient disturbance under a system of fixed versus floating exchanges? Assume the exchange rate and the money supply to be constant. There will be some FL' for which $BP=0$, that is, such that the additional lending due to the fall in the interest rate will be just enough to offset exactly the improvement in the current account balance. In this case, the propagation of cyclical disturbances will be exactly the same under the regime of fixed and floating exchanges; we will call this value of FL' the "critical"

value and denote it by \widehat{FL}' .⁷ If, however, $FL' > \widehat{FL}'$, the resulting effect will be a deterioration in the balance; under a system of fixed exchanges, the money supply would have to be reduced in order to raise the domestic interest rate; however, under a regime of floating rates with M constant, the exchange rate falls and this will improve A's current account balance and thus support its income; as mentioned above, this will be at the expense of the ROW, reducing its exports. The reason for this is that under floating rates, the country originating the disturbance will end up with

⁷ In a simple, Keynesian, open economy model with capital flows, the value of FL' will depend on the feedbacks that are allowed. In the simplest case, total absence of any feedbacks, that is feedbacks from changes in income and interest rate of the ROW;

$$\widehat{FL}' = \frac{sx+i}{r - (1-x)Y\epsilon} - xk'$$

- s = the marginal propensity to save
- x = the marginal propensity to import investment goods
- i = the marginal propensity to import consumption goods
- ϵ = the interest elasticity of demand for money
- Y = domestic income
- r = domestic interest rate
- k' = derivative of investment with respect to the interest rate

a larger money supply and a lower exchange rate; as a result, it will enjoy a larger net export and hence a smaller contraction in income. On the other hand, the ROW will have a smaller net export and a larger contraction in income. As a result, if FL' is above the critical value (this being the interesting case, as we would want a high FL' to insure the long-run transfer of capital), the originating country will suffer a smaller contraction of income under floating than under fixed rates. And under the same conditions, the ROW will lose more.⁸ Note that for a small country, in the limiting case of $FL' = \infty$, the money supply is unchanged so that income is also unchanged; the entire disturbance is transferred outside.

The conclusion reached in this section, on the relative impact effect of a transient domestic disturbance is the opposite of the conventional view that flexible exchange rates shield the domestic economy from disturbances in the ROW. The reason for this apparent paradox is that in standard textbooks, the analysis assumes away the existence of capital flows; with this restrictive assumption, under flexible exchanges, the exchange rate will rise, preventing a fall in imports, and causing a fall in exports and the disturbing country ends up absorbing the entire disturbance internally. However, when we allow for international capital flows, *and* we postulate

⁸ It may be objected that since FL' is the derivative of capital exports with respect to the domestic interest rate r , this quantity cannot be assumed to have the same value under fixed as under floating rates. In fact, capital movements should be expected to respond to the "covered spread" between domestic and foreign rates. Under the strictest form of fixed parity, with no band, the increase in this spread may be identified with the fall in the domestic rate. But under floating rates, we must also take into account the likely appreciation of the forward rate relative to the spot rate, resulting from the increased capital exports, especially if the interest differential is seen as transient (or, equivalently, it is most pronounced at the short end of the maturity spectrum). If the investors cannot or do not hedge then one must allow for the risk of adverse exchange rate movements. In either case, if we interpret FL' as the responsiveness of capital exports to a difference in the covered spread, then, for any given positive differential between foreign and domestic rates, the demand for foreign exchange to invest abroad is likely to be smaller under floating than under fixed rates. (We are indebted to C.P. Kindleberger for bringing this point to our attention). This implies that the "critical" value of FL' may be larger than $\widehat{FL'}$ as defined in the text. Indeed for $FL' = \widehat{FL'}$ capital exports could fall short of the current account surplus, leading to some appreciation and a lower burden for the ROW than under fixed rates. Nonetheless, the conclusion reached in the text, that under floating rates the exchange will depreciate, increasing the burden on the ROW should tend to remain valid for values of FL' sufficiently higher than $\widehat{FL'}$ (though admittedly this result does not necessarily hold).

a high FL' (as needed to insure the desirable transfer of long term capital for allocative purposes) so that the increase in FL exceeds the improvement in the current account balance, then the conclusion is reversed.

