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How strong is the case for international coordination?

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How Strong Is the Case for International
Coordination?

by

Joachim Scheide and Stefan Sinn

Institut für Weltwirtschaft an der Universität Kiel
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Abstract

Many economists and politicians argue that monetary and fiscal policies have to be coordinated internationally; in their opinion, this is the only way to solve economic problems in a highly integrated world. In recent years, the proponents have applied the game-theoretic approach to make the case stronger: If one country only pursues its own interest, this policy will have effects on foreign economies which will in turn react towards these changes. Such a process leads to a deterioration of the situation in all countries; therefore there is an incentive to coordinate.

It is shown in this paper that the actual situation in the world economy is not as gloomy as suggested by the game-theoretic approach. In particular, the assumption about the behavior of policymakers seems to be unrealistic: They usually do not stick to their original targets after a global shock, and they do not totally ignore the effects of their policy actions on other countries. Apart from this, the costs of coordination are usually neglected or played down: Firstly, the private sector is normally left out of the game. Secondly, since knowledge about the relationships in the world economy is limited and since politicians do not agree on the model, coordination can be counterproductive even if all participants agree on the package. And finally, governments and central banks tend to form a cartel at the expense of voters and taxpayers.

There are hardly any success stories of coordination. The locomotive-strategy of the seventies, usually advanced by proponents as the example for good coordination, led to a new round of inflation and the recession of the early eighties. And exchange rate arrangements either were not very successful - like the EMS, where inflation did decline but by less than in the rest of the OECD - or were not sustainable, like the Louvre-accord of February 1987.

An alternative concept is a system in which governments and central banks precommit themselves to specific rules for policy. Coordination in such a system means that the authorities inform each other about their intentions and avoid strategies which are against the interests of the other countries - like beggar-thy-neighbor policies. In such a system, each country is free to choose the path which it feels is adequate for achieving the domestic targets. If this leads to more competition among countries, all countries can benefit because the authorities can learn from their own mistakes and from good or bad examples of other countries.

HOW STRONG IS THE CASE FOR INTERNATIONAL COORDINATION?*

I. International Coordination of Economic Policies: In What Form and in Which Areas?

There seems to be a consensus among politicians and economists that economic problems such as high unemployment and inflation can only be solved if economic policies are coordinated on an international scale. The 1987 economic summit at Venice viewed international coordination as essential "to achieving stronger and sustained global growth, reduced external imbalances and more stable exchange rate relationships" (1). In a similar vein, Helmut Schmidt argued in 1983 that "the major industrial countries' policy mix must be coordinated" (Schmidt, 1983, p. 24). The EC-Commission (1986) as well as the OECD (1987a) have recently urged policymakers to implement a cooperative policy action to restore satisfactory macroeconomic performance of the major industrial countries. These calls for more international coordination receive their theoretical underpinnings from the work of a number of economists who argue that by coordinating their policies individual countries can avoid negative spillover effects of uncoordinated sovereign policymaking and take advantage of positive spillover effects. Coordination would allow each country to achieve its economic targets to a greater degree than if it pursued an independent policy stance (2).

Since the term "international economic policy coordination" may have different meanings it seems useful to define our

* Based on the Kiel Discussion Paper No. 135, Internationale Koordination der Wirtschaftspolitik: Pro und Contra. Kiel, November 1987.

(1) Venice Economic Declaration, Paragraph 3.

(2) The main proponents of this view are Richard N. Cooper, Koichi Hamada, Matthew Canzoneri, Gilles Oudiz and Jeffrey Sachs. Cooper (1985a) provides a useful summary.

terms from the outset. We distinguish different forms of coordination (Putnam, Bayne, 1984; Cooper, 1986, p. 5):

- (i) Exchange of information on the current and future stance of economic policy to provide a basis for the formulation of economic policies in other countries.
- (ii) Agreement on individual policy targets to avoid the pursuit of futile targets.
- (iii) Coordinated use of economic policy instruments to achieve agreed values of macroeconomic targets.

The demands for giving up national autonomy become increasingly greater as countries move from (i) to (iii) (1). It is not surprising that historic examples for the different forms of policy coordination become increasingly rare as they impinge more and more on national sovereignty (2).

As far as the areas of international coordination are concerned, there is a consensus among most economists that international public goods are best provided by coordinated measures of all the governments involved. Examples of such international public goods are an international legal order and the worldwide reduction of trade barriers. There is considerably less consensus on whether the international

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- (1) These forms of policy coordination pertain to the continued use of policy instruments to achieve certain targets (fine tuning). Coordination may also be used to establish a trade or exchange rate regime, a subject not dealt with here.
 - (2) The most frequently cited instance of a successful example for type (iii)-policy coordination are the measures decided upon at the Bonn summit of 1978 (Frenkel, 1987, p. 208); Cooper (1985b, p. 370). The Bonn summit is not, however, without critics: "...the expansionary measures decided upon at Bonn were soon revised, and the Bonn summit is widely considered to be an example of the pitfalls of international 'fine-tuning'" (Horne, Masson, 1987, p. 30). Vaubel (1985, p. 235) asserts that the fiscal stimulus that was the German government's contribution to the policy package was "ill-timed from a cyclical point of view and contributed to the severe budgetary problems of the early eighties".

coordination of monetary and fiscal policies should be used to and can in fact achieve the common targets of high employment, stability of the price level and the exchange rate, and a reduction of current account "imbalances". In order to judge the merits and demerits of international policy coordination, at least four questions have to be addressed:

- On what theoretical grounds can a case be established in favor of explicitly coordinating the economic policies of different countries?
- What are important prerequisites for successful international policy coordination?
- What can we learn from past attempts to coordinate policies?
- What alternatives to explicit policy coordination exist?

II. The Game-Theoretic Case for Policy Coordination

One of the cornerstones on which the case for international policy coordination rests is Franco Modigliani's famous observation that "a private enterprise economy using an intangible money needs to be stabilized, can be stabilized and therefore should be stabilized" (Modigliani, 1977, p. 1). Proponents of international policy coordination firmly adhere to Modigliani's credo; it is not surprising that monetarist or new-classical economists either ignore the debate on policy coordination or are highly critical of such proposals (1). The other cornerstone on which the case for

(1) Cf. Friedman's (1964, p. 8) early warning: "In recent years, the concern with the international balance of payments has given rise to greater co-operation among central banks... I must confess that I regard the tendency as an exceedingly dangerous one". More recently, an outspoken critic of international policy coordination has been Vaubel (1980, 1983, 1985).

international policy coordination rests denies Modigliani's second hypothesis on stabilization policies: In interdependent countries where the actions of one policymaker impinge upon the targets of other policymakers, sovereign policy making by itself cannot stabilize the economy. In fact, attempts to do so will lead to a situation that is worse than the situation that would have prevailed if there had been no attempts to stabilize the economy. But all is not lost for the cause of fine tuning: the solution to the problem lies in the international coordination of national policies. Via the route of international fine tuning, Modigliani's second hypothesis is vindicated. The task of proponents of international policy coordination is therefore two-fold:

- demonstrate that sovereign policymaking is suboptimal and
- show that international policy coordination can improve upon sovereign policymaking.

