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2 The Coordination of Macroeconomic Policies

Peter B. Kenen

2.1 Introduction

For the last three years, beginning with the Plaza Communiqué of September 1985, governments have been hard at work on policy coordination, including the improvement of the process itself. We have seen nothing like it since the mid-1970s and the run-up to the Bonn Economic Summit of 1978. Economists have also been at work, modeling and measuring the gains from policy coordination and devising new approaches. But some have turned against it. The obstacles are large, they say, the potential gains are small, and there is the risk that governments will get it wrong—that macroeconomic coordination will make matters worse.

Some economists were skeptical initially. In 1981, for example, Max Corden argued that coordination is not needed because the international monetary "non-system" has a logic of its own:

> The key feature of the present system is that it is a form of international *laissez-faire*. First of all, it allows free play to the private market, not just to trade in goods and non-financial services but, above all, to the private capital market. Secondly, it allows free play to governments and their central banks to operate in the market and—if they wish and where they can—to influence and even fix its prices or its quantities. Thus it is a fairly free market where many governments, acting in their own presumed interests and not necessarily taking much account of the interests of other governments, are participants. (60).

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Roland Vaubel (1981) went even further, arguing that governments should compete in providing the most attractive economic environment, measured primarily by price stability, and that policy coordination is harmful because it reduces competition among governments. Coordination can also raise the costs of policy mistakes because governments will do the same wrong things collectively rather than make mutually canceling errors.

On Corden's "market" view, each government can and should be free to choose its own monetary and fiscal policies but also to choose its exchange rate arrangements and decide for itself whether to borrow or lend on international capital markets. This sort of policy decentralization would probably be optimal if all economies were very small; each country's decisions regarding its exchange rate would have only trivial effects on other countries' effective exchange rates, and its decisions to borrow or lend would not have much influence on world interest rates.

What happens, however, when economies are large? Each country's policies affect other countries, and structural interdependence gives rise in turn to policy interdependence. The conventional case for coordination starts here.[1] But the strength of the case depends on the extent of the underlying structural interdependence, the governments' policy objectives, and the number of policy instruments at their command.

Stanley Fischer (1988) has surveyed recent research on these issues and has joined the skeptics:

> The notion of international policy coordination is appealing and appears to hold out the promise of major improvements in economic performance. However, estimates of the quantitative impacts of policy decisions in one economy on other economies are quite small. These results, together with explicit calculations of the benefits of coordination, suggest the gains will rarely be significant. Furthermore, theoretical analysis finds many circumstances under which coordination worsens rather than improves economic performance.
>
> The interest in policy coordination in the United States has been strongest when advocates of coordination were hoping to use international policy agreements to bring about changes in domestic policies that they regarded as either undesirable or eventually untenable. It is entirely possible though that formal coordination would sometimes require a country to undertake policy actions of which it disapproved.
>
> So long as exchange rates remain flexible—and they will likely remain flexible among the three major currency areas—macroeconomic policy coordination among the major blocs is unlikely to advance beyond the provision of mutual information and occasional agreements for specific policy tradeoffs. Both information exchanges and occasional policy agreements when the circumstances are right are useful and should be encouraged.
>
> But more consistent ongoing policy coordination in which countries, including the United States, significantly modify national policies "in recognition of international policy interdependence" is not on the near hor-

> izon. Fortunately, the evidence suggests that the potential gains from coordination are in any event small: the best that each country can do for other countries is to keep its own economy in shape. (38–39).

Martin Feldstein was even blunter in comments written shortly after the stock market crash of October 1987:

> Unfortunately, ever since the 1985 Plaza meeting, the [U.S.] administration and the governments of other industrial nations have emphatically asserted that international economic coordination is crucial to a healthy international economy in general and to continued U.S. growth in particular. Since such assertions are not justified by the actual interdependence of the industrial economies, Americans have been inappropriately worried about whether coordination would continue.
>
> Because foreign governments will inevitably pursue the policies that they believe are in their own best interests, it was inevitable that international coordination would eventually collapse. . . . But what contributed to the market decline was not the collapse of international macroeconomic coordination per se but the false impression created by governments that healthy expansion requires such coordination.
>
> The U.S. should now in a clear but friendly way end the international coordination of macroeconomic policy. We should continue to cooperate with other governments by exchanging information about current and future policy decisions, but we should recognize explicitly that Japan and Germany have the right to pursue the monetary and fiscal policies that they believe are in their own best interests.
>
> It is frightening to the American public and upsetting to our financial markets to believe that the fate of our economy depends on the decisions made in Bonn and Tokyo. Portfolio investors, business managers and the public in general need to be reassured that we are not hostages to foreign economic policies, that the U.S. is the master of its own economic destiny, and that our government can and will do what is needed to maintain healthy economic growth (Feldstein 1987).

When thoughtful economists like Fischer and Feldstein express themselves this forcefully, policymakers should listen. But when they listen carefully, they are likely to conclude that two quite different concepts of coordination are at issue. The critics of coordination are castigating governments for pursuing objectives that bear very little resemblance to the objectives that actually animate the governments' own efforts.

Economists typically adopt what can be described as a policy-optimizing approach to coordination,[2] and their use of game-theoretic methods to represent that process has led them to treat the participating governments as antagonists engaged in what Putnam and Henning (1986) have described as policy barter—the trading of commitments about policy instruments without any trading of analyses or forecasts. In this particular framework, moreover,

exchange rate stabilization does not play a central role; it is at most a *method* for optimizing policies and is usually a second-best method at that.

Governments, by contrast, appear to adopt what can be described as a regime-preserving or public goods approach to policy coordination. It has different implications for the ways in which governments interact and for the role of exchange rate stabilization. Mutual persuasion takes the place of adversarial bargaining; exchange rate stabilization becomes a public good rather than a rule for optimizing policies. Furthermore, the regime-preserving approach sheds light on certain puzzling questions: Why does policy coordination move in and out of fashion? Why are disagreements about policy objectives cited so often as "obstacles" to coordination, when they can be expected to raise the gains from policy-optimizing coordination? Why do governments argue about sharing the "burdens" of coordination, when each of them should be expected to benefit from policy optimization?

2.2 Perspectives on Policy Coordination

Governments engage in many forms of economic cooperation. They exchange information about their economies, policies, and forecasts. They provide financial assistance to other governments, bilaterally and multilaterally, ranging from balance of payments support to long-term development aid. They act jointly to supervise or regulate various sorts of economic activity.

Coordination is the most rigorous form of economic cooperation because it involves mutually agreed modifications in the participants' national policies. In the macroeconomic domain, it involves an exchange of explicit, operational commitments about the conduct of monetary and fiscal policies. Commitments of this sort can be framed contingently, with reference to mutually agreed norms or targets; a government can promise to cut taxes, for example, if the growth rate of real GNP or nominal demand is lower than the rate it has promised to deliver. But commitments to targets, by themselves, do not constitute coordination. Commitments about instruments are the distinguishing feature of coordination, setting it apart from other forms of economic cooperation.[3]

2.2.1 Forms of Coordination

Coordination can result from episodic bargaining about specific policy packages or from a once-for-all bargain about policy rules or guidelines.

The Bonn Summit of 1978 is usually cited as the leading instance of episodic bargaining, although the Bonn bargain was not confined to macroeconomic matters. The Federal Republic of Germany and Japan made promises about their fiscal policies, and the United States made promises about its energy policies (Putnam and Bayne 1987, ch. 4). The Bretton Woods Agreement of

1944 is sometimes cited as a once-for-all bargain about rules, although it was too vague to meet my definition of full-fledged coordination. The exchange rate obligations were explicit; the corresponding policy commitments were implicit. The latter became somewhat tighter, however, as the Bretton Woods system evolved. The International Monetary Fund (IMF) began to attach strict policy conditions to the use of its resources, and Working Party 3 of the Organization for Economic Cooperation and Development (OECD) devoted close attention to the macroeconomic side of the exchange rate system.

These arrangements began to resemble rule-based policy coordination, but some would say that they were not symmetrical enough. The obligations of deficit countries were more clearly defined and commonly accepted than those of surplus countries. But symmetry is different from reciprocity or mutuality. The Bretton Woods system was *not* symmetrical—although the most striking asymmetries arose from the special role of the dollar rather than the imbalance between obligations borne by deficit and surplus countries. Nevertheless, the obligations were mutual in the important contingent sense emphasized earlier. They applied in principle to every country when it ran a balance of payments deficit. (Concern to preserve this contingent mutuality explains the reluctance of the IMF to depart from the uniform treatment of its members when attaching conditions to the use of its resources.)

The Louvre Accord of 1987 can be described as a combination of the two techniques for policy coordination. There were rule-based obligations, too loosely defined perhaps, which linked the use of interest rate policies to the maintenance of exchange rate stability. There was an ad hoc bargain about fiscal policies, although it served mainly to codify the goals that governments had already chosen unilaterally.[4]

A number of rule-based systems have been proposed in recent years, including those of McKinnon (1984, 1988), Meade (1984), and Williamson and Miller (1987). McKinnon proposes a gold standard without gold. The major central banks would choose an appropriate growth rate for the global money stock and would then conduct their monetary policies to realize that growth rate. Each of them would also use nonsterilized intervention to peg its exchange rate, causing its national money stock to grow faster than the global stock when its currency was strong and more slowly than the global stock when its currency was weak. The system would work symmetrically, however, so that exchange rate pegging would not affect the growth rate of the global money stock. The Williamson-Miller proposal would not peg exchange rates but is more comprehensive than McKinnon's proposal; it covers fiscal policies as well as interest rate or monetary policies.[5] Because it would involve a rule-based bargain to coordinate national policies, and we will discuss it later, the Williamson-Miller framework is reproduced as figure 2.1.

The distinction between types of policy bargains—between ad hoc agreements on policy packages and long-lasting agreements on policy rules—is

helpful in sorting out arguments and issues. But it is far less fundamental than the distinction drawn in the introduction to this paper, which pertains to the rationale for policy coordination.

2.2.2 The Policy-Optimizing Approach

Many economists look upon policy formation as an optimizing process and are thus inclined to treat policy coordination as an extension of that process. Each government is deemed to have a welfare function defined in terms of its policy targets, and it sets its policy instruments to maximize that function. Its actions may affect other governments' decisions, but it disregards that possibility. When all governments behave this way, however, they end up in a suboptimal situation, the noncooperative or Nash equilibrium. They have neglected the policy interdependence resulting from structural interdependence, and they can bargain their way to a better situation, the cooperative or Pareto equilibrium. By changing the settings of their policy instruments in a mutually agreed manner, they can get closer to their policy targets and raise each country's welfare.[6]

The Blueprint

The participating countries [the Group of Seven] agree that they will conduct their macroeconomic policies with a view to pursuing the following two intermediate targets:

(1) A rate of growth of domestic demand in each country calculated according to a formula designed to promote the fastest growth of output consistent with gradual reduction of inflation to an acceptable level and agreed adjustment of the current account of the balance of payments.

(2) A real effective exchange that will not deviate by more than [10] percent from an internationally agreed estimate of the "fundamental equilibrium exchange rate," the rate estimated to be consistent with simultaneous internal and external balance in the medium term.

To that end, the participants agree that they will modify their monetary and fiscal policies according to the following principles:

(A) The *average level* of world (real) short-term interest rates should be revised up (down) if aggregate growth of national income is threatening to exceed (fall short of) the sum of the target growth of nominal demand for the participating countries.

(B) *Differences* in short-term interest rates among countries should be revised when necessary to supplement intervention in the exchange markets to prevent the deviation of currencies from their target ranges.

(C) National *fiscal policies* should be revised with a view to achieving national target rates of growth of domestic demand.

The rules (A) to (C) should be constrained by the medium-term objective of maintaining the real interest rate in its historically normal range and of avoiding an increasing or excessive ratio of public debt to GNP.

Figure 2.1 The Williamson-Miller blueprint for a target zone system
Source: Williamson and Miller (1987, 2); brackets and italics in original.

Viewed from this standpoint, policy coordination serves to internalize the effects of economic interdependence, which no single government can capture on its own by setting its policies unilaterally. To use a different metaphor, policy coordination gives each government partial control over other governments' policy instruments. Therefore, it relieves the shortage of instruments that prevents each government from reaching its own targets (see, e.g., Buiter and Eaton 1985, and Eichengreen 1985).

