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The Current Account and the Policy Mix Under Flexible Exchange Rates

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Abstract

This paper extends the policy-mix and assignment literature to the flexible exchange rate regime. A model is developed to examine policy-mix questions under floating rates and to gain insights into contemporary policy controversies. After discussing the motivations for current account targets, the paper shows that fiscal policy has a comparative advantage in dealing with the current account, monetary policy with internal balance, and that this assignment will be stable for the case of a single small open economy. The model is extended to discuss the causes of policy failures and their correction in a multicountry setting.

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I. Introduction

The policy mix and assignment problems that figured so prominently in the economic literature of the 1960s fell somewhat out of fashion with the adoption of floating exchange rates by major industrial countries in the early 1970s. The conflict raised by Meade between external and internal balance and the Mundellian assignment of monetary policy to the balance of payments and of fiscal policy to internal balance did not seem of great relevance to a world in which the exchange rate, nominal and/or real, would adapt automatically to insure equilibrium in the official settlements balance of payments. Although concern with the structure of the balance of payments was occasionally mentioned in the policy-mix literature, that was not a principal focus of the analysis.

This paper is in the tradition of the policy-mix and assignment literature but in the context of flexible exchange rates. There are at least two reasons why such an approach to contemporary international macroeconomic policy is appropriate. In the first place, increasingly large current account imbalances in the 1980s have been the subject of mounting concern; the current account has become a major target of policy. In the second place, the current account is not determined in isolation nor is it the only target of policy. Policies that attempt to deal with the current account unavoidably affect other targets; and policies adopted to attain other targets unavoidably have an impact on the current account. This interdependence naturally suggests that policy questions be addressed in a consistent general equilibrium macroeconomic framework, however simple, that incorporates several targets.

The motivation for the analysis contained in this paper, then, is contemporary imbalances in the world economy. Particularly worrying are the large and rising current account deficit of the United States ($138 billion or 3.3 percent of GNP in 1985 IV-1986 III) and the counterpart surplus in the rest of the world, especially that of Federal Republic of Germany ($30 billion or 3.7 percent of GNP) and of Japan ($76 billion or 4.2 percent of GNP). These, however, represent only one among the many national and international imbalances that characterize today's international economy. Without exhausting the list, one may mention low growth and the threat of recession in a large number of countries, high real interest rates, budgetary imbalances and rising ratios of public debt to GNP, persistent unemployment, and the mounting threat of protectionism and trade wars.

That there are many schools of thought as to the proper macroeconomic response to these imbalances bears witness not only to the difficulty of the problem but also to the lack of an agreed-upon framework of analysis. The middle-of-the-road answer, as exemplified in Layard, Basevi, et al. (1984) stresses a rebalancing of fiscal policy consisting of a reduction in the U.S. budget deficit and a (transitory) fiscal expansion in the rest of the world accompanied by monetary expansion in the United States and a lesser monetary contraction in the rest

of the world so as to allow for a reduction in international real rates of interest. The current U.S. Treasury view presents some similarities with the middle-of-the-road answer but emphasizes fiscal expansion abroad more than U.S. budget deficit contraction and seems to regard further real depreciation of the dollar as a valid, indeed the only valid, alternative to foreign fiscal expansion as a means of curing present current account imbalances. "Talking down the dollar" is one means, possibly the preferred means, of bringing about the real depreciation of the dollar. This emphasis on the role of the real exchange rate is shared by proponents of target zone systems who, essentially, propose to stabilize real exchange rates around a level that would reconcile internal and external balance. To the criticism that the real exchange rate that is compatible with these goals is not independent of the specific mix of policies used to achieve them, some advocates of target zones have recently responded by proposing fairly ambitious schemes for policy targeting and coordination. Thus, one implication of Edison, Miller, and Williamson (1987) would seem to be the following mix of policies in today's circumstances: lower U.S. real interest rates to depreciate the dollar in real terms and achieve current account equilibrium; increase money supplies collectively to lower world interest rates and thus raise world nominal output; and let countries adjust their individual fiscal policies to achieve their own internal balance target.

There are, of course, many more schemes or opinions as to the proper solution to the system's imbalances. They range from ambitious schemes that emphasize explicit policy cooperation to avoid departures from Pareto optimality due to strategic behavior to the view that all that is needed is to wait for the J-curve to go away as the present level and pattern of real exchange rates would insure tolerable current account balance in the longer run.

The reasons for this diversity of views are numerous. They include differences of opinion on the nature of unemployment, the scope for anticyclical policy, the role of demand vs. supply management, or the sustainability or not of specific current account imbalances. That is, they include both disagreements on the relevant model and policy goals. It would seem, however, that the range of differences could be significantly reduced if the process of current account determination were incorporated in a standard macroeconomic model in which the trade balance and other targets are simultaneously determined.

This paper uses such a model to examine policy-mix questions as they arise under floating rates and to gain some insight into contemporary policy controversies. Section II very briefly discusses the motivations for taking the current account as a target of policy. It also contains a few remarks on the targets-instruments approach to policy-making and on the macroeconomic model that underlies much of the subsequent discussion. Section III deals with the case of a small, open economy. It shows that fiscal policy has a comparative advantage in

dealing with the current account, monetary policy with internal balance, and that this assignment will be stable for the case of a single small open economy. It also shows that the existence of constraints on fiscal policy would make simultaneous achievement of internal balance and a current account target impossible. It then considers adding a third instrument, "talking the dollar down," as a means to resolve the resulting policy dilemma. This last policy is modeled as introducing a risk premium (wedge) in the interest parity relationship and is shown to be inefficient in the short run and ineffective in the long run.

Section IV turns to a multicountry model to discuss the causes of policy failures and their correction. Its first section deals with the problem of securing enough instruments (here, two monetary and two fiscal policies) to attain the targets of policy (here, the two output or price levels, the world rate of interest, and current account balance). A second section discusses the assignment problem: how to assign specific instruments to particular targets in such a way as to converge on targets rather than diverge from them in a world of limited information. Part of the answer is seen to depend on the relative size of economies. Individual relatively small countries should aim their fiscal policy at their own current accounts; countries whose economies are very large relative to the rest of the world should aim their fiscal policy at the world rate of interest. A third section examines very briefly the conflicts and strategic behavior that arise when countries disagree about the proper value of a "shared" variable such as the world interest rate or the current account in a two-country context. It illustrates the case in which both regions of the world attempt to achieve a current account surplus simultaneously.

Section V summarizes the main themes of the analysis and ends, by way of conclusion, with an indication of the kind of policy coordination arrangement or package that could help resolve contemporary macroeconomic imbalances.

II. The Current Account as a Policy Target

That the current account should be a target of macroeconomic policy is far from obvious; that it actually is seems to be a fact of life under floating exchange rates.

In a world of small countries, with full and symmetrical information, competitive markets, and no externalities, there is no reason why the current account (or, for that matter, any macroeconomic variable) should be a target of policy. Current account surpluses or deficits would simply reflect differences in productivity and/or time preference among countries and be a reflection of the efficient reallocation of capital from regions with an excess of saving over investment to regions with an excess of investment over saving. Respect of intertemporal budgetary constraints would ensure solvency and an appropriate time path of current accounts along "stages of the balance of payments" lines.

From a theoretical point of view, there are a few legitimate reasons why governments may want to influence their current accounts in a world of less-than-perfect competition. A large country with influence on the rate of interest at which it borrows and lends may want, from a national though not a cosmopolitan perspective, to impose an "optimum tax" on capital movements. Some market failures may likewise suggest intervention in international lending and borrowing--but can usually be shown to be second best. In some instances, the government may have a different time preference than the public and may wish, therefore, to interfere with capital movements, again usually a second-best way to deal with the issue. On the whole there appear to be few general analytical reasons for making the current account a target of policy. 1/

In practice, there are three main reasons why current accounts have become a target of policy. The first is that net exports are a component of aggregate demand and some governments see policy-engineered manipulation of the trade balance as a major tool of control of effective demand for their country's output. The second reason is concern with a country's net indebtedness position. This concern may be legitimate when the current account does not reflect "basic" differences between productivity and time preference at home and abroad. But it should be noted that for both of the two reasons cited above, the current account becomes a target because of inappropriate government policies, or an inappropriate policy mix, in other areas of economic life. The current account becomes a target of policy, as it were, because of the unwanted side effects of existing government policies.

A third reason for concern with current account imbalances is the protectionist sentiment to which they give rise, particularly in deficit countries. The example of the United States comes immediately to mind. With higher net exports, employment and the manufacturing sector would fare far better, it is argued. The argument is, of course, incomplete at best and incorrect at worst; it is, again, related to a failure of policy (or simply, poorer-than-desired economic performance) elsewhere. It is domestic plus foreign demand that governs total employment; it is relative competitiveness that governs the share of manufacturing vs. other production in total output; and it is the current account that then reflects discrepancies between national saving and investment, public and private.

Be that as it may, it appears that the current account has become a target of policy. This paper analyzes the consequences under floating exchange rates in a simple macroeconomic framework that is consistent with a fairly wide class of standard static macroeconomic models of the open economy. The specialized Mundell-Fleming version of that model is

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1/ For a fuller discussion of the current account as a target of policy and an indication of its applicability to contemporary imbalances, see Corden (1986).

very familiar and, for that reason, is used in Section III which deals with the case of small open economy. The more general model is outlined in Section IV and is more fully developed in Genberg and Swoboda (1987). Although little needs to be said here about the model's underlying structure, it should be noted that, as used below, it abstracts both from the dynamics that arise from the process of asset accumulation inherent in current account imbalances and from expectational dynamics. It also abstracts from asymmetrical wealth effects. Furthermore, for simplicity, fiscal policy is represented by government spending, tax revenue being assumed fixed. The analysis thus neglects the implications of tax vs. spending changes and those of variations in the structure of government spending (as, for instance, between home and foreign goods). 1/

Finally, the analysis below uses the targets and instruments approach. The limitations of that approach are well known. Besides its limitations from a welfare optimization standpoint, the approach assumes that targets and instruments can effectively be separated. Furthermore, in the present context, it defines the internal balance target in a model-bound way by equating it with "full employment and price stability." Strictly speaking, this implies assuming an aggregate supply curve that is horizontal until full employment and vertical thereafter. It should be added that replacing this supply curve by a more general upward sloping one, and calling one point on that curve full employment, makes for no essential change in the analysis. Moreover, identifying inflation with increases in the price level brought about by increases in aggregate demand once full-employment output is reached is clearly only a heuristic device that sweeps the Phillips curve and, more generally, the dynamics of inflation under the rug. Lastly, the relationship between instruments and targets is assumed independent (at least in the short run) of whether policies are anticipated by the public or not; the analysis is thus subject to the Lucas critique.

III. The Small, Open Economy

Policy-mix prescriptions to achieve internal and external balance in an open economy have two parts. The first, "static" component is to ensure that there be as many independent instruments of policy as there are targets so that the targets can indeed all be achieved. The second,

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1/ Some of these implications are discussed in Genberg and Swoboda (1987). Note that the neglect of current account dynamics is not too damaging if the current account target is equilibrium in that account. Note also that the central result of the paper, that under flexible exchange rates fiscal policy has a comparative advantage over monetary policy in dealing with the current account (as opposed to internal balance), can be shown to hold even when some of the restrictive assumptions of the Mundell-Fleming model are relaxed and expectations are taken into account. See Section III below.

