

DOMESTIC POLITICS AND THE INTERNATIONAL COORDINATION OF FISCAL POLICIES

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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 reduces the cost of running budget deficits, and thus enhances the adverse effects of the domestic political distortion.

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*, 16 September 1987)

1. Introduction

Few economists would disagree with the quote reported above. Yet, despite the rapid proliferation of papers on international 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 'Pigovian' government. Hence, almost by assumption, it chooses the right economic policy, that is, the socially desirable policy from the point of view of the domestic economy, or of the world economy if there is policy cooperation. Not surprisingly, the

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existing literature generally concludes that international policy coordination is welfare improving.¹

There are two exceptions to this result. One, studied by Frankel and Rockett (1988), occurs if the governments set policies on the basis of the wrong model of the economy, in which case coordination can be counterproductive. The second exception, analyzed by Rogoff (1985), Kehoe (1988) and van der Ploeg (1987), occurs if the governments lack credibility with their domestic private sectors. In this second case, economic policy is chosen under an incentive compatibility condition that forces the governments to take private expectations as given. International coordination, by reducing the costs of policy surprises, leads private expectations in the wrong (i.e. socially undesirable) direction. Hence, here too, international policy coordination can be counterproductive.

In this paper, the policymakers know the true model of the economy and have full credibility vis-à-vis their domestic private sectors. Hence, the two above-mentioned exceptions do not apply. Nevertheless, a distortion exists because policy is not set by a benevolent government that maximizes a stable social 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 socially inefficient policy from the point of view of both the domestic and world economy. Does international policy coordination correct the inefficiencies that may result from the political distortions, or does it exacerbate the effect of these distortions? This paper addresses these questions.

The focus of the paper is on the intertemporal choice of fiscal policies. This choice is influenced by a central feature of all pluralistic societies: 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 and Tabellini (1987), Persson and Svensson (1989) and Tabellini and Alesina (1990), this feature distorts the policymakers' incentives and can generate a bias towards budget deficits. Intuitively, by borrowing while in office, the current government increases the amount of public resources under its control. Naturally, these resources will have to be given up in the future, when the debt is repaid. But if the current government is voted out of office, the allocation of future resources will not be under its control. The debt may be repaid by curtailing forms of spending that are not valued by today's government. Hence, the cost of borrowing is not fully internalized by a government that expects to be replaced by another government with different preferences. As a result, political instability creates a bias towards budget deficits.

¹The literature on international economic policy coordination is surveyed in Canzoneri and Henderson (1987), Cooper (1983) and Hamada (1985).

The central result of this paper is that international fiscal policy coordination may be socially undesirable because it may exacerbate this political distortion. A unilateral fiscal deficit causes a suboptimal time path of the real exchange rate. This fact may limit the extent of the deficit bias. With international policy coordination, the adverse effect of the deficit on the real exchange rate is eliminated. As a result, the economy may 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 lesson. International agreements are signed by the governments currently in office 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. The model of this paper provides an example of this phenomenon. Other examples can be constructed. Lohmann (1988) has independently shown that international policy coordination may exacerbate the policy volatility due to political regime changes. Alternatively, 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) 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, and section 6 demonstrates that in the presence of electoral uncertainty international cooperation may be socially undesirable. Finally, section 7 relates the results of this paper to those of Rogoff, Kehoe and van der Ploeg and investigates their implications for the role performed by international institutions and regimes.

2. The model

Each country is endowed with a single nonstorable commodity, and consumes positive quantities of the domestic and foreign commodities. Consumer i in the domestic economy maximizes the following utility function:

$$w^i \equiv E_0 \left\{ \sum_{t=0}^{\infty} \beta^t [u(x_t^i + \alpha_t M_t^i) + (1 - \alpha_t)u(f_t^i)] \right\}, \quad 1 > \beta > 0, \quad (1)$$

where $z \equiv c^{1/2}d^{1/2}$ 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 twice-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 . This coefficient is distributed in the population according to some well-defined but unknown distribution. The possible instability over time of this distribution plays a crucial role throughout the paper.

