

# *I*nternational Policy Coordination: Can We Have Our Cake and Eat It Too?

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**R**ecent events in European financial markets—in particular, Britain’s and Italy’s (at least temporary) departure from the exchange rate mechanism of the European monetary system, the French and Danish referendum votes on European union, as well as the emphasis on coordination stressed at the recent G-7 meetings—have generated a wave of headlines and have focused attention on the various ways in which macroeconomic policies are coordinated internationally. When a country’s economy has no links with other economies—when an economy is “closed”—the fiscal or monetary policy behavior of other countries is irrelevant. However, when economies are linked by capital and services markets—that is, are “open”—policy decisions at home may have an impact abroad and vice versa. As the world is becoming increasingly integrated in trade and financial markets, economic events in one country inevitably have a bigger impact on other countries. Under global capital markets, for example, most countries have access to the same pool of world savings, and individual governments’ borrowing and lending activities affect interest rates—and consequently, economic activity—worldwide. For this reason, the U.S. government budget deficit has been broadly blamed for the high worldwide interest rates that characterized the 1980s, and the “high” interest rates set by Germany’s Bundesbank and the recent “caution” of the Bank of Japan have recently been held responsible for retarding economic growth in Europe, and perhaps worldwide.

As the development of international goods and capital markets has progressed to a degree unseen during the 1960s or 1970s, countries have shown increasing interest in crafting and adopting joint macropolicies or participating in international coordination efforts—at least implicitly as a means

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of ameliorating the transmission of negative policy-spillover effects—and a significant body of research has focused on designing models to analyze the impacts of such efforts. Perhaps the first question to be addressed is that of why countries do not simply move toward a world consisting exclusively of closed economies that would not be susceptible to the negative effects that might be transmitted across countries. Implicit in international coordination efforts is the notion that the positive effects of market integration outweigh its potential negative effects across countries and that most of the potentially undesirable effects can in fact be eliminated or at least drastically reduced with the right coordination scheme. Although, as the discussion makes clear later, there is no such thing as the “right” coordination scheme, the point of departure for discussion is the assumption that integration is worth pursuing.

A number of theoretical perspectives, each with its own policy implications, have found favor with policymakers over time. The purpose of this article is to examine some of the various macroeconomic policy efforts, particularly for the ways in which they attempt to minimize the intercountry transmission of negative spillover effects of policy decisions. The discussion also considers some of the theoretical research on this subject.

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## Recent Coordination Efforts

Efforts to coordinate macroeconomic policies are not new. For example, during the Bretton Woods era (1944-73), a degree of policy coordination was embodied in the system of fixed exchange rates against the U.S. dollar, which was then tied to gold. In the beginning the Bretton Woods agreement allowed currency exchange rates of member countries to vary 1 percent against the U.S. dollar, which in turn was pegged to gold at a fixed rate—\$35 per ounce. By agreeing to fix exchange rates, the monetary authorities involved committed their countries, unconditionally, to trade foreign and domestic currencies at certain exchange rates in the foreign exchange market and thus to modify their domestic money supplies to achieve these rates. Partly because the agreement restricted to some degree the monetary policies of the forty-four countries participating, the Bretton Woods system broke down in the early 1970s.

Efforts to coordinate policies have continued, however. A more recent example of exchange rate coordi-

nation is the Plaza Accord of 1985, established between the G-5 countries (the group of five leading industrial countries—France, Japan, the United States, the United Kingdom, and West Germany). Through the early 1980s, the dollar had appreciated steadily against major currencies, and by December 1984 the dollar exchange rates against the German mark and Japanese yen were 3.1 and 247.96, respectively. Along with the strong dollar came large U.S. trade deficits as Americans imported more and exported less. Policymakers viewed these developments as alarming and in need of reversal. The Plaza Accord provided multilateral support for reducing the foreign exchange value of the dollar, with the purpose of further reducing the U.S. current account deficit.<sup>1</sup>

**Policy Coordination in Europe.** Because half of European trade occurs between European countries, reducing exchange rate volatility has been a major consideration in coordination efforts. The assumption has been that high volatility of exchange rates makes it hard to predict the terms of trade (the relative prices of imports over exports), with consequent costly efficiency losses.<sup>2</sup> Some of the first attempts at coordinating exchange rates in Europe date back to the Joint Float agreement of 1972. This agreement called for its members to hold their currencies' bilateral exchange rates to a 2.5 percent variation. Although the origins of the EMS proposal can be traced to the 1957 Treaty of Rome, which founded the European Community, the Joint Float Agreement provided the working foundations of the European Monetary System (EMS) as it originated in 1979.