No one can quarrel with the logic of the policy-optimizing approach. It has given precise operational meaning to the notion of policy interdependence, provided a framework for measuring the costs of neglecting it, and linked this special subject with the much larger literature on macroeconomic theory and policy. But it tends to be more normative than positive. It tells us what governments can hope to achieve by multinational optimization and warns against some of the risks. It is less useful, however, in helping us to understand what governments are actually trying to accomplish, the obstacles they face, and the institutional arrangements they employ.

2.2.3 The Regime-Preserving Approach

Some economists, many political scientists, and most policymakers look at policy coordination from a different standpoint.[7] It is needed to produce certain public goods and defend the international economic system from economic and political shocks, including misbehavior by governments themselves.

Much of this important work was done by the United States in the first two postwar decades. It was the hegemonic power, having the ability and self-interested concern to stabilize the world economy by its actions. Furthermore, it had been largely responsible for writing the rules of the system and designing the institutions. It could thus be expected to defend them whenever they were threatened. Equally important, other governments could not accomplish very much without American cooperation. Matters are different now. It is still difficult to get very far without American cooperation, and little is likely to happen until Washington decides that something must be done. But the United States cannot act alone. The economic and political costs are too high.

It is easy to find examples of regime-preserving cooperation in recent economic history. They include the mobilization of financial support for the dollar and sterling in the 1960s and the joint management of the London gold pool, the "rescue" of the dollar in 1978, the speedy provision of bridge loans to Mexico at the start of the debt crisis in 1982, and the Plaza Communiqué of 1985, which was meant to defend the trade regime rather than alter the exchange rate regime.

The bargain struck at Bonn in 1978 can likewise be described as regime-preserving coordination. It reflected an agreed need for collective action on two fronts: for more vigorous recovery from the global recession of 1974–75,

to combat rising unemployment, especially in Europe, and for energy conservation to reduce the industrial countries' dependence on imported oil and limit the ability of OPEC to raise oil prices.

When viewed from this different perspective, policy coordination becomes the logical response to the dispersion of power and influence that ended American hegemony. Public goods must be produced and institutional arrangements defended by common or collective action. When seen this way, moreover, disagreements about the benefits and costs of policy coordination take on a different but familiar aspect. They become debates about burden sharing.

2.3 Two Views of Exchange Rate Management

The two views of policy coordination yield different ways of looking at exchange rate management. Seen from the policy-optimizing viewpoint, it involves the use of a simple policy rule to internalize the effects of economic interdependence. Seen from the regime-preserving viewpoint, it embodies a commitment by governments to improve the global economic environment by pursuing exchange rate stability as a policy objective (strictly speaking, an intermediate objective conducive to the pursuit of stable and liberal trade policies and an efficient allocation of resources nationally and globally).

2.3.1 Exchange Rates in the Policy-Optimizing Framework

The earliest theoretical work on policy-optimizing coordination dealt mainly with the pegged rate case. Recent work has taken the opposite tack, partly because of the change in the actual exchange rate regime and partly because mathematical tractability exerts an unfortunate influence on the economist's research agenda.

Although many economists doubt that exchange rate expectations are truly rational, they tend to disparage any other view. Yet it is hard to solve a theoretical model in which rational expectations are combined with imperfect capital mobility. Accordingly, most such models assume that foreign and domestic assets are perfect substitutes. On this assumption, however, exchange rate pegging precludes any other use of monetary policy, greatly reducing the scope for policy coordination.[8] Therefore, exchange rate pegging is typically viewed as a second-best alternative to fully optimal coordination. It is attractive mainly because a simple, rule-based regime is less vulnerable to cheating or reneging, which many economists have regarded as a major obstacle to fully optimal coordination (see, e.g., Canzoneri and Gray 1985, and McKibbin and Sachs 1986).

When foreign and domestic assets are imperfect substitutes, however, the case for exchange rate pegging becomes much stronger, even in the policy-optimizing framework. Purchases and sales of foreign assets (intervention) can be used to peg the exchange rate; purchases and sales of domestic assets (open

market operations) can be used to pursue domestic policy objectives. Using this framework to ask how exchange rate arrangements affect the need for policy-optimizing coordination, I have reached an unorthodox conclusion (Kenen 1987a, 1988c). A simple agreement to peg exchange rates, without any additional coordination, is better from each government's national standpoint than an agreement to let rates float and pursue fully optimal coordination. This is because exchange rate arrangements affect the ways in which exogenous shocks influence outputs and prices.

Working with a standard portfolio-balance model, I have studied the effects of various exogenous shocks, including fiscal policy shocks, under pegged and floating rates and asked how those two exchange rate regimes affect each government's ability to stabilize its output and price level on its own, without attempting to coordinate its monetary policy with those of other countries. In effect, I have used the policy-optimizing framework to look anew at an old question, whether a floating exchange rate can confer policy autonomy on the governments of interdependent economies. It cannot. On the contrary, a pegged exchange rate proves to be superior in three of the five cases studied (a permanent shift in demand between the countries' bonds, a temporary increase in one country's saving reflecting a permanent increase in desired wealth, and a balanced budget increase in one government's spending). The ranking of exchange rate regimes is ambiguous in the other two cases (a permanent switch in demand between the countries' goods and a permanent increase in one country's stock of debt resulting from a temporary tax cut).

My model is summarized in the appendix to this paper. It contains two countries, the U.S. and EC, each with its own good, bond, and currency. The two goods and bonds are traded and are imperfect substitutes; each currency is held only in the issuing country. Asset markets and goods markets clear continuously, but goods prices are sticky. An increase in demand for the U.S. good, for example, does not raise its dollar price immediately. There is instead a temporary increase in U.S. output. But wages and prices start to rise in response to the increase in output, and they go on rising until output returns to its long-run equilibrium level. U.S. bonds are dollar bonds issued by the U.S. government when it runs a budget deficit; EC bonds are ecu bonds issued by the EC government. The two countries' money supplies are managed by their central banks, using open market operations in their own bond markets. When the exchange rate is pegged, however, money supplies are affected by intervention in the foreign-exchange market; intervention can be sterilized when, as here, two countries' bonds are imperfect substitutes, but sterilization is not automatic.

Expectations are static, and the model begins in long-run equilibrium, where there is no saving or investment, budgets and trade flows are balanced, and prices are constant. When this situation is disturbed, moreover, the two economies move gradually to a new long-run equilibrium, driven by changes in wealth induced by transitory saving and, in the floating rate case, by capital

gains or losses on holdings of foreign-currency bonds. Governments are well behaved. They do not try to move their economies away from the stationary state but use their monetary policies merely to optimize the adjustment process initiated by an exogenous shock. Furthermore, each government has enough confidence in the other's integrity to give it open-ended access to reserves.

Casting these assumptions in game-theoretic terms, each government may be said to start at the bliss point defined by its own social welfare (loss) function, and their bliss points will be identical initially even if the governments have different preferences. Therefore, the Nash and Pareto equilibria will coincide. When the situation is disturbed, however, each government will seek to minimize the welfare loss resulting from the output and price effects of the shock. But there are two sorts of shocks. Some can be shown to shift both bliss points together, so that the Nash and Pareto equilibria will continue to coincide. In these special cases, each government can use its own monetary policy to neutralize completely the output and price effects of the shock and thus move directly to its new bliss point. There is no welfare loss and no need for policy coordination. Other shocks can be shown to shift the bliss points differently, so that the Nash and Pareto equilibria will no longer coincide, and monetary policies cannot be expected to neutralize the output and price effects of those shocks. Each government must then settle for a second-best solution, involving a departure from its bliss point and a welfare loss, and policy coordination is needed to minimize that loss.[9]

This strategy is illustrated in figures 2.2 and 2.3, which focus on the pegged rate case. The vertical axis in figure 2.2 measures the permanent change in the U.S. price level resulting from an open market operation or exogenous shock, and the horizontal axis measures the temporary change in U.S. output. As the U.S. economy starts in long-run equilibrium and the U.S. government wants to stay there, the origin in figure 2.2 represents the U.S. bliss point in output and price space, and points on the elliptical indifference curve surrounding it are welfare-inferior to it. (There is, of course, one such curve for each value of the U.S. social welfare function.) The line BB and arrows on it show what happens to the U.S. economy when the U.S. central bank makes an open market purchase. Output rises temporarily, and the price level rises permanently. The line FF and arrows on it show what happens when the EC central bank makes an open market purchase. Under a pegged exchange rate, the case considered here, the change in the U.S. price level will be the same when the size of the open market purchase is the same, but the change in U.S. output will be smaller. Therefore, FF is steeper than BB.

The apparatus in figure 2.2. can be used to derive a reaction curve showing how the U.S. central bank responds to the effects of an open market purchase by the EC central bank. An EC open market purchase takes the U.S. economy to a point such as T′, and the options open to the U.S. central bank are shown by the line B′B′, parallel to BB. The best option is at H′, where B′B′ is tangent to the indifference curve; the U.S. central bank must make an open market sale

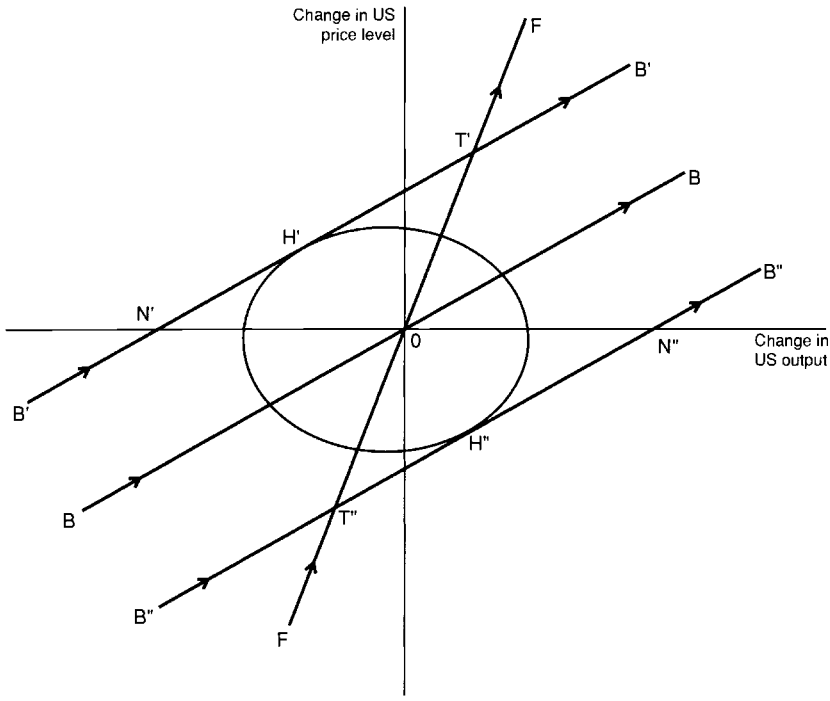

Fig. 2.2 U.S. policy preferences and policy responses

to minimize the welfare loss resulting from the EC open market purchase. But the U.S. price level is higher at H′ than at the origin, which says that the U.S. open market sale is smaller than the EC open market purchase. (The global money supply has risen, raising both countries' prices.)

Turning to figure 2.3, the vertical axis measures holdings of EC bonds by the EC central bank, and the horizontal axis measures holdings of U.S. bonds by the U.S. central bank. The point P is the initial U.S. bliss point and the EC bliss point too, because the EC economy also starts in long-run equilibrium and the EC government wants to stay there. The line I_1 is the U.S. reaction curve, showing how the U.S. central bank responds to an EC open market purchase. It is negatively sloped, because the U.S. central bank will make an open market sale, reducing its holdings of U.S. bonds. It is steeper absolutely than a 45° line, because the U.S. open market sale is smaller than the EC open market purchase. The line I_2 is the EC reaction curve, derived from the EC counterpart of figure 2.2.

