

DOMESTIC POLITICS AND THE INTERNATIONAL COORDINATION
OF FISCAL POLICIES

by

GUIDO TABELLINI
University of California, Los Angeles

UCLA Working Paper #529
October 1988

DOMESTIC POLITICS AND THE INTERNATIONAL COORDINATION OF FISCAL POLICIES*

GUIDO TABELLINI*
University of California, Los Angeles,
Carnegie-Mellon University
and
National Bureau of Economic Research

Last revision: May 1988

*A previous version of this paper was presented at the NBER conference on "The Political Economy of International Macroeconomic Policy Coordination", Andover, November 6-7, 1987 and circulated as CEPR discussion paper No. 226. I wish to thank, without implicating, Alberto Alesina, Matt Canzoneri, Sebastian Edwards, Jeff Frieden, Pat Kehoe, John Lott, Giovanna Mossetti, Torsten Persson, Lars Svensson, and participants to the NBER conference, to the NBER-FMME February meeting, and to seminars at the Institute for International Economic Studies (University of Stockholm), Carnegie-Mellon University, Tel-Aviv University and the World Bank for helpful comments and suggestions.

DOMESTIC POLITICS AND THE INTERNATIONAL COORDINATION OF FISCAL POLICIES

GUIDO TABELLINI

May 1988

ABSTRACT

This paper investigates the desirability of international fiscal policy coordination in the presence of a domestic political distortion. The domestic distortion results from the inability of the current policymaker to enter into a binding agreement with future policymakers about the composition of public spending. This distortion generates a bias towards budget deficits. International coordination can exacerbate the deficit bias, and thus reduce social welfare at home and abroad. The reason is that international coordination enables the domestic and foreign governments to form a coalition that excludes future policymakers. This international coalition reduces the cost of running a budget deficit, and thus enhances the adverse effects of the domestic political distortion.

JEL classification: 023, 025, 320, 400, 423

Keywords: international fiscal policy coordination, budget deficit, political economy

"Cooperation, though often worth having, is no substitute for choosing the right economic policies. The real question is whether cooperation makes the right policies more or less likely to be chosen." The Economist, September 16, 1987.

1. INTRODUCTION

Few economists would disagree with the quote reported above. Yet, despite the rapid proliferation of papers on policy coordination, what according to The Economist is the "real question" has seldom been asked in the scientific literature on this topic. In virtually all of this literature, the policymaker is modeled as a benevolent social planner. Hence, by assumption, it always chooses the right economic policy, that is, the policy that is socially desirable from the point of view of the domestic economy (or of the world economy, if there is policy cooperation).¹

In this paper, policy is not set by a social planner who maximizes a given and stable welfare function. On the contrary, the policymakers respond to domestic political incentives and constraints. These domestic political factors may induce the government to choose the wrong (i.e.: socially inefficient) policy from the point of view of both the domestic and world economy. Does international policy coordination induce the government to correct the inefficiencies that may result from the political distortions? Or instead does coordination exacerbate the effect of these distortions? This paper attempts to answer these questions.

The focus of the paper is on the intertemporal choice of fiscal policies. This choice is influenced by a central feature of the political institutions of all pluralistic societies. Namely, the fact that the party or power group in office expects, with some probability, to be replaced in the future by a party or power group that pursues different goals. As shown in Alesina-Tabellini (1987), Persson-Svensson (1987) and Tabellini-Alesina (1988), this feature distorts the incentives of the policymakers and can generate a bias towards budget deficits in the fiscal policy choices of the government.

The central result of the paper is that, in the presence of this political distortion, international fiscal policy coordination may be socially undesirable. Specifically, international coordination may exacerbate the

deficit bias caused by the political distortion, thereby moving the economy from a second to a third best. The argument goes as follows. If the domestic government unilaterally runs a fiscal deficit, it also brings about a suboptimal time path of the real exchange rate. This fact tends to limit the extent of the deficit bias. With international policy coordination, instead, the adverse effect of the deficit on the real exchange rate is eliminated. As a result, the economy can exhibit a larger deficit bias in the presence of international coordination than without it. Whenever this happens, international fiscal policy coordination is socially undesirable.

This result suggests a general and instructive lesson. International agreements are signed by the governments currently in office (or by the current legislative majorities), so as to maximize their own welfare. If there are political distortions, social welfare need not coincide with the goals of the current governments. Hence, even though international cooperation is welfare improving for the parties signing the agreement, it need not also improve the welfare of society as a whole. On the contrary, international cooperation can exacerbate the effects of the domestic political distortions: for instance, it can reduce the cost of implementing suboptimal policies. In this case, international policy coordination can be undesirable for society as a whole, even though it is welfare improving for the current government or the current legislative majority. The model of this paper provides an example of this phenomenon. But other examples could be easily constructed. For instance, expansionary monetary and fiscal policies motivated by a political business cycle could have positive externalities abroad, and thus be reinforced (rather than discouraged) by international coordination. Putnam and Bayne (1984) suggest that perhaps this is what happened during the much celebrated 1978 Bonn Summit, when West Germany committed to an expansionary fiscal package that ex post turned out to be over-expansionary. Vaubel (1985), (1986) discusses several other examples of the same kind.

The remainder of the paper proceeds as follows. Section 2 describes the basic model. The economic equilibrium is solved in section 3. The socially optimal policies for the world economy are derived in section 4. Section 5 analyzes the effect of electoral uncertainty on the policies of two sovereign governments who cooperate internationally. The central result of the paper, that in the presence of electoral uncertainty international cooperation may be

socially undesirable, is derived in section 6. Finally, section 7 relates the results of this paper to those of some recent literature and investigates their implications for the role performed by international institutions and regimes.

2. THE MODEL

The model is a simple open economy version of Alesina-Tabellini (1987). The world economy lasts two periods and consists of two perfectly symmetric countries. The finite horizon and the symmetry simplify the algebra, but do not affect the nature of the results. Each country has a constant population of atomistic agents who live two periods. There is complete specialization in production, but not in consumption. Thus, each country produces a single non-storable commodity, and consumes positive quantities of the domestic and foreign commodities.

Consumer i in the domestic economy maximizes the following utility function:

$$w^i \equiv E_0 \left\{ \sum_{t=0}^1 \beta^t [\ln z_t^i + \alpha_i h(g_t) + (1-\alpha_i)h(f_t)] \right\} \quad 1 > \beta > 0 \quad (1)$$

where $z \equiv c^{\frac{1}{2}} d^{\frac{1}{2}}$ is a composite commodity consisting of private consumption of the foreign commodity (c) and of the domestic commodity (d); g and f are two different public goods in per capita terms; β is the discount factor; E_0 is the expectations operator conditional on the information set at time 0; $h(\cdot)$ is a continuously differentiable, strictly increasing and strictly concave function. Thus, different consumers have different views about the desired composition of public expenditure in terms of g and f , and their disagreement is parameterized by the coefficient α_i . Note that α_i is not constrained to lie between 0 and 1. The restriction to logarithmic utility simplifies the analysis, but the nature of the results should apply to any homothetic and time-separable utility function.