Since 1979, EMS exchange rate coordination efforts have been overseen by the exchange rate mechanism (ERM). The ERM calls for the exchange rates in each member country to vary no more than 2.25 percent from its bilateral central rate. To achieve this goal, central banks are willing to intervene in the exchange rate market buying and selling their currencies.<sup>3</sup>

Coordination efforts such as those discussed above can be classified as “incomplete,” in the sense that the countries involved in these efforts agree to use their macroeconomic policies to achieve a common objective—a fixed exchange rate or an exchange rate band. If the goal is achieved, the member countries may realize efficiency gains as a result of the reduced exchange rate volatility and increased volume of trade. However, other than taking actions necessary to achieve the exchange rate objective, the participating countries are free to use their macroeconomic policies as they see fit. Clearly, countries involved in such exchange rate

coordination efforts do not relinquish to a central authority all autonomy in macropolicy decisions. At the same time—and in fact because countries retain considerable autonomy—these coordination arrangements do not eliminate negative spillovers across countries. Some countries have therefore pursued more comprehensive coordination commitments that would ameliorate the transmission of negative macroeconomic policy spillovers. As evidence of this trend, the stated goals of the EMS have evolved into an economic convergence of its members as a means of eventually achieving monetary union, and the ERM is seen as an intermediate step in that direction. Unlike the coordination efforts discussed earlier, this proposed union supposedly would have an independent European Central Bank (ECB) and an associated European System of Central Banks (ESCB) overseeing implementation of the common monetary policy. Article 7 of the Maastricht Treaty protocol (1992), for example, states that “neither the ECB nor a national Central Bank, nor any member of their decision-making bodies shall seek nor take instructions from EC institutions or member governments.” In fact, member governments would relinquish their autonomy in setting monetary policy to the independent ECB and ESCB. This type of coordination is referred to here as “complete.”

The Maastricht Treaty, however, does not stop at the prospect of a unified monetary policy with a single currency. Some of the stated goals of the economic community allude to a “deeper integration into a virtual federal Europe.” Such statements have inspired several studies that try to establish a parallel between the envisioned European economic union and the United States’ complete *de facto* coordination agreement among its member states (see, for example, Paul Van Rompuy, Filip Abraham, and Dirk Heremans 1991). As envisioned by these authors, EMU members would function much like states of the United States, not only giving up sovereignty over seignorage (revenue raised by printing money) as a means to finance government deficits but allowing for complete mobility of all resources across member countries and the creation of a supranational government actively involved in all aspects of the community’s economy, with individual country governments playing a subsidiary role. As Ralph C. Bryant has commented, such federalism issues are “well beyond the domains of ‘coordination’” (1993). This discussion concentrates instead on issues related to coordination as Bryant has defined them: “Coordination goes further than mutual recognition in focusing on cross-border spillovers and ‘arbitrage pressures’ eroding the differences among national

economies and policies. And coordination is more ambitious in promoting intergovernmental cooperation to deal with them. Coordination involves jointly designed mutual adjustments of national policies (commitments about time paths of policy instruments, not merely aspirations about time paths . . .)” (1993, 11).

As will be discussed in more detail later, only complete coordination agreements effectively eliminate the transmission of policy effects across countries, but they hinge on a country’s relinquishment of autonomy in choosing policy. The distinction between complete and incomplete coordination is a crucial one because some policymakers and analysts often express the belief that countries can reap the benefits of a complete coordination arrangement while committing only to incomplete coordination—that it is possible to have one’s cake and eat it too.<sup>4</sup>

This trade-off between the loss of policy autonomy and gains from eliminating negative spillovers may help explain why a complete coordination effort among countries seems so elusive and may ultimately be impossible to attain. In fact, the European “currency crisis” of September 1992 is a reminder of other failed coordination efforts and of the apparent fragility that surrounds the process. However, the emergence of a two-tier approach to coordination in Europe, with some countries firmly committed to EMU while others lag, illustrates the belief that coordination of macropolicies is considered beneficial and should not be abandoned.<sup>5</sup>

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## An Economic Modeling Perspective

To help understand the benefits and possible costs of policy coordination, economists have developed coordination models. While they are in general too simple to capture fully the complex features of coordination, these models shed valuable light on some of the major issues that may inhibit joint policy schemes.

**Externalities.** The “invisible-hand” principle of Adam Smith, familiar to any beginning economics student, states that the best way to promote social well-being is to allow everyone to pursue his or her own interest. It is also well known, however, that the principle may fail under the presence of what economists call “externalities.” The most often cited example of negative externalities is that of a plant discharging polluted water into a river that is a town’s only water source. Clearly, the sole pursuit of what the plant considers in its own best interest does not promote the

welfare of the whole society; there are quite different private and social costs at stake.

