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# Introduction

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In the postwar period, trading and financial ties have increased markedly among the industrial countries. Such ties ensure that one country's economic policies have spillover effects on other countries and that the domestic effects of these policies, in turn, are modified by the policies of other countries. Greater economic integration, therefore, has brought with it greater interdependence among national economic policies. Because of this interdependence, coordination of economic policy between countries is often vital, but successful coordination has been the exception rather than the rule.

Despite the importance of international coordination, the subject has not previously generated as much interest among economists as it deserves. Recently, however, a number of economists have begun to study coordination using a variety of innovative approaches. In June 1984, the Centre for Economic Policy Research and the National Bureau of Economic Research brought many of these economists together for a conference at Chatham House in London. The conference provided a unique opportunity for those studying coordination to assess the direction of current research on this important topic.

Economists have recently approached the subject of international coordination in several different ways. Some have studied in detail the international transmission process itself. Whether one country's expansionary policy is transmitted positively or negatively to another country depends on the strength of the real and financial links between the two economies. Particular patterns of transmission, in turn, may strengthen or weaken the case for the international coordination of policies. A simple example of this is the locomotive policy advocated in the mid 1970s. According to this policy, the locomotives (some of the main industrial countries) were to adopt expansionary policies which would, under the assumption of positive international transmission, pull all countries out

of the recession. Negative transmission, in contrast, would call for very different policies.

Other studies analyze international coordination in strategic terms using game theory concepts drawn from the study of oligopoly. In these studies, unilateral national behavior is often modelled as Nash or Stackelberg non-cooperative behavior, with Stackelberg behavior occurring when one nation takes a leadership position vis-à-vis others. Such behavior is then contrasted with cooperative behavior and the incentives to violate cooperative agreements are studied. The advantages of one form of strategic behavior over another in many cases depend on the nature of the transmission mechanism, a dependence discussed at length in several of the papers. Strategic analysis can provide insight into one nation's interaction with another. As one panelist pointed out, for example, recent efforts at European cooperation can be interpreted as attempts to replace Stackelberg leadership by the United States with a more symmetric relationship between the United States and Europe (with the latter acting as a bloc rather than as a set of individual nations).

Where some studies depart radically from previous work is in the introduction of an intertemporal dimension to the analysis. Moving from a static to a dynamic analysis can make considerable difference to the analysis of coordination. As an example, Jeffrey Sachs was once asked to show if propositions involving beggar-thy-neighbor behavior developed in static models would continue to hold in multiperiod models where exchange rate changes could be reversed. The paper presented at the conference by Gilles Oudiz and Sachs succeeds in demonstrating that later adjustments of the exchange rate do significantly modify, though they do not reverse, the effects of current policy. In multiperiod models, moreover, current expectations about the future effects of a current policy may make that policy less effective. Government spending, for example, may be much less effective in a multiperiod model where the future effects of current financing are taken into account through intertemporal budget constraints. Furthermore, only in an intertemporal model do we find the problem of time consistency. This problem arises when governments have an incentive to renege on previously announced policies and when the private sector's expectations take such incentives into account. Policies that are coordinated may prove to be time consistent in circumstances where unilateral policies are inconsistent, since coordination may rule out certain actions by national governments.

All the papers in this volume emphasize one or more of these factors, some focusing more on transmission effects, others on strategic behavior, and still others on intertemporal considerations. The papers together reveal

the high quality and wide range of recent research on international coordination.

In the first paper, Corden considers whether there is any basis for the popular argument that coordinated expansion would be easier to achieve than expansion by any individual country. Corden introduces a model of the real sectors of two economies in which international transmission occurs principally through the terms of trade. An economic expansion by one country improves the terms of trade of the other country, thus shifting the latter's Phillips curve in a favorable direction, and this in turn induces the latter country to pursue a more expansionary policy. The model illustrates clearly circumstances in which international cooperation which leads to coordinated expansion dominates non-cooperative behavior of either the Nash or Stackelberg variety. Later in the paper Corden qualifies his analysis by taking into account the future effects of current policy, including the possibility of future inflation inducing contraction by one country which hurts the other country.