Returning to figure 2.2, consider the effects of an exogenous shock that drives the U.S. economy to a point such as N′, depressing U.S. output temporarily but having no permanent effect on the U.S. price level. (That is what actually happens with a permanent switch in demand from the U.S. bond

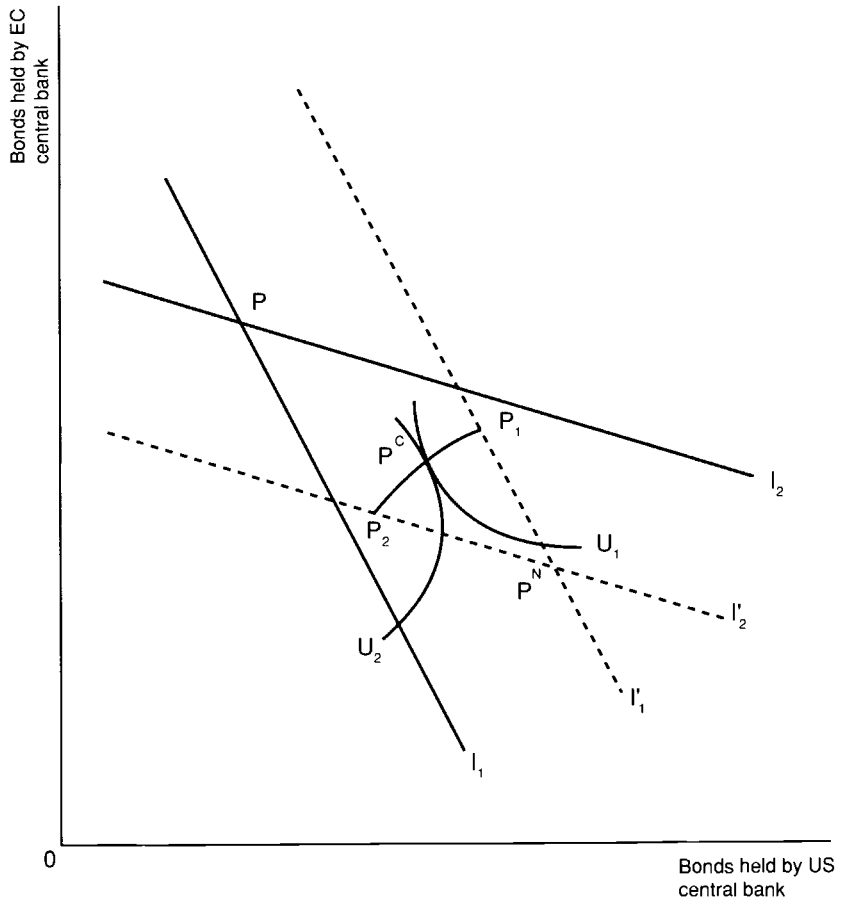

Fig. 2.3 Policy reactions curves for the U.S. and EC

to the EC bond.) The U.S. central bank could go again to H′, accepting a permanent increase in the U.S. price level in order to reduce the size of the temporary cut in U.S. output. But there is another possibility. Suppose that the U.S. central bank makes an open market purchase large enough to take the U.S. economy from N′ to T′ and the EC central bank makes an open market sale large enough to take the U.S. economy from T′ to the origin. The output and price effects of the shock will be neutralized completely. This outcome is shown in figure 2.3 by shifting the U.S. bliss point to P_1, where the EC central bank holds fewer bonds and the U.S. central bank holds more bonds, then shifting the U.S. reaction curve from I_1 to I_1' making it pass through the new U.S. bliss point.[10]

Now suppose that the same exogenous shock drives the EC economy to the EC counterpart of point N″ in figure 2.2, raising EC output temporarily and having no permanent effect on the EC price level. The effects of the shock can

be neutralized completely if the EC central bank makes an open market sale large enough to take the EC economy from N″ to T″ and the U.S. central bank makes an open market purchase large enough to take the EC economy from T″ to the origin. In figure 2.3, the EC bliss point shifts to P_2, where the EC central bank holds fewer bonds and the U.S. central bank holds more bonds, and the new EC reaction curve must be I_2'.

If each central bank optimizes its policy independently, without taking account of the other's decisions, the two will wind up in Nash equilibrium at P^N. If they coordinate their policies by some sort of bargaining, they will wind up in Pareto equilibrium at a point such as P^C, lying on the so-called contract curve connecting P_1 and P_2, and it is easy to prove that P^C is better than P^N from each country's standpoint. Bliss points such as P_1 and P_2 are surrounded by elliptical indifference curves, and two such curves are drawn in figure 2.3. They are the curves whose tangency defines the point P^C. But U_1, the U.S. indifference curve, cuts I_1' between P^N and P_1, which says that the U.S. welfare loss is smaller at P^C than at P^N, while U_2, the EC indifference curve, cuts I_2' between P^N and P_2, which makes an analogous statement about EC welfare. These are the gains from policy-optimizing coordination.

This sort of policy coordination cannot neutralize completely the output effects of the shock; it can only minimize the resulting welfare losses. The effects of a shock are neutralized completely only when a government can reach its new bliss point, and P^C lies between those bliss points. If the bliss points shifted together, however, they would continue to coincide, and the new reaction curves would intersect at the new common bliss point, just as they did initially. That is precisely what happens under a pegged exchange rate. The bliss points shift together in three of the five cases studied, permitting the two central banks to neutralize completely the output and price effects of the shocks without having to coordinate their policies.

2.3.2 Exchange Rates in the Regime-Preserving Framework

In the previous section, the policy-optimizing framework was used to prove that exchange rate pegging can substitute for more ambitious forms of policy coordination. But two strong assumptions were needed. First, the two economies were well behaved. They began in long-run equilibrium and returned to it after every shock. Disturbances were permanent but did not have permanent effects on output. Second, governments were well behaved. They did not defy or try to manipulate the long-run properties of their economies in ways that might have interfered with the viability of a pegged exchange rate. When these assumptions are violated, we step through the looking glass, from a world in which exchange rate pegging reduces the need for policy coordination to one in which coordination is required merely to achieve exchange-rate stability.

When we take that step, moreover, we have to change our frame of reference—to shift from the policy-optimizing framework to the regime-preserving framework. Unless we treat exchange rate stability as an international

public good, something that governments want but cannot produce individually, it is hard to explain how exchange-rate stability can become the rationale for policy coordination. The critics of coordination go wrong here, but so do the defenders. They debate the merits of the Louvre Accord for being something different than it was. The G-7 governments were not trying to manage the global economy. They were trying to manage exchange rates. They started rather tentatively, hoping to keep the dollar from "overshooting" and thus allow the adjustment process to work itself out, but became more ambitious as time wore on. They deserve to be graded fairly, however, for what they were trying to accomplish and how they set about it, not by an extraneous standard.

There is enough to debate even when the issues are narrowly defined by the regime-preserving framework. How much importance should governments attach to the production of exchange rate stability? What should they be willing to sacrifice in order to produce it? How much can they achieve by intervention? How closely must they coordinate their monetary and fiscal policies? How frequently should they revise their exchange rate targets? Can they continue to depend on informal understandings of the sort embodied in the Louvre Accord, or must they adopt more formal rules? Should exchange rate bands be hard and narrow, as in the Bretton Woods system and EMS,or soft and wide, as proposed by Williamson (1985 [1983])? Can governments reform exchange rate arrangements without reforming reserve arrangements?

I have explored most of these issues elsewhere (Kenen 1987c, 1988a) and tried to show how they are linked. Thus, judgments about the feasibility of revising exchange rate targets must condition one's judgments about the appropriate size of the exchange rate band, and the width of the band cannot be chosen without knowing whether it should be hard or soft. If a hard band is appropriate, moreover, intervention must play a major role in exchange rate management; a hard band cannot be defended merely by manipulating short-term interest rates. But changes in reserve arrangements may be needed to facilitate and finance large amounts of intervention.

There have been remarkable changes in the importance that governments attach to exchange rate stability and in their self-confidence—what they think they can achieve by altering or challenging the market's expectations.

At the Versailles Summit of 1982, the G-7 governments created a working group to study the role of intervention, and the group's report was predictably critical of using it extensively. Intervention could be helpful in some special circumstances, but mainly for drawing the market's attention to the implications of monetary policies. Intervention could not and should not be used to oppose market forces (Working Group 1983). The same view was expressed in a second, more comprehensive report on the monetary system commissioned by the Williamsburg Summit in 1983. It worried about the volatility of floating exchange rates and warned that "large movements in real exchange rates may lead to patterns of international transactions that are unlikely to be

sustainable," but it laid most of the blame for exchange rate instability on "inadequate and inconsistent policies that have led to divergent economic performance" (Deputies 1985, paras. 17, 20). In effect, governments endorsed the view then prevalent among economists that foreign-exchange markets process information efficiently and should not be blamed for the policies on which they are asked to pass judgment. That would be shooting the messenger who brings embarrassing news (Frenkel 1987).

A few months later, however, governments took a different view. On September 22, 1985, in the Plaza Communiqué, they sent the messenger back to the market to say that the market was not doing its job:

> The Ministers and Governors agreed that exchange rates should play a role in adjusting external imbalances. In order to do this, exchange rates should better reflect fundamental economic conditions than has been the case. They believe that agreed policy actions must be implemented and reinforced to improve the fundamentals further, and that in view of the present and prospective changes in fundamentals, some further orderly appreciation of the main non-dollar currencies against the dollar is desirable. They stand ready to cooperate more closely to encourage this when to do so would be helpful.

And they took the next step in the Louvre Accord of February 22, 1987:

> The Ministers and Governors agreed that the substantial exchange-rate changes since the Plaza Agreement will increasingly contribute to reducing external imbalances and have now brought their currencies within ranges broadly consistent with underlying economic fundamentals, given the policy commitments summarized [earlier] in this statement.
>
> Further substantial exchange-rate shifts among their currencies could damage growth and adjustment prospects in their countries.
>
> In current circumstances, therefore, they agreed to cooperate closely to foster stability of exchange rates around current levels.

In the months that followed, the G-7 governments intervened massively to support the dollar. They let it depreciate slightly in the spring but held it to a very narrow range thereafter, until the stock market collapse in October.

The rationale for trying to stabilize exchange rates can be summed up in two statements. Those who produce exchange rates in the foreign-exchange market are differently motivated from those who consume them in the markets for goods, services, and long-term assets. Furthermore, exchange rates are very flexible, like other asset prices, whereas goods prices are sticky, so that nominal and real exchange rates move together.

A growing body of evidence supports the first assertion. Inhabitants of the foreign-exchange market have been shown to behave myopically, even irrationally,[11] and this would be reason enough to challenge the conventional wisdom of the early 1980s, which held that markets are wiser than governments. But the second assertion is more important. If goods prices were

perfectly flexible, there would be little cause to worry about exchange rate arrangements. Goods markets would optimize relative prices continuously, including real exchange rates, even if they had to cope with nonsensical messages from the foreign-exchange market. Governments could then stabilize their money stocks and allow the foreign-exchange market to determine nominal exchange rates, or they could peg exchange rates and allow the market to determine national money stocks. It is the stickiness of goods prices that makes the exchange rate regime important. When nominal exchange rates affect real exchange rates, they also affect economic activity—its level, location, and composition.

The strength of the connection between nominal and real exchange rates is shown clearly in figure 2.4, which draws attention to the huge swing in real rates during in the 1980s. This may have been the most expensive round-trip in recent history, save perhaps for the swing in oil prices that began and ended earlier. It would have been expensive even if the effects of the strong dollar had been fully reversed once the exchange rate movement was reversed. According to Branson and Love (1988), the appreciation of the dollar from 1980 to 1985 wiped out more than one million jobs in U.S. industry, affecting more than 5.3 percent of the work force in manufacturing. But the costs of the swing may prove to be even bigger because its effects may not be reversed completely.

Whole industries and regions in the United States may be affected permanently because plants that were shut down when they became uncompetitive will not be reopened. They were not inefficient in 1980, when the

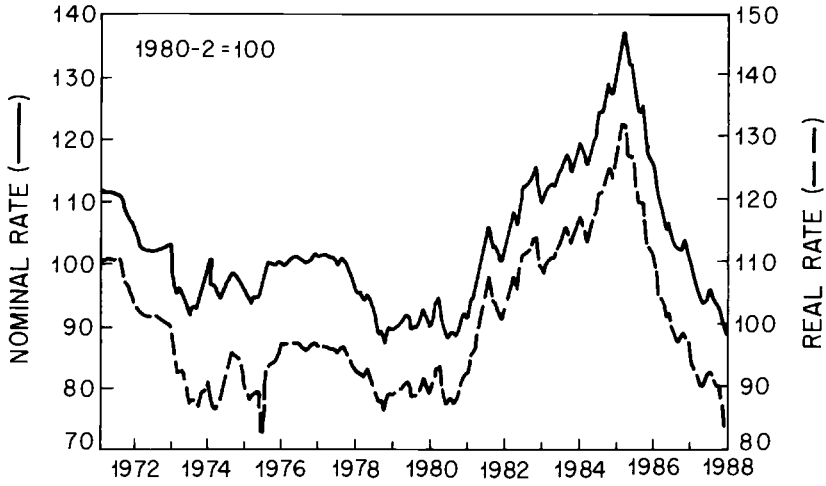

Fig. 2.4 Real and nominal effective exchange rates for the dollar
Source: J. P. Morgan, *World Financial Markets*, various issues; includes currencies of fifteen industrial countries weighted by bilateral trade in manufactures.

exchange rate swing began, but have been rendered obsolete by decisions and events resulting from that swing. Export and domestic markets have been lost to foreign competitors, who invested heavily to capture them and will not give them up, even though they are less profitable than they were initially.[12] This is not a mercantilist dirge. It is a lament for lost resources—for the physical and human capital that has been misallocated, not only in the United States but in other countries too.