"dynamic" component, is Mundell's assignment rule that requires instruments to be assigned to targets, when there is limited information, in such a way as to ensure that the path of the economy converges to the targets and that the values of the instruments converge to their "optimal" setting. Mundell's famed solution to the conflict between internal and external balance under fixed exchange rates was the first to show that capital mobility made it possible to use monetary and fiscal policy as independent instruments in the pursuit of the two objectives of internal balance and external balance, the latter defined as equilibrium in the official settlements balance of payments. Mundell then showed that assigning monetary policy to the balance of payments and fiscal policy to internal balance led to convergence to the targets while the reverse assignment was destabilizing to the economy.

It will be convenient to begin our discussion of the policy mix and assignment problems under floating exchange rates with the case of a small, open economy unable to influence economic variables (prices, incomes, interest rates) abroad. This case, which abstracts from foreign repercussions and feedback, is that most thoroughly investigated in the literature dealing with a fixed exchange rate regime. To allow comparison with that literature, it will also be convenient to develop the analysis below in terms of the simplest, fixed domestic price, version of the Mundell model under floating exchange rates. It should be noted, however, that the analysis holds qualitatively also for most more sophisticated static models of the open economy provided there is a high enough degree of capital mobility. A more general approach using a "semireduced form" version of standard macroeconomic models is used in Section IV for the two-country case. It can easily be verified that most results below will also hold for that more general form. As the standard Mundell-Fleming version is most familiar and very transparent, it is used in the small, open, economy case for expository purposes.

The economy is in equilibrium when the demand for goods and services is equal to the supply (equation III.1 below), the demand for money is equal to the fixed supply (equation III.2), and the ex ante current account is equal to the net ex ante capital outflow (equation III.3). Thus:

$$S(Y) - T(Y,e) - I(i) - G = 0 \qquad \text{(III.1)}$$

$$L(Y,i) - \frac{M}{P} = 0 \qquad \text{(III.2)}$$

$$T(Y,e) + K(i,i^*) = 0 \qquad \text{(III.3)}$$

where T is the trade balance and, neglecting interest income, also the current account; the remainder of the notation is conventional. Note that money balances are deflated by the price of domestic output which is assumed to be fixed (and will henceforth be set equal to 1), that is, output is assumed to be infinitely elastic with respect to the price of domestic goods. 1/ Note also that saving and the trade balance depend on output and not on expenditure and that saving and, hence, expenditure do not depend on the terms of trade. Note, finally, that in this simplest version of the Mundell-Fleming model, capital flows depend on the level of the domestic and foreign interest rates (we will assume $\partial K/\partial i = - \partial K/\partial i^*$ for simplicity) and that the model neglects asset accumulation and its consequences.

Suppose the authorities have a specific current account (or external) target, $\tilde{T}$ and a specific output (or internal) target, $\tilde{Y}$. What combination of instruments will allow these targets to be met? The answer is given in Chart III.1. The two instruments are the money stock and government spending (remember that the exchange rate is an endogenous variable and not a policy instrument). The internal balance line ($Y = \tilde{Y}$) slopes downward because an increase in government spending creates an excess demand for goods and services that requires a fall in the money supply which raises the interest rate and appreciates the currency--and hence decreases net export demand--to absorb the excess in the general case (panel (a)). 2/ When capital is perfectly mobile the internal balance line becomes horizontal. This reflects the well-known result that, with perfect capital mobility and for a small country, a change in government spending crowds out an equal amount of net exports through the appreciation of the domestic currency it causes, hence $dY/dG \to 0$ and $dT/dG \to -1$ as $K_i \to 0$. Since the domestic interest rate stays at the level of the given world rate of interest, there is only one level of the money stock that is compatible with internal balance. The external balance schedule slopes upward because an increase in the money stock depreciates the currency and hence improves the balance of trade (the Marshall-Lerner condition, $T_e > 0$, is assumed to hold throughout); an increase in government spending is required to worsen

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1/ The main implication of deflating money balances by a general price index into which the exchange rate is weighted is that an increase in government spending now results in some expansion of domestic output and in less-than-full crowding out of net exports.

2/ The slope of the Y = Y line is:

$$dM/dG \Big|_{Y = \tilde{Y}} = - \frac{L_i}{I_i - K_i} < 0$$

where subscripted variables indicate partial derivatives with respect to the subscript.

the balance of trade either by bringing about an increase in output and hence imports, or by appreciating the currency, or both. 1/

With perfect information and no constraints on instrument values, all that is required to achieve internal and external balance simultaneously is to set M at $\tilde{M}$ and G at $\tilde{G}$ and let the economy converge to equilibrium.

With imperfect information, the assignment problem becomes relevant. Two assignments suggest themselves. The first would let fiscal policy deal with the current account (raise government spending whenever there is a surplus in the current account relative to the target) and monetary policy deal with internal balance (increase the money stock to fight unemployment). The second ("reversed") assignment would have government spending increase whenever there is unemployment and the money stock decrease whenever there is an excess trade surplus in order to appreciate the domestic currency and hence decrease net exports. 2/ The fact that the current account is equal to the sum of the excess of private saving over investment and of the government budgetary surplus would suggest that fiscal policy has a comparative advantage in dealing with the current account and that the first assignment is preferable to the second. 3/ That comparative advantage becomes evident as the degree of capital mobility increases since, with perfect capital mobility, a change in government spending has a one-for-one effect on the trade balance and no effect on output. 4/ Hence, the first pairing of instruments to targets will be called the "natural assignment," and the second the "reversed assignment" below.

The two assignments are illustrated for the case of perfect capital mobility in Chart III.2. The diagram suggests, and mathematical analysis confirms, that, though both assignments eventually converge, the natural pairing leads directly to policy equilibrium whereas the reversed assignment is likely to result in a cyclical approach to equilibrium (with corresponding cycles in output, interest, and exchange

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1/ The slope of $T = \tilde{T}$ is $dM/dG = L_y/s$, where s is the marginal propensity to save.

2/ It can be shown that trying to get rid of a surplus by increasing the money stock to raise output and induced imports while aiming fiscal policy at internal balance would put the economy on an explosive path.

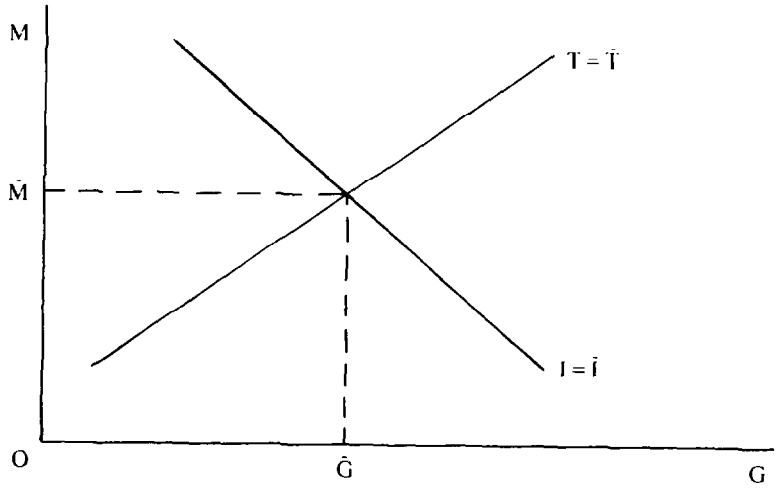
3/ For an additional discussion of the sources of fiscal policy's impact on the current account and of its comparative advantage in dealing with that variable, see Sections IV and V below.

4/ For fiscal policy to have a comparative advantage over monetary policy in dealing with the current account, the following inequality must obtain:

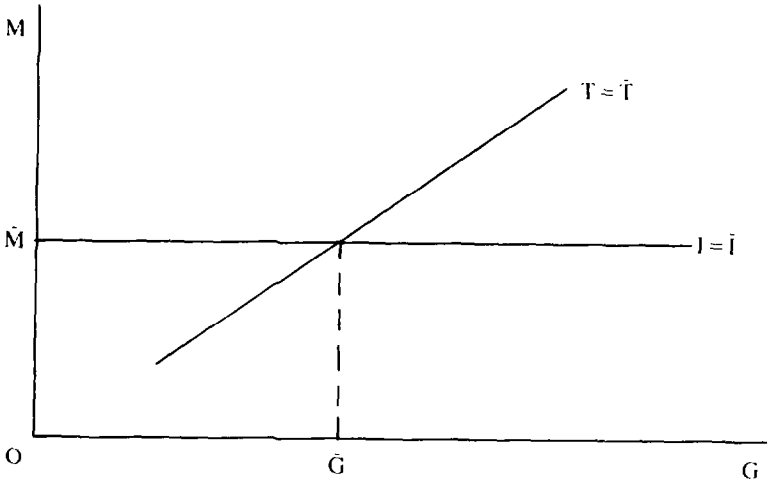
$$| T_G/T_M | = | -L_y/s | > | Y_G/Y_M | = \left| \frac{-L_i}{I_i - K_i} \right| ,$$

which will obviously hold as $K_i \to \infty$.

Chart III.1

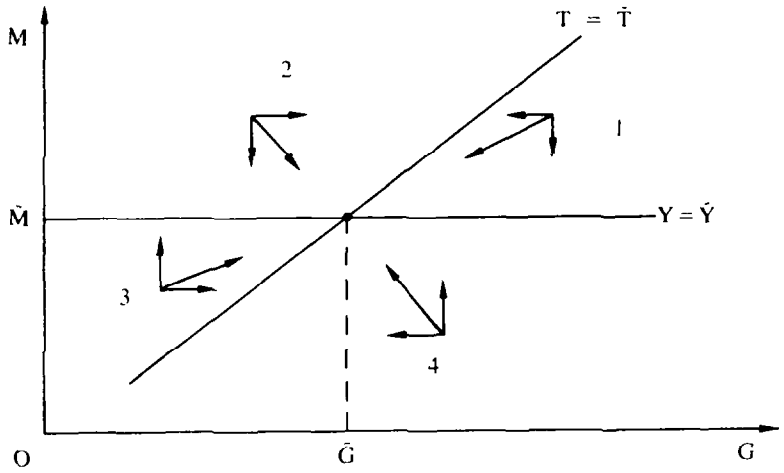


(a) General Case

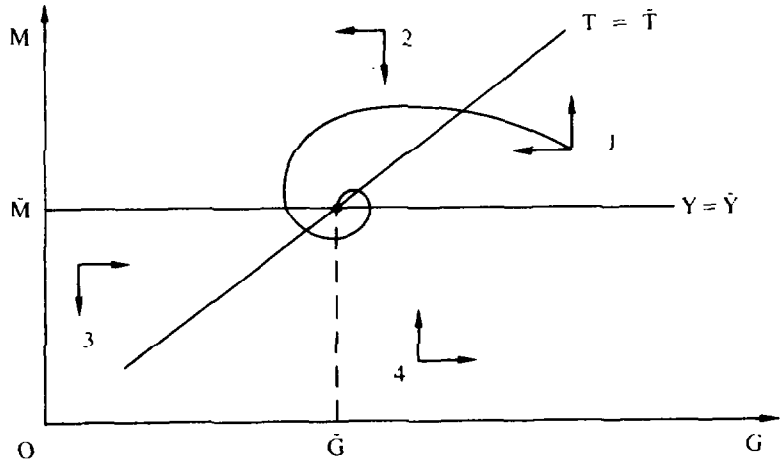


(b) Perfect Capital Mobility

Chart III.2



(a) Natural Assignment



(b) Reversed Assignment

1 : Inflation/Deficit

2 : Inflation/Surplus

3 : Unemployment/Surplus

4 : Unemployment/Deficit

rates). This likelihood decreases as capital becomes less and less mobile. This analysis confirms the comparative advantage of using fiscal policy to deal with the current account balance. It suggests, moreover, that trying to use other means, mainly trying to influence the current account indirectly by using the exchange rate as an intermediate target of monetary policy with the current account as the ultimate objective, is likely to provoke cycles that may ultimately prove destabilizing to the economy as a whole whenever the economy is subject to shocks and once expectations effects are taken into account.