In general in such situations, certain policies may restore efficiency by creating appropriate incentives for firms or other economic actors to achieve, on balance, what is best for the society as a whole. For example, in the case involving water pollution a pollution-control policy could be established: having to pay a fee every time waste is dumped would help polluters realize that natural resources they use are not “free.” The idea is that they would then “internalize” this cost in their decision-making process and have incentives to look for alternatives to dumping, such as investing in cleaner technologies. Such a policy can be achieved, however, only if there is a central authority to enforce it.

It may be helpful to think of individual countries as analogous to the residents of the town affected by water pollution. To avoid negative spillovers across countries, coordination of macroeconomic policies may be desirable for the well-being of the world economy.<sup>6</sup> This line of thinking characterizes several of the formal attempts to study international interdependencies.

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## Open-Economy Macroeconomics

John M. Fleming (1962) and Robert A. Mundell (1963) set the foundation for the formal analysis of international macroeconomic policy coordination.<sup>7</sup> They analyzed the feedback of monetary and fiscal policies between two countries. Their models consist of goods and asset demand functions (including money) in the Keynesian tradition. National expenditures—consumption and investment—are assumed to depend on domestic output and the real (inflation-adjusted) rate of interest while net exports depend on income at home (imports) and abroad (exports) as well as the real exchange rate. For instance, a rise in German income increases Britain’s exports because Germans can afford to buy more goods, including imported goods. Another assumption is that public demand for money is a function of income and interest rates at home—that is, as income rises and people want to buy more goods, they increase their demand for money. At the same time, if the opportunity cost of holding money goes up, the public moves away from money and into higher-yield assets. A third assumption is that changes in private domestic holdings of foreign securities—capital outflows or inflows—are a function of interest rates at home and abroad. Countries in the economy are assumed to be similar in these aspects.

The Mundell-Fleming models suggest that a government could manipulate monetary and fiscal policies in such a way as to attain internal and external “balance” simultaneously, namely, to achieve current account balance and full employment. This paradigm still motivates many of the discussions on international policy coordination.<sup>8</sup> For example, some analysts suggest that the U.S. proposal at the 1978 summit meeting of the G-7—that the United States, Japan, and Germany coordinate their policies in an expansionary effort—was motivated by the threat of trade deficits. If the incomes of a country and its trading partners grow simultaneously, other things being equal, the possibility of external imbalance (large trade deficits) is reduced.

These models assume that changes in domestic government expenditures influence domestic output, which in turn has an impact on the foreign country’s current account and thus affects the level of foreign output. Likewise, a drop in the foreign country’s output has an effect on the domestic current account and output.

The Mundell-Fleming models also illustrate how the effectiveness of aggregate demand policies in an open economy may be affected. For example, a policy increasing government expenditures, intended to lead to greater domestic output by stimulating purchases of domestic commodities, may be diminished in its effectiveness by a concurrent increase in purchases of import goods.

These models constitute a first step toward understanding the transmission of macroeconomic policy effects between countries. They demonstrate how the consequences of adopting certain policies at home depend not only on those policies themselves but also on policies implemented abroad.

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## To Coordinate or Not to Coordinate

Recognizing countries’ interdependence and the potential for negative spillover raises the question of whether a country would be better off choosing policy on its own or in cooperation with other countries. The work of Koichi Hamada (1976) pioneered the analysis of international monetary policy coordination.<sup>9</sup>

Hamada’s models are based on a game theoretical approach that views governments as solving their economic choices after considering a series of strategies, just as card players do (playing individually or as a team).<sup>10</sup> There is evidence that studying macropolicy

coordination in the context of strategic considerations is a sound approach. For example, one could argue that it was not a coincidence that the North American Free Trade Agreement was put on the table at about the time that General Agreement on Tariffs and Trade (GATT) negotiations appeared to be stalling. A trade alliance within North America would show the European Community how the United States was ready to move forward with free trade, with or without the European Community. In fact, one could argue that it is progress toward NAFTA that has led to recent concessions in agricultural policy from the EC in the GATT negotiations.

Hamada's analysis was performed for a world in which exchange rates are fixed, which in fact they had been in the then-recent Bretton Woods era. However, Hamada's insights do not hold only for fixed exchange rates. In the framework of game theory, coordination of monetary policies would also be beneficial in a flexible exchange rate environment like those under which many countries operate today.