Throughout the paper, the domestic commodity is the numeraire. Thus, total expenditure by the domestic consumer in period t is:

$$e_t^i \equiv d_t^i + p_t c_t^i \quad (2)$$

where p_t is the relative price of the foreign commodity in terms of domestic output. A higher value of p_t corresponds to a deterioration of the terms of trade. The price index associated with one unit of the composite commodity z_t is $p_t^{1/2}$.² Thus: $z_t^i = e_t^i / p_t^{1/2}$.

The only assets in the world economy are domestic and foreign government debts.³ Public debt issued by either government is denominated in units of the composite commodity, z_t . By the symmetry of the model, this is the same commodity at home and abroad. Finally, each domestic consumer is endowed with one unit of the domestic commodity in both periods of his life, and is taxed at the rate τ_t in period t . With identical tax rates for all consumers, the superscript i on all economic variables can be dropped, since all consumers make the same economic choices.

Under these assumptions, the domestic consumer's budget constraint in the two periods of his life can be written in terms of the composite commodity as:

$$z_0 + q(b + b^{*e}) \leq (1 - \tau_0) / p_0^{1/2} \quad (3)$$

$$z_1 \leq b + b^{*e} + (1 - \tau_1) / p_1^{1/2} \quad (4)$$

where: b and b^{*e} are respectively the stock of domestic and foreign government debt held by the domestic consumer at the beginning of period 1 (the e subscript denotes external debt and a $*$ denotes foreign variables); and q is the relative price of z_1 in terms of z_0 (i.e., it is the inverse of the gross real interest rate). Implicit in (2) and (3) is a no-arbitrage condition that constrains domestic and foreign government debt to offer the same real rate of return.

The domestic government can at no cost transform the domestic output in two non storable public goods, g and f .⁴ The only difference between these two public goods lies in the utility that they provide to different consumers. These public goods can be thought of as, say, bridges and weapons. They take the same real resources to build, but are valued differently by different consumers. In order to focus exclusively on the intertemporal choices of the government, it is assumed that tax rates are maintained constant and equal to $\tau < 1$ in both periods. Thus the government chooses the composition of public expenditure in terms of g and f during each period, and its intertemporal profile. But it is constrained to set the sum of the present value of public

expenditure in the two periods equal to a predetermined amount. This restricts the realm of the strategic interaction between the domestic and foreign government exclusively to the intertemporal profile of fiscal policy, as opposed to the overall size of public spending. This restriction could be dropped, at the price of substantial complications, as long as taxes were assumed to be distortionary rather than lump sum.⁵

Under these assumptions, the government budget constraint in the two periods can be written in terms of the numeraire as:

$$f_0 + g_0 \leq \tau + q(b + b^e) p_0^{\frac{1}{2}} \quad (5)$$

$$f_1 + g_1 \leq \tau - (b + b^e) p_1^{\frac{1}{2}} \quad (6)$$

where b^e denotes the debt issued by the domestic government and held by the foreign consumer.

Two political parties, denoted D and R, can hold office. The parties are the political representatives of different groups of consumers. Since all consumers make identical private economic choices, the parties "care" identically about these private economic variables, but have different preferences about the composition of the public good. Their preferences are as follows (the superscripts identify the party):

$$w^D = E_0 \left\{ \sum_{t=0}^1 \beta^t [\ln z_t + h(g_t)] \right\} \quad (7)$$

$$w^R = E_0 \left\{ \sum_{t=0}^1 \beta^t [\ln z_t + h(f_t)] \right\} \quad (8)$$

Thus, party D is identified with the consumer (or "constituency") with $\alpha_i = 1$, and party R is identified with the consumer (or "constituency") with $\alpha_i = 0$. It is further assumed that the preferences of the two parties do not change over time and that a prohibitive barrier prevents the entry of a third party. Both of these assumptions can be relaxed without affecting the results, at the price of some algebraic complications.⁶

Elections are held in both countries at the beginning of each period. A period is thus defined as a term of office. The electoral results are uncertain: party D is elected with probability π and party R with probability

$1-\pi$. Voters are rational and forward looking. Hence, the probability that the party in office in period 0 will be reelected in period 1 does not depend on its period 0 performance. At the beginning of period 1, rational voters vote for party D if and only if their expected utility during period 1 is higher under party D than under party R. This comparison only involves the policies that will be chosen during period 1. There is nothing that either party can do during period 0 in order to affect its chances of winning the elections. Hence, the probability π only depends on the preferences of the voters relative to those of the two parties. In particular, inspection of the two types of government's objective functions reveals immediately that the policies pursued by the two types differ in only one respect: whereas type D produces only public good g , type R only produces public good f . Hence, at the beginning of period 1, all the individuals with $\alpha^i > 1/2$ vote for party D and all the individuals with $\alpha^i < 1/2$ vote for party R. Thus, D wins the elections if $\alpha^m > 1/2$, where α^m is the value of α corresponding to the median voter. This implies that $\pi = \text{prob}(\alpha^m > 1/2)$. The randomness in the elections outcome can be interpreted as reflecting randomness in the voters turnout, or shocks to the size and composition of the eligible voting population. This formulation of the political equilibrium is further discussed in Alesina (1988) and Alesina-Tabellini (1987).

The description of the foreign country is perfectly symmetric in all respects. In particular, the foreign government spends on two kinds of public goods that can also be provided out of the foreign commodity. Two foreign parties can hold office, whose utility functions are the exact analogues of (7) and (8) above. And the probability of electing either party is also given by π and $1-\pi$. Section 7 below briefly discusses the consequences of relaxing some of these symmetries.

Finally, denoting foreign variables with an *, the world equilibrium conditions for the two commodities can be written (in per-capita terms) as:

$$d_t + c_t^* + g_t + f_t \leq 1 \quad (9)$$

$$d_t^* + c_t + g_t^* + f_t^* \leq 1 \quad (10)$$

By Walras' law, one of these two equilibrium conditions can be disregarded in the final period.

3. ECONOMIC EQUILIBRIUM

This section computes the equilibrium values of the three world market prices, p_0 , p_1 and q , as a function of the domestic and foreign fiscal policies. Since both types of public good are produced out of the home commodity, the world market prices do not depend on the composition of public spending within each country: only public debt matters for the economic equilibrium. Moreover, because of the symmetry of the model, both parties always choose the same level of debt. Hence, world market prices do not depend on which party is in office in either period. As a consequence, consumers in period 0 do not face any economic uncertainty and the expectations operator E_0 can be omitted from their first order conditions.