These real resource costs have been compounded by permanent damage to the trading system. Although it was deeply opposed to protectionism, the Reagan administration was unable to resist pressures from industries severely hurt by the appreciation of the dollar. It imposed new trade restrictions or tightened old ones on imports of automobiles, steel, textiles, and apparel, and most of them remain in place.

But was this trip unnecessary, or was the foreign-exchange market doing a job that goods markets could not do because goods prices are not flexible enough? That is the key question.

Krugman (1989) dismisses the question curtly, saying that there was no fundamental reason for raising the real value of the dollar in 1984 only to reduce it in 1985. He argues persuasively that this part of the round-trip reflected irrational behavior by the foreign-exchange market. But it is hard to blame the *whole* round-trip on that sort of behavior. The appreciation of the dollar began with the tightening of U.S. monetary policy in 1979. It was driven thereafter by the capital inflow induced by the combination of tight money with a growing budget deficit. In this simple but meaningful sense, the first part of the trip was unavoidable under a floating exchange rate.

Suppose that Louvre Accord had been in force at the start of the 1980s. What would have happened to the dollar? A number of economists have played back this period using different policies or policy rules and a different exchange rate regime (see, e.g., Currie and Wren-Lewis 1988, Williamson and Miller 1987, and Frenkel, Goldstein, and Masson, ch. 1 in this volume). All of them conclude that the world would have been a better place. But most of the improvement can be traced to the modification of U.S. policies, not to the modification of the exchange rate regime. In fact, the exchange rate rules used in most such exercises are too loose to have much influence. The point at issue, moreover, has to do with the behavior of exchange rates under the policies actually followed rather than the modification of those policies. There are two reasons. First, it is hard to believe that the Reagan administration would have forsworn its idiosyncratic fiscal experiment in deference to policy rules or guidelines endorsed by an earlier administration. Second, and more generally, it is wrong to contrast the existing exchange rate regime under imperfect policies with an alternative regime under perfect policies.

If the G-7 governments had been committed to exchange rate management at the start of the 1980s, the new U.S. policy mix would have forced them to intervene heavily to prevent the dollar from appreciating, which would have

put strong upward pressure on the U.S. money supply and strong downward pressure on other countries' money supplies.[13] These monetary side effects of exchange rate stabilization would have produced political pressures that might perhaps have forced the U.S. government to act earlier and more decisively on the budgetary front. At the same time, the G-7 governments would have been warned of the need to adjust exchange rates—to revalue the dollar gradually in small steps, but by less than it rose in fact under the influence of market forces.

How, then, should we apportion blame for the whole round-trip? Some blame must be borne by U.S. policies, which would have caused the dollar to appreciate significantly whether exchange rates were floating freely or closely managed. But much blame must be borne by the foreign-exchange market, not just for producing the speculative bubble of 1984–85 but also for taking a myopic view two or three years earlier. If the inhabitants of the market had been endowed with the marvelous attributes displayed by those who populate many economists' models, they would have known that the U.S. budget and trade deficits could not last indefinitely and that the dollar would have to return eventually to something near its 1980 level. When the dollar started to appreciate, then, they would have bet against it, selling dollars rather than buying them and reducing the net capital inflow. In other words, they would have engaged in stabilizing speculation on a scale sufficiently large to keep nominal and real exchange rates from changing substantially.[14]

The basic lesson taught by the experience of 1980–87 has to do with the high cost of imperfect policies under floating exchange rates. The core of the case for exchange rate management is the simple but sad fact that policies and markets are usually imperfect and interact in costly ways under freely floating rates.

2.4 Obstacles to Policy Coordination

Economists have used the policy-optimizing framework to measure the potential gains from policy coordination. An early attempt by Oudiz and Sachs (1984) found that the gains were disappointingly small. In one of their exercises, for example, the coordination of fiscal and monetary policies by Germany, Japan, and the United States had very little influence on the fiscal instruments and rather small effects on economic performance; when measured in units equivalent to percentage point changes in real income, the welfare gains were smaller than 1 percent of GNP. But subsequent studies have produced bigger numbers. Holtham and Hughes Hallett (1987) have reported welfare gains, measured in income-equivalent units, as large as 6 or 7 percent of GNP and not smaller than 3 or 4 percent, depending on the model used. There would thus seem to be large unexploited gains from policy-optimizing coordination.

Why don't governments exploit those gains? Four reasons are commonly given. First, governments are apt to renege on their bargains and cannot trust each other. Second, governments subscribe to different views about economic behavior and the workings of the world economy. Third, governments have different policy targets. Fourth, political and constitutional constraints interfere with the bargaining process.

The first explanation has been demolished. The rest make sense. But they seem more cogent when they are invoked to explain the apparent scarcity of regime-preserving coordination than when they are used to account for a shortage of policy-optimizing coordination.

2.4.1 Reneging and Reliability

The concern about reneging derives in large part from the stylized way in which economists have represented public and private decision-making and the resulting concern with the problem of time consistency. The issue is illustrated neatly by the Barro-Gordon (1983) model, in which wages and prices are set by the private sector in light of its expectations concerning the inflation rate, which depends in turn on its expectations concerning the money supply. If the government promises to raise the money supply by, say, 5 percent and the private sector expects the government to keep its word, wages and prices will rise immediately by 5 percent, in line with the expected growth rate of the money supply. At this point, the government has two options. If it keeps its promise, it will exactly validate the actual inflation rate, and there will be no change in output or employment. If it breaks its promise and raises the money supply by, say, 10 percent, it will stimulate output and employment, because the inflation rate cannot change until wages and prices can be adjusted. If it breaks its word frequently, however, it will lose credibility. The private sector will cease to pay attention to the government's promises; it will start to base its expectations on the actual growth rate of the money supply, not the rate that the government keeps promising. The inflation rate will rise, and the rapid growth rate of the money supply will serve merely to validate the higher inflation rate. It will no longer stimulate output and employment.[15]

The argument, however, depends on three assumptions: (1) the private sector makes binding decisions about wages and prices; (2) the government can and should make promises about its own behavior to facilitate planning by the private sector; and (3) the "game" played by the government vis-à-vis the private sector is the only game in town.

The assumption about binding private sector decisions is unexceptional. In fact, the resulting stickiness of wages and prices is one basic reason for wanting to stabilize nominal exchange rates. The case for predictable behavior by governments is equally hard to challenge in principle but has to be qualified carefully. Governments may need to keep markets guessing by creating uncertainty about their tactics; they need short-term flexibility, which is not

necessarily incompatible with medium-term predictability. Furthermore, governments cannot be rigidly predictable in an uncertain world. If they were the only source of uncertainty facing the private sector, governments could produce economic stability by being perfectly predictable. When governments and the private sector are *both* plagued by uncertainties, the rigid pursuit of predictable policies can cause instability.[16] But the third feature of the Barro-Gordon (1983) model is far too restrictive. Governments play many games simultaneously, including the all-important political game. If a government cheats on any other player, all of them can punish it. In fact, they can choose a new government at the next election. In the international context, moreover, governments can commit themselves rather firmly because the costs of cheating are very high. A government that breaks its promises to other governments cannot make more bargains with them. This consideration is particularly important for the major industrial countries, which have to cooperate not only in macroeconomic matters but in many economic, political, and strategic domains.[17]

Governments try to refrain from making commitments they cannot expect to honor and try to honor those they make:

> If we take seriously the claim that policy-makers in an anarchic world are constantly tempted to cheat, certain features of the [1978] Bonn story—certain things that did *not* happen—seem quite anomalous. We find little evidence that the negotiations were hampered by mutual fear of reneging. For example, even though the Bonn agreement was negotiated with exquisite care, it contained no special provisions about phasing or partial conditionality that might have protected the parties from unexpected defection. Moreover, the Germans and the Japanese both irretrievably enacted their parts of the bargain in September [1978], more than six months before [President Carter's] action on oil price decontrol and nearly two years before decontrol was implemented.
>
> Once the Germans and Japanese had fulfilled their parts of the bargain, the temptation to the President to renege should have been overpowering, if the standard account of international anarchy is to be believed. Moreover, the domestic political pressure on him to renege was clearly very strong. But virtually no one on either side of the final decontrol debate dismissed the Bonn pledge as irrelevant. (Putnam and Henning 1986, 100)

But these results seem natural enough when we treat the Bonn bargain as an exercise in regime-preserving coordination and bear in mind the complex and continuing relationships among the participating governments. Each stood to gain from its own "concessions" as well as those of its partners, and each was concerned to preserve its reputation for reliability. In President Carter's own words, "Each of us has been careful not to promise more than he can deliver" (Putnam and Henning 1986, 100).

2.4.2 Disagreements about Economic Behavior

Governments *do* disagree about economic behavior. German and American governments have disagreed for years about the responsiveness of unemploy-

ment to aggregate demand and even about the way that aggregate demand responds to fiscal and monetary policies. For a time, moreover, U.S. officials denied that there was any connection between the American budget and trade deficits, while other governments connected them simplistically, without leaving enough room for the role of the exchange rate.[18] But economists disagree in turn about the way that disagreements among governments affect policy coordination.

Frankel and Rockett (1988) have tried to show that misperceptions about economic behavior can lead to welfare-worsening policy bargains. They use ten large multicountry models to represent U.S. and European views about economic behavior and assume that each party uses its own model to measure the welfare effects of striking a bargain with the other. The governments do not exchange information. Instead, they engage in policy barter, agreeing to coordinate their policies whenever each government's own calculations lead it to believe that coordination will be beneficial, given its own model and objectives.

After they have taken the governments through the bargaining process and know the new settings of the policy instruments, Frankel and Rockett ask what will happen to each country, using the "true" model of the world economy. Because they must measure the effects of every bargain using all ten models, they must analyze 100 potential bargains and 1,000 possible outcomes. They find that the United States gains in 494 cases, loses in 398, and is unaffected in the remaining 108, while Europe gains in 477 cases, loses in 418, and is unaffected in the remaining 105. The parties' "success rates" are about 60 percent.

These are interesting results, but they must be interpreted cautiously. Frankel (1988, 27) himself concludes that "ministers in Group of 7 and Summit meetings might do better to discuss their beliefs directly rather than telling the others how to adjust their policies." But that is what governments have been doing all along, and there is a simple way to represent the outcome.

Suppose as before that each government believes in one model and also knows the other's model. If it is not perfectly confident about the rightness of its views, prudential considerations should lead it to ask how a policy bargain would affect its welfare on the working supposition that the other government is using the right model; it should not strike a bargain unless it can expect to gain under both governments' models. If it wants to persuade its partner to accept its own proposals, an important part of the actual bargaining process, reputational considerations should lead it to make sure that its own proposals would raise its partner's welfare under both governments' models. These concerns, taken together, impose a strong condition on the bargaining process. It should not even start unless both governments can expect to gain under both governments' models.

Holtham and Hughes Hallett (1987) came to this conclusion by a different route and applied the strong condition to the Frankel-Rockett (1988) bargains.

They used six models, not ten, and had thus to analyze thirty-six possible bargains.[19] But they ruled out twenty of those bargains because they violated the strong condition. (Three were ruled out because Europe would be worse off on the U.S. view of the world, eight because the United States would be worse off on the European view, and the other nine because both sides would be worse off on the other's view.) This leads me to my first conclusion: disagreements about economic behavior can be a major obstacle to policy-optimizing coordination. They can keep governments from getting together. But Holtham and Hughes Hallett went on to measure the welfare effects of the other sixteen bargains and found that the success rate was quite high. It was 73 percent for the United States and 83 percent for Europe.[20] This leads to my second conclusion: when prudential and reputational considerations block bargains that should not take place, policy coordination is not very dangerous to the participants' health.

It would be hard to conduct this sort of exercise for an instance of regime-preserving coordination. But one would expect the same sort of result. When governments disagree about the workings of the world economy, they are bound to hold different views about the costs of policy coordination, even when they agree completely about the benefits. Suppose that two governments are considering the use of interest rate policies for exchange rate stabilization. If they hold different views about the way that interest rates affect aggregate demand, they will also disagree about the costs of exchange rate stabilization.