As an illustration, consider a world with free trade of goods and capital, and assume that there is a trade-off between unemployment and inflation. Countries choosing monetary policies independently may have a bias to choose an expansionary policy in order to achieve a target rate of unemployment. For instance, a particular country tries to lower its unemployment rate by running an expansionary monetary policy. Such a policy may trigger the following sequence of events: At least in the short run, there may be a depreciation of the country's currency with respect to other countries, which would in turn lead to a reduction of its current account deficit against those countries. The affected countries may react by pursuing expansionary policies themselves, in order to counter their currency's appreciation. In doing so, each country weighs only the inflationary consequences of its policies for its own economy (in the same way in which the factory owner causing water pollution in the example above does not internalize the negative impact of its actions). However, in the absence of any trade barriers the simultaneous expansionary policies would result in a higher rate of inflation worldwide. The fact of decentralized actions by countries precludes a country's ability to internalize the costs its actions impose on the world community. If, on the other hand, each of these countries were to give up its autonomy in choosing monetary policy, agree on a common objective, and have a central authority directing a single, common monetary policy, all would be forced to consider the worldwide inflationary impact of their policies.

Hamada determined that whenever free trade of goods existed, countries coordinating their actions generally achieved more desirable outcomes than resulted when countries acted independently. Hamada recognized, however, that coordination of monetary policies is difficult to achieve. A country faces trade-offs when setting economic goals, and coordination further restricts each country's already limited policy options to achieve the best possible developments at home.

Consequently, each country may assign different priorities to various goals. For example, assume that Germany and Italy have monetary policy at their disposal and that each recognizes the trade-off between inflation and unemployment. Germany may decide that low inflation is its priority while Italy may decide that it is willing to suffer higher inflation rates to achieve lower unemployment rates. Now consider that Germany and Italy decide to coordinate their efforts and relinquish their domestic monetary policies for a common central monetary policy. The question becomes how to assign weights to each country's objectives. That decision is a political one, about which economic theory is silent.

What is a policymaker to sift from these abstract concepts underlying coordination? The discussion so far seems to say that countries may be better off under coordinated policy than acting independently. More precisely, under free trade countries seem to benefit from choosing in unison a single, common policy. That observation is a potent policy recommendation. It is also, however, a typical example of theory having little to say about the actual process—the logistics and negotiations—required for its implementation.

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## Complete versus Incomplete Coordination

It is important to note that fixed exchange rate agreements and "managed" floating exchange rate agreements like the ERM are not the type of coordination Hamada studied. The nature of the policy coordination implicit in fixed exchange rate agreements may reduce exchange rate volatility and thereby improve efficiency. However, as was discussed earlier, under such incomplete coordination agreements the member countries continue to enjoy some degree of discretion over their macroeconomic policies and are not able to internalize fully the consequences of their policies. For example, Germany is still committed to the EMS, the intermediate goals that the EMS represents, and the

eventual creation of a European Central Bank. But Germany's policy choices about financing its unification costs have prevented interest rates from coming down in Europe, indirectly creating negative externalities, or costs, for its neighbors. The type of policy coordination Hamada suggested above involves complete coordination—countries' total relinquishment of autonomous policies such as would characterize the EMU in its third stage, when a European central bank is in place.

It is important, however, to recognize that so far the theory on which a recommendation of complete macropolicy coordination is built has several shortcomings. For example, Hamada's models do not specify the mechanisms that affect consumption and investment decisions, making it hard to analyze the ways in which alternative policies may affect these behaviors. In addition, time plays no role in these models although interest rates are the price of intertemporal allocation of consumption and as such should require that temporal dynamics be a key consideration in analysis. Asset demands depend on current and future interest rates—for example, individuals choose assets to acquire on the basis of prevailing interest rates as well as expectations regarding future interest rates. Models such as Hamada's, however, are silent as to how agents build their expectations regarding future interest rates. Because they are static, they do not address the question of whether multicountry interdependence is only temporary. In spite of their shortcomings, these kinds of models constitute a solid first step toward understanding the international transmission of macroeconomic policies, and some of the models' insights apply for more complicated and realistic environments.

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### **Dynamic General Equilibrium Models**

Dynamic general equilibrium models were developed to address some of the problems identified above. These models reproduce the simultaneous nature of economic variables and assume that interest rates and prices are determined by the underlying economic structure rather than by exogenous behavior patterns that may not be related to the fundamentals of an economy. As their name implies, dynamic general equilibrium models are also able to incorporate the dynamic nature of economic systems.<sup>11</sup>

The models discussed earlier implicitly recommend international macroeconomic policy coordination. Given these models' shortcomings, however, it is im-

portant to investigate the robustness of that implication. Does the same policy prescription hold in a dynamic general equilibrium framework? The discussion that follows concentrates on models that address monetary and fiscal policy.

**Monetary Policy.** Neil Wallace (1984) set out to dispel the notion that there is a single "best" monetary policy for a nation. His model, which can be thought of as providing long-term recommendations, emphasized the notion (perhaps obvious but rarely acknowledged) that monetary policy has different effects across different economic groups. (Few would argue, for example, with the fact that U.S. monetary policy in 1992 generated a surge of mortgage refinancing at home but also displeased holders of three-month certificates of deposit, which experienced record low returns).