The analytical demonstration that sovereign policymaking is suboptimal is by now familiar; we will therefore restrict ourselves to a verbal presentation of its main assumptions and results (1). At the outset the well-known point is made that macroeconomic policy measures are transmitted to other countries thereby affecting their macroeconomic performance. Various channels for these spillover effects have been considered in the literature (2), among them are real exchange rate changes and changes in income which affect international trade flows. The fact that domestic macroeconomic variables such as output and inflation are affected by policy decisions abroad establishes a strategic interdependence among policymakers which can be analyzed using the tools of game theory. Three basic assumptions are made in order to arrive at the suboptimality of sovereign policymaking:

(1) Cf. Cooper (1985a, pp. 1213-1217) for a useful introduction to the analytical framework. He also provides a survey of the literature.

(2) Cf. Canzoneri, Gray (1985, pp. 525 f.).

- (i) The best course of action for domestic policymakers depends on the policy choices made abroad. It is assumed that policymakers behave myopically when optimizing their response to foreign policy disturbances: they ignore possible measures of their counterparts caused by their own decisions. This assumption is familiar from models of firms' behavior in oligopoly theory.
- (ii) There is a scarcity of policy instruments and therefore policymakers have to trade off different targets when deciding on the use of their policy instruments. Analytically such trade-offs are modelled using utility functions of policymakers (1). Optimality then requires that policy instruments are employed until policymakers are indifferent between, for example, a further decline in unemployment and a further rise in inflation (2).
- (iii) Uncoordinated attempts at fine tuning are initiated by a global shock that affects all countries alike (3). In the absence of corrective policy measures, a negative supply shock would leave output below and inflation above their target values. Policymakers in each country therefore attempt to reattain the output and inflation levels they had desired before the shock occurred. An alternative that is not considered would be an adjustment of targets to levels that are more appropriate to worldwide economic conditions after the shock has occurred.

(1) Oudiz, Sachs (1984, pp. 37 f.) attempt to quantify (or reveal) the preferences of policymakers. Their analytical framework is rejected in Martinez-Oliva (1987).

(2) Not surprisingly, all models imply a positive trade-off between output and inflation.

(3) Cf. Canzoneri, Gray (1985, p. 549): "By assumption, all games are initiated by a global shock that will, in the absence of corrective policy, cause output levels in both countries to deviate from their full employment values".

Given these assumptions, it can be shown that individually rational behavior of each policy-maker leads to a globally suboptimal situation, a result that is demonstrated using two scenarios.

In scenario 1 it is assumed that foreign expansionary policy is transmitted positively to the home country, causing a rise in output. This scenario has also been called "locomotive world" (1). The suboptimality arises in this scenario because uncoordinated policy measures to combat the negative output effects of the external shock do not go far enough. Individual optimizing leads to expansionary measures until the marginal utility gain from a further increase in employment is just matched by the marginal utility loss from a further increase in inflation. From a global point of view, however, welfare would increase at this point if the home country undertook further expansionary measures because output abroad would rise. Since these positive spillover effects do not enter the welfare calculations of policy-makers, additional expansionary measures are not undertaken (2). Since every policymaker behaves in this way, a contractionary (less expansionary) bias characterizes economic policies throughout the world. Scenario 1 is occasionally said to characterize the period after the rise in oil prices at the end of the seventies. It is claimed that the worldwide recession in the wake of the second oil price rise would have been less severe if countries had coordinated their macroeconomic policies.

(1) By Canzoneri, Gray (1985). The analysis in Drèze et al. (1987) is based on scenario 1.

(2) Canzoneri, Gray (1985, p. 560): "While both players respond to an oil price increase by increasing their money growth rates, they do not increase them enough". The reason why countries prefer not to contribute to further increases in monetary growth is similar to the incentive problems of the provision of public goods: it is optimal for everyone to speculate on a free ride on the locomotive of expansionary policy abroad.

A "beggar-thy-neighbor" world is depicted in scenario 2. In this case policy measures cause negative spillovers in the other country. Usually it is assumed that policymakers try to "import" price stability via a real appreciation of their currency caused by a monetary policy that is more restrictive than abroad (1). If all policymakers act in this manner, they can never for long achieve their aim because of the reaction from abroad that they myopically fail to take into consideration. Thus the wish of every policymaker to "import" price stability results in a dynamic adjustment process familiar from duopoly theory as the zig-zag movement between two reaction functions. As policymakers continue to react to disturbances from abroad, their policy stance becomes progressively more restrictive. It is only at the intersection of the reaction functions of both policymakers that this process ceases. The equilibrium thus attained is usually referred to as a non-cooperative Nash-equilibrium. It is characterized by the fact that both countries choose the same (low) rate of monetary expansion with the exchange rate remaining constant and the inflation target abroad no longer affected by domestic monetary policy. The non-cooperative Nash-equilibrium is suboptimal from a global point of view: since monetary policy is more restrictive than originally planned, unemployment is needlessly high. Empirically scenario 2 is said to characterize worldwide economic policies in the early eighties, when monetary policies in Western Europe were quite restrictive in order to avoid an even greater depreciation of their currencies against the dollar.

Having demonstrated that uncoordinated attempts at fine tuning lead to global inefficiencies, it is fairly straightforward to demonstrate that international policy coordination leads to an improvement. Whereas under a system of

(1) The analyses of Cooper (1985a, pp. 1214-1218) and Oudiz, Sachs (1984, p. 50 ff.) are based on scenario 2.

competitive policies "spillover effects" were ignored in each policymaker's welfare calculus, they are now taken into consideration. By explicitly trading expansionary measures in scenario 1, the coordinating countries remove the "checks and balances" that the international monetary regime imposes upon a country that seeks to expand on its own, i.e. a devaluation of the currency or a loss in reserves. Indeed as most models assume that inflation is only caused by a rise in the price of imported goods, there is no theoretical limit as to how far countries could jointly expand their money supplies as long as they do so at the same rate (1). In scenario 2 coordination consists of the mutual commitment to refrain from competitive beggar-thy-neighbor policies, be they aimed at "importing" employment - the classic worry of Keynesian authors - or price stability, their more recent concern. In both cases coordination leads to a Pareto improvement: every country is at least as well off in a coordinated regime, some even better (2). A comparison of the coordinated policy measures in both scenarios shows that coordination may either consist of the joint decision to embark upon fine tuning (scenario 1) or the agreement to refrain from doing so in an uncoordinated way (scenario 2).

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- (1) Most elementary models on international policy coordination assume that countries are identical in every aspect. In this special case coordination always results in identical measures. Once more complicated models with asymmetries are used, coordination may imply different policy stances in different countries. Thus it is not generally true that policy coordination implies a synchronization of policies in one direction.
 - (2) Therefore every country has an incentive to participate in policy coordination. Oudiz, Sachs (1984, p. 3 f.) note that this demonstration is an improvement to earlier empirical exercises which merely demonstrated that a coordinated expansion had a greater impact on worldwide output than an uncoordinated expansion. It had to be assumed that some countries act altruistically for this result to hold. Cf. also Vaubel (forthcoming).