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

$$e_t^d = d_t^d + p_t^f f_t^d \quad (2)$$

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 $2p_t^{1/2}$. Formally, this price index corresponds to the indirect expenditure function associated with obtaining one unit of the composite commodity.² Thus, $z_t^d = e_t^d / 2p_t^{1/2}$.

The only assets in the world economy are domestic and foreign government debts. Since the governments have no opportunity to surprise the private sector and capital markets are perfect, the unit of denomination of government debt is of no importance. For simplicity we assume that the debt issued by either government is denominated in units of the composite commodity, z_t . By symmetry, 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 pays a fixed tax, τ , in each period. With identical taxes 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 two budget constraints can be written in terms of the composite commodity as:

$$z_0 + qb \leq (1 - \tau) / 2p_0^{1/2}, \quad (3)$$

$$z_1 \leq b + (1 - \tau) / 2p_1^{1/2}, \quad (4)$$

²See Frenkel and Razin (1983) and, for any homothetic utility function, Svensson and Razin (1983) and Edwards (1987).

where b denotes the stock of domestic government debt held by the domestic consumer at the beginning of period 1; 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 (3) and (4) is a no-arbitrage condition that constrains domestic and foreign government debt to offer the same real rate of return. To simplify notation it is assumed that both governments do not issue external debt. Since the model is symmetric, this assumption involves no loss of generality.

The domestic government can costlessly transform domestic output into two nonstorable public goods, g and f . These public goods can be thought of as, say, bridges and weapons. They take the same real resources to build, but they are valued differently by different consumers. In order to focus exclusively on the intertemporal choices of the government, it is assumed that the tax revenue is not a policy instrument.

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

$$f_0 + g_0 \leq \tau + 2qb p_0^{1/2}, \quad (5)$$

$$f_1 + g_1 \leq \tau + 2b p_1^{1/2}. \quad (6)$$

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 they 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 with $\alpha_i = 1$, and party R is identified with the consumer 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.

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. 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 and is not affected by the period 0 performance of the incumbent. 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 provides only public good g , type R only provides public good f . Hence, at the beginning of period 1, all the individuals with $\alpha' > 1/2$ vote for party D and all the individuals with $\alpha' < 1/2$ 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 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. The probability of electing either foreign party is also given by π and $1 - \pi$.

Finally, denoting foreign variables with an asterisk, 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.

Several of the above-mentioned assumptions can be relaxed without affecting the results. In particular, the assumption that the tax revenue is not a policy instrument restricts the realm of the strategic interaction between the domestic and foreign governments 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.³ Moreover, the specification of the parties' preferences in (7) and (8) can be generalized.⁴ And the assumption that policy is set by one of two elected parties can be relaxed by allowing free entry of parties in the elections, or by allowing voters to directly choose the policy by majority rule. The only

³As shown in Alesina and Tabellini (1987), the results of Proposition 2 in section 5 below, concerning the deficit bias, identically apply to a model in which the government controls a distortionary tax. However, the macroeconomic effects of budget deficits generally depend on the nature of the tax distortion; see Fatas and Razin (1987). Hence, whether or not the results of Proposition 3 in section 6, concerning the desirability of cooperation, also hold, depends on how exactly the tax distortions are modelled.

⁴By imposing some restrictions on $u(\cdot)$, all the results of this paper can be extended to the case in which party D maximizes: $w^D = E_0[\sum_{t=0}^{\infty} \beta^t (u(x_t) + \alpha f_t)]$, and party R maximizes the same function, but with α replaced by $(1 - \alpha)$, for any $\alpha \in [0, 1]$.

essential aspect in the formulation of the political equilibrium is that the current government or legislature faces uncertain re-election prospects. This uncertainty must ultimately reflect an instability in the distribution of the coefficient α' over the voters' population, and can be interpreted as reflecting randomness in the voter's 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 and Tabellini (1987), and at the end of section 5 below.