Disagreements about economic behavior may be very potent in blocking this sort of coordination. When governments are willing to contemplate policy-optimizing coordination, it must be because they believe that a suitable policy bargain will allow them to make welfare-improving changes in their own national policies. When they are made to contemplate regime-preserving coordination, they may still believe that their national policies continue to be optimal and will thus want their partners to make the policy changes required for the common good.

2.4.3 Disagreements about Policy Objectives

The same possibility arises when governments have different policy objectives—the third in the list of reasons for the scarcity of coordination. In fact, such differences cannot explain why governments fail to engage in policy-optimizing coordination. On the contrary, they make it more attractive.

An example drawn from Eichengreen (1985) illustrates this point. Indeed, it makes a stronger point. Governments that have incompatible objectives can nevertheless benefit from policy-optimizing coordination.

Consider two identical economies with rigid wage rates and greedy governments. Each government wants to hold three-quarters of the global gold stock. If they pursue their targets independently, raising their interest rates competitively to attract capital inflows and gold, they will wind up with identical gold stocks but high unemployment rates. There are two ways to deal

with this outcome. The two governments can agree to reduce their interest rates without even talking about their targets. That is the sort of policy barter that many economists have in mind when they talk about policy-optimizing coordination. Alternatively, the governments can reveal and modify their policy targets. But what if they reveal them and refuse to modify them? That is when conflicts or differences in targets obstruct coordination.

This case is too simple to take seriously—or is it? It does not differ from the case in which governments pursue incompatible current account targets, and they seem to do that frequently. It does not differ from the case in which they attach different weights to different targets, including the common or collective targets that they can achieve only at some cost in terms of their domestic targets. When collective targets are at issue, moreover, debates about objectives are unavoidable. The aims of the exercise have to be identified, and differences in preferences are bound to surface. When governments engage in policy barter, they can agree on means without discussing ends. When they engage in mutual persuasion—which is what normally happens—it is hard to agree on means without agreeing on ends.

2.4.4 Political and Constitutional Constraints

The fourth reason for the shortage of coordination applies to both varieties. Once again, however, it provides a more compelling explanation for the scarcity of regime-preserving coordination. There are political and constitutional obstacles to every sort of international cooperation, but they are hardest to surmount when the costs are clear and close to home and the benefits are not.

The political obstacles to policy coordination have been dramatized by the budgetary problems of the United States. How can the United States engage in international bargaining about fiscal policies when congressional leaders can say that the president's budget is "dead on arrival" on Capitol Hill? In the last days of World War I, the German general staff was said to believe that the situation was serious but not hopeless, while the Austrian general staff thought that it was hopeless but not serious. The Viennese view may be more appropriate here. The budgetary deadlock of the 1980s does not signify permanent paralysis. Nor should we neglect the political problems faced by other major countries in making and adjusting fiscal policies:

> The political system in Japan has traditionally restrained the powers of the Prime Minister to a far greater degree than the U.S. constitution limits the power of the American President. Always conscious of factional politics, the Prime Minister must answer to "policy tribes" which are groups of politicians committed to one-dimensional special interests. The Prime Minister must also placate vast armies of bureaucrats, not always from a position of strength. In Japan, it has often been said, politicians reign, but bureaucrats rule. (Funabashi 1988, 91)

The German situation is similar for different reasons:

> Although the ruling coalition has no difficulty in obtaining sufficient parliamentary support for its taxing and spending priorities, in practice its

> control over fiscal policy is undermined by the following two factors. First, since the 1970s . . . the SPD has received control of the Ministry of Finance, while the FDP has staffed the Ministry of Economics, an arrangement that has weakened the federal government's ability to undertake comprehensive or drastic measures. Second, the federal government controls less than 50 percent of public investment, and only about 15 percent of the nation's total public spending and investment, the remainder coming from the *land* and local governments. (Funabashi 1988, 117)

There is, of course, a fundamental difference between these situations and the U.S. situation. Once the German and Japanese governments have decided to make a policy change, they can commit themselves formally, and the U.S. government cannot, because it cannot commit the Congress. But the record is not so very bad. President Carter was careful not to promise more than he could deliver—and he did deliver eventually. In another context, moreover, the White House obtained in advance a promise of rapid congressional action on the trade policy bargain produced by the Tokyo round of GATT negotiations—the "fast track" that Congress would follow in agreeing to accept or reject those parts of the bargain requiring new legislation. The Bush administration should perhaps propose a similar standby arrangement in the fiscal policy package it takes to Capitol Hill to break the budgetary deadlock.

The basic problems are political, not constitutional. No democratic government can make major policy changes without working hard to persuade the public that the new policies will be better than the old, if not indeed the best of all possible policies. When the time comes to coordinate policies, "Each national leader already has made a substantial investment in building a particular coalition at the domestic [game] board, and he or she will be loath to construct a different coalition simply to sustain an alternative policy mix that might be more acceptable internationally" (Putnam and Bayne 1987, 11). In brief, fiscal policies are not very flexible in any democracy, regardless of its constitution.

Policy coordination is made more difficult by jurisdictional divisions within governments. The problem is most serious on the monetary side, especially in Germany and the United States which have independent central banks. Here again, however, constitutional arrangements matter less than political realities, and independent central banks maintain their independence by being extremely astute politically. They cannot permit politicians to precommit them or to take their consent for granted, and they can be expected to make their views known, privately or publicly. Once they have given their consent, however, they are apt to be very reliable partners, because credibility is their most important asset. Furthermore, they rely on each other to protect their independence. On a number of recent occasions, central banks have refused to make interest rate changes until they could be sure that foreign central banks were ready to move with them.[21]

Finally, monetary policies can be altered rapidly and incrementally, without building a new political consensus. That is why a change in monetary policy is usually the first signal of a change in official thinking about the economic outlook. Therefore, monetary policies can be coordinated more deftly than fiscal policies, despite jurisdictional divisions in some countries.

2.5 The Framework for Policy Coordination

Rigidities in making fiscal policies and differences of view about the ways in which they work are probably sufficient to account for the apparent scarcity of policy-optimizing coordination—why governments fail to exploit all of the potential gains. They may even account for a more important failure. Quantitative studies of policy coordination have to start with a benchmark—the counterpart of the noncooperative equilibrium. They must therefore define fully optimal policies for each government acting unilaterally, and this is an instructive exercise. The welfare gains obtained by optimizing policies are often larger than the gains obtained thereafter by moving from noncooperative to cooperative policies. Dealing with policy coordination between the United States and Europe, Hughes Hallett (1987) obtains these welfare measures:

Simulation	United States	Europe
Baseline	466.2	346.2
Noncooperative	103.6	81.3
Cooperative	96.2	55.8

These are loss-function calculations, measuring the welfare costs of the governments' failure to reach their targets, so reductions are good things. But the biggest reductions occur on the way from the actual (baseline) situation to optimal noncooperative policies, not from noncooperative to cooperative (coordinated) policies. Political and institutional rigidities combine with the uncertainties of the real world to interfere with any sort of optimization, let alone optimal coordination.

The same rigidities and disagreements also help to account for the apparent scarcity of regime-preserving coordination, and disagreements about targets are important too. They combine to produce disagreements about burden sharing. But disagreements of this sort are more readily susceptible to resolution than those which arise when one government tries to tell another how to pursue its own self-interest. For this reason, if no other, we can perhaps be optimistic about the prospects for the sorts of policy coordination required to support exchange rate management.

What sorts of coordination are needed? The Williamson-Miller (1987) framework supplies an appropriate starting point. Intervention and interest rate

differences would be used to stabilize exchange rates, while the global average of real interest rates and national fiscal policies would be used to regulate nominal expenditure. Conflicts between external and internal balance would be reconciled in the usual way, by periodic adjustments in real exchange rates. This is a far more sensible assignment than the one proposed by McKinnon (1988), who believes that fiscal policies should regulate current account balances because real exchange rates do not affect them, that the global money supply should be used to control the global price level, and that nonsterilized intervention should keep nominal exchange rates in line with purchasing power parity. Fiscal policies cannot control current account balances without imposing unemployment on deficit countries and inflationary pressures on surplus countries. They may be needed to validate changes in real exchange rates but cannot replace them.[22]

Yet the Williamson-Miller (1987) framework fails to address some difficult issues. While monetary policies must be coordinated closely to influence capital flows and offset expectations of exchange rate realignments, they cannot be assigned to that task exclusively, nor can fiscal policies be assigned exclusively to managing nominal demand. On the one hand, fiscal policies affect current account balances and, therefore, the size of the task faced by monetary policies. On the other hand, fiscal policies cannot be adjusted frequently enough to stabilize aggregate demand. Monetary policies must do some of the work that fiscal policies could do if they were more flexible, and exchange rate changes must do the rest.

It is important to distinguish between exchange rate management and the rigid defense of pegged exchange rates within very narrow bands. In my own view, the bands should be hard but wide and should be adjusted frequently to rectify disequilibria, including those that result from rigid fiscal policies. It is also important to distinguish between fiscal differences and fiscal shocks. International differences in fiscal policies do not necessarily destabilize exchange rates. They have not done so in the EMS, even though they continue to be quite large (see Gros and Thygesen 1988, 7). In fact, differences in fiscal policies can compensate for differences in national savings rates that would otherwise produce current account imbalances. The lessons to be learned from the 1980s relate to the effects of large fiscal shocks, which are bad news indeed, and the framework for multilateral surveillance currently being developed by the G-7 governments should focus very sharply on that problem.

Appendix

This appendix presents the model used to derive the results reported in the text. The model contains two countries, the U.S. and EC, but is written entirely in U.S. dollar terms. All nominal variables are dollar denominated except those

with primes and those pertaining to the EC bond (F, F^c, etc.) which are denominated in EC ecu. The subscripts 1 and 2 denote U.S. and EC variables respectively; asterisks denote long-run values and exogenous shifts in demands for goods and assets.

The U.S. Economy

U.S. households hold U.S. money, U.S. bonds, and EC bonds. Their wealth is

$$W_1 = L_1 + B_1 + \pi F_1, \tag{1}$$

where W_1 is U.S. wealth, L_1 and B_1 measure U.S. holdings of U.S. money and bonds, F_1 measures U.S. holdings of EC bonds denominated in ecu, and π is the exchange rate in dollars per ecu. (An increase in π is a depreciation of the dollar.) The time path of U.S. wealth is

$$(dW_1/dt) = S_1 + F_1(d\pi/dt), \tag{2}$$

where S_1 is U.S. saving, and the last term measures the capital gain conferred by a depreciation of the dollar.

The U.S. money supply is

$$L_1 = B^c - R, \tag{3}$$

where L_1 is the money supply, B^c is the central bank's holdings of U.S. bonds, and R measures its reserve liabilities to the EC central bank. (An increase in B^c reflects an open market purchase by the U.S. central bank; an increase in R reflects nonsterilized intervention in the foreign-exchange market—a dollar purchase by the U.S. or EC central bank to keep π from rising.)

The supply of dollar bonds can change only gradually as the U.S. government runs a budget deficit or surplus. The market-clearing equation for the U.S. bond is

$$B = B_1 + B_2 + B^c, \tag{4}$$

where B_1 and B_2 are the quantities held by U.S. and EC residents and B^c is the quantity held by the U.S. central bank. The evolution of B is governed by a stylized fiscal policy:

$$(dB/dt) = g(B^* - B),\ 0 < g < 1. \tag{5}$$

The U.S. government chooses a target level of debt, B^*, and runs a budget deficit or surplus until target and actual debt levels are equal. The government cuts taxes to run a deficit, then rescinds the tax cut gradually to satisfy equation (5). The government's budget is

$$(6)\quad g(B^* - B) = G_1 + r_1B - T_1 - T_{12} - r_1B^c,\ T_{12} = r_1B_2 - r_2\pi F_1,$$

where G_1 is the government's spending on U.S. and EC goods, r_1 and r_2 are the interest rates on U.S. and EC bonds, T_1 is the lump sum tax that the government adjusts continuously to run the desired surplus or deficit, and T_{12} is an intergovernmental transfer payment from the EC to the U.S. that removes all interest income terms from the definitions of the current account balance and disposable income.