It is important to notice that the result of the previous paragraph is not sensitive to the particular assumptions that we have imposed on the model used here. We have shown elsewhere (Genberg and Swoboda (1987)) that the comparative advantage of fiscal policy as a current-account instrument obtains also if the exchange rate influences the money market equilibrium directly via a consumer price index that deflates nominal money balances. Furthermore, incorporating into the model an aggregate supply structure based on a labor market in which there is some degree of wage indexation does not alter this result. Fiscal policy should still be assigned to the external balance target whether nominal wages are completely rigid or completely indexed to the domestic consumer price index. Finally, the result does not depend critically on the static expectations assumption. Introducing forward-looking exchange rate expectations does not alter the assignment rule if export- and import-demand functions are sufficiently price elastic.

To ensure that the world economy moves toward its desired state is, of course, the motivation for analyzing the assignment problem. Lest the importance of designing proper assignment systems be underestimated, it may well be worth noting that many of the policy problems of the 1960s and, to some extent, the breakdown of the Bretton Woods System, can be attributed not only to a shortage of instruments but also to an inappropriate assignment (under fixed exchange rates) of monetary policy to the pursuit of internal balance. Improper assignment leads to increasing discrepancies between actual and target values of economic variables and, eventually, to abrupt reversals in policies or the breakdown of the system. For instance, in the case of the 1960s, as mentioned above, the increasing disequilibria in official settlements balances of payments brought about by the use of monetary policy for internal balance purposes were bound to lead to stop-go policies and/or the abandonment of fixed exchange rates.

One may, however, ask why an assignment that leads to a direct rather than cyclical approach to policy equilibrium should be preferred if both assignments ultimately converge. One reason is simply that a cyclical approach may involve reversals in resource allocation that are likely to be costly and could be avoided if the approach were direct. This is, of course, not to deny that such adjustment costs should be taken into account in deciding at which speed instruments should react to disequilibria and, hence, at which speed the system as a whole will

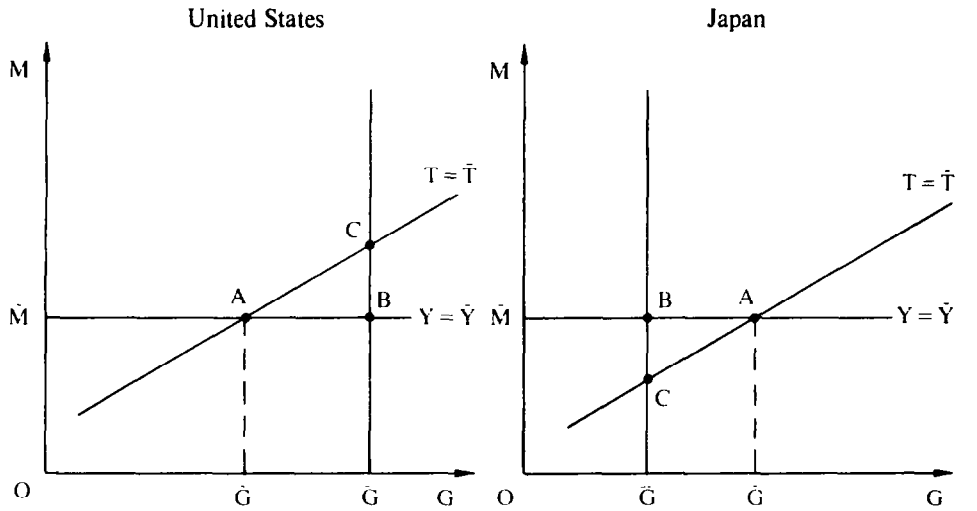
move toward policy equilibrium. Nor should the preference for a direct approach be taken to imply that the "overshooting" of variables is by and of itself bad. As a matter of fact, such overshooting is often desirable when it provides the correct signals as to resource reallocation and thus speeds the adjustment process; note also that such overshooting will still occur under a "direct" assignment in response to shocks to the system. Another reason for preferring an assignment that makes for a direct approach is that such an assignment is likely to be more robust than one that implies a cyclical approach to equilibrium; at the limit the cyclical approach can veer to the borderline case where the system oscillates endlessly around equilibrium without ever reaching it. Moreover, as noted above, if certain patterns of shocks and expectational dynamics may transform a direct approach into a cyclical one, they may also transform a cyclical approach into a pattern of explosive divergence from equilibrium. Finally, there are "practical" reasons why a direct approach would appear preferable to a cyclical one. First, a cyclical approach of target variables to their long-run value implies a cyclical approach of instruments to their long-run value which may well be politically and administratively difficult to justify. Second, a cyclical approach implies that, at least over some ranges, some disequilibria will grow temporarily larger. This may well be taken as a sign of policy failure and lead to policy reversals that would prove destabilizing and damaging to the economy.

The discussion so far has proceeded on the assumption that G and M could be set at $\tilde{G}$ and $\tilde{M}$. In practice, however, there are often limits on the values that policy instruments can take. For instance, the political process may prevent government spending from being lowered to the value implied by $\tilde{G}$--perhaps the case of the United States today. Or the desire to "consolidate" and prevent further accumulation of government debt, as in Japan, may keep G below $\tilde{G}$. Panel (a) of Chart III.3 illustrates these two cases. The left-hand diagram shows a country where government spending is fixed at $\bar{G} > \tilde{G}$. For convenience, the first country will be called "the United States," and the second "Japan," even though the diagram applies strictly only to a small country.

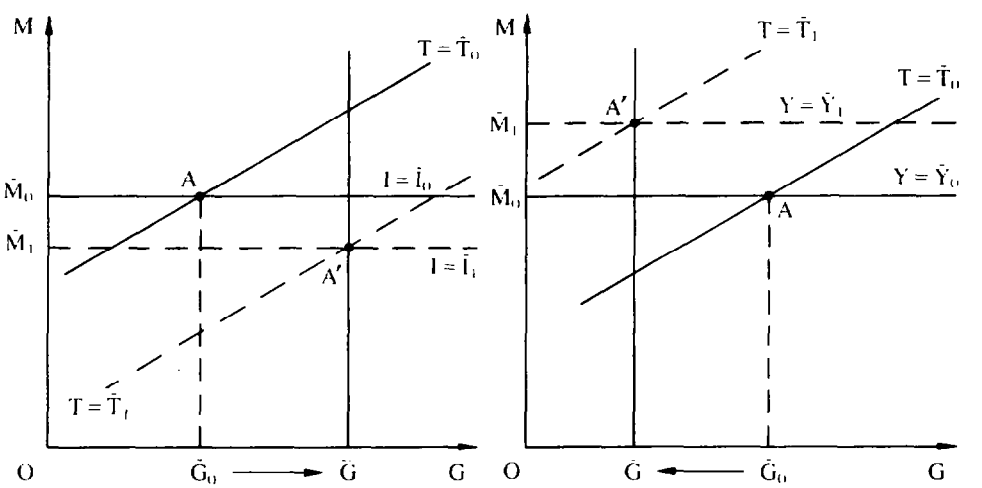
Given the constraint on government spending, the authorities can choose only points above $\bar{G}$. With perfect information, the authorities will choose a point between B and C (other points above $\bar{G}$ are inefficient in the sense that moving to the BC line segment improves internal and external balance). 1/ In our example, the United States seems to be condemned to choose between a current account deficit (at B) and "inflation" (at C), or a combination of the two (in between). Japan has the opposite choice: a current account surplus at B or unemployment at C.

1/ There is, in practice, the additional difficulty of knowing, or agreeing on, the state of internal balance. Take the United States today: some would say the economy is just about on the right track, others that it is in recession, yet others that it is beginning to show signs of inflation.

Chart III.3



(a) Policy Conflict



(b) Using the Wedge

"Talking the dollar down" (or the yen up) can be interpreted (perhaps too charitably) as an attempt to resolve this policy dilemma by replacing the lost fiscal instrument with another and thus having, again, two instruments to deal with the double objective of internal and external balance. This new policy can be modeled as introducing an exogenously determined "risk" premium into the interest parity condition. A change in this risk premium or "wedge" attempts to capture the notion of talking down the dollar and is analogous to the tax on capital mobility discussed, for instance, in Buiter (1986). 1/ How adding such a "policy" to the list could help when instrument values are constrained is illustrated in the case of a small country even though this may be particularly unrealistic (can one imagine the Netherlands talking the guilder up or down?) and the example may more easily be interpreted as an interest disequalization tax. Let it be added that talking currencies up or down may be quite unrealistic for large countries also, especially in anything but the short run (can one, by the way, imagine Japan talking the yen down or the United States talking the dollar up for any length of time?).

Be that as it may, the introduction of a wedge that raises "U.S." interest rates and lowers "Japanese" interest rates relative to world interest rates (for example, by talking the dollar down and the yen up) is illustrated in panel (b) of Chart III.3. Take the case of the United States. Talking the dollar down requires that the domestic interest rate rise by the amount of the newly created risk premium; at the old interest rate and level of output there is now an excess supply of money that depreciates the currency and raises net exports until output has risen by enough to create an increase in the transactions demand for cash equal to the fall in the speculative demand brought about by the increase in the domestic interest rate. If output was at its target level initially we now have an "inflationary" situation that requires a fall in the money stock to compensate; hence, the internal balance schedule shifts down (by $L_i/(1 - I_i/K_i)$). The current account balance schedule also shifts down since the increase in net exports created by the wedge requires that the money stock be lowered to appreciate the currency and thus reduce net exports back to their initial level. It can be shown that the external balance schedule shifts down by $L_i + (I_i L_y/s)$, that is, by more than the internal balance schedule. The same type of reasoning applies in reverse to the introduction of a negative wedge in the case of "Japan."

The diagrammatic analysis shows that, in principle, the policy dilemma or conflict posed by rigidity in the fiscal instrument can be solved by a policy that introduces a wedge between domestic and foreign interest rates (the argument carries over to the case of less-than-perfect capital mobility where the wedge would represent an increase in

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1/ One could also model the "talking currencies up or down" policy as affecting the public's exchange rate expectations directly. For a further discussion, see Genberg and Swoboda (1987).

the differential over what it would otherwise have been). That wedge can take the form of talking a currency down (or up) or of imposing a tax (or controls) on capital flows. Note that the wedge must be supplemented by monetary policy to reach the points labeled A' in panel (b) of Chart III.3. Monetary policy must turn more restrictive in the United States, more expansive in Japan.