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. The private sector logarithmic utility function implies that consumers spend half of their expenditure on each commodity:

$$d_t = \frac{d_t^*}{2}, \quad c_t = \frac{c_t^*}{2p_1}. \quad (11)$$

The foreign consumers behave symmetrically. Inserting these expressions and their foreign counterparts in the consumers' budget constraints, (2)–(4), using the government budget constraints, (5), (6), and the equilibrium conditions, (9), and simplifying, one obtains

$$\begin{aligned} (1 - \tau) - p_0(1 - \tau) - 2ap_0^{1/2}(b - b^*) &\leq 0, \\ (1 - \tau) - p_1(1 - \tau) - 2p_1^{1/2}(b - b^*) &\leq 0. \end{aligned} \quad (12)$$

By symmetry, the terms of trade, p_1 , only depend on the difference between the domestic and foreign government economic policies. In particular, if $b = b^*$, then (12) implies that $p_0 = p_1 = 1$. Under this same condition, applying the implicit function theorem to (12) and denoting the partial derivative of p_1 with respect to x by $p_{1,x}$, one also obtains that

$$p_{0b} = -\frac{2q}{1-\tau} = -p_{0b}^* < 0,$$

$$p_{1b} = \frac{2}{1-\tau} = -p_{1b}^* > 0, \quad (13)$$

$$p_{0r} = 0.$$

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 raises the price of the domestic good relative to the foreign good in period 0 (i.e. reduces p_0) and reduces it in period 1 (i.e. increases p_1). The opposite is true if the foreign government unilaterally runs a fiscal deficit in period 0. Finally, by symmetry, any change in the world real interest rate, q , does not affect the terms of trade, as long as both countries run the same fiscal deficit.

It remains to determine the equilibrium world real interest rate. Solving the domestic consumers' intertemporal optimum problem yields the optimal consumption of the composite commodity in period 0:

$$z_0 = \frac{1-\tau}{2(1+\beta)}(p_0^{-1/2} + qp_1^{-1/2}). \quad (14)$$

Using (14) and its foreign counterpart in the private budget constraints yields the equilibrium condition between the world supply and demand for real savings in period 0:

$$q[(1+\beta)(b+b^*) + (1-\tau)(2p_1^{1/2} + p_1^{-1/2}/2)] - \beta(1-\tau)(2p_0^{1/2} - p_0^{-1/2}/2) = 0. \quad (15)$$

Applying the implicit function theorem to (15) and denoting the partial derivatives of q with respect to x by q_x , one obtains that, if $p_0 = p_1 = 1$ (i.e. if $b = b^*$):

$$q_x = -\frac{q}{b+b^* + S(1-\tau)/2(1+\beta)} < 0, \quad \text{for } x = b, b^*, \quad (16)$$

$$q_x = 0, \quad \text{for } p = p_0, p_1.$$

Thus, an increase in world government debt raises the world real interest rate (reduces q). Moreover, by symmetry, the real interest rate depends on the world stock of government debt, but not on who issued it. 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 (16), 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 $b = b^* = 0$), then (16) 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 and Razin (1985) and Devereux (1987) discuss similar findings in a related framework. Their analysis suggests that these results would survive several generalizations of the underlying model.

4. Ex ante cooperation

Different international regimes can be thought of as alternative procedures for determining debt policies. Since only public debt has external effects abroad, 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 consumes the public good about which it cares, irrespective of the international regime: party D only consumes good g , whereas party R only consumes good f .

This section provides a normative benchmark for the comparison of alternative international regimes. It shows that the optimal debt policy from the point of view of the world economy is to balance the budget in both countries. Optimality here means 'ex-ante efficiency' in the sense of Holmstrom and 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 among different citizens of the same country, while at the same time taking into account that, once elected into 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 government about to be elected.