4. Implications for Policy Measures

Let us allow for stabilization policies aimed at offsetting the decline in income. We want to show that floating rates encourage the use of stabilization measures which are destabilizing to the ROW, while fixed parities encourage the use of tools which minimize the impact on the ROW. Consider the possible policy responses of the country where the disturbance originated, taking first the case of fixed exchange rates. Clearly, the country cannot have recourse to a policy of lower interest rates through monetary expansion, as this would encourage capital exports leading to an unfavorable balance of payments. However, the fiscal policy devices, the wedge approach and the dual exchange system, singly or in combination, could still be useful, as short-run tools, if changes in parity were limited in the short-run (for example, as in a system of sliding parities with limitations on the maximum permissible rate of slide). These devices could, in fact, be relied upon to contain FL within the B that could be achieved at any point in time, within the restriction imposed by the limited slide, and without sacrificing other domestic goals. Its only choice, if no use is made of the above devices, is expansionary fiscal policy; while this will increase imports, it will not create a balance of payment problem, at least as long as income does not rise above the initial level, since the rise in imports only offsets the initial decline. It should be clear that such measures, in addition to helping the originating country, will also help the rest of the world; indeed, if fiscal policy succeeds in offsetting fully the decline in investment, then the ROW is unaffected by the disturbance which is entirely handled domestically.

Consider next the case of floating exchanges. Especially when FL' is large, there will be little incentive for the originating country to take *ad hoc* measures, as the burden largely falls on the rest of the world. If, nonetheless, it were to take measures it could choose either monetary or fiscal measures. Monetary expansion may be quite effective if capital exports are very sensitive — for the resulting

downward pressure in interest rates will encourage the export of capital which will put downward pressure on the exchange rate, thus raising net exports. But much of the improvement will clearly be at the further expense of the ROW. On the other hand, under the same assumption, fiscal policy will be ineffective for the country itself, but will mostly help the ROW — for it will put upward pressure on interest rates giving an incentive to capital imports which puts upward pressure on the exchange rate, decreasing net exports. This last effect will, of course, help the ROW. In fact, this beneficial effect to the ROW will be larger the less the country itself is helped.

Thus, under fixed parities, the country has an incentive to take measures and these are also helpful to the ROW. Under the floating rates, on the other hand, there is less of an incentive to take action since much of the burden is automatically shifted to the ROW, and even less to choose actions which relieve the burden of the ROW, over measures which increase it further.

5. Conclusion

The conclusion to be drawn from the above analysis, is that with respect to response to cyclical fluctuations in investment, fixed parities seem to have some advantages over floating rates. At first sight, this result may seem to contradict our earlier conclusions pointing to the serious shortcomings of the system of official parities. But, in reality, there is no contradiction. What we have established in both cases is that under a system of floating rates variations in the potential "surplus" or deficit of a country — whether due to variations in national saving or in the rate of domestic investment — tend to be accommodated by corresponding variations in capital exports and real transfer of resources through the current account surplus. Under fixed rates on the other hand, the current account surplus, at the target level of \hat{Y} , is a given, $B(\hat{Y})$, and hence the only way to maintain \hat{Y} is to use fiscal policy to make savings at \hat{Y} equal to $K(\hat{r}) + B(\hat{Y})$. The reason for changing the ranking of the two alternative systems is that we have implicitly taken a very different view as to which was the desirable response to a change in surplus. In the first case, we were dealing with

variations in "potential" surplus of a long-run, "permanent" nature, and concluded that these should be accommodated by variations in capital movement through appropriate adjustment of exchange rates. In the second case, we were dealing with variations of a transient cyclical nature, and not surprisingly, concluded that these would best be absorbed domestically, through fiscal policies. This approach would avoid the need for the transient transfer of resources in and out of the sector exposed to foreign competition as well as reduce fluctuations in ROW output, while the adjustment is being made. On the other hand, this shift of resources is clearly desirable when structural changes have occurred. Kindleberger (1966), noted this argument about flexible rates, "clearly it (shift of resources) is desirable when significantly large structural changes occur".