III. A Critique of the Game-Theoretic Approach

Supporters of international policy coordination who base their arguments on the game-theoretic approach may wonder at the stupidity of politicians who do not seize this opportunity for welfare gains. Is the widespread absence of coordinated macropolicies a sign of "policy failure" on an international scale or might there be reasons that explain why the prescription of the game-theoretic approach does not lend itself to an application in the real world? We proceed in two steps. At first the question is addressed whether the game-theoretic characterization of an uncoordinated or competitive international economic system fits the present situation in the world economy. Our main conclusion is that characterizing present worldwide relations among policymakers as a non-cooperative Nash-equilibrium is unduely pessimistic. If we are in fact not in as bad a situation as proponents of international policy making would like to make us believe, a close look at the actual working of international coordination seems called for. This is our second step where we focus on possible costs of international policy coordination.

1. Are Policymakers Myopic and Adamant?

Whether policy coordination can in fact lead to welfare gains depends on initial conditions. Proponents of policy coordination claim that the present international "non-system" is inefficient; in this paragraph we question their assumptions about the behavior of policymakers.

One of the crucial assumptions says that policymakers do not adjust their macroeconomic targets in the face of adverse external shocks. In fact the discrepancy between the desired value and the realized value of the policy target initiates all games which do not stop until this gap has disappeared.

Why would it be more realistic to assume that politicians adjust their targets to more reasonable values in the face of adverse developments?

An adverse external shock carries the simple message for domestic policymakers that their range of attainable targets has become smaller. The result of attempts to deny this are nicely summarized by a Swedish policymaker: "We attempted to build a bridge but ended up with a pier" (1). If policymakers adjusted their targets instead of trying to build bridges, policy coordination would become superfluous because there would no longer be any need for policy measures, be they coordinated or not (2).

It is well-known from duopoly theory that the behavioral assumptions underlying a non-cooperative Nash-equilibrium are highly unrealistic: "It models the behaviour not of rational economic agents but of imbeciles. They learn nothing, clinging in spite of over-whelming counter-evidence to zero reactions" (Bacharach, 1977, p. 71). Current international policy making - while not presenting the textbook case of the coordinated use of policy instruments - does not seem to be conducted by politicians who myopically fail to take into account the reaction of the other countries to their own decisions. One quote may suffice to demonstrate this: "The coordination process ... is an ongoing process involving regular consultations among the participants on their economic objectives and projections, current policies and performance, and the possible need for remedial action" (Mulford, 1987, p. 9). As a consequence we most probably are not in a non-cooperative Nash-equilibrium and the potential

(1) Reported by Oudiz, Sachs (1984, p. 3).

(2) Cf. Martinez-Oliva, Sinn (1987). The conclusion does not change if, instead of building a bridge single-handedly (uncoordinated policies), one tries to do so with the help of others (policy coordination). As will become clear in the course of this essay, the latter amounts to trying to build a bridge and ending up with two piers.

gains from coordination are not as considerable as implied by the game-theoretic approach.

The game-theoretic approach further assumes that in each country there is a scarcity of instruments relative to targets. One reason is that policymakers are assumed to try to achieve not only domestic but also external targets such as a particular balance on the current account or a particular exchange rate. At first sight coordination seems indeed to be necessary for such targets to avoid conflicts - after all, not every country can have a current account surplus, and between any two countries there can only be one exchange rate. Yet one may wonder whether current account balances are meaningful targets of economic policy at all. Two conjectures are often brought forward in discussions about external account balances. First, there seems to be a tendency in international fora to associate a current account balance of zero with an equilibrium, positive or negative current account balances are often referred to as imbalances (1). Second, surpluses carry the odium of beggar-thy-neighbor-policies: Germany's and Japan's surpluses are said to lead to an import of employment while the deficit countries deplore a loss of employment. Both conjectures are wrong (2). Any deficit on the trade account is financed by a surplus on the capital account. As long as the foreign investor earns a good return by investing abroad, there is no reason why the deficit could not continue. Imbalances in the sense of unsustainable situations need not occur (3). The same is true for a trade account surplus, although there the

(1) The EC (1986) as well as the OECD (1987a, p. IX f.) refer to the presently observed balances as disequilibria. Countries with a deficit are urged to curb spending, those with a surplus should stimulate domestic spending.

(2) And one may wonder why economists have not stressed this point more.

(3) Cf. Samuelson (1972, p. 661): "Thus, there is no necessary reason why a country should ever be paid off for its past lending, unless it has become relatively poorer". The same point is made by Gale (1974).

stability is rarely questioned. The second conjecture concerns the employment effects of trade account balances. No new jobs are created by the presence of a trade account surplus alone. On the contrary, the concomitant capital export increases employment abroad, in the recipient country. The employment experience of the U.S. in the first half of the 1980's as a major recipient of capital compared with that of major capital exporting countries supports this view. The balance on the external account of a country is devoid of any normative implications: its size and its sign cannot be associated with the welfare of a country in the same way as, for example, a stable consumer price index or steady economic growth. The same can be said for the exchange rate: just like any other relative price it serves as an indicator of relative scarcities and cannot be a meaningful target of economic policy.

The implications for international policy coordination are substantial: if exchange rates and external accounts balances cease to serve as targets for economic policy, there may no longer be a scarcity of instruments to attain the targets of policymakers. Instead of searching for new instruments (1), an equality of the number of targets and instruments can also be achieved by making external targets redundant (2). This conclusion will not be accepted by those who view the targets of policymakers as sacrosanct and argue that the de facto pursuit of external targets by politicians requires the economist to calculate how these targets can be reached by implementing an internationally coordinated policy package. The package (and the economist's calculations) become superfluous if governments were urged to renounce to all their external targets. However, such a disinterested-

(1) Cf. Cooper (1985, p. 1230 f.).

(2) Oudiz (1985, p. II) describes the scarcity of policy instruments in Europe. Since governments' policies concentrate on fighting inflation and correcting current account imbalances, no instrument is left for curing unemployment.

ness on behalf of the economic profession is currently lacking.

Is the present international monetary system as inefficient as has been claimed and does it therefore warrant a coordinated effort of economic policies to restore growth and employment? A closer look at present international economic arrangements has shown that they are in fact neither characterized by the inefficient non-cooperative Nash-equilibrium nor by a continuous effort at coordination. The true description would probably be that of a system where occasional coordination of economic policy is taking place, mainly in the realm of exchange rate stabilization. In all other areas it is still true what Max Corden observed some years ago: "The current laissez-faire international monetary system is simply a market system which coordinates the decentralized decisions reached by private and public actors and is likely to be as efficient in this as the market system is within the domestic economy" (Corden, 1983, p. 71). As a result, the likely gains from coordination are going to be small or zero. As a consequence, possible costs and efficiency losses due to international coordination become more important.