Then they would want to sign an agreement prescribing the debt policies characterized in this section.³

Assume that the probability π of electing party D is constant over time and recall that, once elected, party D only produces good g whereas party R only produces good f . Then the expected utility of individual i in the domestic country before the period 0 elections can be written as:

$$v^i = \sum_{t=0}^T \beta^t [\pi z_t + \pi \alpha^t h(g_t^D) + (1-\pi)(1-\alpha^t)h(f_t^R)], \quad (17)$$

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^D , is obtained by aggregating (17) across all domestic citizens:

$$w^D = \sum_{i=1}^N \lambda_i v^i = \sum_{i=1}^N \beta^i [\pi z_i + \pi \alpha^i h(g_i^D) + (1-\pi)(1-\alpha^i)h(f_i^R)], \quad (18)$$

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

In order to maintain symmetry and to avoid the need for international income transfers, the world social welfare function assigns 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

$$w = w^D + w^F \quad (19)$$

with respect to b and b^* , subject to the world equilibrium conditions, (12) and (15), and to the private sector's first-order conditions.

Inspection of the welfare functions and of the constraints (12) and (15) reveals immediately that domestic and foreign variables are perfectly symmetric. Hence, at the optimum the government debt is the same at home and

³A 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.

abroad. This implies that the partial derivatives of p_0 and p_1 with respect to government debt are given by (13) 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 (19) with respect to b can be written as:

$$q h'(g_0) + \frac{q b(1/z_0 - h'(g_0))}{b + b^* + \lambda(1-\tau)/2(1+\beta)} = \beta h'(g_1). \quad (20)$$

The D superscripts have been omitted to simplify the notation. The first-order condition with respect to foreign government debt, b^* , is identical to (20), except that all domestic variables in (20) are replaced by the corresponding foreign ones.

Eq. (20) has a simple interpretation. The right-hand side represents the marginal cost of issuing domestic government debt. It is 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 (20) 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 welfare effect of the rise in the world real interest rate caused by the debt issue. This term can be either 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 government is a net debtor (i.e. if $b > 0$). 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.

At the optimum, the marginal cost and the marginal gain of issuing public debt must be equal. Here, this is true at the point $b = b^* = 0$: at this point $g_0 = g_1 = \tau$ and $q = \beta$, so that (20) is satisfied.⁴ This result is illustrated in fig. 1. The solid upward-sloping curve depicts the marginal cost, MC. Its positive slope follows from the concavity of $h(\cdot)$. The marginal gain, MG, curve is

⁴Even 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. If the government could raise distortionary taxes, 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 and Razin (1987)). Hence, the ambiguity concerning the sign of such a term would remain even in a more general framework.

⁵It 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 $b = 0$, 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 .

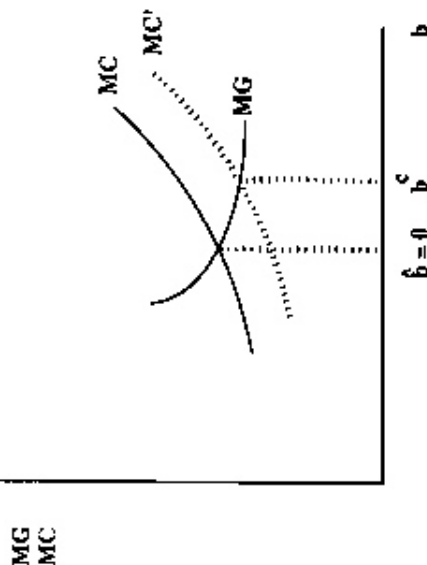


Fig. 1

drawn with a negative slope. This need not always be the case. But if the second-order conditions of footnote 7 are satisfied, then the *MG* curve intersects the *MC* curve from above. The point *b* denotes the optimal stock of domestic public debt. The position of both curves in the plane depends on the amount of debt issued by the foreign government. The previous arguments imply that if $b^* = 0$, then $\hat{b} = 0$.

This procedure for determining public debt has two features. Public debt 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 the external effects of the policy are internalized. It turns out that only the first feature matters: it is the 'veil of ignorance', and not the international agreement, that determines the character of the optimal debt policy. The explanation is simply that a fiscal policy that balances the budget does not have any external effects abroad. 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.⁸

Finally, eq. (20) shows that the *ex ante* optimal policy does not depend on either π or \hat{a} . Thus, the results of this section can be summarized in the following:

Proposition 1. All the voters are unanimous that the ex ante optimal policy is

⁸This feature of the model is not general: it is due to the assumption of fixed taxes.

to balance the budget in both countries, irrespective of the extent of the electoral uncertainty.