Consider the determination of p_0 and p_1 first. From the private sector logarithmic utility functions, we obtain immediately that each consumer spends half of his expenditure on each commodity:

$$d_t = \frac{e_t}{2}, \quad c_t = \frac{e_t}{2p_t} \quad (11)$$

and similarly for the foreign consumer:

$$d_t^* = e_t^*/2, \quad c_t^* = e_t^*/2p_t^* = p_t e_t^*/2 \quad (12)$$

Moreover, from the consumer budget constraints and by definition of e_t (cf. equations (2)-(4)), we have:

$$\begin{aligned} e_0 &= 1-\tau - p_0^{\frac{1}{2}}q(b + b^*e) \\ e_1 &= 1-\tau + p_1^{\frac{1}{2}}(b + b^*e) \end{aligned} \quad (13)$$

and similarly for the foreign consumer:

$$\begin{aligned} e_0^* &= 1-\tau - q(b^* + b^e)/p_0^{\frac{1}{2}} \\ e_1^* &= 1-\tau + (b^* + b^e)/p_1^{\frac{1}{2}} \end{aligned} \quad (14)$$

Inserting (11)-(14) and the government budget constraints, (5), (6), in the equilibrium conditions (9) for periods 0 and 1, and simplifying, one obtains:

$$(1-\tau) - p_0(1-\tau) - qp_0^{\frac{1}{2}}(b + b^e - b^* - b^{*e}) \leq 0 \quad (15)$$

$$(1-\tau) - p_1(1-\tau) + p_1^{\frac{1}{2}}(b + b^e - b^* - b^{*e}) \leq 0 \quad (16)$$

Thus, as expected because of the symmetry of the model, the terms of trade, p_t , only depends on the difference between the domestic and foreign government economic policies. In particular, if $b+b^e = b^*+b^{*e}$, then (15) and (16) imply that $p_0=p_1=1$. Under this same condition, applying the implicit function theorem to (15) and (16) and denoting the partial derivative of p_t with respect to x by p_{tx} , one also obtains that:

$$p_{0b^e} = p_{0b} = -\frac{q}{1-\tau} = -p_{0b^*} = -p_{0b^{*e}} < 0 \quad (17)$$

$$p_{1b^e} = p_{1b} = \frac{1}{1-\tau} = -p_{1b^*} = -p_{1b^{*e}} > 0 \quad (18)$$

$$p_{0q} = 0 \quad (19)$$

Thus, if the domestic government unilaterally runs a larger fiscal deficit in period 0, the terms of trade improve in period 0 and deteriorate in period 1. The explanation is simple. A larger domestic fiscal deficit in period 0 implies more public consumption of the domestic good in that period, and less of it in the subsequent period. This tends to appreciate the price of the domestic good relative to the foreign good in period 0 (i.e. to reduce p_0), and to depreciate it in period 1 (i.e. to increase p_1). Vice versa, if the foreign government unilaterally runs a fiscal deficit in period 0, this tends to raise p_0 and reduce p_1 , for an analogous reason. Finally, since the model is perfectly symmetric, any change in the world real interest rate (i.e., in q) does not affect the terms of trade, as long as both countries run the same fiscal deficit.

It remains to determine the world real interest rate as a function of the two governments policies. This is obtained from the equilibrium condition in the world capital market. Solving the domestic and foreign consumers

intertemporal optimum problem yields the optimal consumption of the composite commodity in period 0, at home and abroad:

$$z_0 = \frac{1-\tau}{1+\beta} (p_0^{-\frac{1}{2}} + q p_1^{-\frac{1}{2}}) \quad (20)$$

$$z_0^* = \frac{1-\tau}{1+\beta} (p_0^{\frac{1}{2}} + q p_1^{\frac{1}{2}})$$

Inserting (20) in the budget constraints of the domestic and foreign consumers respectively and summing them together, we can express the equilibrium condition between the world supply and demand for real savings in period 0 as:

$$q[(1+\beta)(b + b^e + b^* + b^{*e}) + (1-\tau)(p_1^{-\frac{1}{2}} + p_1^{\frac{1}{2}})] - \beta(1-\tau)(p_0^{-\frac{1}{2}} + p_0^{\frac{1}{2}}) = 0 \quad (21)$$

Applying the implicit function theorem to (21) and denoting the partial derivatives of q with respect to x by q_x , one obtains that, if $p_0 = p_1 = 1$ (ie., if $b + b^e = b^* + b^{*e}$):

$$q_x = - \frac{q}{b + b^e + b^* + b^{*e} + 2(1-\tau)/(1+\beta)} < 0 \text{ for } x = b, b^*, b^e, b^{*e} \quad (22)$$

$$q_p = 0 \quad \text{for } p = p_0, p_1 \quad (23)$$

Thus, an increase in the world stock of government debt increases the world real interest rate (reduces q). Moreover, all kinds of government debt have the same effect on q . In other words, because of the symmetry of the model, the real interest rate depends on the aggregate stock of government debt, but not on its distribution by type or issuer. The explanation of this result is also simple. A larger stock of government debt implies more public consumption in period 0 and less of it in period 1. Since world supply is given, private consumption must fall in period 0 and increase in the following period. The higher real interest rate achieves precisely this effect. Finally, according to (23), if both countries run exactly the same policies (which implies that $p_0 = p_1 = 1$), then the world real interest rate does not depend on the terms of trade. Note also that, if both governments fully balance the budget (i.e., if $b=0$, all b), then (21) implies that $q=\beta$: the rate of interest coincides with the rate of intertemporal preferences, so that private

consumption is constant over time.

These effects of fiscal policies on the terms of trade and on the world real interest rate are plausible and seem consistent with the empirical evidence. Frenkel-Razin (1985), Devereux (1987) and Ihuri (1987) discuss similar findings in a related framework. Their analysis suggests that these results would survive several generalizations of the underlying model.

4. SOCIALLY OPTIMAL POLICIES

Different international regimes can be thought of as alternative procedures for determining debt policies. Since only public debt is a source of international externalities in this model, there is no reason to presume that the regime also matters for the choice of the composition of public spending. Hence, throughout the rest of the paper the party in office always produces the public good about which it cares, irrespective of the international regime: party D only produces good g , whereas party R only produces good f .

In order to provide a benchmark for the comparison of alternative international regimes, this section describes the optimal debt policy from the point of view of the world economy. The relevant notion of optimality is that of "ex-ante efficiency" (cf. Holmstrom-Myerson (1983)). According to this criterion, the debt policy is evaluated behind a "veil of ignorance", before knowing which government is in office in the first period. This procedure ensures unanimity amongst different citizens of the same country, while at the same time taking into account the fact that, once elected in office, different parties will choose different compositions of public spending. One can imagine the following institutional arrangement as implementing this notion of efficiency. Suppose that, before electing a government, the citizens of each country could sign an international agreement that binds the debt policies of the governments about to be elected. Then they would want to sign an agreement prescribing the debt policies characterized in this section.⁷

Under the assumption that the probability π of electing party D is constant over time, and recalling that, once elected, party D only produces good g whereas party R only produces good f , the expected utility of individual i in the domestic country before the period 0 elections can be

written as:

$$v^i = \sum_{t=0}^1 \beta^t [\ln z_t + \pi \alpha^i h(g_t^D) + (1-\pi)(1-\alpha^i)h(f_t^R)] \quad (24)$$

where g_t^D (f_t^R) is obtained from the government budget constraints (5) and (6), with $f_t = 0$ ($g_t = 0$) in them. The domestic social welfare function, w^{sp} , is obtained by aggregating (24) across all domestic citizens:

$$w^{sp} = \sum_{i=1}^N \lambda_i v^i = \sum_{t=0}^1 \beta^t [\ln z_t + \hat{\alpha} h(g_t^D) + (1-\hat{\alpha})h(f_t^R)] \quad (25)$$

where N is the size of the domestic population, $\hat{\alpha} = \frac{N}{\sum_{i=1}^N \lambda_i \alpha_i}$ and λ_i is an arbitrary weight such that $\sum_{i=1}^N \lambda_i = 1$. The foreign social welfare function, w^{*sp} , is an analogous weighted average of the expected utility of foreign citizens.