In practice, however, there are many reasons why "wedge policies" are not to be recommended and are likely, in any event, to fail. In the first place, talking currencies up or down may fail if it goes against market sentiment and may not be needed if it goes with market sentiment except in the shortest of runs. Such a policy is also extremely sensitive to reversals in market sentiment. Second, it would be almost impossible to fine tune and adjust monetary policies to the vagaries of wedge policies. Nor is it likely that wedge policies can be made part of a systematic assignment strategy (talk the dollar a little bit more up or down depending on...). Third, note that the mix requires the U.S. money stock to be lowered while the dollar is being talked down; this may make the talking down policy rather unbelievable to the public. Fourth, the side effects of the wedge policy are often undesirable. For instance, in the U.S. example, the wedge raises U.S. interest rates and improves the balance of trade by crowding out private investment. On that as on other scores, regaining fiscal flexibility and reducing the budget deficit would be a far preferable policy. Fifth, if the wedge takes the form of attempts to control or tax capital flows, it may either fail and/or introduce serious distortions in the economy. Capital controls are notoriously difficult to implement and, hence, likely to be ineffective; to the extent that they are effective, they are likely to be particularly inefficient, perhaps as distortive as the trade controls whose adoption they are supposed to avoid. In brief, wedge policies are no substitute, or at best a very poor substitute, for changes in fiscal policy as a tool of current account control.

IV. The Policy Mix in a Multicountry Setting

So far it has been assumed that the country undertaking policies to achieve its various goals was small. To analyze some of the problems both of national policy and of coordination when countries are large enough to create foreign repercussions, this part of the paper turns to a two-country model of the policy mix.

Our concern will be mainly with "policy failure" and how to prevent it. That is, why would targets fail to be achieved and what can and should be done to correct the situation. We consider three sources of

policy failure: 1/ (1) a shortage of instruments relative to targets owing either to an overabundance of targets or to constraints on allowable values of instruments; (2) an improper assignment of instruments to targets in the presence of limited information, leading to movements away from rather than toward targets; and (3) inconsistent (conflicting) target values for "shared" variables, such as the current account, across countries.

To make some headway and to keep the exposition relatively simple, we will make use here, unlike in Section III, of "semireduced form" relationships between targets and instruments that can be more formally deduced from a variety of versions of standard two-country macroeconomic models (for example, the two-country version of the Mundell-Fleming model). 2/ These relationships, or derivatives of target variables with respect to instruments, are medium-run in the sense that income or prices, interest rates, and the exchange rate are allowed to adjust. We neglect, however, and as we did in Section III, the effects of adjustments in asset stocks and the dynamics they imply, as well as the dynamics that arise from explicitly taking into account expectations formation mechanisms. 3/ The argument considers two polar cases: rigidity of the domestic currency price of national output and full price flexibility. It also assumes perfect capital mobility (in the sense that domestic interest rates are equalized across countries in the static equilibria that are analyzed), even though some remarks are offered as to the effects of departure from this assumption.

The relationships we assume are summarized in Table IV.1 both for the rigid prices/unemployment and for the flexible prices/full employment cases. The results are familiar ones. Consider, first, the main entries in the unemployment case. Domestic monetary expansion lowers interest rates worldwide, causes a depreciation of the home currency (an increase in e), an improvement in the trade balance, an increase in output at home, and a fall in output abroad. Had prices been flexible and output at full employment, the increase in the home money supply would have been neutral and would merely have increased home currency prices and the exchange rate by an equal amount, leaving foreign variables and the interest rate unaffected. The signs in parentheses refer to the Mundell model when the home country's economy becomes very small relative to the rest of the world (the starred country), the case

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1/ There are other possible sources of failure, for example, multiple solutions, linearly related targets, breakdown of systematic relationship between targets and instruments (policy ineffectiveness), model disagreement, disagreement as to the actual state of various economies, and so forth. These are not analyzed below even though some of them are mentioned in passing.

2/ See, in particular, Mundell (1968), Chapter 18 and Appendix.

3/ For a fuller analysis that incorporates some of these factors and concentrates on the current account, see Genberg and Swoboda (1987).

Table IV.1. Effects of Instruments on Target Variables

Instruments \ Targets	Rigid Prices					Flexible Prices				
	Y	Y*	T	r	e	P	P*	T	r	$\frac{eP^*}{P}$
M	+	- (0)	+	- (0)	+	+	0	0	0	0
M*	-	+	-	-	-	0	+	0	0	0
G	+ (0)	+ (0)	- (-1)	+ 0	? (-)	+	+	-	+	-
G*	+	+	+ (0)	+	? (+)	+	+	+	+	+
wedge	? (+)	? (0)	+ (+)	+ (+1)	+	?	?	+	+	+

The values in parentheses refer to the special case where (Y/Y*)-> 0 and the Mundell-Fleming structure is assumed. They are given for these cases where they tend to the limiting cases of 0 or 1, or differ from the general case.

discussed in Section III above. In that case, a domestic monetary expansion fails to have any effect abroad.

Turning to fiscal policy, an increase in government spending at home (an increase in G) raises interest rates, attracts capital from abroad financing the trade deficit it causes, and results in an increase in output both at home and abroad. The effect on the nominal exchange rate (and hence on the real exchange rate with fixed home currency prices) is ambiguous, although there is a presumption that the home currency will appreciate unless behavioral parameters differ widely across the two countries. For a very small country, an increase in government spending merely crowds out exports, causing the balance of trade to deteriorate by an equal amount, via the appreciation of the home currency, leaving all other variables unchanged. In contrast, for a very large country (the world in the limit), it is investment that gets crowded out by a rise in government spending, leaving the balance of trade unchanged. In the full employment case, it is price levels rather than incomes that rise in both countries whenever there is a fiscal expansion anywhere. This follows from the fact that, with perfect capital mobility, interest rates rise everywhere. What gets affected differentially depending on the origin of the fiscal policy is the trade balance that deteriorates for the country in which the increase in government spending originates.

The "wedge policy" discussed in Section III results in a rise in interest rates in the country on whose assets the risk premium increases and a decrease in interest rates in the other country. The effect on output levels is ambiguous; however, in the Mundell-Fleming version of the model where nominal balances are deflated by the fixed price of home-produced goods, output increases at home and falls abroad.

One feature of these by and large familiar results is worth emphasizing. Under floating exchange rates with capital mobility, fiscal policy is globalized: an individual country's fiscal policy affects output only to the extent that it affects the world interest rate, that is, only to the extent that the country is large. Monetary policy, on the other hand, tends to be country-specific: the smaller a country, the stronger the effect of its monetary policy on its own output when prices are rigid (as it grows larger the country's monetary policy will also affect output abroad, but in beggar-thy-neighbor fashion). Under fixed exchange rates, on the other hand, it is monetary policy that becomes globalized: domestic monetary policy affects world interest rates (whether capital is mobile or not), and domestic and foreign output and prices to the extent that it affects the world money stock and in proportion to its share in the latter (which is why a small country's monetary policy influences predominantly its official settlement balance of payments and not output and prices under fixed exchange rates). It is fiscal policy under fixed exchange rates that tends to be country-specific in the sense that it can have an effect on a small

country's output level. 1/ This insight into the different effects of monetary and fiscal policy under floating as compared with fixed exchange rates turns out to be important in the discussion of the policy mix in the next sections.

That discussion proceeds in three steps in the remainder of Section IV. We begin in Section IV.1 with an examination of the comparative statics of the policy mix: how can instruments be combined to reach various targets in our two-country context? And what can cause policy failure in that context? We continue (Section IV.2) with a discussion of the dynamics of the assignment of instruments to targets when information on the structure of the world economy is limited and, in that context, pay particular attention to the role of the relative size of countries' economies. We end (Section IV.3) with a brief discussion of the consequences of inconsistent goals (suppose, for instance, that the current account targets of the two countries differ).

1. The policy mix: statics

For a single country the two targets of internal and external balance can be reached by an appropriate combination of monetary and fiscal policy, provided no constraint is put on the range of the instruments. The two-country counterpart suggests a surfeit of instruments: we have four instruments, monetary and fiscal policy in each of the two countries, to reach three independent targets, internal balance at home and abroad and current account equilibrium. That there are only three independent targets of policy derives of course from the fact that the home country's current account surplus is the rest of the world's current account deficit. The n-1 problem, of fixed exchange rate fame, resurfaces: one of the four instruments can be used to pursue some additional policy goal. Failure to reach all policy targets in a static, perfect information context can arise for three reasons: (1) constraints on the value of instruments; (2) the introduction of additional targets; and/or (3) failure to agree on what constitutes current account equilibrium. We discuss the first two of these below.

Beginning with the rigid prices/unemployment case, suppose, first, that the two countries are only concerned with internal balance. The two internal balance targets can be reached indifferently through the use of monetary policy in both countries, of fiscal policy in both, or of fiscal in one and monetary policy in the other as Chart IV.1 illustrates. Ignore the dashed, trade, or current account, equilibrium schedules for the moment. The slopes of the internal balance schedules,

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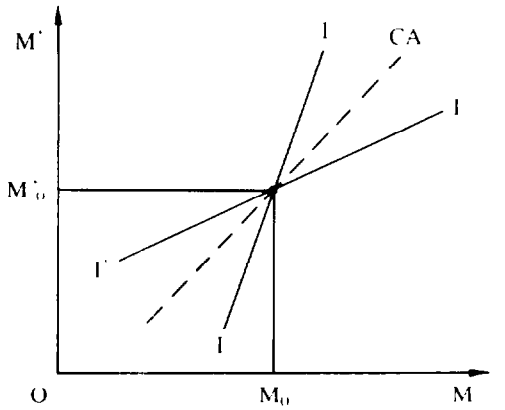
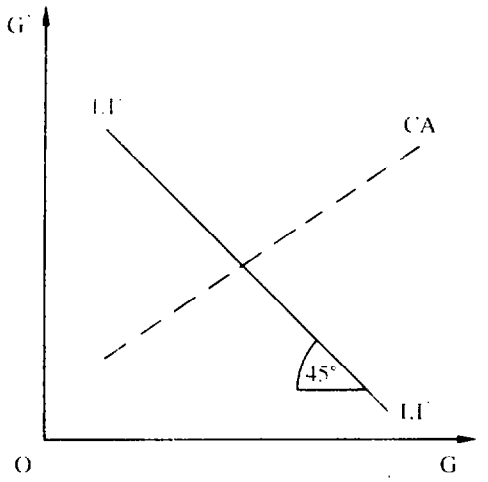
1/ As the country's economy becomes large, its fiscal policy through its influence on the world interest rate may even become beggar-thy-neighbor with respect to foreign output if capital mobility is sufficiently high and behavior parameters are sufficiently different across countries.