We conclude that the ideal system of international payments would be one that would allow the transfer of permanent changes in surplus and would prevent or limit the transfer of cyclical or transient changes in surplus. This situation cannot be achieved under either fixed rates (which allow for no change in transfer) or under floating rates (which allow the transfer of both permanent and transient changes). Nor could one rely on a system that permitted selective transfer of one kind of change but not of the other because it would be hard to establish whether any given change would be transient or permanent.⁹

These considerations suggest that sliding parities may be preferable to either pure floating rates or permanently fixed parities. Under sliding parities, in fact, gradual changes in potential surplus — as well as other gradual changes tending to impinge on the trade balance such as sustained differences in the rate of infla-

⁹ These conclusions need to be modified to recognize that, under floating rates, the operation of private markets could be relied upon, to some extent, to contain the transfer of resources between the domestic and the foreign sector when the disturbance, and, hence, the interest rate differential, were generally recognized to be but transient in nature. In this case, in fact, one could expect the spot and the forward rate to move in opposite directions, reducing the change of the spot rate and the transfer of real capital generated by a given differential between domestic and foreign rates. Clearly these same conclusions would apply to some extent to a system of sliding parities, provided the system allowed a band of permissible fluctuations around parity. It is, in fact, precisely for this reason that an adequate band should be provided for. However, under sliding parities, if the spot rate, nonetheless, hits the lower limit of the band, the Monetary Authority would be required to intervene, and the argument in the text leads us to the conclusion that this would be appropriate.

tion — could be absorbed through gradual changes in parity.¹⁰ On the other hand, limitations on the rate of slide would prevent a country from requiring the ROW to absorb significant short-run changes in imports and exports forced on it by rapidly, unconstrained, changes in exchange rates. Furthermore, this limitation on the rate of slide would encourage the originating country to take anticyclical policy measures which are stabilizing for both itself and for the rest of the world.

FRANCO MODIGLIANI - HOSSEIN ASKARI

Cambridge, Mass.

REFERENCES

- RICHARD CAVES, "Conditions of International Monetary Equilibrium, Flexible Exchange Rates", *American Economic Association Papers and Proceedings*, pp. 120-29, 1962.
- GEORGE HALM and FRITZ MACHLUP (editors), *Burgenstock papers*, Princeton University Press, 1970.
- CHARLES KINDLEBERGER, "Flexible Exchange Rates", in *Europe and the Dollar*, p. 122, 1966.
- FRANCO MODIGLIANI and PETER KENEN, "A suggestion for Solving the International Liquidity Problem", in this *Review*, No. 76, March 1966, pp. 3-17.
- FRANCO MODIGLIANI and HOSSEIN ASKARI, "The Reform of the International Payments System", *Essays in International Finance*, No. 89, September 1971, Princeton University, Princeton, New Jersey.
- FRANCO MODIGLIANI, "International Capital Movements, Fixed Parities, and Monetary Policies" in *Development and Planning*, Essays in honor of Paul Rosenstein-Rodan, edited by Bhagwati, Eckaus, and Chakravarty, Allen and Unwin, London, 1973.
- ROBERT MUNDELL, "Capital Mobility and Stabilization Policy under Fixed and Flexible Exchange Rates", *Canadian Journal of Economics and Political Science*, Vol. XXIX, No. 4 (November, 1963), pp. 475-85.
- EGON SOHMEN, *Flexible Exchange Rates*, second edition, University of Chicago Press, 1969.
- JOHN WILLIAMSON, "The Crawling Peg", *Essays in International Finance*, No. 50, December, 1965, Princeton University, Princeton, New Jersey.

¹⁰ It should be recognized that even with a system of sliding pegs, one may need some occasional, discontinuous large change in parity if a sudden "permanent" shock of large proportion occurs. In such cases, the appropriate policy measure is to float the exchange rate for a short period until a new maintainable level has been established.