5. Ex post cooperation

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 period 0. In period 1 the governments can only choose the composition of public spending, and so the issue of international cooperation does not arise. Since elections are held at the beginning of period 1, both cooperating governments in period 0 face uncertain prospects of re-election. 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 takes in the world economy today. This section shows that this kind of coordination results in both countries running a budget deficit in period 0.

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 may be replaced by a policymaker who prefers a different composition of public spending. If that happens, it will not get any utility out of the public good consumed next period. Hence, the government expected utility function at the start of period 0 can be written as:

$$w^D \equiv \ln z_0 + h(g_0) + \beta \ln z_1 + \beta \pi h(g_1). \quad (21)$$

The expected utility function of the foreign government, w^{*D} , coincides with (21), 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 and b^* so as to maximize

$$w^C \equiv w^D + w^{*D} \quad (22)$$

subject to the world equilibrium conditions (12) and (13) and to the private sector first-order conditions; the c superscript stands for cooperative equilibrium. After some simplifications, the first-order condition with respect to b can be written as:

$$q h'(g_0) + \frac{q b (1/z_0 - h'(g_0))}{b + b^* + 5(1 - \pi)/2(1 + \beta)} = \beta \pi h'(g_1). \quad (23)$$

The first-order condition with respect to b^* is analogous. Eq. (23) is identical to (20) in the previous section, except in one respect. The right-hand side of (23) is multiplied by the probability of winning the elections, π . Since π is smaller than 1, 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 fig. 1. According to (23), 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' . From (23) the MG curve is independent of π . According to the second-order condition of footnote 7, MG intersects MC from above; thus, a reduction of π below 1 increases the equilibrium size of public debt above the socially optimum value, say to b^s . Hence:

Proposition 2. If $\pi < 1$, then in the ex post cooperative equilibrium both the domestic and foreign governments run a fiscal deficit. The equilibrium size of the deficit is inversely related to π .

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 debt because it is aware that it cannot bind the spending policies of its successors. Public debt is a strategic variable used by the current administration to influence the policies of future policymakers.

There is a crucial difference between the institutional arrangements described in this and in the preceding section. Under the previous assumptions, 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 favored a balanced budget. Now, the government that issues the debt also controls how the proceeds are spent. Hence, because of the future electoral uncertainty, it has an incentive to run a deficit.

Is this result due to the fact that, with a given probability of re-election π , the governments are never punished for having pursued 'suboptimal' debt policies? The answer is no. The reason is that a balanced budget policy is optimal for everybody ex ante, but not ex post. Once it is known how the debt proceeds are 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 like it to run a surplus. Hence, exactly the same result emerges if the citizens voted directly on the policy rather than delegating the choice to an ideological government, or if a third centrist party also participated in the electoral competition. The point

is that different voters have different preferences about how to allocate public spending. Thus, the decisive voter always favors a budget deficit provided that: (a) he can choose the size of the deficit together with the composition of public spending, and (b) he is 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 current 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 and Alesina (1990) discuss this point in more detail.

6. The noncooperative 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 re-election. It is shown that both countries may run smaller budget deficits than with ex post cooperation. Hence, ex post cooperation may be counterproductive.

In this equilibrium, the domestic government sets b so as to maximize w^D in (21), taking the foreign policy variable, b^* , as given, and subject to the world equilibrium conditions, (12) and (15), and to the private sector's first-order conditions. The first-order condition of the domestic government with respect to b is:

$$\begin{aligned} qh'(g_0) + \frac{qh'(z_0 - h(g_0))}{2[b + b^* + \bar{x}(1 - \tau)](1 + \beta)} \\ = \beta ah'(g_1) + \frac{2b}{1 - \tau} (\beta ah'(g_1) + q^2 h'(g_0)). \end{aligned} \quad (24)$$

This equation has the usual interpretation: it equates the marginal gain and the marginal cost of public debt. Eq. (24) differs from the corresponding first-order condition of the cooperative equilibrium, (23), in two respects.

