

# The Politics of 1992: Fiscal Policy and European Integration

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The internal market in Europe will greatly increase the international mobility of resources. How will this affect fiscal policy in different countries? We consider taxation of capital in a two-country model, where a democratically-chosen government in each country chooses tax policy. Higher capital mobility changes the politico-economic equilibrium in two ways. On the one hand, it leads to more tax competition between the countries: this "economic effect" tends to lower tax rates in both countries. On the other hand, it alters voters' preferences and makes them elect a different government: this "political effect" offsets the increased tax competition, although not completely.

## 1. INTRODUCTION

The creation of an internal European market in the nineteen-nineties will integrate individual national markets by abolishing existing national regulations, technical standards, border controls, and special rules for foreign competitors. This deregulation will remove most of the remaining barriers to the mobility of capital, goods and labour. How will increased mobility affect fiscal policy in different countries? What will happen to government transfer payments and government expenditure on goods and services? Will tax and spending policies of different countries converge or diverge?

A great deal of the policy discussion has centered on fiscal policy harmonization and coordination (see in particular the Delors report). Explicitly or implicitly these questions suggest a cooperative approach to policymaking. We believe that, at least in the case of fiscal policy, such an approach is unrealistic at the present stage of European integration. The present cooperation in deciding on some general rules is one thing, but prospective cooperation in deciding on specific fiscal policies is a very different thing.

We prefer to think of each country in Europe as deciding non-cooperatively about its fiscal policy. Furthermore, we prefer to think of the policy decision process as a politico-economic equilibrium that reflects the particular economic and political characteristics of each country. When the environment changes—as when resources in Europe become more mobile—so will the politico-economic equilibrium that determines fiscal policy. In general terms, this way of thinking about fiscal policy choices can be described as "positive public finance". In the literature there are certainly a few examples of researchers that have adopted such an approach, particularly in local public finance, but

it is surprising that public finance economists have done so little work on trying to explain existing fiscal policies. This paper can therefore be seen as a particular example of a more general research agenda that attempts to explain the large differences in the fiscal policies of different countries by differences in their economic and political structure.<sup>1</sup>

Let us turn to the specific issues addressed in this paper. We shall try to highlight a specific implication of reducing the barriers to mobility, namely that some tax bases become more mobile across borders. In principle, higher mobility applies to most tax bases: capital, goods and labour. In practice, however, the most important case is that of capital. Higher capital mobility raises the issue of tax competition between countries, an issue that has been treated in a strand of the literature started by Gordon (1983) and followed by others.<sup>2</sup> This literature discusses the externalities in taxation when tax bases can move across borders, and the possibility of non-cooperative equilibria with sub-optimally low levels of taxation. Indeed, it is these externalities that have provoked discussions about the need to harmonize capital taxation within the European community (see for instance, Giovannini (1989) and Giovannini and Hines (1990)).

In the paper we analyse a simple, two-country, two-period model. Each country imposes distorting taxes on capital to finance government transfer payments. Wealth is distributed unequally across the population, so there is scope for a political equilibrium with positive taxes and redistribution, as in the classic paper by Meltzer and Richards (1981). The population votes to appoint a policymaker (a government) who then sets capital taxes, taking into account capital taxes in the other country. The individual with the median endowment casts the pivotal vote, but, interestingly enough, chooses to appoint a policymaker with policy preferences different from his own. Delegation of this kind turns out to correct some of the distortions that arise from tax competition.

We show that this political mechanism offsets the economic consequences of higher capital mobility on the tax rate. With the same policymaker in place, higher capital mobility reduces capital taxation and government transfer payments. But since the majority appoints a new policymaker further "to the left", the reduction in capital taxation is mitigated. We also discuss how initial asymmetries in capital taxation across countries, which derive from different distributions of wealth, affect the policy response to higher capital mobility.

Section 2 of the paper outlines the model and describes the economic equilibrium. The political equilibrium and its comparative statics are analysed in Section 3. Section 4 concludes the paper.