Preston J. Miller and Wallace's (1985) analysis of international coordination of monetary policies is an open-economy extension of Wallace's model. Miller and Wallace start with the observation that although countries appeared to have gained more discretion over their policies under a flexible exchange rate regime, flexible exchange rates did not ameliorate the transmission of negative spillover effects across countries. In this context, coordination of monetary policies has been abdicated as a means of improving the workings of flexible exchange rates.

Miller and Wallace's work is designed to contrast two approaches to choosing monetary policy. In the first, each country chooses its own monetary policy, recognizing the fact that other countries' independent decisions will influence the ultimate effects of its policy and that those decisions are beyond its control. The second alternative, akin to some of the G-5 or G-7 coordination attempts, involves all countries jointly organizing a central authority to choose a common monetary policy.

At the core of whether or not monetary policy coordination makes a difference is the fact that when countries choose policy independently of each other, their policies have asymmetric effects at home and abroad. Miller and Wallace illustrate this asymmetry with the following example. In their model, when the monetary authority in the United States engineers higher real interest rates at home, in a well-integrated international capital market long-term real interest rates will also tend to increase around the world. However, the impact of such policy on the purchasing power of economic agents trying to cash in their savings at the time the policy goes into effect will be different at home than abroad. A tighter monetary policy in the United States will increase the purchasing power of the people

at home cashing in their savings, whereas it will reduce the purchasing power of the same group of savers abroad. Without themselves tightening, foreign countries suffer from higher rates, which translate into a heavier burden for servicing outstanding government bonds that would, in turn, require the central bank to monetize part of the government deficits. By acting independently of other countries in the Miller-Wallace model, the United States has failed to internalize the consequences of their actions abroad. If on the other hand all countries were to choose policy in unison, each would be able to internalize their policies' consequences for other countries and thus choose policy accordingly.

Miller and Wallace point out that although their analysis suggests that cooperation is desirable, it does not determine whether the common policy to be adopted should be a loose or tight monetary policy. And, as emphasized in Wallace (1984), the choice is important given that monetary policy does not have a uniform impact across economic groups.

In the Miller-Wallace model the final form of a common monetary policy evolves as a consensus that takes into account the weights assigned to different economic groups in the different countries. Unfortunately, economic theory suggests nothing in terms of how to distribute such weights; as in Hamada's analysis, such decisions are political ones that have to be hammered out in political negotiations. For this reason, Miller and Wallace are reluctant to view their analysis as prescribing a specific policy recommendation. They acknowledge, however, that their analysis suggests that adopting some common monetary policies could improve welfare worldwide.

A flavor of the negotiations necessary for resolving differences among countries attempting coordination was recently provided by the Maastricht Treaty. Danish failure to ratify the treaty in early 1992 and the nervousness over the French referendum vote later in the year may partially explain why the proposed third stage of EMU—the creation of a European Central Bank—seems sometimes so elusive.<sup>12</sup>

**Fiscal Policies.** During the 1980s the U.S. government deficit escalated to magnitudes on the order of 5 percent of the gross domestic product. As mentioned earlier, the size of the U.S. deficit has been seen as contributing to high interest rates worldwide. At the same time, the type of coordination among EC countries has gone beyond monetary policy to involve tax and industrial policies. In light of these developments, some economists have turned attention to analyzing the coordination of fiscal policies.

Patrick J. Kehoe (1987) investigated whether countries benefit more by coordinating their tax policies, particularly income taxes. Kehoe's analysis is developed in a dynamic general equilibrium model in which there is a household sector, a production sector, and a government sector. The government finances its expenditures via income taxes. Government-produced goods are turned over to households. Higher taxes lead to an increase in government-produced goods, which are valued by the current generation of households. Capital purchases, however, are a function of disposable income so that higher taxes lead to lower quantities of capital and, consequently, lower output and consumption levels for all future generations. Less capital also leads to higher real rates of interest (the interest rate goes up as capital becomes more scarce). These are the trade-offs that a policymaker has to consider in evaluating a tax policy.

As discussed earlier, when countries choose tax policies independently of each other but in the context of integrated capital markets, higher taxes will represent higher interest rates not only at home but also abroad; countries choosing policy independently do not internalize the consequences of their actions on interest rates worldwide. Under perfect integration of capital markets, the incentive to increase taxes at home increases with the number of countries in the world: A government acting on its own experiences the positive short-term effects of taxes regardless of the number of countries in the world; on the other hand, the government suffers only in a diluted way the negative cumulative effect of higher interest rates because their marginal contribution to higher interest rates worldwide is smaller the larger the number of countries in the world. Clearly, coordination of macropolicies again could allow all countries to internalize the negative externalities that they impose on each other, and, therefore, coordination is better than noncoordination of fiscal policies for all countries involved.