(i) First of all, the right-hand side of (24) contains an additional term. With $b > 0$, this new term increases the marginal cost of issuing government debt. The explanation is that a government that unilaterally issues debt turns its terms of trade against itself. If the domestic government unilaterally runs a larger budget deficit, it raises the relative price of domestic output today (it lowers p_0) when public consumption is larger; and it reduces it tomorrow (it raises p_1) when public consumption is curtailed to repay the debt. Hence, the government pays a higher price for the public good when it consumes more of it, and a lower price when its consumption is smaller. As explained in Dornbusch (1983), this 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 effective real rate faced by the domestic government.

(measured in units of domestic output). For a given world real interest rate, the effective real rate faced by the government rises with a unilateral deficit expansion. This increases the marginal cost of issuing public debt. This feature of the model is general. It would also hold if government spending were on the imported commodity, rather than on the domestic one as here, or if public debt were denominated in units of domestic output. In a more general setting, the adverse welfare effects of a temporary increase in trade change would also be compounded by possible market imperfections, such as price rigidities and costs of relocating resources across sectors. Hence, this additional marginal cost of a unilateral fiscal deficit can be of relevant magnitude.

(ii) Eqs. (24) and (23) differ in a second respect. Now the domestic government does not internalize the effects of a change on the world real interest rate on the foreign country. Hence, the second term on the left-hand side of (23) 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 be either larger or smaller if the two countries cooperate. Eqs. (24) and (23) are identical in all other respects. Hence, in this equilibrium too, both governments run a deficit as long as $\pi < 1$.

Is the equilibrium deficit larger with or without ex post cooperation? If points (i) and (ii) reinforce each other, or if point (i) prevails over point (ii), then the deficit is clearly larger with ex post cooperation: cooperating reduces the cost of running a deficit and hence increases its equilibrium size. Whenever this happens, international cooperation is counterproductive in the sense that it moves both economies farther away from the ex ante optimal policy.⁹

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 farther 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.

⁹A sufficient condition for this to happen is that $1/(1 - \tau) \geq h'(\tau)$. For in this case, using (14), it can be shown that the second term on the left-hand side of (24) is positive for any $\theta > 0$. Hence, the marginal gain of issuing debt under cooperation is always larger than in the absence of cooperation.

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 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, such as electoral business cycles generated by asymmetric information between voters and the incumbent [as in Rogoff and Sibert (1988) and Rogoff (1989)], or partisan political business cycles [as in Alesina (1987) and Lohmann (1988)], or the rent-seeking activities of special interest groups.

The second ingredient that accounts for the undesirability of coordination concerns the external effects of domestic policies. 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 this model the external effects of the policies enhance the political distortion, because of the complete intertemporal synchronization of fiscal policy in the two countries. But more generally these external effects could go either way: either reinforcing or offsetting the domestic distortion.

Summarizing, there ought to be no general presumption in favor of against international policy coordination. Coordination can be desirable or undesirable from the point of view of society as a whole, depending on the political incentives and constraints faced by the government, and on the policy externalities. Most of the existing economic literature on this topic has investigated in detail only the second of these two aspects (the external effects of domestic policies), 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

It is instructive to compare the previous results with those of Rogoff, Kehoe and von der Ploeg mentioned in the Introduction. At the core of all these results lies the government's inability to precommit. In Rogoff, Kehoe

and van der Ploeg the government cannot commit to a policy until after the private sector is locked into an irreversible economic decision. Hence, the government lacks credibility *vis-à-vis* private economic agents. Here, the government has full credibility *vis-à-vis* the private sector, but it cannot commit to a policy until it is elected into office.