## 2. CAPITAL TAXATION

This section illustrates how higher capital mobility leads to increased tax competition and to generally lower tax rates on capital. We focus on the international allocation of productive capital (as opposed to financial capital) within Europe. Consequently, our results apply more to corporate taxation than to other forms of capital taxation.

### 2.1. *The model*

We study a two-period and two-country model adapted from Persson and Tabellini (1989). Both countries produce the same commodity, and both have access to a linear storage technology with gross return equal to unity. The two countries are inhabited by individuals

1. Persson and Tabellini (1990a) discuss and survey the small but growing literature that tries to develop a positive theory of fiscal policy.

2. See in particular Wilson (1981), Wildasin (1988), Keen (1987), de Crombrugge and Tulkens (1989).

with the same preferences but with heterogeneous endowments. We only describe the domestic country since the description of the foreign country is completely analogous. The  $i$ th individual maximizes:

$$W^i \equiv U(c^i) + d^i, \tag{2.1}$$

where  $U(\cdot)$  is a well-behaved utility function, and  $c$  and  $d$  denote consumption in the first and second period, respectively.

In the first period, the  $i$ th individual receives an endowment  $1 + e^i$ , and chooses how much of it to invest and where to invest it. His budget constraint is:

$$1 + e^i \geq c^i + k^i + b^i, \tag{2.2}$$

where  $k^i$  and  $b^i$  denote domestic and foreign investment, respectively. The variable  $e^i$  is distributed in the population with zero mean, negative median and bounded support inside the interval  $[-1, 1]$ .

In the second period, every individual pays capital taxes and receives a lump sum transfer,  $g$ , from the government. The second period budget constraint is:

$$(1 - \theta)k^i + (1 - \theta^*)b^i + g - M(b^i; \mu) \geq d^i, \tag{2.3}$$

where  $\theta$  and  $\theta^*$  denote the domestic and foreign tax rate on capital, respectively, and  $M(b^i; \mu)$  denote the net ‘‘mobility costs’’ of investing abroad. These costs refer to all the extra complications that foreign direct investment requires compared to domestic investment. For instance,  $M(b^i; \mu)$  can represent the cost of gathering extra information about legal issues or about marketing, of overcoming country-specific regulations, of hiring foreign employees, and so on. But it can also represent the benefits of foreign investment closer to the market, or of foreign control. The parameter  $\mu$  measures the size of these mobility costs. One of the questions addressed in this paper concerns the consequences of a reduction in  $\mu$ .

Throughout the paper we assume that  $M(b^i, \mu)$  is twice-continuously differentiable and strictly convex in  $b^i$ , and satisfies the following properties (a subscript denotes a partial derivative).

$$M(0; \mu) = 0, \quad M_b(b^i; \mu) \leq 0 \quad \text{as } b^i \leq 0, \\ M_{b\mu}(b^i; \mu) \leq 0 \quad \text{as } b^i \leq 0, \quad M_{bb\mu}(b^i; \mu) \leq 0 \quad \text{as } b^i \leq 0.$$

Thus, the marginal mobility costs are zero only if  $b^i = 0$ , and are increasing in the amount invested abroad (or borrowed, if  $b^i < 0$ ). Moreover, the parameter  $\mu$  is defined in such a way that a higher value of  $\mu$  generates higher and steeper marginal mobility costs. These assumptions imply that the only reason to invest abroad is to exploit tax differentials: if tax rates are equal in the two countries, there is no foreign investment. A previous version of the paper—Persson and Tabellini (1990b)—specified a slightly different cost function, which allowed for bi-directional foreign investment flows in the absence of tax differences. We discuss in footnotes below how that alternative specification changes the results.

In line with our aim to focus on foreign direct investment within Europe, we assume that the *source* principle of capital taxation applies. According to this principle, all capital in the domestic country is taxed at the same rate  $\theta$ , irrespective of who owns it. And all capital invested in the foreign country is taxed at the rate  $\theta^*$ , also irrespective of ownership. As argued for instance in Tanzi and Bovenberg (1989), in practice, this is the relevant

principle for the corporate income tax, now and presumably after 1992.<sup>3</sup> Finally, we only consider a purely redistributive fiscal policy: all tax proceeds are distributed as equal lump-sum payments to every individual. Under these assumptions, we can write the government budget constraint as:

$$\theta k + \theta b^* \cong g, \quad (2.4)$$

where  $k$  and  $b^*$  denote average investment by domestic and foreign citizens, respectively. Throughout this and the next section, a policy means a tax policy, and hence the determination of  $\theta$  (or  $\theta^*$ ).