A natural question to ask at this point is whether cooperative outcomes of the sort described above will necessarily amount to giving up autonomy in choosing policy. Roberto Chang (1990), who has provided another model of fiscal coordination, also found that the world economy would be better served by having coordinated fiscal policies among countries. Chang has shown that under some circumstances countries would be able to internalize the consequences of their independent macroeconomic policies and thus avoid the transmission of negative externalities across countries without giving up autonomy in choosing policy. If, for example, countries pledged to impose fiscal self-discipline

provided that other countries did the same, and if each threatened to abandon this discipline if others did, internalization would be possible. The policy implications of this research make its application promising: if credible threats could be implemented and the rules of the game clearly specified, there could be considerable savings of resources in achieving an outcome comparable to that of official coordination.

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### Can Coordination Be Undesirable?

While it is true that much of the economics literature suggests that under free trade coordinating macropolicies—both monetary and fiscal policies—is desirable, there may conceivably be situations in which coordination could be counterproductive. For example, Kenneth Rogoff (1985) has shown that cooperation among policymakers can in certain circumstances lead to a lower level of social well-being than independently set policy.

Rogoff's contribution hinges on the concept of "time inconsistency."<sup>13</sup> At the core of the idea of time inconsistency is the fact that there are incentives for governments and economic agents to renege on past commitments. Economic agents care about the sequence of their lifetime returns, not just consumption at a particular time. Individuals look ahead, and their expectations play a crucial role in their decision-making. If governments fail to recognize the importance of this process, they may pursue policies that seem optimal but involve reversing past commitments. For example, a government may announce that it will reduce capital taxes permanently to encourage investment. Once capital investment has taken place, the government may renege on its promise and raise capital taxes, promising never to do it again. Such a tax increase would not distort private investment decisions because capital investment has already taken place, and the government would have greater expenditure capabilities. However, economic agents observe the government's action and will discount future announced policies. In this scenario, the incentive for the government to renege on its promises may be recognized ahead of time, and the tax cut originally announced may be of little or no relevance. Such time-inconsistent policies seem likely to prevent society from achieving the best possible outcome.<sup>14</sup>

Rogoff found that when time inconsistencies exist, cooperation among countries can be counterproductive. For example, in the absence of monetary policy coordination any unilateral effort by a central bank to inflate

(to engage in time-inconsistent policies) will cause its real exchange rate to depreciate, with the consequent price increase on imported goods driving up inflation at home. Such a concomitant depreciation and fears of accelerating inflation help check the incentives for a central bank to expand its money. However, in a cooperative arrangement the real exchange rate has no such tempering influence because each central bank can count on the others to match any money supply increase without any impact on the real exchange rate. Cooperation thus forces wage setters to set a higher rate of nominal wage growth in order to ensure that the central banks will ratify their target real wage. A cooperative regime may then be characterized by systematically higher inflation rates.

One criticism of Rogoff's findings is that the time inconsistency in his model exists because the governments' economic goals differ from those of their citizens (see note 14). It has been argued that if the governments and their citizens share economic goals, Rogoff's results may not occur. However, authors like Kehoe (1989) have shown that time inconsistencies can arise in settings in which governments and citizens share the same economic goals, thus leaving an environment where cooperation can be counterproductive.

Kehoe found that in the context of an open economy with capital mobility, a country's desire to renege on a promise not to tax existing capital is removed by the threat of capital flight; savings will flee the country with the highest income tax. Competition across countries and capital mobility act as an enforcer to eliminate time inconsistency. However, with fiscal cooperation between countries, this enforcement falls away because each government can count on the other to match any capital tax increase and thus eliminate the potential for capital flight. According to Kehoe's findings, international fiscal cooperation exacerbates the time-inconsistent problem and is therefore counterproductive. To summarize, if countries coordinate policies but cannot precommit to never deviating from the agreed-upon policy, such coordination efforts may be counterproductive.

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### The EMU: A Closer Look

Some economists argue that the goal of EMU is to establish a central authority that would set a common monetary policy and have member countries agree not to deviate from the policy. If so, coordination established under the auspices of the EMU should not be counterproductive.