Jacob Frenkel and Assaf Razin study international transmission effects in an intertemporal model, examining the effect of government expenditure on world rates of interest and spending. Their model assumes a two-country world within which capital markets are integrated, individuals behave rationally, and the behavior of individuals and governments is subject to temporal and intertemporal budget constraints. They show that a transitory rise in government spending raises interest rates and lowers domestic and foreign wealth while an expected future rise in government spending lowers interest rates, reduces the value of domestic wealth and raises the value of foreign wealth. Unlike in Corden's model, therefore, negative transmission can occur in some circumstances, with transmission occurring through world capital markets. The effect of a permanent rise in government spending on the rate of interest depends on whether the domestic economy is a net saver or dissaver in the world economy, i.e., whether it has a current account surplus or deficit. In general, the effects of government spending can be analyzed by reference to a multitude of 'transfer problem criteria' involving comparisons between marginal spending and saving propensities of governments and private sectors in the two economies.

The way in which national policies are transmitted from one country to another depends not only on the channels of transmission specified in a model, but also on the quantitative magnitude of key structural parameters. Patrick Minford uses a nine-country model he has estimated to investigate the transmission effects of US monetary and fiscal policy. The model exhibits many 'new classical' features including an aggregate supply curve based on a labor contract model and rational expectations.

Minford reports several policy simulations using this model, the most interesting of which is a simulation of US fiscal policy. According to this simulation, US deficits crowd out other US spending with the only stimulative effects being on the rest of the world (with a lag). The crowding out occurs because of strong wealth effects in the financial sector of his model. Monetary policy, in contrast, has very strong effects on output. Interpreting the results of his simulations, Minford suggests that the US monetary contraction in 1980-81 and expansion in late 1982 have been the major cause of the latest world business cycle.

Barry Eichengreen applies the strategic analysis characteristic of much recent work on international coordination to the financial history of the interwar period. Eichengreen develops an explicit two-country model of the interwar gold standard that shows clearly the advantages of coordinated action but also explains why cooperative solutions proved so difficult to achieve. The model features short run output variability, a money multiplier sensitive to bank rate, and perfect capital mobility. Eichengreen shows that cooperative behavior necessarily dominates Nash non-cooperative behavior, in the sense of more nearly achieving gold and price targets. Both countries, moreover, benefit if one country moves to a Stackelberg leadership position from the Nash equilibrium, but the country acting as the follower benefits more than the leader. Each country has an incentive, therefore, to engage in a game of 'chicken', attempting to force the other party to accept the role of leader. Eichengreen interprets this model in the light of interwar attempts at cooperation beginning with the Genoa Conference of 1922 and leading to the Tripartite Agreement concluded by Britain, France, and the United States in 1936.

The paper by Marcus Miller and Mark Salmon is one of several in the conference which address the problem of time consistency, which as discussed above arises when a government has an incentive to renege on previously announced policies. To ensure that policies are time consistent, Miller and Salmon assume that policy makers take the real exchange rate as given in setting current policy. This, according to the authors, is what will happen when the authorities have lost credibility so that the markets refuse to believe official pronouncements. Within this set of time consistent rules, they derive the optimal solutions for Nash open-loop games, where each nation takes the other's policy paths into account, and Nash closed-loop games, where policy rules are taken into account, and compare these with cooperative solutions.

Like Miller and Salmon, David Currie and Paul Levine examine the effects of policies in a dynamic model, in their case a model that features lags in both demand and supply behavior. They consider a variety of simple policy rules involving the money supply, nominal income, exchange rate,

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or price level. The price rule is found to perform significantly better than any other rule in a single economy, but when applied to all economies together it performs very poorly. This is because the price rule works through beggar-thy-neighbor variations in exchange rates that are not feasible if all countries follow the rule.

Gilles Oudiz and Jeffrey Sachs, as mentioned above, show that the payoffs to beggar-thy-neighbor policies look very different in one period and multiperiod contexts, because exchange rate changes in the current period are typically reversed in later periods. International coordination which avoids beggar-thy-neighbor actions, they find, is less desirable in a multiperiod model. They ask whether international coordination necessarily improves welfare if governments, as some have claimed, are more myopic than the private sector. Governments have a short run expansionary bias if policy can raise output today while increasing inflation only in the future. As long as policy is not coordinated, however, the fear of currency depreciation following a unilateral expansion keeps this bias in check, whereas coordination permits governments to expand together and avoid any depreciation. They also make several interesting points about time consistency. They show, for example, that international coordination can make policies time consistent in cases where unilateral policies are time inconsistent if the time inconsistency stems from the ability to manipulate the exchange rate.