The description of the foreign country is symmetric. In particular, foreign investors also bear a mobility cost  $M^*(b^*, \mu)$  to invest in the domestic country, which also satisfies the previous assumptions.

Events in the model unfold as follows: First, simultaneously in both countries a policymaker (government) is elected under majority rule. Second, the elected policymakers in the domestic and foreign countries simultaneously commit to a value for  $\theta$  and  $\theta^*$ , respectively. Finally, having observed  $\theta$  and  $\theta^*$ , private investors in both countries make their investment decisions.

A politico-economic equilibrium must satisfy three optimality conditions: (i) Private agents: for every value of  $\theta$  and  $\theta^*$ , economic decisions are optimal for private agents and markets clear. (ii) Elected policymakers: given how private agents respond to the policy, and given  $\theta^*(\theta)$ , the domestic (foreign) policy is optimal for the domestic (foreign) policymaker. (iii) Voters: given how the domestic and foreign policymakers set policy, and given the identity of the foreign (domestic) policymaker, the domestic (foreign) policymaker is preferred to any other domestic (foreign) candidate by a majority of the domestic (foreign) voters.

Two remarks about this equilibrium are in order. First, because of the timing, there is no credibility problem vis-à-vis the private sector in the choice of the capital tax rate. We refer the reader to Persson and Tabellini (1989) for an extensive discussion of these credibility problems and of how the timing assumed here can be enforced through the design of political institutions that delegate policymaking to an elected official.

Second, under this timing, the voters (unlike the elected policymakers) do not take the foreign policy as given, even though they do take the foreign election outcome as given. Hence, the outcome of elections is—at least partly—driven by a strategic motive: a successful candidate is one who can yield a favourable Nash equilibrium in the subsequent policy game. Because policymakers behave as Nash players when setting  $\theta$ , whereas voters do not when evaluating  $\theta$ , there is an agency problem: voters may wish to elect a policymaker that does not share their own preferences. This agency problem is studied in Section 3.<sup>4</sup>

## 2.2. *Equilibrium savings and investment*

Consider first the solution to the consumer optimization problem: the third stage of the game. The first-order conditions imply:

$$c^i = U_c^{-1}(1 - \theta) \equiv C(\theta) \quad (2.5a)$$

3. Under the *residence* principle, strategic consideration play much less of a role in tax policy, since the residence is much less mobile internationally.

4. A third remark is that we identify the policy with  $\theta$  and  $\theta^*$ , rather than  $g$  and  $g^*$ . We discuss in footnote 6 below why in this model, this is an innocuous assumption.

$$b^i = M_b^{-1}(\theta - \theta^*; \mu) \equiv B(\theta, \theta^*; \mu) \tag{2.5b}$$

$$k^i = 1 + e^i - C(\theta) - B(\theta, \theta^*; \mu) \equiv K(\theta, \theta^*; \mu) + e^i \tag{2.5c}$$

$$d^i = g + (1 - \theta)K(\theta, \theta^*; \mu) + (1 - \theta^*)B(\theta, \theta^*; \mu) - M(B(\theta, \theta^*; \mu); \mu) + (1 - \theta)e^i, \tag{2.5d}$$

Thus, first-period consumption and foreign investment are the same for every consumer, irrespective of how wealthy he is. Only domestic investment and second-period consumption differ across consumers by the linear term  $e^i$ . This property of the model is very convenient; it follows from the specification of the utility function (2.1), which implies that all the income effects are absorbed by second-period consumption.