Chart IV.1

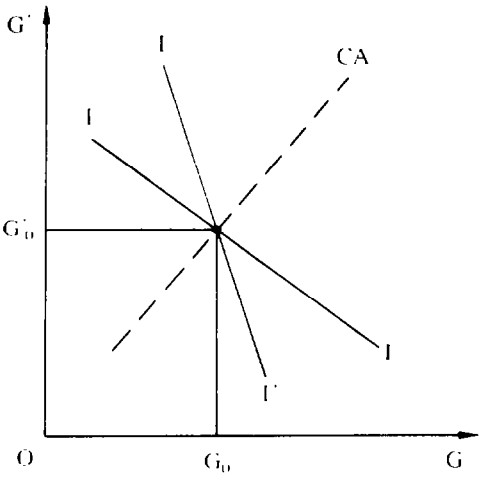
The Pursuit of Internal Balance



(a) Monetary policies used in both countries

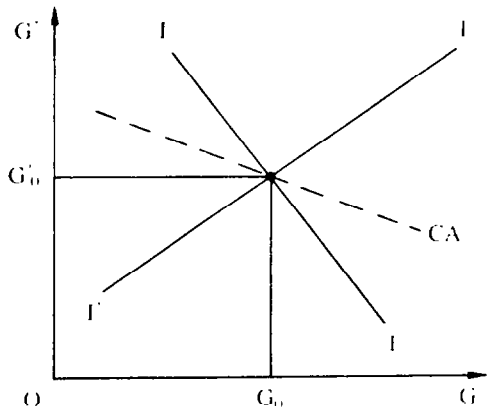


(i) Perfect capital mobility



(ii) Imperfect capital mobility

(b) Fiscal policies used in both countries



(c) Monetary policies at home, fiscal policies abroad

II and I^*I^*, can be determined from the derivatives in Table IV.1. 1/ For instance, the slope of II, the internal balance schedule of the home country, in panel (a) is

$$(dM^*/dM)\Big|_{II} = (-dY/dM)/(dY/dM^*) > 0.$$

The internal balance schedules are drawn for given values of the remaining (unused for internal balance) instruments. As Chart IV.1 makes clear, it is always possible to find a combination of values of the two used instruments that allow for fulfillment of the two countries' output targets. This combination, given the values of the redundant instruments, is unique except in the case of perfect capital mobility where government expenditure at home and abroad is used to obtain target outputs, the case illustrated in panel (b)(i).

That last case deserves further discussion. With perfect capital mobility, it is the sum of government spending at home and abroad (given taxes) that, given the money stocks in the two countries, determines both the world interest rate and world output (defined as the sum of output levels in the two countries). In other words, perfect capital mobility and fixed prices make it possible to add the two countries' IS and LM curves into a world IS and LM curve that determines the world's output and interest rate. There exists a unique sum of government expenditures for which, given the two money supplies, world output will be distributed among the two countries in such a way as to insure that full employment obtains simultaneously in both countries. From such a point, suppose home government spending decreases and foreign spending increases by the same amount: the world interest rate is unaffected and hence, given the money supplies in the two countries, output levels in both countries are unaffected. 2/ Since the interest rate and output levels are unaffected, the current account of the home country must have improved by an amount exactly equal to the decrease in home government spending (abstracting from possible Laursen-Metzler effects of the

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1/ The relative values of the slopes of the schedules can be derived from specific model formulations as well as more general (stability) considerations. For instance, in panel (a), II will be steeper than I^*I^* if the effect of a change in M on home output Y, (dY/dM), is greater than its effect on foreign output (dY^*/dM), a reasonable condition in, or outcome of, most standard models.

2/ In terms of panel (a), the internal balance schedules depend on home and foreign government spending. The decrease in G shifts II to the right by an amount Z, and the increase in G^* shifts it back to the left by the same amount, leaving II in its original position. Similarly, the net effect of the two changes is to leave I^*I^* in its original position. The dashed curve, however, shifts to the left showing that at M_o, M_o^*, the home country now has a current account surplus.

change in the terms of trade on saving). The home currency depreciates to effect the change in the trade balance (the crowding in of exports).

Adding a current account target to the internal balance goals of the two countries is easily accommodated within Chart IV.1 as long as the two countries agree on what that target is. Assume for simplicity that a zero current account balance is the sought-after target. This target is represented by the dashed CA lines in the Chart IV.1. There will always exist a combination of the two remaining instruments that ensures that the three target lines intersect at the same point. The "only" problem is that the two remaining instruments cannot be used independently; the redundancy of the fourth instrument must be respected lest the system be overdetermined.

The fourth instrument could also be used to pursue an additional goal. There is one additional goal that naturally suggests itself in the present context: the world interest rate. Suppose, for instance, that a low interest rate becomes a target in order to foster investment and growth in the long run; suppose also that countries agree on what that low interest rate should be. The four targets--internal balances in each country, current account equilibrium, and a given world rate of interest--can, in principle, be attained with the four instruments--the two monetary and the two fiscal policies. This is illustrated in Chart IV.2 in the G,G^* plane for the case of perfect capital mobility.

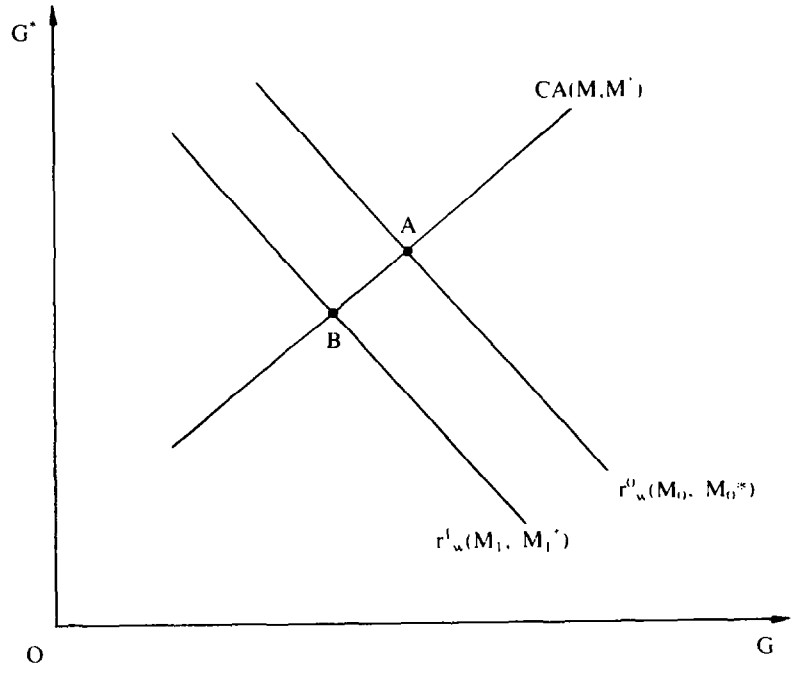
Before proceeding to the illustration, it will be convenient to examine the determinants of the slope of the CA line. It stands to reason that the CA line should be upward sloping. An increase in home government expenditure has a deteriorating effect on the balance of trade and must be compensated by an increase in government expenditure abroad if current account balance is to be maintained. More precisely, the slope of the CA line is $-(dT/dG)/(dT/dG^*)$. Since the size of the derivative of the trade balance with respect to G is inversely related to the size of the country, the slope of the CA line will go from ∞ (vertical) when the home country is infinitesimally small to 0 (horizontal) when the foreign, starred, country is infinitesimally small. More precisely the slope of the CA line is given by:

$$\left.\frac{dG^*}{dG}\right|_{CA} = \frac{Y^*}{Y} \cdot \Omega ,$$

where Ω is a constant that depends on the behavioral parameters in the two economies. If these behavior parameters are identical across countries, that is, if countries differ only in size, Ω will be equal to one. 1/

1/ It can be verified that these conclusions hold for the standard models of both rigid and flexible prices.

Chart IV.2



Turn now to Chart IV.2. Suppose that all four targets are initially met at point A, but that the authorities in both countries wish to see the world interest rate lowered. The II, I^*I^* line has been renamed r_w to indicate that along that line, given the two money supplies, the rate of interest is constant. What should be done to lower the rate of interest from r_w^0 to r_w^1? One obvious suggestion would be to lower the sum of G and G^*. To maintain current account balance the sum should be lowered so as to maintain the proportion Ω (Y^*/Y): the two countries should decrease government spending by the same percentage of their respective GNPs. The reduction in government spending, however, would create an excess supply of output unless matched by an increase in money supplies. For the world as a whole, the leftward shift in the IS curve has to be accompanied by a rightward shift of the LM curve to keep world output constant at a lower interest rate. How the rise in money supply is to be apportioned between the two countries will depend on the value of various behavioral parameters in those countries. If the countries differ only with respect to size, the two money supplies should be increased by the same percentage; in that case, the CA curve will remain unaffected and the new equilibrium will be at B in Chart IV.2.

The precise combination of instrument values that will achieve all targets simultaneously would be extremely difficult to estimate in practice. This suggests that one may want to consider a decentralized system of response to insure a converging approach to policy equilibrium. Before examining some aspects of this question in the next section, it will be useful to consider instances of policy failure owing to a shortage of instruments, in the cases of both rigid and flexible prices.

Policy failure occurs when there are fewer instruments than targets. Whether the shortage stems from additional goals being considered explicitly (or because what used to be an "intermediate" target becomes an ultimate one, for example, ceilings on interest rates imposed for "usury" reasons) or from constraints on the range of allowable values of the instrument variables, the result is the same: reducing departures from one target variable will have to be traded against increasing deviations from the others. As a matter of fact, constraints on instruments can arise either because the values of the instrument become targets themselves or because of institutional rigidities (for example, the political process becomes biased toward high government spending and/or low taxes), or because the instrument considered in a model is used to pursue a target not explicitly considered in that model (for example, a ceiling on government spending imposed to reduce the role of the public sector in the economy).

To illustrate, consider the case where government spending at home is constrained to a specific value, $\bar{G}$, greater than the unique value of G which, together with the unique values of G^*, M, and M^*, would allow the target values of Y, Y^*, r_w and T to be reached. To see the

consequences, consider Chart IV.3. All targets are met at point A when the instrument values are G_o, G_o^*, M_o, and M_o^*. Home government spending now increases to its constrained value $\bar{G}$ and we move to point B. There is now excess demand both at home and abroad, a current account deficit for the home country, and the world rate of interest rises above its target value r_w^o. Consider first variations in G^* to restore policy equilibrium, given M_o and M_o^*. From B, restoring current account equilibrium would involve raising G^* and moving to C, while lowering the world interest rate back to its target value r_w^o would involve lowering G^* and moving to D. Clearly, achieving one target can be done only at the expense of the other. But could it not be that the two money supplies could be changed to make the r_w and CA schedule intersect on the vertical line above $\bar{G}$ while maintaining (restoring) internal balance in both countries? The answer is no. At B there is an excess demand for world output given the initial money supplies; therefore the money supplies have to be lowered to restore internal balance. Suppose the two money supplies are lowered in a proportion that leaves the CA line in its original position; the r_w^o line shifts down and the discrepancy between the actual and target value of the world interest rate rises even more.