The demand for money by U.S. households is defined with reference to the value of U.S. output and varies inversely with the U.S. interest rate around $\bar{r}$, its initial level:

$$(7)\quad L_1 = (1/v)\text{Exp}[-\delta_1(r_1 - \bar{r})]p_1Q_1,\ \delta_1 > 0,$$

where Q_1 is U.S. output and p_1 is its price. The demand for the EC bond by U.S. households is defined with reference to U.S. wealth and varies with the difference between U.S. and EC interest rates:

$$(8)\quad \pi F_1 = \beta_1\text{Exp}[-\tfrac{1}{2}\phi(r_1 - r_2)]W_1,\ 0 < \beta_1 < 1,\ \phi > 0.$$

The demand for the U.S. bond by U.S. households is defined residually by equations (1), (7), and (8).

Saving depends on the difference between desired and actual wealth:

$$(9)\quad S_1 = s(W_1^* - W_1),\ 0 < s < 1.$$

Desired wealth, in turn, depends on the domestic interest rate and on disposable income:

$$(10)\quad W_1^* = \alpha\text{Exp}[\Theta_1(r_1 - \bar{r})]Y_1^d,\ 0 < s\alpha < 1,\ 0 < \Theta_1 < \phi.$$

The term $s\alpha$ is the marginal propensity to save out of disposable income (and must thus lie between zero and unity); the restriction on Θ_1 puts a lower bound on capital mobility. Disposable income is

$$(11)\quad Y_1^d = p_1Q_1 + r_1B_1 + r_2\pi F_1 - T_1 = p_1Q_1 - G_1 + g(B^* - B),$$

where equation (6) has been used to replace the lump sum tax T_1.

Households and the government have identical preferences with regard to goods, and a_1 measures the share of the EC good in total U.S. spending. Therefore,

$$(12)\quad p_1c_{11} = (1 - a_1)(Y_1^d - S_1 + G_1),\ p_2c_{21} = a_1(Y_1^d - S_1 + G_1).$$

On these same assumptions, the U.S. consumer price index is

(13) $$q_1 = p_1^{1-a_1} p_2^{a_1}.$$

Finally, the market-clearing equation for the U.S. good is

(14) $$Q_1 = c_{11} + c_{12},$$

where c_{12} is the quantity of the U.S. good imported by the EC for household and government consumption.

The EC Economy

It is not necessary to write out all of the EC equations, since they resemble their U.S. counterparts. The equations for EC wealth, however, look different because they are written in terms of the dollar (the foreign currency) rather than the ecu:

(1′) $$W_2 = \pi(L_2' + F_2) + B_2,$$

(2′) $$(dW_2/dt) = S_2 + (L_2' + F_2)(d\pi/dt),$$

where W_2 is EC wealth, L_2' and F_2 measure holdings of EC money and bonds in ecu, B_2 measures holdings of U.S. bonds in dollars, and S_2 is EC saving in dollars. The supplies of the two ecu assets are given by

(3′) $$L_2' = F^c + (1/\pi)R,$$

(4′) $$F = F_1 + F_2 + F^c,$$

(5′) $$(dF/dt) = g(F^* - F),$$

where F, F^c and F^* play the roles that B, B^c, and B^* played in the U.S. equations. The EC budget equation is

(6′) $$g(F^* - F) = G_2' + r_2 F - T_2' + (1/\pi)T_{12} - r_2 F^c,$$

where G_2' and T_2' play the roles that G_1 and T_1 played in the U.S. budget equation. The EC demands for money and the U.S. bond are

(7′) $$L_2 = (1/v)\mathrm{Exp}[-\delta_2(r_2 - \bar{r})]p_2 Q_2$$

(8′) $$B_2 = \beta_2 \mathrm{Exp}[\tfrac{1}{2}\phi(r_1 - r_2)]W_2$$

The EC demand for the EC bond is defined residually. The remaining EC equations, for saving, desired wealth, disposable income, levels of EC spending on the U.S. and EC goods, and the consumer price index, are identical to their U.S. counterparts, equations (9) through (13), apart from

subscripts. The market-clearing equation for the EC good is made redundant by Walras's Law.

Strategic Simplifications

Four conditions are imposed on the initial situation. Prices are normalized at unity ($p_1 = p_2' = \pi = 1$, so that $p_2 = \pi p_2' = q_1 = q_2 = \pi q_2' = 1$). Interest rates are equalized ($r_1 = r_2 = \bar{r}$). Net reserves are zero ($R = 0$). Both economies start in a stationary state ($S_1 = S_2 = 0$, $B^* = B$, and $F^* = F$), so trade is balanced initially ($p_1 c_{12} = p_2 c_{21}$).

Two restrictions are imposed on economic behavior. Each country's spending is biased toward its own home good, so that $a_1 < \frac{1}{2}$ and $(1 - a_2) < \frac{1}{2}$, where a_1 and a_2 are the shares of the EC good in U.S. and EC spending, espectively. When the U.S. and EC interest rates are equal, as they are to start, the share of the foreign-currency asset in each country's wealth is equal to the share of the imported good in that country's spending, so that $\beta_1 = a_1$ and $\beta_2 = (1 - a_2)$.

Finally, outputs and levels of government spending are the same in the U.S. and EC ($Q_1 = Q_2 = Q$, and $G_1 = G_2' = G$), and all behavioral parameters are the same ($\delta_1 = \delta_2 = \delta$, and $\Theta_1 = \Theta_2 = \Theta$). Under these assumptions, moreover, $W_1 = W_2$, and $a_1 = (1 - a_2) = a$, because trade is balanced initially.

The model is solved for the short-run and long-run effects of six disturbances: open market purchases of the domestic bond in the U.S. and EC ($dB^c > 0$ and $dF^c > 0$), a permanent shift by U.S. or EC households from the EC bond to the U.S. bond ($dB_2^* > 0$), a permanent shift in U.S. or EC spending from the U.S. good to the EC good ($dc_2^* > 0$), permanent increases in government spending in the U.S. and EC matched by increases in lump sum taxes ($dG_1 > 0$ and $dG_2' > 0$), permanent increases in desired wealth causing temporary increases in saving ($dW_1^* > 0$ and $dW_2^* > 0$), and temporary tax cuts in the U.S. and EC causing permanent increase in stocks of debt ($dB^* > 0$ and $dF^* > 0$). As prices are sticky in both countries, p_1 and p_2' are held at unity to obtain the short-run solutions, but Q_1 and Q_2 vary. As outputs return eventually to their natural levels, Q_1 and Q_2 are held at their initial levels to obtain the long-run solutions, but p_1 and p_2' vary.

The Short-Run Solutions

The pegged rate solutions are obtained by holding π at unity and allowing R to vary:

$$(15)\quad dR = (1/H)\{aW\phi[n(vdB^c - vdF^c) - (1 - 2a)(dx_1 - dx_2) + 2dc_2^*] - [s(1 - 2a)W\Theta + nQ\delta]dB_2^*\},$$

where

$$
\begin{aligned}
H &= s(1 - 2a)J + 2a(Q\delta + nvW\phi),\\
n &= 2a + s\alpha(1 - 2a),\\
J &= W\Theta + \alpha Q\delta,\\
dx_1 &= s(\alpha dG_1 - dW_1^*) + (1 - s\alpha)gdB^*,\\
dx_2 &= s(\alpha dG_2' - dW_2^*) + (1 - s\alpha)gdF^*.
\end{aligned}
$$

An open market purchase of domestic bonds reduces the reserves of the country involved; so do the two forms of fiscal expansion and a permanent fall in desired wealth (a temporary decrease in household saving). A switch in demand to the U.S. bond raises U.S. reserves. A switch in demand to the EC good raises EC reserves.

The changes in outputs are

$$
\begin{aligned}
(16)\quad dQ_1 = {} & (1/H)(1/J)\{[H_1 v dB^c + H_2 v dF^c + v(H_1 - H_2)dB_2^*]\\
& + (1/s)(M_1 dx_1 + M_2 dx_2) - J[(Q\delta + 2avW\phi)dc_2^* - H_f d\tilde{\pi}]\},
\end{aligned}
$$

$$
\begin{aligned}
(16')\quad dQ_2 = {} & (1/H)(1/J)\{[H_1 v dF^c + H_2 v dB^c - v(H_1 - H_2)dB_2^*]\\
& + (1/s)(M_1 dx_2 + M_2 dx_1) + J[(Q\delta + 2avW\phi)dc_2^* - H_f d\tilde{\pi}]\},
\end{aligned}
$$

where

$$
\begin{aligned}
H_1 &= [s(1 - 2a)J + a(Q\delta + nvW\phi)]W\Theta,\ H_2 = a(Q\delta + nvW\phi)W\Theta,\\
M_1 &= s(1 - 2a)J(Q\delta + avW\phi) + aQ\delta\,(Q\delta + nvW\phi),\\
M_2 &= a[Q\delta(Q\delta + 2avW\phi) - s(1 - 2a)W\Theta(vW\phi)],\\
H_f &= a[(Q\delta + 2avW\phi)U_f + 2v(1 - a)Ws(1 - 2a)W\Theta],\\
U_f &= Q + s(1 - 2a)W.
\end{aligned}
$$

These effects are unambiguous, with one exception noted shortly. An open market purchase of the domestic bond raises both countries' outputs but raises domestic output by more than foreign output ($H_1 > H_2$). Both forms of fiscal expansion raise domestic output but can raise or lower foreign output, and a reduction in desired wealth has the same effects. A switch in demand to the U.S. bond raises U.S. output and reduces EC output, and a switch in demand to the EC good has the opposite effects. The final terms in equations (16) and (16′) describe the effects of a once-for-all devaluation of the dollar, which raises U.S. output and reduces EC output.

The floating rate solutions are obtained by holding R at zero and allowing π to vary:

$$
(17)\qquad d\pi = (1/a)(A/U)dR,
$$

where dR is the vector of changes in reserves given in equation (15), and

$$U = 2\{(1 - a)[s(1 - 2a)J + 2aQ\delta] + a\phi U_f\}.$$

These effects are unambiguous, because those in equation (15) were unambiguous. The dollar depreciates under a floating rate whenever U.S. reserves would fall under a pegged rate.

The changes in outputs are

$$(18) \quad dQ_1 = (1/U)\{(1/J)[U_1 v dB^c - U_2 v dF^c - (1/W)JQ\delta U_f dB_2^*] + (1/J)(1/s)Q\delta[V_1 dx_1 + V_2 dx_2] - 2Q\delta(1 - a)dc_2^*,$$

$$(18') \quad dQ_2 = (1/U)\{(1/J)[U_1 v dF^c - U_2 v dB^c + (1/W)JQ\delta U_f dB_2^*] + (1/J)(1/s)Q\delta[V_1 dx_2 + V_2 dx_1] + 2Q\delta(1 - a)dc_2^*\},$$

where

$$U_1 = 2(1 - a)W\Theta[s(1 - 2a)J + aQ\delta] + a(J + W\Theta)\phi U_f,$$
$$U_2 = aQ\delta[\alpha\phi U_f - 2(1 - a)W\Theta],$$
$$V_1 = 2(1 - a)[s(1 - 2a)J + aQ\delta] + a\phi U_f,$$
$$V_2 = a[2(1 - a)Q\delta + \phi U_f].$$

These terms are unambiguous (even U_2, as $\phi > \Theta$). An open market purchase of the domestic bond raises domestic output but reduces foreign output. Both forms of fiscal expansion raise both outputs, as does a permanent fall in desired wealth. A switch in demand to the U.S. bond reduces U.S. output and raises EC output, and a switch in demand to the EC good has the same effects.

The Long-Run Solutions

These are the long-run solutions for the pegged rate case:

$$(19) \quad dR = (1/2N)\{[(1 - 2a)W\Theta + 2aW\phi](vdB^c - vdF^c) - 2(Q\delta)dB_2^* + Q\delta[(1 - 2a)(\alpha dG_1 - dW_1^*) - (1 - 2a)(\alpha dG_2' - dW_2^*) + (dB^* - dF^*)] + [(1 - 2a)J + 2aW\phi](1/a)dc_2^*\},$$

where

$$N = v(1 - 2a)W\Theta + 2avW\phi + Q\delta.$$

There is an important difference between the signs of these effects and those in equation (15), pertaining to the short run. In the short run, both forms of fiscal expansion raise the reserves of the country involved, and a permanent fall in desired wealth has the same effect; in the long run, however, they reduce its reserves. The changes in the two price indexes are

$$(20) \quad dq_1 = (1/2JQ)[W\Theta(vdB^c + vdF^c) + Q\delta(dB^* + \alpha dG_1 - dW_1^*) + Q\delta(dF^* + \alpha dG_2' - dW_2^*)] - (1/2Q)(1 - 2a)(1/a)dc_2^* + (1/2)d\bar{\pi},$$

$$(20') \quad dq_2' = (1/2JQ)[\ \ldots\ ] + (1/2Q)(1 - 2a)(1/a)dc_2^* - (1/2)d\bar{\pi},$$

where the term [. . .] in equation (20′) is identical to the corresponding term in equation (20). A switch in demand to the U.S. bond has no permanent effect on the countries' price levels; it does not appear in equations (20) and (20′). A switch in demand to the EC good drives them apart, raising the EC price level and reducing the U.S. price level, and a devaluation has the opposite effects, but all of the other disturbances raise them by the same amounts.