In order to maintain the symmetry of the model and to avoid the need for international income transfers, the world social welfare function is assumed to assign equal weights to the domestic and foreign country. Thus, the ex-ante optimal debt policy for the world economy is the solution to the problem of maximizing

$$w = w^{sp} + w^{*sp} \quad (26)$$

with respect to b , b^e , b^* and b^{*e} , subject to the world markets equilibrium conditions, (15), (16) and (21), and to the private sectors first order conditions.

Inspection of the welfare functions and of the constraints (15), (16) and (21) reveals immediately that domestic and foreign variables are perfectly symmetric. Hence at the optimum the government debt is the same at home and abroad. This implies that the partial derivatives of p_0 and p_1 with respect to government debt are given by (17) and (18) in section 3, and that in equilibrium $p_0 = p_1 = 1$. Based on this result, and after some simplifications, the first order conditions for the maximum of (26) with respect to b can be written as (the D superscripts have been omitted to simplify the notation)⁸:

$$q h'(g_0) + \frac{q[(b + b^{*e}) / z_0 - (b + b^e)h'(g_0)]}{b + b^e + b^{*e} + 2(1-\tau)/(1+\beta)} = \beta h'(g_1) \quad (27)$$

The first order condition with respect to the external debt of the domestic government, b^e , is identical to (27). And so are the first order conditions with respect to both kinds of foreign government debt (with all domestic variables in (27) replaced by the corresponding foreign ones).

Equation (27) has a simple interpretation. The right hand side is the marginal cost of issuing domestic government debt. It corresponds to the (discounted) marginal utility of the public expenditure that has to be foregone in the final period in order to repay the debt. The left hand side of (27) is the marginal gain of issuing government debt. It consists of two terms. The first one, $q h'(g_0)$, is the marginal utility of the additional public consumption that can be bought with the proceeds of the debt issue. The second term accounts for the social welfare effect of the rise in the world real interest rate caused by the debt issue. This term can either be positive or negative. It is positive if the marginal utility of private consumption ($1/z_0$) is larger than that of public consumption ($h'(g_0)$) and if the governments are net debtors (i.e.: if $b + b^e > 0$, $b + b^{*e} > 0$). For in this case a higher real interest rate enables the government to effect a transfer to the consumer, who in turn has a higher marginal utility of income than the government. It is negative in the opposite case.⁹

At the optimum, the marginal cost and the marginal gain of issuing public debt must be equal. Here, this is true at the point $b = b^e = b^{*e} = 0$. For in such a case, $g_0 = g_1 = \tau$ (cf. equations (5), (6) in section 2) and $q = \beta$ (cf. equation (21) in section 3), so that (27) is satisfied.¹⁰ This result is illustrated in Figure 1. The solid upwards sloping curve depicts the marginal cost (MC). Its positive slope follows from the concavity of $h(\cdot)$. The marginal gain (MG) curve is drawn with a negative slope. This need not always be the case. But if the second order conditions are satisfied (cf. footnote 10), then the MG curve intersects the MC curve from above. \hat{b} denotes the optimal stock of domestic public debt. The position of both curves in the MG, b plane (and hence of the point \hat{b}) depends on the amount of debt issued by the foreign government. The previous arguments imply that, if $b^{*e} = b^e = 0$, then $\hat{b} = 0$.

This procedure for determining public debt has two features. Public debt

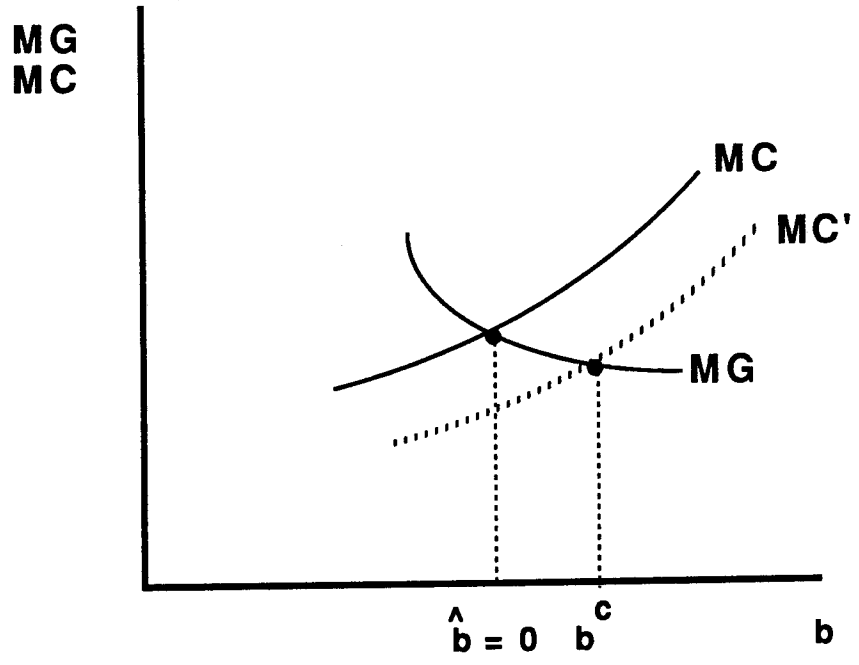


Figure 1

is chosen "behind a veil of ignorance", before knowing the result of the period 0 elections in each country. And it is chosen so as to maximize a function defined on the expected utility of all individuals in the world economy, so that all international externalities are internalized. It turns out that only the first feature is responsible for the result that the optimal policy is not to issue any public debt. Specifically, suppose that b and b^e are chosen so as to maximize domestic social welfare as defined in (25), for given values of the foreign policy variables, b^* and b^{*e} , and subject to the world equilibrium conditions (15), (16) and (21) and to the private sector first order conditions. Suppose further that the foreign country behaves symmetrically. It can be shown that in the resulting non-cooperative international equilibrium neither country issues any public debt. In other words, it is the "veil of ignorance", and not the international agreement, that determines the character of the optimal debt policy.

The explanation of this finding is simply that, in this model, a fiscal policy that balances the budget does not have any international externalities. Hence, if such a policy is desirable from the point of view of the world economy, it can also be sustained as the equilibrium outcome when the two countries do not cooperate with each other. In other words, as it will be shown in the next two sections, the externalities that motivate the international cooperation only arise in the model because of a political distortion (uncertain election outcomes) that induces sovereign governments to pursue inefficient debt policies from the point of view of their own domestic economy. This feature of the model is not general: it is due to the assumption of fixed tax rates. However, it may provide some support in favor of the argument that sovereign governments, before advocating international coordination, should try and "put their own house in order".