2. Efficiency Losses Due to International Policy Coordination

In many studies international coordination of policies is presented as a panacea to important worldwide economic problems. It is invoked time and again as an unexamined alternative: the proof that existing arrangements are deficient in one aspect or the other is a necessary and sufficient condition to justify the call for coordination. What such Nirvana economics (Demsetz, 1969) fails to take into consideration is that policy coordination itself may fail, primarily for two reasons:

- policymakers' lack of knowledge about the structure of their economics may prevent an implementation of the optimal plan;
- the coordination process changes the incentives for third parties in such a way that their reaction may militate against the success of the coordination package.

The gains from coordination can only be realized if policymakers agree on and know the structure of the world economy and the size of the "spillover effects" of their own policy measures (1). At present these prerequisites for successful policy coordination are certainly not met. Table 1 reports the results of a simulation exercise where different econometric models were used to predict the effect of an expansion of U.S. government spending on output and inflation in the United States and the rest of the OECD-countries as well as on the dollar exchange rate. While there is some agree-

Table 1 - Simulation Effect of an Increase in Government Expenditure in the United States by 1 Percent of GNP (Percentage changes) (a)

Model	GNP United States	Consumer Price Index United States	External Value of the Dollar (b)	GNP Rest of OECD- Countries	Consumer Price Index Rest of OECD- Countries
MCM	+1.8	+0.4	+2.8	+0.7	+0.4
EEC	+1.2	+0.6	+0.6	+0.3	+0.2
EPA	+1.7	+0.9	+1.9	+0.9	+0.3
Project LINK	+1.2	+0.5	-0.1	+0.1	-
Liverpool	+0.6	+0.2	+1.0	-	+0.6
MSG	+0.9	-0.1	+3.2	+0.3	+0.5
MINIMOD	+1.0	+0.3	+1.0	+0.3	+0.1
OECD	+1.1	+0.6	+0.4	+0.4	+0.3
Wharton	+1.4	+0.3	-2.1	+0.2	-0.1
DRI	+2.1	+0.4	+3.2	+0.7	+0.3

(a) Effect in the second year of increase in government expenditure by 1 percent of GNP. - (b) Positive sign: effective appreciation of the dollar.

Source: Frankel, Rockett (1986).

(1) Cf. Vaubel, 1985, p. 237.

ment on the sign of the impact multipliers, there is little agreement on the size of the effect.

Although policymakers are uncertain about the true model of the world and therefore disagree, they will still be able to coordinate policies on the basis of their divergent views as long as each of them believes that the agreed upon measures make his country better off. It is not certain, however, that the agreed upon policy package does indeed lead to a Pareto improvement. This is the main point of a recent paper by Frankel and Rockett (1986). They assume that the true model of the world is not known to the policymakers, however, each one of them believes his model to be correct. Agreement on a coordinated policy package will only be reached if each policymaker believes the package will make his country better off in terms of the macroeconomic targets he pursues. Once policymakers have decided on a coordinated policy package on the basis of their beliefs about the workings of the economy, the effects of these measures can be simulated using the "true" model. Frankel and Rockett repeat this exercise with eight different models, in each round of the simulation exercise another model is the "true" one. The upshot of Frankel and Rockett's study is that in 206 out of 512 possible cases U.S. welfare is reduced by coordination in comparison to the initial, uncoordinated situation, in 289 cases welfare improves. For the remaining OECD countries welfare is improved by coordination in 297 cases, in 198 cases it is reduced.

Frankel and Rockett's results can be illustrated by one of the basic scenarios of international policy coordination: a joint monetary expansion. If politicians believe that by coordinating their expansionary monetary policies they can avoid inflation - because there will be no real depreciation - and raise output, they will engage in the coordination effort. If, however, the true model of the economy is one where monetary expansion - whether coordinated or not - leads to inflation and where employment gains are only small

and transitory, the coordination effort will make all participants worse off.

Another reason why international policy coordination may be counterproductive is that it creates adverse incentives for those players that are left out of the coordination game. Rogoff (1985) considers the credibility problem of central banks vis-à-vis the private sector. He notes that international policy coordination lowers the incentive for the central bank to prevent inflation. In a system of uncoordinated monetary policies the announcement of the central bank not to yield to private sector pressure to accommodate high nominal wage increases by increasing the money supply is credible because if the central bank were to do so, the country would have to undergo an undesirable real depreciation of its exchange rate. But the same announcement is less credible in a system where monetary policies are coordinated because the threat of a real depreciation is not present. This in turn will fuel inflationary expectations, raise nominal wages and lead to actual higher inflation if the central bank accommodates the rise in wages (1).

Rogoff's argument may be illustrated with the help of Table 2, which depicts expectations and actual policy in matrix form to derive implications for the achievement of macroeconomic targets. If monetary policy is not coordinated, inflationary expectations are low because the central bank is expected to avoid a depreciation of the currency. The probability of inflation rises in a coordinated regime, therefore inflationary expectations are high and higher wages are set. Rogoff demonstrates that in a coordinated regime the probability of missing one's macroeconomic targets rises. If in a coordinated regime the central bank pursues - contrary to expectations - a stable monetary policy, there is an unex-

(1) "A regime in which governments conduct monetary policy independently may produce lower time-consistent inflation rates than a regime in which central banks cooperate; intergovernmental cooperation can exacerbate the central banks' credibility problems vis-à-vis the private sector" (Rogoff, 1985, p. 211).

pected rise in real wages leading to unemployment (case 2) (1). If, on the other hand, expectations of a loose monetary policy are fulfilled and the central bank does indeed accommodate the steep wage increases, it will cause inflation (case 4). Only in case 1 are both targets, price level stability and full employment, actually met. In this case inflationary expectations are low and the central bank does not attempt to become more expansionary. This optimal case prevails under a regime of uncoordinated monetary policies.

Table 2 - Macroeconomic Targets under Coordinated and Competitive Economic Policies

Actual Policy Stance \ Expectations	Competitive Regime: Inflationary Expectations Low	Coordinated Regime: Inflationary Expectations High
Maintaining Price Stability	(1) All targets are achieved	(2) Unemployment
Expansionary	(3) Inflation	(4) Inflation

While the previous arguments against policy coordination have pointed out that well-intentioned attempts to raise national welfare via international policy coordination may have unintended negative implications for the countries involved, other critics of international policy coordination stress the public choice arguments; they particularly question the assumption that politicians do in fact aim at raising the welfare of their citizens. Instead it is assumed that international policy coordination increases the opportunities of politicians to further their own aims at the expense of their citizens. By removing the checks and balances of international currency competition (in the form of an unwanted currency depreciation), international policy coordination allows politicians to form a cartel and collude against citizens by raising their price (inflation rate) and lower their output (real balances) (Vaubel 1980, 1983, 1985).

(1) Case 2, however, is unlikely to occur.

IV. Coordination Under Fixed and Flexible Exchange Rates:
Recent Experiences

The world financial system can be characterized as an arrangement of managed floating between the three big blocks United States, Japan and Europe. At the same time, the European Monetary System (EMS), effective since 1979, is a regime of fixed but adjustable rates. What is the experience with these two regimes with respect to international policy coordination?