Concavity of the utility function  $U(\cdot)$  and convexity of the mobility cost function  $M(\cdot)$  imply that:

$$B_\theta = -B_{\theta^*} > 0 \tag{2.6a}$$

$$K_\theta = -C_\theta - B_\theta < 0 \tag{2.6b}$$

$$K_{\theta^*} = -B_{\theta^*} > 0. \tag{2.6c}$$

In words, a higher domestic tax on capital,  $\theta$ , increases capital flight ( $B_\theta > 0$ ) and reduces savings ( $C_\theta > 0$ ), thereby reducing domestic investment. And a higher foreign tax on capital,  $\theta^*$ , has the opposite effect on domestic capital flight and hence on domestic investment.

### 2.3. Equilibrium of the policy game

We are now ready to describe the equilibrium policy choices of the elected policymakers in the second stage of the game. Let  $e^g$  be the endowment of whoever happens to be elected as policymaker in the domestic country. By (2.5) and by the government budget constraint (2.4), we can write his indirect utility function as:

$$W^g(\theta, \theta^*; \mu) \equiv U(C(\theta)) + K(\theta, \theta^*; \mu) + \theta B^*(\theta^*, \theta; \mu) - M(B(\theta, \theta^*; \mu); \mu) + (1 - \theta^*)B(\theta, \theta^*; \mu) + (1 - \theta)e^g. \tag{2.7}$$

Similarly, let  $e^{*g}$  denote the endowment of the foreign policy maker, and let his indirect utility function  $W^{*g}(\theta^*, \theta; \mu)$  be defined as in (2.7).

The equilibrium policies in the domestic and foreign country,  $\theta^g$  and  $\theta^{*g}$  respectively, are defined by the Nash conditions, that both policymakers play their best response to their foreign counterpart:

$$\theta^g = \text{Argmax}_\theta W^g(\theta, \theta^{*g}; \mu) \tag{2.8a}$$

$$\theta^{*g} = \text{Argmax}_{\theta^*} W^{*g}(\theta^*, \theta^g; \mu). \tag{2.8b}$$

We next differentiate (2.7) with respect to  $\theta$ , taking  $\theta^*$  as given and using the consumer first order conditions, and then repeat the same procedure for the foreign policymaker. Then we obtain the following optimality conditions, which define  $\theta^g$  and  $\theta^{*g}$  at an interior optimum:

$$B^* - e^g - \theta^g(C_\theta + B_\theta - B_\theta^*) = 0 \tag{2.9a}$$

$$B - e^{*g} - \theta^{*g}(C_{\theta^*}^* + B_{\theta^*}^* - B_{\theta^*}) = 0. \tag{2.9b}$$

In (2.9)  $B^*$ ,  $C_\theta$ ,  $B_\theta$ ,  $B_\theta^*$  and the foreign counterparts are evaluated at the point  $\theta^g, \theta^{*g}$ .

Equations (2.9) define the reaction functions of the domestic and foreign policymakers. The first two terms in (2.9a) capture the marginal gain of raising  $\theta$ , a direct redistributive effect. A higher domestic capital tax rate redistributes in favour of the domestic policymaker from two sources: from foreign investors in the domestic country, in proportion to their foreign investment,  $B^*$ ; and from wealthier domestic investors, in proportion to the difference between the average endowment (0) and the policymaker endowment ( $e^g$ ). The remaining terms in (2.9a) capture the marginal cost of raising  $\theta$ , a marginal loss of tax revenue when the domestic capital tax rate is raised unilaterally. There are three sources of revenue loss: a higher  $\theta$  leads to less savings ( $C_\theta > 0$ ), more capital flight ( $B_\theta > 0$ ), and less foreign investment ( $B_\theta^* < 0$ ). In equilibrium, the marginal redistributive gain must equal this marginal loss of revenue. Clearly,  $\theta^g > 0$  only if the marginal gain is positive (if  $B^* - e^g > 0$ ). An analogous interpretation holds for the foreign reaction function, equation (2.9b).