This lack of a political (as opposed to economic) commitment technology can be looked at from two points of view. On the one hand, it can be seen as an 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.¹⁰ However, this form of cooperation excludes future policymakers in both countries from the agreement. Thus, international cooperation enables the domestic and foreign governments to form a coalition against future policymakers, in the sense that it reduces the cost of strategically manipulating public debt so as to influence future policies. This fact can exacerbate the deficit bias, and thus reduce social welfare in both countries. It could be argued that, even in the absence of binding agreements, reputation and repeated interactions might induce current and future policymakers to cooperate within each country, thereby eliminating the source of the deficit bias. Indeed, Alesina (1987) studies an infinitely repeated static game where this form of cooperation can be sustained. However, Alesina shows that this form of cooperation requires a considerable and perhaps unrealistic amount of coordination among voters, the governments and private economic agents. Moreover, even if these coordination problems are overcome, the equilibrium still does not exhibit full convergence of policies between the current and future policymakers, unless the discount factors of the governments are sufficiently high and the probability of electing either government is sufficiently close to 1/2. Without full policy convergence, the results of this paper apply.

On the other hand, the lack of a political commitment technology can be seen as the inability of the parties to choose public debt before being voted into office. Perhaps this interpretation highlights the similarities with the previous literature that focused on the lack of economic commitments. In that literature too there is a distinction between *ex ante* and *ex post* cooperation. But there *ex ante* and *ex post* refers to the timing of policy decisions relative to the economic decisions of the private sector. Here instead the comparison is with the date of elections. In both cases, *ex post* cooperation (i.e. cooperation in the absence of commitments) is *ex post* optimal for the participating governments, and in both cases *ex post*

cooperation takes both countries away from the *ex ante* optimum. Despite this similarity, however, the lack of political and economic commitments have different implications. First of all, as stressed by Carraro and Giavazzi (1988), in the absence of economic commitments *ex post* cooperation is *ex post* optimal for everybody. Here instead there is *ex post* disagreement: the winning majority is made better off by international cooperation, but the opposition is made worse off. The reason is that international cooperation makes it easier for the current government to take advantage of its position at the expense of future governments. Second, in this paper the distinction between *ex ante* and *ex post* refers to the arrival of information, rather than to the timing of moves. Suppose, for instance, that party D is relatively confident that it will win the period 0 elections, but it is much more uncertain about the outcome of the period 1 elections. Then, it would still choose to issue debt in period 0, even if it could commit in advance of the first election. Hence, even *ex ante* cooperation (i.e. cooperation before the period 0 election) would be welfare deteriorating for society as a whole, though not for the government participating in the agreement. In other words, in the example of this paper the *ex ante* versus *ex post* distinction really means: behind a 'veil of ignorance' or not. Whereas in the literature explored by Rogoff, Kehoe and van der Ploeg this distinction is just a matter of timing of moves: it means before or after the relevant private economic decisions. Arguably, the set of circumstances in which cooperation can be *ex post* in the sense of this paper seems larger than for the case studied by Rogoff, Kehoe and van der Ploeg. If this is true, then the lack of a political commitment technology has even stronger potential normative implications against international policy coordination than those derived from the literature that emphasizes the possible lack of economic commitments.

An interesting question is whether some kind of international regime or institution can correct the lack of a political commitment technology that is the focus of this paper. From a conceptual point of view, the answer is clear. One wants an international agreement capable of enforcing the *ex ante* optimal policy described in section 4. This agreement would have two requirements: (i) to be chosen with near-unanimity within each country [for only in this case would it really be chosen behind a 'veil of ignorance', as Buchanan and Tullock (1962) and Rawls (1971) have extensively argued], and (ii) to be durable, in the sense of binding the choices of governments at future points in time. Both requirements seem unrealistically ambitious. However, it may not be too far-fetched to interpret some existing international regimes, such as GATT, the Bretton-Woods system or the EMS as having been designed according to these two criteria.¹¹

¹¹Quoting 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

¹⁰Like in much of the literature, the nature of the commitment technology that enforces international agreements has been left unspecified throughout the paper. See Casonovi and Henderson (1988) for a discussion of how this enforcement can take place in infinite repetitions of the game.

At the risk of oversimplifying, perhaps one can draw the following conclusion 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 the time inconsistency of policy as well as the political distortions that originate from alternating governments. 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 fails to correct the possible lack of economic or political commitment technologies. And thus it can induce the policymakers to choose the socially inefficient policies.

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.¹ Giavazzi and Pagano (1986) have analyzed the functioning of the EMS from this same perspective.

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