1. Coordination to Avoid Undesired Exchange Rate Changes?

Under fixed exchange rates, economic policies are coordinated by definition (1). If exchange rates are flexible, countries are relatively independent with respect to monetary and fiscal policy; but there may still be repercussions from policies abroad which affect domestic targets (see also section II). This is especially the case when policy-induced real exchange rate changes are as large and persistent as they were over the past 15 years. Such changes affect the relative competitive position of the import sector vis-à-vis the export sector of the economy as well as competitiveness among countries. This may lead to temporary or permanent effects on employment. The most important argument with respect to coordination seems to be that movements of real exchange rates immediately affect the inflation rate and can

(1) This is a special form of coordination, namely the synchronization of monetary policy; all countries have to follow the course pursued by the dominant country. This implies that inflation rates more or less have to converge. - The proposal of target zones is similar to such a regime, exchange rates would be more or less fixed. However, target zones - although propagated by proponents of coordination - would run counter to the idea of coordination, if, as in the present discussion, it is suggested that monetary policies should be differentiated between countries. For a critical analysis of target zones, see Scheide (1986).

thus cause a violation of an economic target (1). An often quoted example in the coordination-debate is the competitive revaluation (see section II). It is argued that - if inflation rates are to be reduced - monetary policies should be coordinated in order to avoid that policies become more restrictive than originally intended because this would affect employment negatively. For example, proponents of coordination usually refer to the Dollar-revaluation between 1980 and 1984: Countries in Western Europe followed a rather restrictive policy in order to protect their economies from imported inflation (2). This may not be the "textbook-case" of competitive revaluation; but the European complaints about the US-policy of high interest rates show that the countries would have preferred a more considerate policy on the part of the United States. They especially argued again and again that the United States should relax the stance of monetary policy (3).

Another example which is usually quoted to propagate coordination is the "French experiment" of 1981/82. The French government tried to fight unemployment by expansionary monetary and fiscal policy (4). However, this strategy had to be given up very soon; one of the reasons was the pressure on the French Franc which had to be devalued several times within the EMS. Now, proponents of coordination argue that it would not have been necessary to give up this policy

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- (1) The experience over the past 15 years shows that this can indeed be a substantial problem; the real exchange rates between, for example, the US-Dollar, the DMark and the Japanese Yen have changed by 50 p.c. or more within a short period of time.
 - (2) Whether the revaluation of the dollar had a negative impact on employment is difficult to judge. If negative impulses resulted from tighter monetary policies, there were expansionary impulses for export industries.
 - (3) Ironically, later on the same countries complained that monetary policy was too loose. In 1986, they tried to prevent a sharp fall of the dollar by following the expansionary course in the United States (especially in Japan and West Germany).
 - (4) Cp. the critical assessment in Trapp (1982).

- which they obviously would support - if other countries had only followed a similar policy (cf. scenario 1).

Why had the franc to be devalued? If market participants had viewed the experiment as sound policy the franc would have surely remained strong; but agents obviously expected more inflation. If coordination really had implied an expansionary course elsewhere, proponents of coordination often ignore that such a strategy would have also led to more inflation. In the case of the unilateral move of France the inflationary dangers only became obvious faster; but even in the case of coordination inflation would have gone up, also in France: firstly, because of higher monetary expansion in this country, and secondly because of the higher increase of import prices (1).

2. The EMS: An Example of Successful Coordination?

The EMS is usually viewed as an example of successful coordination. There was much skepticism in the beginning, but more recently the judgement has become generally positive (2). In particular, the proponents point to the substantial reduction of inflation rates in the member countries (3).

Table 3 shows that inflation rates within the EMS went down substantially: Between 1979 and 1986 the average rate declined by some 6 percentage points, and inflation has been

(1) In the case of no coordination, there will be a devaluation with constant foreign prices; in the case of coordination, the exchange rate is unchanged, but import prices go up because monetary expansion abroad increases and leads to an upward movement of prices on all markets.

(2) Fischer (1987) call the EMS "surprisingly successful".

(3) The Commission of the European Community mentions not only the reduction but also the convergence of inflation rates (EC, 1986).

very low recently, which is also due to the decline in oil prices, a common factor for all regions. However, these figures alone are not so important, they have to be compared to the performance of an uncoordinated system of (flexible) exchange rates. In fact, practically all countries have succeeded in bringing down their inflation rates. The decline was even larger for the average of OECD-countries outside the EMS; and the rate there is now as low as in EMS-countries, while it was higher when the EMS was established. It is true that the inflation rates in European countries that are not members of the EMS are relatively high; but they have also been successful and show the largest decline among the regions mentioned (1).

Table 3: Inflation Rates in OECD-Countries(a)

Year	EMS-Countries	Total OECD	OECD-Europe	OECD Without EMS-Countries	OECD-Europe Without EMS-Countries
1979	8,5	9,8	10,6	10,1	14,3
1980	11,7	12,9	14,3	13,2	18,5
1981	11,5	10,5	12,2	10,3	13,2
1982	10,4	7,8	10,5	7,1	10,7
1983	8,5	5,2	8,2	4,3	7,7
1984	6,6	5,2	7,4	4,7	8,6
1985	5,5	4,5	6,5	4,2	7,9
1986	2,7	2,6	4,0	2,6	5,9
- Percentage change between 1979 and 1986:					
	-5,8	-7,2	-6,6	-7,5	-8,4
- Percentage change between 1979/80 and 1985/86:					
	-6,0	-7,8	-7,2	-8,3	-9,5
(a) Percentage change of consumer prices over previous year (weights according to OECD).					

Source: OECD (1987, a, b); own calculations.

(1) De Grauwe (1985) arrives at a similar result.

This should not in any way understate the success of stabilization efforts among EMS-countries. It is remarkable that such large progress has been made by countries like Italy and France which had "traditionally" experienced high inflation (1). There is even the possibility that the EMS contributed to this success in the sense that it enabled them to follow a course that otherwise might not have been possible due to political resistance within these countries (2). But when compared to other regions, the same - or even a larger - reduction could be achieved in an uncoordinated system. Moreover, several countries with traditionally high inflation rates have been equally successful as Italy or France, for example the United Kingdom or Portugal. And it has also to be taken into account that countries which had always been more stability-oriented - like, for example, West Germany - probably needed a longer time to bring down their inflation to acceptable levels.

Therefore one cannot accept the argument that the EMS shows how successful coordination is, because it owes its success to a large extent to the general desire of all countries in the early eighties to bring down inflation. It is by no means clear whether the EMS will work in the future. If some countries once again resort to loose monetary policies in order to fight unemployment, realignments could only be avoided if West Germany acted in the same way. Certainly the current international demands that Germany should reflate the economy suggest that new conflicts may emerge (3).

(1) Italy's rate in 1980 was higher than 20 p.c., in France inflation was some 13 p.c.

(2) This is the interpretation of Eggerstedt, Sinn (1987).

(3) The attitude of some countries is sometimes ambiguous: On the one hand they expect an advantage by following the stability-oriented course of the German authorities, on the other hand they complain about the stance of policy. Obviously they would prefer stable exchange rates but a higher rate of inflation.