Finally, it is worth remarking that the ex-ante optimal policy does not depend on either π or $\hat{\alpha}$ (cf. (27)). Thus, the above results hold for any value of π and for any weighting of individual utilities in the aggregate welfare function: within each country there is unanimity that a balanced budget policy is ex-ante optimal, with or without international cooperation.

The results of this section can be summarized in the following:

Proposition 1

The ex-ante optimal policy from the point of view of the world economy is

not to issue any public debt. This policy can be sustained as a non-cooperative international equilibrium, provided that within each country public debt is chosen before the period 0 elections.

5. INTERNATIONAL COOPERATION BETWEEN ELECTED SOVEREIGN GOVERNMENTS

The institutional arrangement described in the previous section has no real world counterpart: typically debt policy is chosen together with the rest of the fiscal policy package, once a government (or legislature) is elected in office, and not before its election. This is what is assumed throughout the rest of the paper. This section characterizes the equilibrium debt policies pursued by the domestic and foreign governments if they cooperate internationally in the first period. In the second period the governments can only choose the composition of public spending, and so the issue of international cooperation does not arise. Note that, since elections are held at the beginning of the second period, both cooperating governments in the first period face uncertain prospects of reelection. Hence, this conceptual experiment refers to a situation in which two governments agree to pursue coordinated policies in the current period, but neither of them is certain of whether it will be reappointed in the future. This is the form that international fiscal policy coordination generally would take in the world economy today. The coordinated outcome can be thought of as being enforced either through an implicit reputational mechanism (as in Canzoneri-Henderson (1987)), or with the help of some international organizations.

To preserve symmetry, it is assumed that in both countries party D holds office at the beginning of period 0. This party knows that, with probability $(1-\pi) > 0$, next period it can be replaced by a policymaker who prefers a different composition of public spending. If that happens, he will not get any utility out of the public good produced next period. Hence, the government expected utility function at the start of period 0 can be written as follows (the D superscript serves as a reminder that he is of type D):

$$w^D \equiv \ln z_0 + h(g_0) + \beta \ln z_1 + \beta \pi h(g_1) \quad (28)$$

The expected utility function of the foreign government, w^{*D} , coincides with

(28), except that domestic variables are replaced by foreign variables.

This (symmetric) cooperative equilibrium can be computed as the solution to the following optimization problem. Set b , b^e , b^* and b^{*e} so as to maximize:

$$w^c \equiv w^D + w^{*D} \quad (29)$$

subject to the world equilibrium conditions (15), (16) and (21) and to the private sector first order conditions (the c superscript stands for cooperative equilibrium). After some simplifications, and noting that

$$\frac{\partial w^{*D}}{\partial b} = \frac{\partial w^D}{\partial b^*}, \quad \text{the first order conditions with respect to } b \text{ can be written as:}$$

$$qh'(g_0) + \frac{q[(b + b^{*e})/z_0 - (b + b^e)h'(g_0)]}{b + b^e + b^* + b^{*e} + 2(1-\tau)/(1+\beta)} = \beta\pi h'(g_1) \quad (30)$$

The remaining first order conditions, with respect to b^e , b^* and b^{*e} , are all identical to (30). Equation (30) has the same interpretation of (27) in the previous section: it equates the marginal gain and the marginal cost of public debt. There is only one difference between (30) and the corresponding expression of the previous section. Unlike in (27), the government discount factor on the right hand side of (30), β , is multiplied by the probability of winning the elections, π . Since π is smaller than 1, this implies that uncertainty about the election outcome reduces the expected marginal cost of repaying the debt. Intuitively, if the current policymaker loses the elections, he cannot choose the desired kind of public good. In this case, he does not care by how much public spending has to be curtailed in order to repay the debt. As a consequence, the expected marginal cost of the debt is smaller the smaller is the probability of winning the election, π .

This feature of the model is illustrated in Figure 1. According to the right hand side of (30), the position of the MC curve depends on the value of π . A smaller π shifts the MC curve below and to the right (say, to the dotted curve labelled MC'). The position of the MG curve instead is independent of π (cf. the left hand side of (30)). Since MG intersects MC from above (see the second order condition of footnote 10), it follows that a reduction of π below 1 increases the equilibrium size of public debt above the

socially optimum value, say to b^c .

This discussion can be summarized in the following:

Proposition 2

If $\pi < 1$, then in the cooperative equilibrium both the domestic and foreign governments run a fiscal deficit. The equilibrium size of the deficit is inversely related to π .

Note that this result is not due to myopia or irrationality on the part of the government. On the contrary, the government does not fully internalize the costs of issuing public debt because it is aware that it cannot bind the spending policies of future policymakers. In this situation, public debt becomes a strategic variables and is used by the current administration to influence the policies of future policymakers.

This result points out that there is a crucial difference between the institutional arrangements described in this and in the preceding section. Under the assumptions of the previous section, public debt was chosen without knowing how the proceeds from the debt issue would be spent between the two kinds of public good. As a result, everybody was unanimous that not issuing any public debt was optimal. Here instead, the government that issues the debt can also control how the proceeds are spent. Hence, because of the future electoral uncertainty, he has an incentive to issue a positive amount of debt.

Is this result do to the fact that, with a given probability of reelection π , the governments are never punished for having pursued "suboptimal" debt policies? The answer is no. The point is that a balanced budget policy is optimal for everybody ex-ante, but not ex-post. Once it is known how the tax revenue is spent, different individuals have different preferences concerning the government debt policy: those who approve of the expenditure choices of the current government would like it to run a budget deficit; those who do not value its public spending would instead like it to run a surplus. Hence, exactly the same kind of result would emerge if the citizens voted directly on the policy rather than delegating the choice to an ideological government, provided that the following two conditions were satisfied: (a) they voted simultaneously on the composition of spending and on the size of the deficit; and (b) they were uncertain about the preferences of

future majorities. Only if the decision concerning public debt can be separated by a "veil of ignorance" from the decision concerning the composition of public spending, or if the current majority can bind the spending choices of future majorities, can the ex-ante optimal balanced budget policy be sustained. Tabellini-Alesina (1988) discuss this point more in detail.

6. THE NON-COOPERATIVE EQUILIBRIUM

This section describes the equilibrium debt policies when the two elected governments do not cooperate with each other. As in the previous section, both governments face the same uncertainty about future reelection.

In this equilibrium, the domestic government sets b and b^e so as to maximize w^D in (28), taking the foreign policy variables, b^* and b^{*e} , as given, and subject to the world equilibrium conditions, (15), (16) and (21) and to the private sector's first order conditions. The domestic government first order condition with respect to b in equilibrium can be obtained simply by subtracting the term $\frac{\partial w^{*D}}{\partial b_1} = \frac{\partial w^D}{\partial b_1^*}$ from the left hand side of (30) in the previous section. The resulting expression is:

$$\begin{aligned} qh'(g_0) + \frac{q[(b + b^{*e})/z_0 - (b + b^e)h'(g_0)]}{2[b + b^e + b^* + b^{*e} + 2(1-\tau)/(1+\beta)]} = \\ = \beta\pi h'(g_1) + \frac{(b + b^e)}{1-\tau} (\beta\pi h'(g_1) + q^2 h'(g_0)) \end{aligned} \quad (31)$$

This equation has the usual interpretation: the left hand side represents the gain of issuing one more unit of debt; the right hand is the marginal cost of repaying it. Equation (31) differs from the corresponding first order condition of the cooperative equilibrium, (30), in two respects.