It is a matter of some concern that the requirements established by the EMS for economic convergence are somewhat vague.<sup>15</sup> Further, each member country may fulfill the EMS requirements and still maintain dissimilar policies, and adherence to the guidelines may not be sufficient to guarantee a smooth transition to a monetary union. Even if a smooth transition is achieved and a common monetary policy adopted, there is no mechanism to ensure adherence to a common fiscal policy. For example, suppose that Germany met the guidelines to become a member of the EMU, that the union took place, and that all countries agreed to adhere to a common monetary policy. If Germany discovered at a later date that the burden of unifying the two Germanies implied larger-than-anticipated deficits, the country could de facto renege on the agreed-upon fiscal policies, creating the problem of time inconsistencies. According to the research reviewed above, only if EMU would lead to each member's precommitment to fiscal and monetary policy rules could a union be productive.

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### **Partial Coordination**

The bulk of the literature on international coordination concludes that coordination of macroeconomic policies that is complete and undertaken by all the countries in the world (at least all the countries that have a major impact on goods and asset prices worldwide)—in other words, “full coordination”—is preferable to having decentralized setting of policies.

As was discussed above, the rationale behind this dictum is that complete coordination allows countries to internalize the negative externalities that might otherwise be transmitted across countries. In reality, although there have been several initiatives to engage in full coordination, it has not been accomplished. Full coordination may, therefore, be thought of as a benchmark. More commonly, a small group of countries agrees to coordinate policies, and the result is “partial” coordination.<sup>16</sup> EMU is actually an example of this type of coordination.<sup>17</sup> In fact, the original goal for which the European Community was founded was to achieve free trade among its six members while adopting a common policy with respect to nonmembers. In view of that stated objective, recent research has concentrated on the issue of partial coordination, attempting to address the question of whether partial coordination is in fact superior to having each country make independent policy choices. If, as the discussion above in-

dicates, full coordination is superior to independent policymaking, can it be assumed that the same is true of partial coordination?

When a coalition of some but not all countries is formed and policymaking is centralized, additional considerations will surface. For example, if the EMU eventually materialized and agreed to fiscal and monetary discipline that implied lower interest rates, it would be possible for nonmembers or outsiders to “free-ride” on the EMU member countries' efforts. An outsider would not internalize the impact of, for instance, its setting a loose monetary policy but would still be in a position to enjoy the positive impact of a complete coordination effort by the members of the EMU felt worldwide.

Stephen J. Turnovsky (1988) analyzes partial coordination using an economic model that emphasizes the negative spillovers on the terms of trade. He assesses the effects of a subset of countries in the world forming a union. In his analysis government spending is valued by private economic agents, such as spending for roads and infrastructure. Because domestic governments purchase import and export goods, they affect the terms of world trade. With no barriers to trade, one country's increase in government expenditure on export goods could, for example, raise the goods' relative price worldwide, thus affecting the purchasing power of other countries. As before, without policy coordination individual countries seem unable to internalize negative spillovers across countries. Turnovsky showed that countries that coordinate policy will in general have less government spending and, accordingly, less influence on the terms of trade. In this context, his model indicates that some coordination is better than no coordination at all. This conclusion rests on the rationale that as long as some fiscal discipline is imposed, its positive impact will be felt worldwide. However, the countries not bound by a coordination agreement can enjoy both improved terms of trade and larger government expenditures than those countries committed to a common policy. In that sense, countries not involved in the coordination agreement would be free-riders, raising the question of the frailty of partial coordination agreements. Given that free-riding is a possibility, countries would have an incentive to break away from the union. What are the implications for the future of agreements like the EMU?

Marco Espinosa and Chong K. Yip (forthcoming), using a dynamic general equilibrium approach, have found that the number of countries involved in a partial coordination agreement relative to the number of all countries is crucial in determining the sustainability

of the agreement. Given groups of coordinating and noncoordinating countries, each country balances gains from coordination against gains from free-riding on others' coordination. If the number of countries involved in a coordination scheme is too small or too large, the gains to the coordinating members are such that the possibility of free-riding on the fiscal discipline of others does not outweigh the advantages of sticking to their coordinated policy. Espinosa and Yip show that there is, however, a "right-sized" coordination coalition of relatively homogenous countries. With the appropriate number of coordinating countries, the incentives to break away from the coalition disappear. Therefore, this research suggests that agreements like the EMU can be both beneficial and lasting.

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## Conclusion

Economic theory suggests that in the presence of open economies, free trade, and efficient capital markets, a country's policies will generate some externalities affecting the rest of the world community. When countries choose policies independently of each other,

the impact of their choices on the world community cannot be fully internalized. Several of the coordination initiatives have implicitly acknowledged this fact. The discussion in this article establishes that under these circumstances coordination of macropolicies seems better for the world than having each country making independent policy choices.