V. International Coordination: Only a New Version of the Old Locomotive-Theory?

Practically all proponents of coordination use a Keynesian model. This is true for empirical studies (e.g. Oudiz, Sachs, 1984) as well as for numerous publications on a less technical level such as those of the EC-Commission or the OECD. Typically, it is argued:

- (1) High unemployment results from a lack of demand. Economic policies have not been expansionary enough in recent years but have had a deflationary bias. Now the time has come, the argument goes, to give up overly restrictive policies (1). A typical Keynesian element is the use of "output gaps" in those models. Not only is there much controversy about whether such concepts make sense at all; but the order of magnitude calculated for these gaps is far beyond what other institutions estimate. For example, in his baseline-scenario, Oudiz (1985) estimates the output gap for West Germany to be some 6 p.c. for 1986. On the other hand, the estimate of the Sachverständigenrat (1986, p. 65) for the GNP-potential implies that the rate of capacity utilization in 1986 was roughly equal to the long-run average of the period 1963-1985.
- (2) It is generally taken for granted that policymakers can successfully use monetary and fiscal policy to manipulate output, employment, and the current account in the desired way (2). This totally relies on the assumption that economic policy can indeed be effective (the Lucas-critique obviously has not reached those models

(1) The OECD (1987a, p. XI) argues with respect to Germany and other countries: "Fiscal prudence over recent years has created scope for a larger budgetary contribution to domestic demand...".

(2) Typical examples are the publications of the EC as well as the OECD which imply that surplus countries should raise, deficit countries should lower domestic demand.

yet). After the experience of the last 15 years it is dubious whether money illusion can be persistently exploited as suggested by the models. Further, doubts have been raised - not only by the revival of the "Ricardian equivalence" - whether fiscal policy can really have the effects on employment, interest rates, exchange rates and so on as the models imply (1).

- (3) The optimism with respect to the manipulation of real variables certainly has to do with the time horizon of the models; they usually refer to the short run only. Then a Phillips-curve model is used to estimate the real effects of changes in monetary policy. Similarly, with respect to exchange rates, proponents concentrate on the short-run effects of exchange rate changes. However, there the analysis should go beyond the initial effect of overshooting; what happens afterwards? When monetary expansion decelerates the rate of inflation will fall rather quickly. But this "success" is not permanent. The idea of overshooting implies that after some time the currency will have to devalue again. In this period of adjustment prices will rise faster than before. This argument has important consequences for the desirability of international coordination: If only short-run exchange rate changes are included in the utility function, there is an illusion about the overall effects of a change in monetary policy. Therefore the time horizon for evaluating economic policies is not appropriate. Even proponents of coordination are skeptical and admit that the short-run effects may not always persist (2).

(1) For a discussion about the meaning and effects of deficits see Brunner (1986).

(2) In the General Discussion (1984, p. 75) of the paper by Oudiz and Sachs (1984) we find: "Sachs acknowledged that some effects might be modified or conceivably even reversed when looked at beyond the horizon of the model...". But: "... he did not agree that the short-run welfare results would be overturned". - With reference to the Bonn summit of 1978, Horne, Masson (1987, p. 29 f.) argue: "... the Bonn measures placed insufficient

They also concede that the short-run and long-run utility functions may well be different, and, most importantly, that the short-run seems to fit the policymaker's time-horizon better: "... Oudiz observed that what arguments were appropriate in the objective function depended on the time period of the analysis. It was possible to conceive of a long-run analysis and objective function. But this lay beyond the scope of present quantitative models and, possibly, beyond the interest of the policymakers" (General Discussion, 1984, p. 75). This certainly sanctions stop-and-go policies and reduces economic advisors to the level of "your obedient servant"! (Vaubel, forthcoming).

- (4) The supply side or the role of relative prices is rarely mentioned in the models; they primarily refer to output gaps which have to be closed by expansionary demand policies. If interest rates are considered too high, proponents of coordination conclude that monetary policy has to become expansionary; however, high interest rate may also reflect capital shortage, i.e. a real phenomenon which cannot be made to disappear by printing money. As far as unemployment is concerned, the role of wages is rarely mentioned. But if unemployment is due to the fact that real wages are too high or that wages are not sufficiently differentiated, the comparative advantage of monetary policy rests with fighting inflation and not unemployment and it should therefore be assigned to the former target.

These arguments resemble those of the locomotive-approach which was propagated in the second half of the seventies. In fact, proponents even stress that the measures taken at that time can be considered as a good example for today's desired

emphasis on the medium-term consequences of fiscal expansion...".

policies (1). There is one important difference, however, in that the recent debate focuses more on game-theoretic arguments, and this seems to be an important progress: While in earlier studies it was stressed that a coordination package would be beneficial for the group of industrial countries as a whole, game-theoretic arguments demonstrate that each country would be better off with respect to its own targets if it participates in coordination. So this new approach no longer relies on altruistic behavior of some countries (cp. Oudiz, Sachs, 1984, p. 3 f. and Oudiz, forthcoming).

In the seventies, too, proponents of coordinated expansion argued that inflationary dangers did not exist (e.g. Solomon, 1978); they argued that the underutilization of capacities was - in their view - substantial since unemployment was very high compared to the early seventies. But after the recommended policies were pursued inflation accelerated. Nevertheless, proponents of coordination still hold today that the locomotive-experiment was a success; obviously, they must have a different explanation for the behavior of inflation, for example, cost-push factors. The fact is, however, that inflation started to accelerate well before oil prices were raised. This acceleration can be explained by the global stance of monetary policy which had become expansionary already in the course of 1977. The oil price hike led to a further increase but was not the prime cause of inflation (2).

(1) See, for example, Cooper (1986) and Bean (1985).

(2) Inflation started to go up in the United States first; here, monetary policy had become expansionary very early. Already in the course of 1978, that is before the increase of oil prices, inflation accelerated to some 10 p.c. from 6.5 p.c. and 5.5 p.c. in the previous years. Other countries followed a little later.

VI. What Can Be Expected From Arrangements on an International Level?

Present economic problems of industrial countries can hardly be explained by a lack of opportunities to coordinate. After all, international organizations have been established exactly for this purpose; and governments and central banks meet regularly in order to inform each other about policy intentions and so on. Did the governments not take advantage of these opportunities, or was coordination simply "bad"?

As far as the economic summits are concerned, the statements and commitments have in general been empty (1). This is only to be expected: Summiteers have every reason to promise very little since their annual meetings make it very easy to "punish" those among them that do not keep their part of the bargain. While certain characteristics of the summits - the small number of participants and their credibility, the annual repetition of the bargaining game - ensure that those bargains that are struck are also kept by all parties (2), this very fact militates against detailed and far-reaching agreements. Another reason why they do not promise much is that they know that it would be difficult to carry out the measures "at home".

The lack of precise commitments may also be due to the fact that there are substantial differences between countries with respect to their targets and priorities. This is quite normal, and the flexibility of exchange rates has the important function of making possible the different policy changes which may reflect different targets. Although in-

(1) The Bonn summit of 1978 may be called an exception. - Putnam, Bayne (1985) argue that this emptiness with respect to precise commitments may have to do with the fact that events of general political relevance also played a role in the conferences.