(i) First of all, the right hand side of (31) contains an additional term relative to (30). With a positive stock of debt, this new term increases the marginal cost of issuing government debt. The explanation of this fact is as

follows. If the domestic government unilaterally runs a larger budget deficit, it raises the relative price of domestic output today (it lowers p_0) and it reduces it tomorrow (it raises p_1) when the debt is repaid--see (17) and (18) in section 3. Since public debt is indexed to the price of the composite commodity, $p^{\frac{1}{2}}$, the private sector is sheltered from this temporary change in the terms of trade.¹¹ But as a result, the effects of the terms of trade change are felt by the public sector. In particular, the temporary change in the terms of trade drives a gap between the world real interest rate (measured in units of the composite commodity) and the home real rate faced by the domestic planner (measured in units of domestic output) (cf. Dornbusch (1983)). For a given world real interest rate, the home real rate faced by the government rises with a larger deficit. And this increases the marginal cost of issuing public debt. This feature of the model, that a unilateral expansion of budget deficits has an adverse welfare effect at home through the terms of trade change, is a general one. For instance, the same feature would arise if government spending was on the imported commodity (rather than on the domestic one as here), or if public debt was denominated in units of domestic output (in this case, the negative welfare effect would be felt by the domestic consumer rather than directly by the government through public consumption). In a more general setting, the adverse welfare effects of a temporary terms of trade change would also be compounded by possible market imperfections, such as price rigidities and costs of relocating resources across sectors. Hence, this additional component of the marginal cost of running a unilateral fiscal deficit due to the resulting terms of trade changes can be a relevant magnitude.

(ii) Equations (31) and (30) differ in a second respect. Now the domestic government does not internalize the effects that a change on the world real interest rate has on the foreign country. Hence, the second term on the left hand side of (30) is divided by 2. Recalling the discussion of section 4, this term can be either positive or negative, depending on the parameter values. Thus, the marginal gain of issuing public debt can either be larger or smaller if the two countries cooperate. Equations (31) and (30) are identical in all other respects. Hence, in this equilibrium too, both governments run a deficit as long as $\pi < 1$.

What can be said about the size of the deficit in this cooperative equilibrium relative to the equilibrium with cooperation? If points (i) and

(ii) reinforce each other, or if point (i) prevails over point (ii), then the deficit is clearly smaller without cooperation: cooperation reduces the cost of running a deficit and hence increases the equilibrium size of the deficit. Whenever this happens, international cooperation is counterproductive, in the sense that it moves both economies further away from the ex-ante optimal policy. If instead point (ii) goes in the opposite direction of point (i) and prevails over it, then international cooperation can reduce the size of the deficit relative to the noncooperative equilibrium.

Thus we have:

Proposition 3

With uncertain election outcomes, international cooperation can be socially undesirable, in the sense that it can take both the domestic and foreign economies further away from the ex-ante optimum.

Intuitively, international cooperation can weaken the resolve of each government to pursue a balanced fiscal policy. It does so by eliminating the adverse effects of the fiscal imbalance on the time path of the terms of trade. As a result, by coordinating with the foreign country, each government can be induced to pursue policies that are more inefficient from the point of view of the domestic economy.

Note that the current governments at home and abroad are actually made better off by cooperating with each other, since they can exploit more efficiently the gains from being in office. However, this happens at the expenses of future policymakers and of all the citizens that disagree with the current government about the desired composition of the public good.

The example from which Proposition 3 has been derived contains a number of special features. However, only two of them are driving the result that international coordination can be undesirable. The first one concerns the existence of a political distortion that induces the sovereign governments to pursue socially inefficient policies. Here this distortion takes the form of disagreement between alternating governments, and the resulting inefficiency is a deficit bias. But other examples come to mind. For instance, asymmetric information between voters and the incumbent, that generates an electoral business cycle (as in Cukierman-Meltzer (1986), Rogoff-Sibert (1987) and Rogoff (1987)); or a partisan political business cycle (as in Alesina (1987)

and Lohmann (1988)); or the rent seeking activities of special interest groups; or any of the other political-market-failures investigated by the school of public choice (see the survey by Mueller (1979)).

The second ingredient that accounts for the undesirability of coordination concerns the nature of the international externalities. Suppose that the domestically inefficient policy has a positive spillover effect abroad. Then international coordination calls for a larger dose of the inefficient policy, and this exacerbates the effects of the domestic distortion. Alternatively, suppose that the foreign policy alleviates the cost of pursuing the domestically inefficient policy. A cooperating foreign country would take these effects into account. And this would induce the domestic government to pursue even more distorted policies. In the example of this paper, the distorted policy has a positive externality abroad. This is due to the symmetry of the model and to the complete synchronization of the intertemporal fiscal policies in the two countries. In general, it is clear that other examples could be constructed in which the externality can be either positive or negative. Take for instance the case analyzed by Persson-Svensson (1987), in which a conservative government runs a socially suboptimal budget deficit because it expects to be replaced by a liberal successor. Such a policy would be synchronized with the foreign policy if the foreign government is also more conservative than its likely successors. If instead the foreign government is liberal, then the two countries would pursue desynchronized policies: one would run a budget deficit, the other a surplus. In such a case, the externalities would be negative and international cooperation would be desirable. Thus, in that set up, international cooperation would seem to be socially desirable if it involved governments with opposite political points of view; and undesirable otherwise. Alternatively, consider what might happen if in the model of this paper one of the two public goods, say f , has a positive externality abroad (for instance, because it consists of expenditure on defense). Here, the positive externality of the deficit would be larger for the government of type R (that prefers f to g) than of type D. Accordingly, international agreements involving the government of type R would imply even larger budget deficits and thus they would be more undesirable than those involving type D.

Summarizing, the results of the paper suggest that there ought to be no general presumption in favor or against international policy coordination.

Coordination can be desirable or undesirable from the point of view of society as a whole, depending on the nature of the political incentives and constraints faced by the government, and on the nature of the policy externalities. Most of the existing economic literature on this topic has investigated in detail only the second of these two aspects (the externalities), assuming that sovereign governments always face the appropriate political incentives. As shown in the previous sections, this is by no means an innocuous assumption.

7. DISCUSSION AND CONCLUDING REMARKS

The results of this paper can be summarized as follows. Disagreement amongst alternating governments distorts the incentives of the policymaker currently in office and generates a deficit bias. This bias results from the inability of the current policymaker to enter into a binding agreement with future policymakers about the composition of public spending. International cooperation between current administrations enables the domestic government to enter into a binding agreement with its foreign counterpart. However, this form of cooperation excludes from the agreement future policymakers in both countries. In a sense, international cooperation enables the domestic and foreign governments to form a coalition against future policymakers. This fact can exacerbate the deficit bias, and thus reduce social welfare in both countries.