These are the long-run solutions for the floating rate case:

$$(21) \quad d\pi = (2N/QK)dR,$$

where dR is the vector of changes in reserves given in equation (19) and

$$K = (1 - 2a)J + 2aW(\delta + \phi).$$

The changes in the two price indexes are

$$(22) \quad dq_1 = (1/JQK)\{K_1 vdB^c - K_2 vdF^c - Q\delta J dB_2^* + JK_0 dc_2^* + Q\delta[(1 - 2a)J + aW(\delta + \phi)](dB^* + \alpha dG_1 - dW_1^*) + aQ\delta[W(\delta + \phi) - J]dF^* + aQ\delta W(\delta + \phi)(\alpha dG_2' - dW_2^*)\},$$

$$(22') \quad dq_2' = (1/JQK)\{K_1 vdF^c - K_2 vdB^c + Q\delta J dB_2^* - JK_0 dc_2^* + Q\delta[(1 - 2a)J + aW(\delta + \phi)](dF^* + \alpha dG_2' - dW_2^*) + aQ\delta[W(\delta + \phi) - J]dB^* + aQ\delta W(\delta + \phi)(\alpha dG_1 - dW_1^*)\},$$

where

$$K_1 = W\Theta[(1 - 2a)J + aW(\delta + \phi)] + (aW\phi)J,$$

$$K_2 = aW\delta(\alpha Q\phi - W\Theta),$$

$$K_0 = (1 - 2a)\alpha\delta G + aW(\delta + \phi).$$

An open market purchase of the domestic bond raises the domestic price level and reduces the foreign price level (as $\phi > \Theta$). A temporary tax cut causing a permanent increase in debt raises the domestic price level but can raise or lower the foreign price level. A balanced budget increase in government spending raises both price levels, as does a permanent fall in desired wealth. A switch in demand to the U.S. bond reduces the U.S. price level and raises

the EC price level, and a switch in demand to the EC good has the opposite effects.

The Bliss-Point Shifts

To obtain the countries' bliss-point shifts, we would set $dQ_1 = dQ_2 = dq_1 = dq_2' = 0$ and solve the appropriate output and price equations for the requisite changes in B^c and F^c. Under a pegged exchange rate, for example, equations (16) and (20) would be solved for the U.S. bliss-point shifts, and equations (16′) and (20′) would be solved for the EC bliss-point shifts. This is laborious and not really necessary. It is simpler to set $dQ_1 = dQ_2$ and solve the appropriate output equations for the changes in B^c and F^c that stabilize Q_1 and Q_2. These will represent common bliss-point shifts if it can be shown that $dq_1 = d_2' = 0$ when the changes in B^c and F^c are inserted in the price equations.

Here is the simplest illustration. With a switch in demand from the EC bond to the U.S. bond ($dB_2^* > 0$) and a pegged exchange rate, equations (16) and (16′) say that $dB^c = -dF^c = dB_2^*$ will stabilize both countries' outputs. But the switch in demand does not affect price levels, and when $dB^c + dF^c = 0$, equations (20) and (20′) say that $dq_1 = dq_2' = 0$. Therefore, the bliss points shift together. But the changes in B^c and F^c that stabilize Q_1 and Q_2 with a floating exchange rate, obtained from equations (18) and (18′), do not stabilize q_1 and q_2' when used in equations (22) and (22′).

The same results obtain with balanced budget changes in government spending and changes in desired wealth. They do not obtain in the remaining cases, with temporary tax cuts leading to permanent changes in supplies of debt, and switches in demand between goods. With a U.S. tax cut, for example, outputs are stabilized with a pegged exchange rate when

$$dB^c = -(1/v)(1/W\Theta)(Q\delta + avW\phi)(1/s)(1 - s\alpha)gdB^*,$$

$$dF^c = (1/v)(1/W\Theta)(avW\phi)(1/s)(1 - s\alpha)gdB^*.$$

But these solutions give $dq_1 = dq_2' = -(1/2)\delta(1/s)[(1 - s\alpha)g - s]dB^*$, which goes to zero when $g = s/(1 - s\alpha)$ but not otherwise.

Notes

1. Corden examines these issues in a subsequent paper (Corden 1986), paying particular attention to the interdependence of fiscal policies. He concedes that large countries' budget deficits can have large effects on real exchange rates and interest rates. But he does not depart substantially from his earlier conclusion. Governments should mitigate the adverse effects of their neighbors' policies by making compensatory changes in their own domestic policies rather than rely on agreed rules or procedures to limit or correct fiscal policy differences.

2. In earlier papers (Kenen 1987a, 1987b, 1988b), I used different names for the approaches described in this and the next paragraph, but each attempt to label them ran into difficulties.

3. Similar definitions are used by Bryant (1980, 465), Artis and Ostry (1986, 75) and Frankel (1988, 1). The varieties of cooperation are discussed in Kenen (1987a). Some authors are less emphatic about including commitments about instruments in the definition of coordination. But the concept becomes too elastic without them. At the start of the 1980s, governments firmly agreed to combat inflation but said nothing about the settings of their monetary and fiscal policies, and the outcome was unsatisfactory—huge movements in real exchange rates and in current account balances. No one would want to identify that outcome with policy coordination. In fact, the subsequent revival of full-fledged coordination was partly a reaction to that outcome.

4. Describing the negotiations that led to the Louvre Accord, Funabashi (1988, chs. 5–8) depicts it differently: Japan and the Federal Republic of Germany agreed reluctantly to take new fiscal measures in exchange for a commitment by the United States to help stabilize dollar exchange rates by joint intervention. There were no commitments about monetary policies. This characterization is not wholly accurate. The United States was also pressed to make fiscal policy commitments, and it had agreed to the stabilization of the yen-dollar exchange rate some months before the Louvre Accord (even before Japan agreed to take new fiscal measures). Furthermore, the disagreement about German interest rates that cropped up in October 1987, the "collapse" of coordination to which Feldstein refers, suggests that the Louvre Accord included understandings about interest rate policies, even if there were no formal undertakings.

5. The most recent version of Meade's proposal, developed in Blake, Vines, and Weale (1988), is even more comprehensive than the Williamson-Miller proposal, having a wealth target as well as a GDP target, and it uses a different rule to define the exchange rate target.

6. Following Hamada (1974, 1976), the Nash and Pareto equilibria are usually depicted by reaction curves, as in figure 2.3. These curves appear to say that governments respond directly to changes in other governments' policies. If that were true, however, the Nash equilibrium would degenerate; each government would soon notice that other governments do not stand pat when it alters its own policies. Therefore, reaction curves should be deemed to say that governments respond to the *effects* of their partners' policies. They can then react repeatedly to each others' policies without becoming aware of policy interdependence. For surveys of research on policy-optimizing coordination, see Cooper (1985), Kenen (1987a), and Fischer (1988); on recent theoretical developments, see Oudiz and Sachs (1985).

7. Cooper (1985) and Kindleberger (1986) are prominent among the economists; for the views of political scientists and policymakers, see Putnam and Bayne (1987, ch. 1), and the sources cited there. Paul Krugman has persuaded me that the policy-optimizing framework can be used to represent regime-preserving coordination by including the international public good in the governments' welfare functions. That, indeed, is done in some recent papers; a measure of exchange rate variability is included in the governments' loss functions to represent their collective interest in exchange rate stability. I still believe, however, that the regime-preserving approach is sufficiently different in its implications to justify the sharp distinction drawn in this paper.

8. It is still necessary to decide what should be done with one country's money supply or with the global money supply. In many representations of pegged rate regimes, that decision is left to a single country (the United States in the Bretton Woods system and Germany in the EMS); McKinnon (1984) would handle the problem collectively, as would Williamson and Miller (1987), who would use the global money supply to manage the average short-term interest rate (see fig. 2.1). This is the fundamental issue

facing the designers of a European central bank. The question of substitutability, central to the functioning of policy coordination under pegged exchange rates, is also central to the functioning of official intervention in foreign-exchange markets; see Marston, ch. 6 in this volume.

9. Other economists have suggested or used the same basic approach. Buiter and Eaton (1985) show that Nash and Pareto equilibria are both bliss-point equilibria when policy targets and instruments are equal in number; Giavazzi and Giovannini (1986) anticipate my approach to the ranking of exchange rate regimes but do not carry it out; Turnovsky and d'Orey (1986) adopt the same strategy but deal only with temporary disturbances.

10. The size of the bliss-point shift does not depend on the particular shape of the ellipse in figure 2.2 (on the preferences of the U.S. government); it depends only on the slopes of the BB and FF curves (on the structures of the U.S. and EC economies).

11. See, for example, Dominguez (1986), Frankel and Froot (1986, 1987), and Krugman (1989); recent research on this issue is surveyed by Dornbusch and Frankel (1987).

12. This theme is developed by Krugman (1989), drawing partly on work by Dixit (1989) concerning the effects of uncertainty about the future exchange rate. A firm that has made the investment required to enter a market may decide to remain in that market even when the exchange rate turns against it, even though it cannot cover its variable costs, if the firm is sufficiently uncertain about the permanence of the new exchange rate. Conversely, a firm that has left a market may decide not to make the investment required to reenter it when the exchange rate moves in its favor. For more on the allocational effects of the exchange rate swing, see Marris (1987, 54–60).

13. These tendencies would have developed even under existing institutional arrangements, which automatically sterilize the effects of foreign official intervention on the U.S. money supply (and likewise sterilize the effects of U.S. intervention when conducted by the U.S. Treasury rather than the Federal Reserve); see Kenen (1988a, ch. 5). To prevent the dollar from appreciating, foreign official institutions would have been forced to sell dollars and thus to sell the U.S. government securities in which they invest their dollar reserves. To prevent U.S. interest rates from rising sharply under the influence of those sales and thus enlarging the capital inflow to the United States, the Federal Reserve System would have been compelled to undertake open market purchases of government securities, and these would have raised the U.S. money supply. Furthermore, foreign central banks could not have sterilized the domestic money-supply effects of their own and U.S. intervention without reducing their interest rates and thus enlarging the capital flow. These monetary effects of exchange rate management have also been cited by Frenkel (1987) and Dornbusch (1988) in criticizing McKinnon's rules for exchange rate management and by Williamson and Miller (1987) in defending their own proposals from those, like myself, who favor tighter arrangements.

14. In this case, however, the current account deficit would have been smaller, and interest rates might have risen in the United States, in order to crowd out domestic investment and thus make room for the budget deficit.

15. Taken to its logical conclusion, the Barro-Gordon model restates the basic proposition of the "new" macroeconomics—that monetary policy cannot affect the real economy—but casts it as a long-run tendency. If a government protects its reputation by keeping its promises, it can never alter output or employment. If it risks its reputation by breaking its word, it will vitiate its ability to surprise the private sector. Rogoff (1985) uses the same basic model to show why international policy coordination can be welfare-worsening, but his results have been challenged by Currie, Levine, and Vidalis (1987) and by Carraro and Giavazzi (1988).

16. Bryant (1987) has made the same point and applied it more generally to the problems of time consistency and reneging. He points out that all policy promises are contingent on forecasts about the state of the world, explicitly or implicitly. It is therefore impossible for anyone to know whether a government is reneging on previous promises or adapting to new circumstances.

17. These considerations are finding their way into the formal literature on policy-optimizing coordination; see Canzoneri and Henderson (1987). But the emphasis is still too narrow; it treats policy coordination as a repeated game but neglects the broad context in which the game is played.

18. Some of these disagreements may really testify to disputes about objectives. It may be more convenient for governments to say "That won't work" than to say "We don't like that." If this is true, however, apparent disagreements about behavior should not interfere with policy-optimizing coordination because disagreements about objectives can actually enhance the gains from that sort of coordination. An illustration follows shortly.

19.Holtham and Hughes Hallett used an early version of the Frankel-Rockett paper, which gave complete results for six models. The final version of the paper shows results that differ appreciably from those in the early version but gives complete results for only four models. It is therefore impossible to update the calculations reported in the text. (When they are updated for the four models shown in tables 4 and 5 of the final version, seven of the sixteen bargains violate the strong condition, and the success rates for the remaining nine approach 75 percent, up from 69 percent for all twenty-four bargains.)