The description of basic models of full coordination illustrates the complexity of the nature of international coordination and points to several issues that require further studied consideration. For example, given the desirability of a complete coordination effort, can it be inferred that incomplete coordination is better than none at all? Given the difficulties of implementing a complete coordination agreement, should countries instead spend energy trying to implement incomplete agreements? If countries agree to coordinate policy, how does an economic union choose a common objective? What are the difficulties faced by countries that precommit to coordinated policy adoptions and by the body of coordinating countries in ensuring adherence to agreed-upon policy? These are just a few of the areas of concern calling for attention from policymakers and researchers alike.

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## Notes

1. See Kahn (1987) for a review of some of these coordination efforts.
2. See, for example, Kumar and Whitt (1992) for a cross-country analysis of exchange rate variability on international trade.
3. See Chriszt (1991) for a review of the ERM.
4. One should not confuse these concepts with the distinction between full and partial coordination established below. The terms *full* and *partial* coordination refer to the number of countries relinquishing their policy autonomy—in other words, the number of countries involved in a coordination scheme.
5. President Mitterrand, for example, has been quoted as saying that countries that have already ratified the Maastricht Treaty could continue to move forward.
6. Some authors have taken pains to clarify the different degrees of international interdependence and coordination and the difference between coordination and cooperation. In this article, for simplicity, there is no distinction between coordination and cooperation. Several current studies—for example, Feldstein (1988)—similarly make no distinction. Cody (1989) and Humpage (1990), for instance, emphasize that the term *international cooperation* refers to the sharing of macroeconomic data and economic goals across countries. International coordination, on the other hand, refers to the joint setting of macroeconomic policies. By these definitions international cooperation includes the International Monetary Fund (IMF) and the OECD; some of the joint actions of the G-5 and G-7 are examples of international coordination.
7. For an excellent survey on the Mundell-Fleming approach to open economy macroeconomics, the reader is referred to Frenkel and Razin (1987).
8. See Caves, Frankel, and Jones (1993, chap. 22-23) for a textbook-level illustration.
9. For an updated survey see Cooper (1985).
10. See chapter 19 of Krugman and Obstfeld (1991) for a simple application of game theory to international coordination.
11. A common thread found in some of the literature on dynamic general equilibrium modeling is that the analysis of fiscal and monetary policies is based on the public finance approach originated by Ramsey (1928) and popularized by Lucas (1986). Lucas suggests viewing fiscal and monetary policies as trying to allocate distortions from taxes or subsidies in such a way as to maximize society's well-being over time. To be specific, this approach says that governments should choose taxes or subsidies so as to maximize the

well-being of all generations in a society. The choice of a tax-subsidy scheme explicitly incorporates a government sector that as a player in the international capital market can influence interest rates worldwide. This methodology represents a holistic approach to choosing "optimal" fiscal and monetary policies and as such is superior to a methodology that views them as independent of each other and assigns them different objectives throughout time.

12. For further analysis of the Maastricht Treaty see Kenen (1992) and Fratianni, von Hagan, and Waller (1992).
13. For a intuitive description of the concept of time inconsistency, see Mankiw (1992, chap. 12).
14. Rogoff (1985) studies international cooperation in setting monetary policies in a context in which such policies influence economic activity and the objectives of the private sector (wage setters) and governments are at odds with each other. This conflict arises from the assumption that the society's target employment rate is higher than the wage setter's target employment rate. Several factors can give rise to this situation—labor unions, for example. Labor unions are usually willing to accept a lower level of employment in order to bargain for higher wages for their members.

Once wage setters set their nominal wages, the central bank can affect the rate of employment by inflating the economy. An increase in the price level would reduce the unemployment rate because a lower real wage raises the demand for labor. The monetary authorities, however, cannot systematically raise the level of employment through infla-

tion. The private sector will eventually recognize this pattern and set nominal wage rates high enough to reflect their inflation forecast. As this process goes on and the central bank loses its credibility, the rate of inflation would increase consistently. This result does not imply that the central bank is irresponsible; it simply says that given the lack of precommitment to adhere to a policy's rules, a central bank's optimal choice each period may be to try to increase employment, at the expense of higher inflation.

15. The requirements for economic convergence of the EMU members include specific low-inflation targets, similar long-term nominal interest rates, quasi-fixed exchange rates, and fiscal discipline as evidenced by a low maximum ratio (3 percent) of a government's deficit to GDP.
16. A partial coordination scheme refers to a situation in which at least one country with influence in world economic activity chooses policy independently. This section considers only complete policy coordination, under which countries that are members of a coalition adopt common macroeconomic policies.
17. It is not a coincidence that this discussion has focused on the EMU and has only tangentially dealt with GATT. The type of analyses that deal with coordination of macroeconomic policies emphasizes intertemporal trade whereas the studies that deal with custom unions emphasize contemporaneous trade of different commodities. For an analysis of free trading zones, see Krugman (1991).

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