The solution to a policy failure resulting from a shortage of instruments is to find additional instruments. The "wedge" policy referred to in Section III is one such instrument, albeit one that does not recommend itself on either feasibility, effectiveness, or efficiency grounds as discussed there. In the context of Chart IV.3, talking the home currency down or imposing a tax on capital imports would shift the CA line to the right. The interest rate now differs between the two countries; it rises at home and falls abroad. Assuming that the differential is acceptable internationally, the money supply must be lowered at home and raised abroad to insure the intersection of an "average" r_w line with a new CA line above G while maintaining full employment output in the two countries.

Be that as it may, Charts IV.2 and IV.3 and the discussion so far suggest that the sum of governmental spending in the two countries plays a crucial role in determining the world rate of interest, their ratio (or more precisely, their difference) in maintaining current account equilibrium. This, in turn, suggests the pairing of instruments and targets given in Table IV.2.

To determine whether such a pairing is dynamically stable or not, and whether other pairings are unstable, requires a full mathematical analysis that is beyond the scope of this paper, although a partial answer is presented in the next section.

Chart IV.3

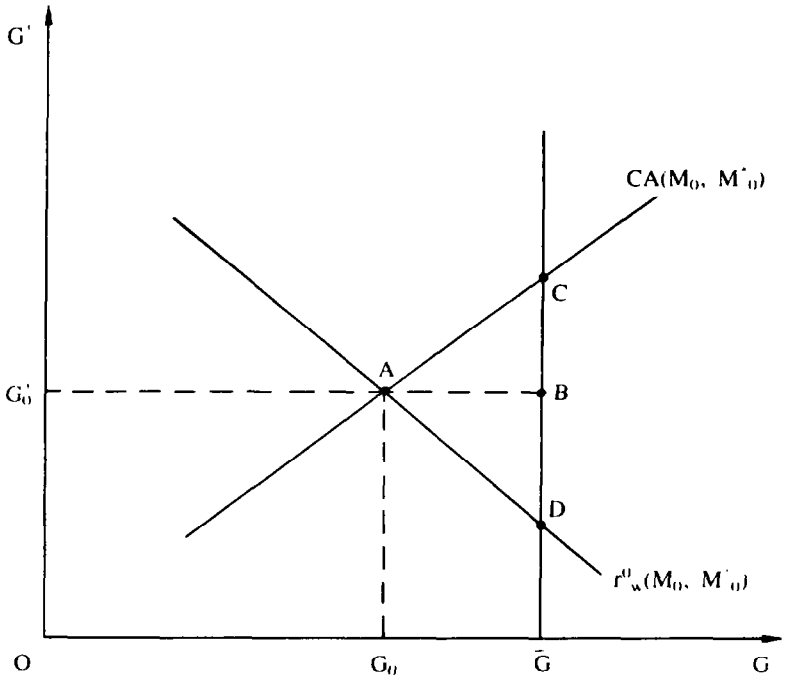


Table IV.2. Pairing of Instruments and Targets

Instrument	Target
r_w	$G+G^*$
CA	$G-G^*$
Y	M
Y^*	M^*

Consideration of the full employment, flexible price case, however, suggests that it is the correct pairing. For, in that case, money is neutral and the Y, Y^* targets can be replaced by P and P^* targets. Neutrality of money insures that the r_w and CA lines in Chart IV.3 are independent of the money supplies, M and M^* (in Table IV.1, $(dT/dM) = (dr/dM) = (dT/dM^*) = 0$). In other words, in a period long enough for money to be neutral, there is no substitute for fiscal measures to achieve current account equilibrium at an appropriate level of real interest rates. There are three requirements for policy equilibrium to be achieved in the long run: that constraints on fiscal policies be removed, that countries agree on the target levels of the current account and the real rate of interest which are both "shared" variables (in an integrated financial world for the latter), and that a mechanism be found to ensure that the appropriate sum and ratio of governments' (net) expenditures is reached. It is to this last issue that the next section turns. 1/

2. The assignment problem: dynamics

Even if there are as many instruments as there are targets, reaching the latter is no mean task unless information is perfect. If it is, all that is needed is to set the instruments at their optimum static value and wait for the economic system to reach all targets; better still, if one also knows the full dynamics of the system, one should move the instruments to their final value at a speed that maximizes some social welfare function that takes adjustment costs into account. Unfortunately, knowledge of the behavioral parameters underlying the derivatives of Table IV.1 is far from perfect; knowledge of the system's dynamics is even more imperfect and the economy is continually subjected

1/ In the long run, the conflict between constraints on government spending imposed by the budget process, on one hand, and by the requirements of current account balance given the target real rate of interest, on the other hand, can be eased by structural policies aiming at encouraging net private saving in deficit countries and diminishing net private saving in surplus countries. Graphically, this would shift the CA curve down and to the right in Chart IV.3.

to unpredictable shocks. Supposing that available information is confined to the signs of the derivatives mentioned above and to the state of the economy at a moment in time (whether there is a surplus or a deficit in the current account, whether there is unemployment or inflation, etc.), can one design a system of policy adjustment, or response, which is robust in the sense that it will lead to eventual convergence toward the targets of policy or at least not systematically away from them? This is the motivation for Mundell's assignment proposition that enjoins that instruments be assigned to targets according to their comparative advantage in reaching those targets. The principle was illustrated in Section III for the case of the small, open economy.

Analysis of various assignments when the number of targets is larger than two becomes rather complex. A few points about assignment in the two-country case can nevertheless be made. First, consider the pursuit of internal balance in the two countries, neglecting current account balance considerations. It turns out that the following pairings of instruments to targets are all stable: both countries use monetary policy, both countries use fiscal policy, one country uses monetary policy and the other fiscal policy. This can be shown formally but the analysis is too cumbersome to be repeated here. 1/ More intuitively, this conclusion can be inferred from the "arrows of motion" that can be penciled into the various panels of Chart IV.1. Adding a current account target and assigning one of the remaining instruments to it does not add an obvious element of instability for some assignments and not for others. If countries are similar in terms of behavioral parameters (they differ mainly in size), various assignments all appear to be stable. There is, however, one important sense in which fiscal policy should be assigned to the current account in that case. In the long run monetary policy loses its influence on the current account and, by necessity, fiscal policy has to be assigned to it.

Formal analysis of the assignment problem when all four instruments are used to attain all four targets is quite complex and has not been carried out yet in the case of rigid prices. We suspect, however, that

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1/ To give but one example, consider the case where each country uses its monetary policy to reach its internal balance level of output. Proving that this assignment converges requires showing that the following (linearized) policy-response system is stable:

$$\begin{bmatrix} \dot{M} \\ \dot{M}^* \end{bmatrix} = \begin{bmatrix} h(dY/dM) & h(dY/dM^*) \\ k(dY^*/dM) & k(dY^*/dM^*) \end{bmatrix} \begin{bmatrix} M - M_o \\ M^* - M_o^* \end{bmatrix},$$

where h and k are arbitrary (negative) speeds of adjustment and M_o, M_o^* are the policy equilibrium values of the money stocks. The system is stable if the roots of its characteristic equation are negative if real, or have negative real parts if complex.

any assignment other than the one suggested in Table IV.2 will prove unstable; this assignment is, after all, the floating rate counterpart to the fixed exchange rate rule that requires monetary policy to be devoted to the overall balance of payments (and fiscal policy to internal balance) if policy convergence is to be attained. Again, this proposition must be true in the long run when the ability of monetary policy to affect real variables such as the real rate of interest, the real exchange rate, or output levels weakens. Indeed, formal analysis of the stability of assignments is possible in that long-run case. Take, first, an assignment consistent with that proposed in Table IV.2. That is, let national money supplies be assigned to their respective price levels and let one fiscal policy be assigned to the world rate of interest, the other to the current account. It is readily (though tediously) shown that this assignment indeed satisfies necessary conditions for stability. An alternative assignment, where fiscal policies are used for price level control and one monetary policy is assigned to the interest rate and the other to the current account, is not. The system would oscillate endlessly around equilibrium without ever reaching it; under certain conditions, the path of targets and instruments could even prove explosive.

In fact, we can say something more precise about the assignment problem when money essentially controls the national price level and we concentrate on the problem of achieving the target levels of the real interest rate and of the current account. Consider once more the G, G^* plane and the CA and r_w lines as in Chart IV.3. Suppose no small country assumption and that our country and the rest of the world agree on the appropriate real rate of interest and state of the current account. Given perfect information this agreement would be sufficient to determine government spending in the two regions. In the absence of perfect information, however, is there any way of reaching point A without knowing its exact location? Suppose that one applies the following rule: the home country should increase government spending whenever it experiences a current account surplus (and vice-versa in case of a deficit); and the foreign country should lower government spending whenever the interest rate is above r_w^o and raise spending whenever r_w is too low. The outcome is illustrated by the arrows of motion in panel (a) of Chart IV.4. As the path from B to A indicates, this division of tasks leads to convergence to the policy targets. 1/ Note that letting, instead, the home country target the rate of interest and the rest of the world target the current account would also lead to convergence, as illustrated in panel (b) of Chart IV.4. It would seem that it does not matter who looks after what target as long as a clear division of tasks is adopted.

In fact, it turns out that who should target what variable depends on the relative size of countries. If one country is quite small and the other quite large, the former should use fiscal policy to adjust the

1/ See the Appendix for a formal proof.

current account and the latter should target the world rate of interest if the approach to equilibrium is to be direct rather than cyclical. This proposition is demonstrated in the Appendix and illustrated in Chart IV.5. Recall that the slope of the CA line is an inverse function of the home country's size. Considering the case where the home country is infinitesimally small relative to the other country, the CA line becomes vertical. The arrows of motion in Chart IV.5 speak for themselves. An intuitive explanation is as follows: for a very small country, the small country result of Section III takes hold: an increase in government spending is reflected one for one in a deterioration of the current account while the world rate of interest remains unaffected for all practical purposes. Conversely, a very large country's government spending has hardly any effect on its balance of trade but affects the world interest rate strongly. It follows that a small country's fiscal policy has a comparative advantage in dealing with current account disequilibria, and a large country's government spending in dealing with the world rate of interest.

It would be tempting to conclude from this analysis that a large country like the United States should aim its fiscal policy at the world interest rate in the long run (and perhaps at sustaining world effective demand in the short run) leaving it to others, for example, Japan or the Federal Republic of Germany, to take care of the current account. This neglects the fact that what is relevant here is the size of one country relative to the aggregate rest of the world. In this perspective, the United States is not a large country: the ratio of U.S. output to world output is about one fourth. With such relative sizes and assuming countries to be similar in their behavioral parameters, it can be shown that a decrease in U.S. government spending of $10 billion would result in an improvement of $7.5 billion in that country's current account if the Mundell two-country model under perfect capital mobility is to be believed. 1/ The relative size criterion thus does not support the notion that it is up to the rest of the world to increase its spending to solve the U.S. current account problem, unless it is argued that world interest rates are too low (we are at a point above G_0 but below A in Chart IV.3). There is, of course, also the complication that the rest of the world is not a single country, which makes assigning the responsibility for the world interest rate a difficult matter.