In the final paper, Tommaso Padoa Schioppa analyzes whether the European Monetary System (EMS), the exchange rate system tying the mark, franc, lira and other European currencies together, can serve as a model for other efforts to coordinate economic policy. He contrasts 'institutional cooperation' through arrangements such as the EMS with 'ad-hoc cooperation', and argues that if institutions are strong enough, there is more scope for discretion in the management of international economic problems. He also considers the experience of multicountry monetary cooperation within the EMS and presents statistical evidence on the System's ability to achieve its objectives.

The conference concluded with a panel session, chaired by William Branson of the NBER and Princeton University, on prospects for international policy coordination. The last section of this volume presents the prepared remarks of the four panelists: Richard Cooper, Harvard University; Michael Emerson, Commission of the European Communities; Louka Katseli, Centre of Economic Planning and Research; and Stephen Marris, Institute for International Economics.

Richard Cooper cites a number of instances in which international cooperation was successful, either because public goods were involved (as in the establishment of Greenwich mean time or the metric system) or

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because there were significant externalities or spillovers (such as in the case of GATT or the non-proliferation treaty). Successful cooperation was achieved in such cases, according to Cooper, because the mutual benefits were both large in magnitude and apparent to those involved. Cooperation in the macroeconomic field, however, faces a number of obstacles including disagreements among governments on the outlook for economies at any given time, differences in objectives (e.g., inflation versus unemployment), and disputes over the distribution of gains. Even in instances where there are positive gains for all nations, the negotiations often bog down over how to divide those gains. Finally, there are considerable differences of opinion, even among experts, about how economies work. The variety of papers presented in this conference provide evidence to support this point.

In his remarks, Michael Emerson describes current US policy as that of limiting international cooperation to trade and LDC debt problems while ignoring macroeconomic coordination. He argues that if the failure to coordinate macro policies leads to a further deterioration of the world economy, this could jeopardize current trade agreements and make more difficult future cooperation in solving debt problems. Commenting on the prospects for European policy coordination, Emerson suggests that the first three years of the European monetary system had been disappointing, but that European policy was now better coordinated, albeit in a restrictive direction. Because policy is more credible than before, moreover, restrictive actions are less costly in terms of lost output and employment.

Louka Katseli focuses on the asymmetries which characterize the current international system and international decision-making. There are asymmetries in the origin of the shocks affecting different countries, as well as in the impacts of the shocks on various markets. In addition, there is an asymmetry in the monitoring of outcomes and performances of different countries; for example, there are rules which apply to the less-developed countries which seem not to apply to the United States, even when both are running deficits. Moreover, there is no monitoring of the position of creditor countries as there is for debtor countries. As far as coordination of policies is concerned, she suggests that more attention be paid to the structures of decision-making in international organizations, including how responsibilities for different economic problems are divided among various international agencies and meetings of national governments.

The last member of the panel, Stephen Marris, argues that a key lesson from the flexible rate period was not made clear by early advocates of flexible rates – that an expansion by one country might be precluded because of the effect of the ensuing depreciation on the domestic inflation rate. Because economic cooperation lifts the restraints imposed by the

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exchange rate, it might lead to more inflation than uncoordinated national policies. But such effects depend very much on events. Thus, at the time of the second oil shock, Marris suggests, governments were fortified in their deflationary policies by the knowledge that other governments were following similar strategies. Marris goes on to discuss the current policy problem – the divergence in policies between the United States and the rest of the world. He expresses the view that the gains from more coordination in fiscal and monetary policy are apparent to all in the present situation, despite the considerable divergence of views about the sign and magnitude of transmission effects in other more general circumstances.

The general discussion following the remarks by the panelists ranged over a number of issues. One question that continually arose concerned the direction that future research should take. Most participants agreed that recent work on international coordination, of which the papers in this volume are certainly representative, had succeeded in clarifying a number of issues of importance to the subject and in developing analytical approaches required to study them. There was disagreement, however, about whether future research should concentrate on further analytical work or should instead turn to empirical research which would attempt to quantify the gains from coordination. No resolution of this question was reached. We hope that this volume will serve as a basis for further research, both theoretical and empirical.

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