20. These numbers cannot be compared directly to the 60 percent success rate reported by Frankel and Rockett, which covered all ten models. The corresponding rate for the six models used by Holtham and Hughes Hallett was 62 percent.

21. See Funabashi (1988, chs. 2 and 7). But his assessment of monetary cooperation is more critical than mine. He seems to regard the central bankers' silence at certain G-5 meetings as reflecting a reluctance to coordinate their policies. It should perhaps be seen as reflecting their reluctance to endorse the rather ambitious commitments made by finance ministers.

22. See Dornbusch (1988) and Krugman (1989). Simulations by Currie and Wren-Lewis (1988) support this view; feedback rules based on the Williamson-Miller framework do better than rules that use fiscal policies to regulate current account balances and monetary policies to regulate aggregate demand.

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Comment

Richard N. Cooper

The Bretton Woods system can be said to have begun de facto in 1959, when West European currencies first became fully convertible for current account transactions. Before a decade had passed it was under severe pressure, accompanied by widespread calls within the economics profession for its abandonment in favor of some form of flexible exchange rates. Over fifteen years after the inauguration of widespread exchange rate flexibility, in March 1973, there are increasing calls within the economics profession for some form of exchange rate management. Although many economists still favor relatively unmanaged floating, the weight of argument and evidence is shifting away from the conditions that must be met for free floating to be optimal, or even

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superior, to extensive official management of exchange rates, if not outright rigidity.

Peter Kenen has added to the weight of argument. In a simple portfolio-balance model in which assets are imperfect substitutes, Kenen finds that, for three of the five generic disturbances he examines, fixed exchange rates permit national policymakers to achieve their objectives on their own, without formal coordination among countries, whereas freely floating exchange rates do not. For the other two generic disturbances, neither fixed nor floating exchange rates lead to such a result; some coordination of policy among countries will lead to an outcome superior to that arising from decentralized national decision-making. Kenen's results thus scotch the notion, once prevalent among economists, that freely floating exchange rates will generally insulate countries from international influences, especially those arising in the financial sector.

Kenen provides a thoughtful review of the recent literature on policy co-ordination among countries, as well as adding to it, and offers his judgements, with which I generally agree, on a number of points in that literature. First, exchange rate cooperation in the late 1980s among the major countries is not best interpreted in terms of most academic literature on coordination, since that literature typically assumes a policy-optimizing framework for analysis; rather, it should be interpreted in terms of what Kenen calls regime-preservation. Two relevant aspects to those cooperative efforts, not emphasized by Kenen, were the desire in 1985 to push the dollar down sharply in order to protect the liberal trading system by reducing protectionist pressures in the United States, and the desire in 1987 to reestablish some stability in exchange rates on the grounds that significant movements in exchange rates can themselves be a source of disturbance to national economies, what Kenen calls the public goods aspect of exchange rate stability. (It must be said, however, that the Louvre Accord of 1987 resulted in part from Japanese concern that a further sharp rise in the yen from the late 1986 level would put severe adjustment strains on Japanese firms, and an American concern that further sharp depreciation of the dollar would revive inflationary expectations in the United States, both notions that could be encompassed in a policy-optimizing framework.)

Second, the widely cited Frankel-Rockett (1988) simulations on policy coordination under different perceived models of how economies work exaggerate the risks of policy coordination, since those results do not allow for acknowledgement by policymakers that their preferred model might be wrong. The caution that is appropriate to uncertain knowledge would reduce substantially the number of instances in which policymakers would coordinate policies to their own ultimate disadvantage.

Third, the preoccupation in the technical literature with so-called time inconsistency, or the likelihood that governments will renege on commitments previously made, while interesting from a technical point of view, is misplaced.

Governments at any time are playing many "games" and expect to continue doing so in the future. To renege on clear past commitments would compromise their positions in other current and subsequent negotiations. They thus have ample reason—to preserve credibility—for keeping their past commitments unless there are plausible and well-understood reasons for not doing so.

Fourth, disagreements on objectives are probably not a significant obstacle to macroeconomic cooperation among major market-oriented economies; indeed, disagreements on certain kinds of objectives (e.g., current account targets) may substantially enhance the gains from cooperation. Rather, disagreements on the behavioral responses of economies to specified policy actions are a much more serious obstacle to coordination of macroeconomic policies, as indeed was also the case for international cooperation in preventing the spread of contagious diseases until scientific developments resulted in consensus on the etiologies of the important diseases (Cooper 1989).

Kenen's paper does not focus on the debate over the exchange rate regime, but his analysis raises new questions about the desirability of free floating. I would like to take the occasion to go further and reopen an old but still unsettled question concerning the use of nominal exchange rates as either a free endogenous variable in the economy or as a policy tool.

That is perhaps best done by posing an operational question: would it be desirable to depreciate the North German mark against the South German mark? Or should the New England dollar be appreciated against other U.S. dollars? Each of these actions had something to be said for it in 1987 and early 1988. North Germany was relatively depressed, while South Germany was buoyant, yet wages were determined at the national level so that North German wages were too high relative to South German wages. A depreciation of the North German mark could possibly correct for this and stimulate economic activity in the north, while dampening it somewhat in the south.

Similarly, New England in 1987–88 was booming, with house prices and other prices of nontradables rising especially rapidly. The oil and gas regions of the U.S. economy and to a lesser extent the industrial midwest were somewhat depressed. Appreciating the New England dollar against other U.S. dollars, and in particular against the Texas dollar, would redistribute economic activity in a desirable direction.

Since these actions would be generally desirable, why do we not think about them? The answer probably lies in their total political impractability. They run strongly against the national unity that a unified currency area both fosters and symbolizes, and which the Federal Republic of Germany and the United States of America have each established. The proposals are simply too radical, even quixotic.

But I suggest there is another, more analytical reason for not seriously thinking about these changes in exchange rates. To depreciate the North German mark against the South German mark, or to appreciate the Boston dollar against the Dallas dollar, would jar economic relations within each

country badly. It would create a major new source of uncertainty in making contracts and in investing on the basis of future expected demand. Businessmen must worry about the real value of money, but the rate of inflation changes slowly compared with real exchange rates under a system of flexible exchange rates. Movements in exchange rates can wipe out—or double—a 5 percent profit margin in a week. Movements in nominal exchange rates, which as we have learned in recent years do more than simply correct for differential rates of inflation, introduce great uncertainty for prospective investors who are exposed to international—or in this context, interregional—trade. In reaching an overall judgement on the merits of a regime of exchange rate flexibility, the possible negative effects of this uncertainty on investment must be balanced against the occasionally favorable effect of exchange rate flexibility on reducing the costs of adjustment.

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Comment

Stanley Fischer

Peter Kenen argues in this interesting and stimulating paper that much of the policy coordination literature misses the point. Drawing a distinction between policy-optimizing and regime-preserving coordination, he develops the argument that policy coordination in practice is directed mainly to regime preservation, and not to policy optimization.

The distinction between policy-optimizing and regime-preserving coordination is suggestive but elusive. Policy optimization is the standard approach followed in the coordination literature. In that framework, the gains to coordination may be examined under either fixed or floating rates. The analyst would then be able to rank outcomes in a two-by-two matrix, resulting from combinations of coordination versus noncoordination under fixed and floating exchange rates.

Kenen's *analysis* in this paper confines itself to two of the possible four boxes in that matrix, namely those in which countries do not coordinate

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policies. His analysis implies that fixed exchange rates are, in this noncoordinated mode, preferable to floating in the face of three types of shocks (a permanent shift in portfolio preferences between the countries' bonds, a temporary increase in one country's saving rate, and a balanced budget increase in one government's spending) and not clearly worse in the face of two other shocks (a permanent switch in demand for the goods of the two countries and a permanent increase in the stock of bonds in one of the countries). The analysis is carried out in a portfolio-balance-type model with static expectations.

Kenen's conclusion is that fixed exchange rates are preferable to floating rates. He assumes that governments will share this conclusion and that they will therefore engage in policies designed to preserve fixed exchange rates. This behavior, he suggests, is better thought of as cooperative rather than coordinating. He also argues that we should more generally interpret various types of policy coordination or cooperation as resulting from governments' attempts to preserve institutional arrangements that they regard as being on the whole helpful.

The distinction between the choice of regime and the question of whether coordination is preferable within a given regime is worth emphasizing. Decisions about coordination may be necessary in some regimes, but handled automatically in others: for instance, the issue of fiscal policy harmonization has to be negotiated within the European Community, but is handled automatically in the U.S. federal system. Similarly, one of the benefits of a fixed exchange rate system may be that it calls forth automatically the monetary and/or fiscal policies necessary to maintain fixed rates.

Nonetheless, Kenen's analysis does not directly address the important question of how the regime is chosen. He shows that fixed exchange rates are better in some circumstances (namely, with noncoordination, in his model) and then suggests that is why we observe governments cooperating to smooth exchange rates. But why do governments not cooperate, having the best of both worlds by holding exchange rates fixed in response to some shocks and varying them in response to others? The answer must have to do with: the simplicity for the government of carrying out a fixed exchange rate rule compared with the difficulties of coordinating on a more complicated rule; the difficulties of identifying particular shocks; and the effects on expectations of adopting a simple rule.

It is suggested in Kenen's note 7 that the public goods aspect of exchange rate stability could be included in the ordinary policy optimization literature by including exchange rate stability as an argument of the utility function of each government. This is formally true, but it would not make sense to do so unless the conclusion that exchange rate stability is desirable came from some economic or broader political economy analysis rather than being arbitrary.

Beyond the analytics, the paper also presents insightful comments on the literature and on the current debate on policy coordination. In doing so, Kenen

takes issue with the relevance of the Barro-Gordon analysis of dynamic inconsistency to the international context. He suggests that governments do not renege on agreements they have reached with other governments, using the Bonn Economic Summit Agreement as an example. While governments are reluctant to renege on formal agreements, it appears that the U.S. government has held out the prospect of a reduction in its fiscal deficit as its share of the repeated agreements to support the dollar since 1985 but has not actually moved fast on this front.

It is not entirely clear how the distinction between regime-preserving and policy-optimizing coordination relates to the current debate. We are in the current situation because governments were not willing in the late sixties and early seventies to preserve the fixed exchange rate regime. They are undoubtedly trying to preserve or maximize something through their current efforts at coordination, but it is difficult to see what regime is being preserved. It is not the fixed exchange rate regime; perhaps as Kenen suggests, modern coordination is intended to preserve the international trading system.

Current differences in attitudes to policy coordination are colored most strongly by views of the success or failure of the Bonn Summit of 1978, and on the consequences of international policy coordination since 1985. Proponents of policy coordination regard the Bonn Summit as a success, even though it soured German policymakers' views of the process. They believe that their expansionary moves in 1978 were partly responsible for the high inflation in 1979. Their failure to expand in 1986 despite urgings from abroad can be attributed to the earlier experience, and can also be regarded ex post as appropriate.

One view of coordination since 1985 is that it has succeeded by bringing the dollar down smoothly, preventing a hard landing, and permitting continued growth of the international economy. Alternatively, coordination has been the cover under which other countries finance the U.S. budget and trade deficits, thereby protecting the United States from the consequences of its fiscal policy. I believe the latter view is more appropriate, and that without the particular type of coordination practised since 1985, the U.S. would already have been forced into more fundamental fiscal contraction.

However, there is not too much point in blaming policy coordination for this outcome. It is not coordination per se that is to blame, but rather the fact underlying the coordination—the desire of other countries not to have the dollar depreciate too rapidly against their currencies.

One can compare the effects of exchange rate coordination since 1985 with international policy coordination over the debt crisis. In each case, coordination prevented rapid adjustment of an underlying disequilibrium. In the debt crisis, debtors and creditors would by now have reached a settlement had official intervention not occurred. In each case, international policy coordination reduced the risks to the international economy but did so at the cost of prolonging a situation that needed to be changed.

It is these tendencies that lead critics to suggest that the reflex belief in the values of international policy coordination is unwise. In principle, optimal international policy coordination cannot hurt. In practice it sometimes does. This view is strengthened by the fact that proponents of international policy coordination are at their most vociferous when they want to change domestic policies of which they disapprove, and which they hope to affect through international action.

The right approach to international policy coordination is suggested by the analysis on which Peter Kenen embarks in this paper: first design a system which is robust to noncoordination, undertake automatically those policies that are needed to sustain the system, and consider other policies and coordinated policy actions on a case-by-case basis.