The example thus points to two problems. In the first place, coordination through assignment rules becomes much more difficult when the world is composed of several medium-sized countries: there is no clear criterion for assigning responsibility for the world interest rate to any one of them even though it would seem natural for each to aim its fiscal policy at its current account. Second, agreement on the target

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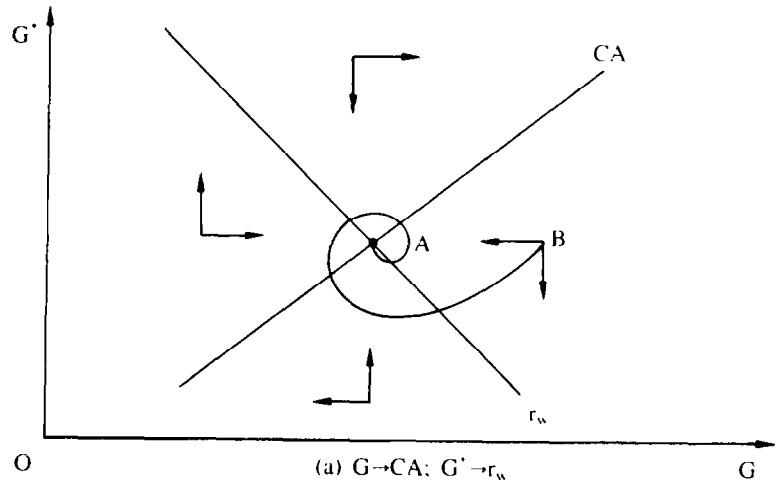
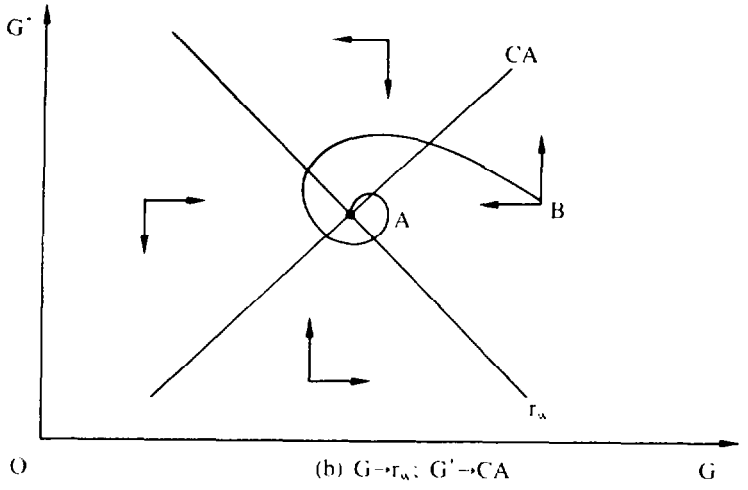
1/ It can be shown that, with identical interest and income elasticities in the two countries $dT/dG = Y^*/(Y + Y^*)$ in the model contained in Mundell (1968), Chapter 18 and Appendix.

Chart IV.4

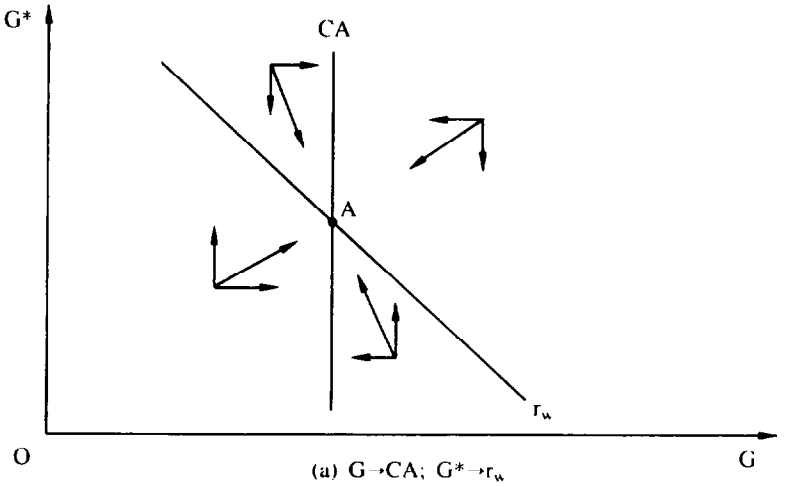


(a) G→CA; G'→r_w

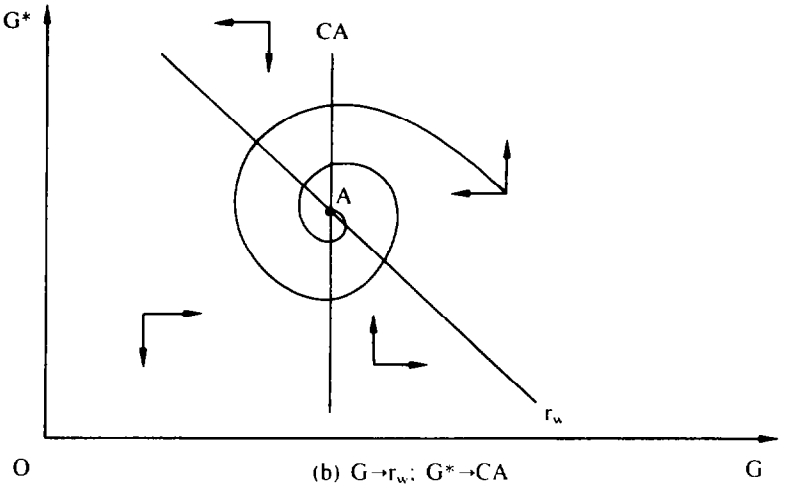


(b) G→r_w; G'→CA

Chart IV.5



(a) $G \rightarrow CA$; $G^* \rightarrow r_w$



(b) $G \rightarrow r_w$; $G^* \rightarrow CA$

value of shared variables (the world interest rate or the current account) may become much more difficult to reach. The following section deals briefly with one instance of such disagreement.

3. Goal disagreement: strategic behavior

A shortage of instruments makes a trade-off between deviations from various targets inevitable. Such trade-offs pose difficult enough problems of choice within a country; when the trade-off has to take place among the targets of different countries, international conflict is bound to arise and is likely to give rise to strategic behavior. One example is the case in which each country relies on monetary policy to try to attain both internal and external balance under fixed exchange rates. 1/

Conflict and strategic behavior can also arise when countries have different targets for a shared variable--that is, the world interest rate or the current account under floating exchange rates. We will illustrate briefly with respect to the current account. Suppose, to begin with, that both countries want a surplus in their current account balance. If they do not care about any variable affected by government spending other than the current account, government spending will go to zero in both countries. Conversely, if both want a deficit, government spending will explode in the two countries. The analysis is more interesting if both care about some other variable, say, the world rate of interest for growth and employment reasons.

A graphical analysis of that case is presented in Chart IV.6 for the simplest of examples. The two countries are rigorously identical in terms of both structure and tastes, so much so that they agree on the optimum level of the rate of interest, r_w^o, and their bliss point is reached at an identical level of surplus, at B for the home country and at B^* for the rest of the world. It is assumed for simplicity that deviations from r_w^o and from the target surplus are weighted equally in the policymakers' loss functions so that their preferences can be represented by circular contours around the bliss points B and B^*. It follows immediately that the reaction function of the home country is RG_o, that of the rest of the world is $R^*G_o^*$, and the Nash equilibrium point is N. In our simple example, noncooperation would lead immediately to N; the attempt at generating surpluses for both countries is frustrated but the attempt leads, not unexpectedly, to deflationary pressures in the short run (given the money supplies, world aggregate

1/ See Hamada (1974) for the initial analysis of this case.

demand falls) and to lower interest rates, and possibly higher growth, in the long run. 1/

The situation would, of course, be reversed if both countries wanted a current account deficit. Graphically, the positions of the two bliss points, B and B^*, are reversed and the two reaction functions intersect on CA above the r_w^o line. Nash equilibrium implies a rise in the interest rate above its target value, inflation in the short run, and possibly lower growth in the long run.

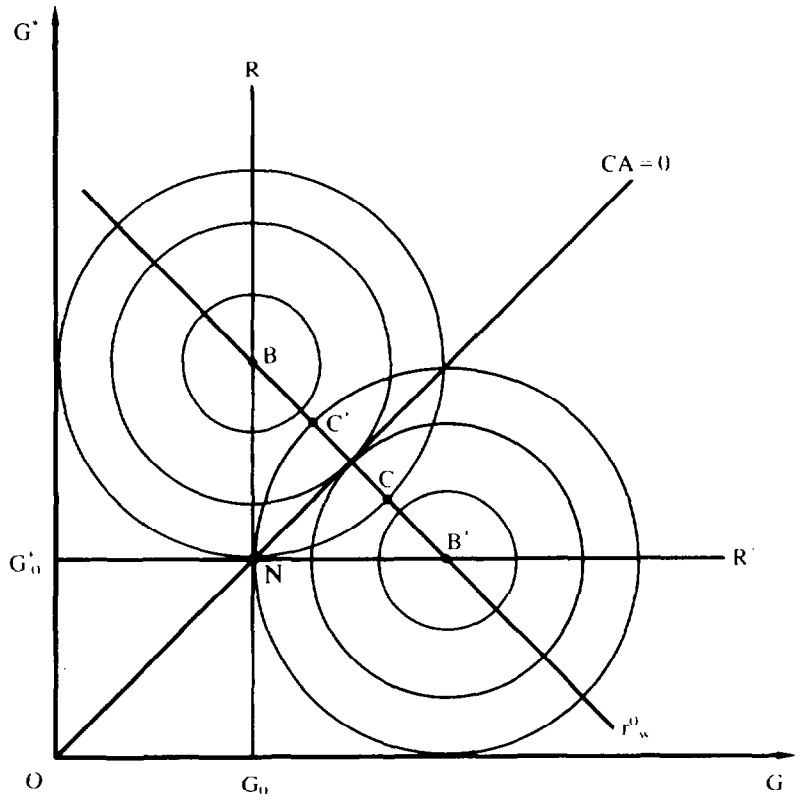
Returning to the case in which both countries want a surplus (Chart IV.6), it appears that both countries could be better off by cooperating to move to a point on the contract curve (the r_w^o line that passes through B and B^*) between C^* and C. The nature of the cooperation that is required when conflict arises, as is the case here, from inconsistent national values assigned to a shared variable is, however, rather different from that which is required when conflict arises from a shortage of instruments. In the latter case what is required is either to find an extra instrument to remove the conflict (the best solution) or for each country to trade off one attainable target against another. In the present case, there is no extra instrument available to reconcile an irreconcilable difference; an improvement for one country with respect to the current account necessarily marks a worsening for the other; the welfare of one country has to be traded off against that of the other.

The only way to remove the conflict is to reach an agreement on appropriate goals; a bargaining solution can lessen but not remove the untoward consequences of that conflict as compared with the Nash solution. This would imply that the first step of any coordination of policies with respect to the current account is to seek some agreement regarding the value of the current account. There are basically three solutions in this respect: agree that the current account should not be a target of policy (as some would argue, cf. Section II); negotiate a consistent target (or target range) for current accounts; or let one country play the role of the nth country and renounce its current account target, thus pursuing a policy of benign neglect toward its current account.