(2) Put differently, the prisoners' dilemma situation is overcome. Cf. Putnam, Bayne (1984).

ternational coordination does not require that all countries have the same priorities and follow the same strategy it does need permanent negotiations about policy measures. While the equilibrium of non-coordination, the Nash-equilibrium, is stable, an improvement with respect to Nash requires permanent discussions and negotiations about policy measures. Such bargaining about the correct course of policy leads to uncertainty on the markets; there are numerous examples of public statements by various policymakers on the "correct" level of the US-Dollar exchange rate or the policy measures to be taken by other countries which were certainly confusing the market. One may question whether the bargaining process can in fact find the efficient solution calculated by diligent economic advisors. If we accept for a moment the claim that international policy coordination gives rise to net gains for each country, the bargaining process has to distribute these net gains among the participants. It seems likely that the dispute over a "fair" distribution of gains interferes with the smooth fine tuning that is required when managing the world economy - a fact that even proponents of policy coordination admit (see, for example, Cooper, 1986).

Coordination can only work and be carried out successfully over a long period of time if precommitments are credible. Such commitments have to be reliable just like those given on a national level. However, the experiences with domestic policies are not very encouraging: As far as fiscal policy is concerned, in many cases the promises concerning future spending cuts or reduction of deficits were not kept. And monetary targets were missed again and again in many countries (see, for example, OECD 1987a, p. 15 f.).

Present attitudes towards international agreements do not make cooperation a likely prospect for the future. This is one of the reasons why the Louvre-agreement of February 1987 failed. More generally, the United States do not take

monetary targeting seriously anymore. It may be true that the various aggregates have undergone severe changes and that monetary targeting has become more difficult. But the new mode of policy is certainly also due to the fact that the US-authorities no longer believe that monetary targeting makes much sense at all. How else can it be explained that they urge other countries to do the same and completely neglect targets (1)? Even if one agreed that international coordination was desirable, it would be quite unlikely that successful moves could be expected on the basis of present controversies (2).

VII. Can the Targets of Economic Policy Also be Achieved Without Coordination?

It seems that the arguments of proponents of international coordination are not valid or miss the point:

- The assumptions of the game-theoretic approach with respect to the behavior and the knowledge of policymakers are unrealistic;
- the selection of targets and instruments does not make much sense, especially as far as international targets - exchange rates and current account balances - are concerned;

(1) For example, the Deutsche Bundesbank is criticized not because it has not hit the target but because it is trying to return to the target path.

(2) On a recent conference, proponents of coordination argued that governments had regained a lot of credibility in recent years because they succeeded in bringing down inflation. Since then, however, unemployment has become the most pressing problem, and governments should now use their accumulated credibility and increase the money supply one more time - and certainly, for the last time (!) - to reduce unemployment. They argue: credibility per se is of no use if it is not exploited for something! This is maybe not the state of the present debate about coordination; but obviously these economists were serious about this proposal.

- the focus is almost exclusively on the short run, therefore important long-run effects of policy measures - especially concerning inflation - are not taken into account;
- the relevance of relative prices for growth, employment and the allocation of resources is neglected;
- there are hardly any success stories of coordination.

Policy mistakes are likely because of the choice of the time horizon or the wrong assignment of targets and instruments; they can be avoided if all countries accept a concept of economic policy which is oriented at the medium run (1). This strategy includes a steady monetary policy to achieve price level stability. Also, fiscal policy should avoid discretionary interventions and follow a preannounced path. Such rules or precommitments are desirable because they make policies predictable for all economic agents; their expectations will be stabilized (2). Given such a course of monetary and fiscal policy, the responsibility for employment rests with employers and unions.

In this strategy, the roles are assigned in such a way as to ensure that each instrument has the largest comparative advantage with respect to achieving the target. Since this assignment is unambiguous there is no need for international

(1) For this concept, see, for example, Gebert, Scheide (1980) and Vaubel (1983). It is designed to lead to steady growth without inflation, a target shared by all countries participating in the economic summits.

(2) In other words, the government should not interfere with the stabilization efforts of economic agents; if they make mistakes, they will learn quickly - because they will feel the consequences - and can decide about the adjustments. This concept also implies that the government should refrain from intervention if there are real shocks; this would only obscure the problem and make an adjustment more difficult. For example, referring to the oil price increase Hayek (1980) wrote: "As the price of gasoline goes up, either you have to buy less gasoline or buy less of everything else. If you look to the government for help for the time being, it makes you not see what your real problem is".

coordination. It is also specific with respect to responsibilities and incentives; for example, it would be of no use if the Deutsche Bundesbank was made responsible for unemployment in other countries. This would not only be a wrong assignment with respect to the comparative advantage of policy instruments, it would also create a problem of "moral hazard": If members of one country can always hold a foreign country responsible for not having contributed to the domestic target, the incentive to change their own behavior would be small.

This strategy can reduce the unpredictability and volatility of policies substantially, therefore exchange rates will also be more stable. They nevertheless have to be flexible to adjust to various circumstances, for example, if the countries choose different paths to achieve their targets. There is room for coordination if it leads to a situation where

- governments inform each other about their policy intentions;
- the targets are similar even if governments choose a different path to achieve them;
- strategies of open conflict - like beggar-thy-neighbor-policies or the erection of trade barriers - are excluded.

Bibliography

- BACHARACH, Michael, Economics and the Theory of Games. London 1977.
- BARRO, Robert J., David B. GORDON, "A Positive Theory of Monetary Policy in a Natural Rate Model". Journal of Political Economy, Vol. 91, 1983, pp. 589-610.
- BEAN, Charles R., "Macroeconomic Policy Co-ordination: Theory and Evidence". Recherches Economiques de Louvain, Vol. 51, 1985, pp. 267-283.
- BRUNNER, Karl, "Deficits, Interest Rates and Monetary Policy". Cato Journal, Vol. 5, 1986, pp. 706-726.
- CANZONERI, Matthew B., Jo Anna GRAY, "Monetary Policy Games and the Consequences of Non-Cooperative Behavior". International Economic Review, Vol. 26, 1985, pp. 547-564.
- , Patrick MINFORD, When International Policy Coordination Matters: An Empirical Analysis. Centre for Economic Policy Research, Discussion Paper Series, 119, London 1986.
- COOPER, Richard N. [1985a], "Economic Interdependence and Coordination of Economic Policies". In: Ronald W. JONES, Peter B. KENEN (Eds.), Handbook of International Economics, Vol. II., Amsterdam 1985, pp. 1195-1234.
- [1985b], "Panel Discussion: The Prospects for International Economic Policy Coordination". In: Willem H. BUITER, Richard C. MARSTON (Eds.), International Economic Policy Coordination. Cambridge, Mass., 1985, pp. 366-372.
- , International Economic Cooperation: Overview and a Glimpse of the Future. Paper presented at the OECD 25th Anniversary Symposium, Paris, October 21 and 22, 1986.
- CORDEN, W. Max, "The Logic of the International Monetary Non-System". In: Fritz MACHLUP, Gerhard FELS, Hubertus MÜLLER-GROELING (Eds.), Reflections on a Troubled World Economy. Essays in Honour of Herbert Giersch. London 1983, pp. 59-74.
- DE GRAUWE, Paul, "Should the U.K. Join the European Monetary System?". In: HOUSE OF COMMONS, Treasury and Civil Service Committee, The Financial and Economic Consequences of UK Membership of the European Communities. Memoranda on the European Monetary System. London 1985, pp. 5-11.
- DEMSETZ, Harold, "Information and Efficiency: Another Viewpoint". Journal of Law and Economics, Vol. 12, 1969, pp. 1-22.