When stated in this way, the results of this paper are easily comparable with those of some recent literature on the time inconsistency of optimal economic policies. Rogoff (1985), Kehoe (1986) and Van der Ploeg (1987) show that, if the optimal monetary or fiscal policy is time inconsistent (in the sense of Kydland-Prescott (1977)), then international cooperation may be undesirable. The explanation is related to that of the previous paragraph. Time inconsistency of policy reflects the government inability to precommit with respect to the private sector. International cooperation involves precommitment between the domestic and foreign governments. If the international agreement does not also bind the government policies with respect to the private sector, then international coordination may be counterproductive. In other words, precommitment with respect to only a

subset of the players in the game may be worse than no precommitment at all.¹²

However, as remarked by Canzoneri-Henderson (1988) and Persson (1988), a situation in which the government fails to be bound with respect to the private sector while at the same time being bound with respect to a foreign policymaker can only arise under rather special timing assumptions. Moreover, under these special timing assumptions, cooperation is counterproductive for the governments themselves. Hence, in such a situation rational governments would try and precommit not to cooperate with each other, for instance by avoiding regular summit meetings.

These remarks do not apply to the results of this paper. As noted above, in the model of this paper the current policymaker is always made better off by entering into a coalition with foreign governments, irrespective of whether or not cooperation is desirable from the point of view of society as a whole. Moreover, the political distortion that drives the results of the preceding sections is due to the incapacity of the current administration to bind the policies followed by future (politically different) administrations. This distortion would not be eliminated by the reputational or commitment mechanisms that are necessary, say, to coordinate policies after an international summit. In other words, the timing assumptions that yield the results of this paper seem more general than those of the literature on time inconsistency and policy coordination. For these two reasons, the findings of this paper seem to have stronger normative implications against policy coordination than those of the existing literature.

An interesting question is whether some kind of international regime and institution can correct the political distortion that is the focus of this paper. From a conceptual point of view, the answer is clear. One would want an international agreement capable of enforcing the ex-ante optimal policy described in section 4. This agreement would have to meet two requirements: (i) To be chosen with near-unanimity within each country (for only in this case it would really be chosen behind a "veil of ignorance", as Buchanan-Tullock (1962) and Rawls (1971) have extensively argued). (ii) To be durable, in the sense of being able to bind the choices of governments at future points in time. Both requirements seem unrealistically ambitious. However, it may not be too farfetched to interpret some existing (or recent) international regimes, such as the GATT or the Bretton-Woods system, as having been designed according to these two criteria.¹³

At the risk of oversimplifying, perhaps one can draw the following normative implication from the foregoing discussion. International policy coordination can be either "good" or "bad". But it is more likely to be "good" if it takes the form of cooperation around general rules of conduct that are conceived to be binding for current and future governments alike. This form of cooperation is most likely to solve both the time inconsistency of policy and the political distortions that originate from alternating governments. Besides GATT and the Bretton Woods regime, one can think of the EMS and of some recent agreements on financial deregulation within the EEC as instances of this kind of "good" cooperation. Conversely, international cooperation is more likely to be "bad" if it takes the form of coalitions between two or more sovereign governments on some discretionary policy action. This kind of agreement is most likely to exclude other relevant players in the game, and therefore it can turn out to be socially inefficient.¹⁴

FOOTNOTES

1. The existing literature on international economic policy coordination is surveyed in Canzoneri-Henderson (1987), Cooper (1985) and Hamada (1985). Recent papers by Rogoff (1985) and Frankel (1986) have shown that international coordination may be undesirable, even if the policymaker acts as a social planner. Section 8 relates Rogoff's results to those of this paper.
2. Formally, this price index corresponds to the indirect expenditure function associated with obtaining one unit of the composite commodity z_t . See Frenkel-Razin (1985) and, for any homothetic utility function, Svensson-Razin (1983) and Edwards (1987).
3. Allowing the domestic and foreign consumers to borrow and lend to each other would not change anything, since by the symmetry assumption all world consumers are alike in their savings behavior.
4. The assumption that the public goods are produced out of the domestic commodity, rather than from the foreign commodity, or from a combination of the domestic and foreign commodity, serves the only purpose of simplifying the algebra. A previous version of this paper derived all the results summarized in Propositions 1-4 under the opposite assumption that the public goods were produced out of the imported commodity.
5. Alesina-Tabellini (1987) study a closed economy version of this model, where the government also controls a distortionary tax on labor income. They show that the results of Proposition 2 in section 5 below, concerning the deficit bias, identically apply to this more general setting. Frenkel-Razin (1987) investigate the effects of fiscal deficits on the world interest rate in a model with tax distortions and predetermined government spending. They show that the sign of these effects depends on the nature of the tax distortion. In the model of this paper, changes in the intertemporal profile of distortionary taxes would also affect the terms of trade, in a way which presumably also depends on the nature of the tax distortion (see also Edwards (1987)). Moreover, permanent changes in the overall level of government spending would also have permanent effects on the terms of trade. Hence, adding the choice over distortionary taxes to the model of this paper could either reinforce or weaken the result of Proposition 3 in section 6, concerning the desirability of cooperation, depending on how exactly the distortions are modelled.

6. All the results of this paper can be extended to the case in which party D maximizes: $w^D = E_0 \left\{ \sum_{t=0}^1 \beta^t (\ln z_t + \alpha h(g_t) + (1-\alpha) h(f_t)) \right\}$, and party R maximizes the same function, but with α replaced by $(1-\alpha)$, for any $\alpha \in [0,1]$, provided that $h(\cdot)$ belongs to the HARA class of utility functions with decreasing absolute risk aversion. Alesina-Tabellini (1987) and Tabellini-Alesina (1988) discuss this extension (as well as others) more in detail. Furthermore, Tabellini-Alesina (1988) show that the result concerning the deficit bias (cf. Proposition 2) goes through if there is free entry of parties (i.e.: if the voters vote directly on the policies rather than electing a policymaker); it can be shown that all the other results of this paper can also be extended to this case.

7. A previous version of this paper also computed the optimal debt policy when the citizens could also precommit the choices of future governments concerning the composition of public spending. Such an arrangement can be interpreted as a cooperative equilibrium between current and future governments within each country. The results concerning public debt were shown to be identical to those of this section.

8. In deriving (27), the facts that $\frac{\partial w^{*sp}}{\partial b} = \frac{\partial w^{sp}}{\partial b^*}$ and that $g_t^D = f_t^R$ have been used.

9. Even though this second term reflects an arbitrary feature of the model (namely, the assumed inability of the government to set taxes), an equivalent term would still be present in a more general setting. In particular, if the government only has distortionary taxes available, at an optimum the marginal utility of public consumption would generally be larger than that of private consumption. However, in such a model issuing government debt could either raise or lower the world real interest rate, depending on the nature of the distortion. (See Frenkel-Razin (1987)). Hence, the ambiguity concerning the sign of such a term would remain even in such a more general framework.