1/ Removing the assumption of equal weights on deviations from the two targets in loss functions does not modify the analysis fundamentally. If both countries put more weight on the current account than on r_w (but still have identical loss functions) the reaction functions have a positive slope, $0 < dG^*/dG < \infty$ and N moves down on the CA curve; if both put more weight on the interest rate the two reaction functions become negatively sloped and N moves up CA though it remains below the r_w^o line. If one country, say the home country, puts more weight on deviations from the CA target relative to deviations from r_w^o than the other the slope of its reaction function becomes less than infinite and the Nash equilibrium is above the CA line, that is, entails a surplus for that country.

Chart IV.6

Both countries want a surplus



V. Summary and Implications for Current Policy Controversies

Rather than attempting to summarize the preceding arguments in detail, this concluding part begins by concentrating, albeit briefly, on three main themes that emerge from the analysis: the impact of capital mobility on the nature of interdependence under floating as contrasted with fixed exchange rates; the comparative advantage of fiscal policy in dealing with current account and interest rate targets under floating rates; and the key ingredients of policy coordination in practice. The paper then ends with a brief discussion of the relevance of the analysis to current policy controversies.

1. Capital mobility, fiscal policy, and coordination

One consequence of capital mobility is that it makes for a great deal of macroeconomic interdependence under floating exchange rates. In the absence of capital mobility there would be a large degree of independence in the behavior of national output levels. Under fixed exchange rates, interdependence in output levels would exist even without capital mobility (the exchange-rate stabilization operations of the authorities substitute for private capital movements as it were). The nature of interdependence, however, differs under the two exchange rate regimes. Under fixed exchange rates, it is the world money supply that is the "global instrument," affecting interest rates (and hence output levels) in the short run and the world price level (but not interest rates) in the long run. This is why, under fixed exchange rates, international policy coordination must of necessity focus an monetary policy and on control of the growth of the world money supply. Under floating exchange rates, it is the sum of individual countries' fiscal policies ("global fiscal policy") that is the "global instrument" affecting the world level of interest rates in the short and long run; monetary policy, in contrast, is country-specific at least in the long run. Under floating exchange rates, the coordination of fiscal policies is of the essence.

It is the nature of this interdependence that, together with long-run neutrality of money, gives "world fiscal policy" its comparative advantage in dealing with the world rate of interest, the common variable under floating exchange rates. The comparative advantage of the sum of national government expenditures (and taxes) in dealing with r_w and that of the differences in government expenditures and tax levels in dealing with the current account constitutes a second main theme of this paper. Ultimately, the main general instrument (and one of the only relatively efficient ones) for dealing with current account imbalances is fiscal policy.

A third theme concerns the implications for policy coordination. Successful policy coordination in practice has three key ingredients: insuring that there are enough instruments; assigning them to targets in

a stabilizing fashion; and securing international agreement on the target value of shared (common) variables.

This paper has focused attention on four target variables in a two-country setting: the two output levels (price levels in the long run), the current account, and the world level of interest rates. It has identified four instruments to deal with these targets: the two monetary and the two fiscal policies. Constraints on the admissible values of monetary policies are likely to be less severe than those on fiscal instruments. This suggests that restoring flexibility in fiscal policies, at least in the long run, is a first requirement to avoid having a shortage of instruments lead to policy conflict and failure to achieve real interest rate and current account balance targets.

With an equal number of targets and instruments, policy equilibrium exists but may not be reached unless the assignment of targets to instruments is appropriate. We have given a number of reasons why the assignment suggested in Table IV.2 should be appropriate. One part of the assignment turns out to be crucial from a long-run perspective: the assignment of the sum of governments' expenditures to the world rate of interest and that of their difference to the current account. If that assignment is to be achieved in a decentralized fashion, that is, in the sense that each country sets its level of government spending independently of the other country, we have also suggested that, in a two-country context, the small country's fiscal policy be aimed at the current account, the large country's at the world rate of interest.

Finally, equality of the number of target variables and instruments, together with proper assignment, will not succeed in eliminating conflict if various countries insist at one and the same time on different values for a shared variable. Agreement on goals is indispensable. In practice, such agreement can be achieved in some coordination arrangement that concerns both target and instrument values (that moves instruments in the direction suggested by the proper assignment of instruments to targets).

An efficient arrangement is one that is consistent with the long-run logic of interdependence under the ruling exchange rate regime; respects the direction of proper assignments; and incorporates agreement vis-a-vis the goals of shared variables. Efficiency is a requirement for credibility of the arrangement; and without credibility the arrangement would, in any event, be defeated by markets and be ineffective.

2. Implications for current macroeconomic controversies

In light of the foregoing discussion, a major question becomes: among the coordination arrangements that could conceivably be made to solve current conflicts, are some potentially better than others? This paper's discussion suggests, for instance, that "I agree to spend more

if you spend less" is a better arrangement than "I agree to spend more if you agree to do something about the dollar." So does the analysis that follows.

To outline the core of an efficient arrangement in the present world economic situation requires an analysis of that situation in terms of the apparatus developed above. A complete analysis is clearly beyond the scope of this paper. An indication of the essence of current policy conflicts between the United States and the rest of the world can, however, be given with the help of the CA-r_w diagram.

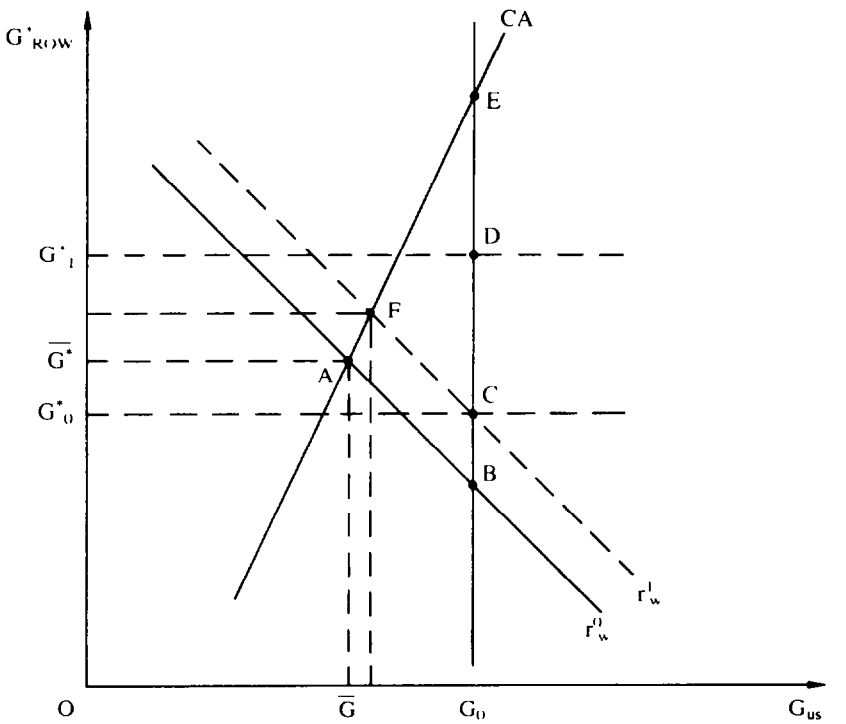
Consider Chart V.1. The first task is to determine in which quadrant of the diagram we presently are. That the U.S. current account deficit is too large is beyond much doubt; we therefore are to the right of and below the CA line, where we assume that the United States and the rest of the world roughly agree on what a proper or "*sustainable*" current account for that country is (CA should be a range rather than a line). Most analysts would also agree that real interest rates are currently too high (or at least not too low) especially in a longer-run perspective. This implies that we are above and to the right of the optimal rate of interest line, r_w^o, about which, again, we assume that countries roughly agree. This means that actual U.S. Government spending (given taxes), G_o, is larger than its optimum level, $\bar{G}$. The current combination of the two regions' fiscal policies thus lies somewhere between B and E. Exactly where is a matter of some controversy: the United States would argue that foreign spending is below optimum (for example, G_o^* yielding point C), the rest of the world arguing perhaps that their spending (given taxes) is larger than optimum at least in a long-run perspective (for example, G_1^* yielding point D). If such uncertainty, as well as concern about short-run effective demand, did not exist, the solution would be obvious: move G and G^* to the level compatible with A.

Given this uncertainty and concern about the weakness of aggregate demand in the world in the short run, the following arrangement might be struck: begin by moving along whichever r_w line we are at present until rough current account balance is reached. This would involve increasing spending abroad by the same amount as it is reduced in the United States. Assuming, for the sake of illustration, that we are currently at C, this would involve moving from C to F along the dotted line, r_w^1. At F, the current account has reached its sustainable level and employment is unchanged, but the real world rate of interest is still too high, as are government expenditures in both regions. Reaching A would then require that both regions gradually reduce their expenditure so as to lower interest rates and foster long-run growth (the increase in net foreign government expenditure is thus partly transitory).

This analysis has not begun to do justice to the complexities of the current situation, for instance the fact that the rest of the world is not a single homogeneous country. Nevertheless, it contains the

kernel of what we believe to be an effective policy package. It also shows that a decrease in the U.S. budget deficit is an indispensable part of any such package. Depreciation of the dollar, whether by means of talking it down or by means of an increase in U.S. money growth, is simply no alternative.

Chart V.1



Stability of assignment of one country's fiscal policy to the current account and of the other's to the rate of interest can be shown as follows.

The policy rules are:

$$\overset{\circ}{G} = \beta T \tag{1}$$

$$\overset{\circ}{G}{}^{*} = = -\gamma(r-r_o),$$

where β and γ are arbitrary positive speeds of adjustment; $T = 0$ and $r = r_o$ are the target values of the current account and the interest rate, respectively. Expanding (1) into a Taylor series and omitting nonlinear terms yields the following system of equations:

$$\begin{bmatrix} \overset{\circ}{G} \\ \overset{\circ}{G}{}^{*} \end{bmatrix} = \begin{bmatrix} \beta T_G & \beta T_{G*} \\ -\gamma r_G & -\gamma r_{G*} \end{bmatrix} \begin{bmatrix} G-G_o \\ G^{*}-G_o^{*} \end{bmatrix}, \tag{2}$$

where subscripted variables indicate partial derivatives with respect to the subscripts. The characteristic equation of the system is:

$$\lambda^2 - [\alpha T_G - \lambda r_{G*}]\ \lambda + \beta\gamma\ [T_{G*}r_G - T_G r_{G*}] = 0. \tag{3}$$

It can be readily checked that the coefficient of λ and the constant term are both positive, as required of stability, given the assumed signs of derivatives.

Whether the approach to equilibrium is direct or cyclical depends on whether the roots are real or complex. They will be real and the approach will be direct if the discriminant, D, is positive:

$$D = (\beta T_G - \gamma r_{G*})^2 - 4\beta\gamma(T_{G*}r_G - T_G r_{G*}). \tag{4}$$

Making use of the fact that, assuming Ω to be equal to 1 for simplicity, $T_{G*} = -\alpha T_G$ (where $\alpha = Y/Y^{*}$), we can rewrite (4) as:

$$D = (\gamma r_G^* + \beta T_G)^2 + \alpha 4\beta\gamma T_G r_G. \qquad (5)$$

The second term in the discriminant is negative but goes to zero as α, the relative size of the country targeting the current account, goes to zero. In that case the discriminant will be positive and the approach to equilibrium direct.

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