- DREZE, Jacques, Charles WYPLOSZ, Charles R. BEAN, Francesco GIAVAZZI, Herbert GIERSCH, *The Two-Handed Growth Strategy for Europe: Autonomy through Flexible Cooperation*. Brussels 1987 (unpublished).
- EGGERSTEDT, Harald, Stefan SINN, "The EMS 1979-1986: The Economics of Muddling Through". *Geld und Wahrung*, Vol. 3, 1987, pp. 5-23.
- EUROPEAN COMMUNITY (EC), Commission, *Annual Report 1986-87*. Brussels, November 1986.
- FISCHER, Stanley, *International Macroeconomic Policy Coordination*. NBER Working Papers, 2244, Cambridge, Mass., 1987.
- FRANKEL, Jeffrey A., Katharine A. ROCKETT, *International Macroeconomic Policy Coordination When Policy-Makers Disagree on the Model*. NBER Working Papers, 2059, Cambridge, Mass., 1986.
- FRENKEL, Jacob, "The Collapse of Purchasing Parities During the 1970's". *European Economic Review*, Vol. 16, 1981, pp. 145-195.
- , "The International Monetary System: Should it be Reformed?". *The American Economic Review*, Papers and Proceedings, Vol. 77, 1987, pp. 205-210.
- FRIEDMAN, Milton, "Post War Trends in Monetary Theory and Policy". *The National Banking Review*, Vol. 2, 1964, pp. 1-9.
- GALE, David, "The Trade Imbalance Story". *Journal of International Economics*, Vol. 4, 1974, pp. 119-137.
- GEBERT, Dietmar, Joachim SCHEIDE, *Die Lokomotiven-Strategie als wirtschaftspolitisches Konzept*. Kiel 1980.
- "GENERAL DISCUSSION" of the Paper by Oudiz, Sachs [1984]. *Brookings Papers on Economic Activity*, 1984, No. 1, pp. 74-75.
- HAYEK, Friedrich A. von, "Gradualism Unacceptable. Stop Inflation Quickly". *International Herald Tribune*, Paris, February 2, 1980, p. 7.
- HORNE, Jocelyn P., Paul R. MASSON, "International Economic Cooperation and Policy Coordination". *Finance and Development*, Vol. 24, June 1987, pp. 27-31.
- INSTITUTE FOR INTERNATIONAL ECONOMICS, *Promoting World Recovery*. Washington, December 1982.

- MARTINEZ-OLIVA, Juan Carlos, Policy Makers' "Revealed Preferences" and Macroeconomic Policy Coordination: An Appraisal. Kiel Advanced Studies Working Papers, 84, February 1987.
- , Stefan SINN, The Game-Theoretic Approach to International Policy Coordination: Assessing the Role of Targets. Kiel Advanced Studies Working Papers, 97, September 1987.
- MODIGLIANI, Franco, "The Monetarist Controversy or, Should We Forsake Stabilization Policies?". The American Economic Review, Papers and Proceedings, Vol. 67, 1977, pp. 1-19.
- MULFORD, David C., "Economic Policy Coordination and LDC Debt Problems". Statement before the Subcommittee on Domestic Monetary Policy and the Subcommittee on International Finance, Trade and Monetary Policy, Washington, on November 5, 1987. In: Deutsche Bundesbank, Auszüge aus Presseartikeln, No. 83, November 17, 1987, pp. 9-10.
- ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (OECD) [a], Economic Outlook. Paris, June 1987.
- [b], Main Economic Indicators. Paris, July 1987.
- ODDIZ, Gilles, European Policy Coordination: An Evaluation. Centre for Economic Policy Research, Discussion Paper Series, 81, London 1985.
- , "Macroeconomic Policy Coordination: Where Should We Stand?". In: Herbert GIERSCH (Ed.), Macro and Micro Policies for More Growth and Employment. Symposium 1987 (forthcoming).
- , Jeffrey SACHS, "Macroeconomic Policy Coordination among the Industrial Economies". Brookings Papers on Economic Activity, 1984, No. 1, pp. 1-64.
- PUTNAM, Robert D., Nicholas BAYNE, Hanging Together: The Seven Power Summits. Cambridge, Mass., 1984.
- ROGOFF, Kenneth, "Can International Monetary Policy Cooperation Be Counterproductive?". Journal of International Economics, Vol. 18, 1985, pp. 199-217.
- SACHVERSTÄNDIGENRAT ZUR BEGUTACHTUNG DER GESAMTWIRTSCHAFTLICHEN ENTWICKLUNG, Jahresgutachten 1986/87. Bundestagsdrucksache 10/6562, Bonn, November 25, 1987.
- SAMUELSON, Paul A., Economics. 9th edition. New York 1972.
- SCHEIDE, Joachim, "Mehr Stabilität durch Wechselkurszielzonen?". Die Weltwirtschaft, 1986, H. 1, pp. 38-46.

- SCHMIDT, Helmut, "The World Economy at Stake". The Economist, February 26, 1983, pp. 21-32.
- SOLOMON, Robert, The Locomotive Approach. March 1978 (unpublished).
- STEIN, Herbert, Best Selling Fiction: 3 Million Lost Jobs. The Wall Street Journal, European Edition, Brussels, July 31, 1985.
- TRAPP, Peter, "Frankreich: Ausbruch aus der Rezession gescheitert". Die Weltwirtschaft, 1982, H. 1, pp. 48-63.
- VAUBEL, Roland, Internationale Absprachen oder Wettbewerb in der Konjunkturpolitik? Walter Eucken Institut, Vorträge und Aufsätze, 77, Tübingen 1980.
- , "Coordination or Competition among National Macroeconomic Policies?". In: Fritz MACHLUP, Gerhard FELS, Hubertus MÜLLER-GROELING (Eds.), Reflections on a Troubled World Economy. Essays in Honour of Herbert Giersch. London 1983, pp. 3-28.
- , "International Collusion or Competition for Macroeconomic Policy Coordination? A Restatement". Recherches Economiques de Louvain, Vol. 51, 1985, pp. 223-240.
- , "Comment" on Gilles Oudiz, "Macroeconomic Policy Coordination: Where Should We Stand?". In: Herbert GIERSCH (Ed.), Macro and Micro Policies for More Growth and Employment. Symposium 1987 (forthcoming).