10. It can be shown that the second order conditions are satisfied at the point $b=0$ if the function $h(\cdot)$, in addition to being strictly concave, also satisfies: $|h''(\tau)| \geq 1/(1+\beta)(1-\tau)$. For $b \neq 0$, the second order conditions can still be satisfied for a large set of parameter values, but they become harder to interpret. Throughout the rest of the paper it is assumed that the second order conditions are satisfied for all equilibrium values of b .

11. This is confirmed by the fact that the first order condition, equation

(31), does not contain any term referring to the effect of the change in p on the consumer welfare (except through the consumption of the public good).

12. Alesina-Tabellini (1988), Basevi-Kind-Poli (1987) and Oudiz-Sachs (1985) contain other examples of this same general finding.

13. Quoting from Keohane (1984), pp. 117-118: "Policies that are incorporated in international agreements are much more difficult for future governments to alter. [...]. GATT was not merely a device by which governments could influence each other's behavior, but one permitting them to restrict their successors' freedom of action. Likewise, the par-value system of the Bretton Woods monetary regime, before 1971, restricted the inflationary propensities of future governments, at least insofar as they would have to borrow internationally to finance the resulting current account deficits."

14. Richardson (1987) draws a similar distinction between "rules" and "discretion" in the choice of cooperative trade policy agreements. See also Giavazzi-Pagano (1987) for an analysis of the idea that the EMS provides the governments with a technology for making commitments to an otherwise time inconsistent monetary policy.

REFERENCES

- Alesina, Alberto "Credibility and Policy Convergence in a Two-party System with Rational Voters," forthcoming, American Economic Review, (1988).
- _____ and Guido Tabellini "A Positive Theory of Fiscal Deficits and Government Debt in a Democracy," NBER working paper no. 2308, July 1987.
- _____ and _____ "Rules and Discretion with Non-Coordinated Monetary and Fiscal Policy," Economic Inquiry, (1988).
- Basevi, Giorgio, Paolo Kind and Giorgio Poli, "International Cooperation of Monetary Policies and Confrontation of Commercial and Financial Policies," mimeo, 1987.
- Buchanan, James and Gordon Tullock, "The Calculus of Consent," University of Michigan Press, Ann Arbor, 1962.
- Buiter, Willem and Richard Marston International Economic Policy Coordination, Cambridge University Press, New York, 1985.
- Canzoneri, Matthew and Dale Henderson Non-cooperative Monetary Policies in Interdependent Economics, 1987, forthcoming.
- _____ and _____ "Is Sovereign Policymaking Bad?", Carnegie-Rochester Conference Series on Public Policy, Spring 1988, forthcoming.
- Cooper, Richard "Economic Interdependence and Coordination of Economic Policies," in Handbook of International Economics, Ronald Jones and Peter Kenen eds., Vol. 2, North Holland, Amsterdam, 1985.
- Cukierman, Alex and Allan Meltzer "A Positive Theory of Discretionary Policy, the Cost of Democratic Government, and the Benefits of a Constitution," Economic Inquiry, 24: 367-88, July 1986.
- Devereux, Michel "Fiscal Spending, the Terms of Trade, and Real Interest Rates", Journal of International Economics, 1987.
- Dornbusch, Rudiger "Real Interest Rates, Home Goods and Optimal External Borrowing," Journal of Political Economy, 91: 141-53, February 1983.
- Edwards, Sebastian "Tariffs, Terms of Trade and Real Exchange Rate in an Intertemporal Model of the Current Account," NBER working paper, 1987.
- Frankel, Jeffrey "The Sources of Disagreement Among International Macro Models and Implications for Policy Coordination," NBER working paper, No. 1925, 1986.
- Frenkel, Jacob and Assaf Razin "Fiscal Expenditures and International Economic Interdependence," in Buiter-Marston (1985).

- _____ and _____ "Deficits with Distortionary Taxes: International Dimensions," NBER working paper No. 2080, 1987.
- Giavazzi, Francesco and Marco Pagano "The Advantage of Tying One's Hands: EMS Discipline and Central Bank Credibility", London: CEPR discussion paper No. 135, October 1986.
- Hamada, Koichy "The Political Economy of International Monetary Interdependence", The MIT Press, Cambridge, 1985.
- Holmstrom, Bengt and Roger Myerson, "Efficient and Durable Decision Rules with Incomplete Information", Econometrica, 51, pp. 1799-1819.
- Kehoe, Patrick "International Policy Coordination May Be Undesirable," Federal Reserve Bank of Minneapolis, Staff Report 103, 1986.
- Keohane, Robert "After Hegemony - Cooperation and Discord in the World Political Economy", Princeton University Press, Princeton, 1984.
- Kydland, Finn and Edward Prescott "Rules Rather than Discretion: The Inconsistency of Optimal Plans," Journal of Political Economy, 85: 473-92.
- Ihori, Toshihiro "Spillover Effects and the Terms of Trade within a Two-Country Model", Journal of International Economics, 1987.
- Lohmann, Susanne "Political Business Cycles and International Policy Coordination", mimeo, Carnegie-Mellon University, 1988.
- Mueller, Dennis Public Choice, Cambridge University Press, New York 1979.
- Oudiz, Gilles and Jeffrey Sachs "International Policy Coordination in Dynamic Macroeconomic Models," in Buiters-Marston (1985).
- Persson, Torsten "Credibility of Macroeconomic Policy: A Broad Survey," European Economic Review, Paper and Proceedings, forthcoming, 1988.
- _____ and Lars Svensson "Checks and Balances on the Government Budget," mimeo, University of Rochester, 1987.
- Putnam, Robert and Nicholas Bayne "Hanging Together. The Seven Power Summits", Heinemann Educational Books, Ltd., London, 1984.
- Rawls, John, "A Theory of Justice", Harvard University Press, Cambridge, 1971.
- Richardson, David "International Coordination of Trade Policy," NBER working paper No. 2293, 1987.
- Rogoff, Kenneth "Can International Monetary Policy Coordination be Counterproductive?", Journal of International Economics, 18, 199-217.
- _____ "Equilibrium Political Budget Cycles", University of Wisconsin, Madison, mimeo, 1987.

- _____ and Anne Sibert "Equilibrium Political Business Cycles," The Review of Economic Studies, forthcoming, 1987.
- Svensson, Lars and Assaf Razin "The Terms of Trade and the Current Account: The Harberger-Laursen-Metzler Effect," Journal of Political Economy, 91: 97-125, 1983.
- Tabellini, Guido and Alberto Alesina, "Voting over the Budget Deficit", Carnegie-Mellon University, mimeo, 1988.
- Van der Ploeg, Rick "International Policy Coordination in Interdependent Monetary Economies," mimeo, London School of Economics, 1986.
- Vaubel, Roland "International Collusion or Competition for Macroeconomic Policy Coordination? A Restatement," Recherches Economiques de Louvain, 51: 223-40, December 1985.
- _____ "A Public Choice Approach to International Organization," Public Choice, 1986.