It is apparent from (2.9) that fiscal policy has two external effects on the foreign country, one on the marginal gain and one on the marginal cost of taxation. First, there is an effect on the taxation of foreign investment. This effect, which we call the "tax-the-foreigner" effect, increases the marginal gain and hence tends to push the tax rate on capital above the Pareto-efficient frontier of the game (i.e. above the rate that would be set in a cooperative equilibrium). Under our assumptions about the mobility costs, this effect is never present in a symmetric equilibrium (since  $B = B^* = 0$ ), and operates in opposite directions in the two countries in a non-symmetric equilibrium.<sup>5</sup> Second, there is an effect on the international allocation of investment: by unilaterally lowering its tax rate, the domestic country attracts capital (domestic and foreign) that otherwise would have been invested abroad. This effect, which we call the "tax-competition" effect, increases the marginal cost and hence tends to push the tax rate on capital below the Pareto-efficient frontier of the game. These two effects work in opposite directions. Depending on which one prevails, the equilibrium tax rates can be above or below the cooperative equilibrium rates.

The two reaction functions are illustrated in Figure 1. Equation (2.9a) implicitly defines  $\theta$  as a function  $\theta = T(\theta^*, e^g, \mu)$ . And (2.9b) implicitly defines  $\theta^*$  as a function  $\theta^* = T^*(\theta; e^{*g}, \mu)$ . By the implicit function theorem, we can show that  $1 > T_{\theta^*}$ ,  $T_{\theta^*}^* > 0$ . Hence the domestic and foreign policy instruments are strategic complements, and the two reaction functions can be drawn as the solid lines in Figure 1. The Nash equilibrium is point  $N$ , where they intersect.<sup>6</sup>

The positions of the reaction functions depend on the endowments of the two policymakers,  $e^g$  and  $e^{*g}$ , and on the mobility costs,  $\mu$ . As  $e^g$  rises, the marginal gain of capital taxation is reduced, and the domestic reaction function shifts down, say to where the dotted line is. As a result, the Nash equilibrium corresponds to lower domestic and foreign tax rates. Intuitively, as  $e^g$  increases, the domestic policymaker becomes wealthier. He is thus less willing to tax in order to redistribute. The best response of the foreign policymaker to a lower  $\theta$  is also to reduce  $\theta^*$ . Hence, in equilibrium both governments reduce their tax rates as  $e^g$  increases. Raising the endowment of the foreign policymaker,  $e^{*g}$ , has a similar effect on the equilibrium.

5. A previous version of the paper investigated more extensively the implications of this effect also in the symmetric equilibrium. The comparative statics results were generally more ambiguous.

6. Strategic complementarity is preserved even if the policymakers set transfers,  $g$ , rather than tax rates, at least in a symmetric equilibrium. Hence all the qualitative results of a symmetric political and economic equilibrium discussed below also apply to the case  $g$  is the instrument. In a non-symmetric equilibrium, strategic complementarity may be lost when policymakers set  $g$  rather than  $\theta$ , in which case the properties of the political equilibrium could also differ.

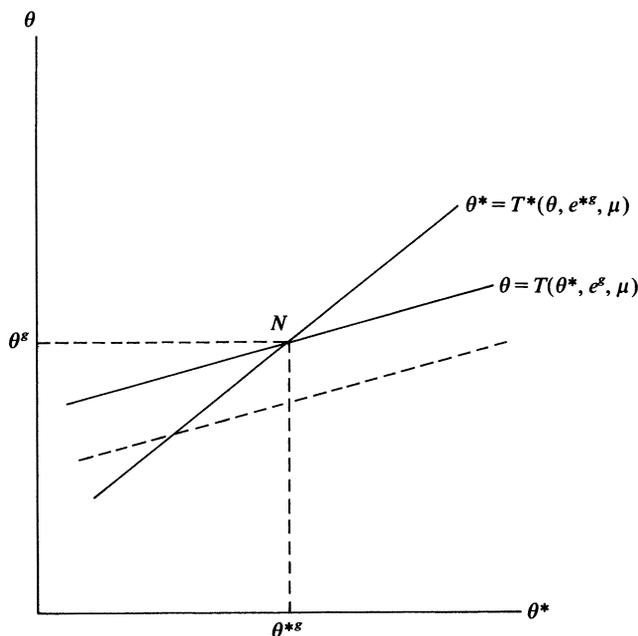


FIGURE 1

2.4. *The economic consequences of European integration*

What are the effects of a change in the mobility costs,  $\mu$ ? Applying the implicit function theorem to (2.9a) and (2.9b), we get that as  $\mu$  changes, the two reaction functions are shifted by:

$$T_{\mu}(\theta^*; e^g, \mu) = B_{\mu}^* - \theta^g(B_{\theta\mu} + B_{\theta^*\mu}^*) \tag{2.10a}$$

$$T_{\mu}^*(\theta; e^{*g}, \mu) = B_{\mu} - \theta^{*g}(B_{\theta^*\mu}^* + B_{\theta\mu}). \tag{2.10b}$$

The first term on the right-hand side of (2.10) indicates that higher mobility costs reduce the marginal gain of capital taxation (since  $B_{\mu}^*, B_{\mu} \geq 0$  as  $B^*, B \leq 0$  respectively). Intuitively, this term captures what we have called the tax-the-foreigner effect: A higher  $\mu$  reduces foreign investment, and hence the incentive to maintain a high rate so as to tax foreign investors. The second term on the right-hand side of (2.10) indicates that higher mobility costs also reduce the marginal cost of capital taxation (since under our assumptions about the function  $M(\cdot)$ ,  $B_{\theta\mu}, B_{\theta^*\mu}^* < 0$ ). This term refers to what we have called the tax-competition effect: A higher  $\mu$  reduces the elasticity of capital movements with respect to tax differentials, and hence reduces the marginal revenue loss as  $\theta$  is unilaterally increased. If  $B, B^* > 0$  these two effects work in opposite directions, whereas they reinforce each other if  $B, B^* < 0$ .

Let us now investigate the effect of European integration, represented by a fall in  $\mu$ . First, consider a symmetric equilibrium. Under our assumptions about the mobility costs,  $B = B^* = 0$ . Hence, only the tax-competition effect operates, and  $T_{\mu}, T_{\mu}^* > 0$ : the two reaction functions shift down and up respectively in Figure 1 as  $\mu$  falls, and the equilibrium tax rates move in the same direction. In this symmetric case, the process of

European integration should bring about lower equilibrium tax rates everywhere. This result is similar to those of Wilson (1987) and Wildasin (1988).<sup>7</sup>

Next, consider a non-symmetric equilibrium. For concreteness, suppose that the domestic country has appointed a more left-wing government than the foreign country:  $e^g < e^{*g}$ . Hence  $\theta > \theta^*$  and  $B > 0 > B^*$ . Now we also have to consider the tax-the-foreigner effect, which operates differently in the two countries. In the home (high-tax) country the tax-the-foreigner effect reinforces the tax-competition effect. This means that  $T_\mu > 0$  and the home-country reaction function shifts down in Figure 1, even more than in the symmetric equilibrium. But in the foreign (low-tax) country, the two effects now work in opposite directions. The foreign reaction function can therefore shift either up or down, depending on which effect prevails. The general conclusion is thus that lower mobility costs certainly lead to lower taxes in the home (high-tax) country, but they may lead to either lower or higher taxes in the foreign (low-tax country). Moreover, even if taxes fall in both countries, they certainly fall more in the high-tax country. According to this finding, we should thus expect some economic convergence (i.e. convergence of tax policies) to take place as capital becomes more mobile internationally within Europe.<sup>8</sup>

### 3. POLITICAL EQUILIBRIUM AND INCREASED CAPITAL MOBILITY

#### 3.1. *The political equilibrium*

We now turn to a description of the first stage of the game, in which voters elect a policymaker. The indirect utility function of the  $i$ th voter is like in (2.7), except that  $e^g$  is replaced by  $e^i$ . This utility function is linear in the idiosyncratic parameter  $e^i$ . It thus belongs to the class of intermediate preferences—studied by Grandmont (1978). Then, provided that the second-order conditions of the optimal tax problem are satisfied, the voters preferences for  $\theta$  are single-peaked and can be ranked by the variable  $e^i$ . The majority rule equilibrium thus coincides with the decision that is optimal for the median voter, who in this case is the individual with median endowment, say  $e^m$ .

By assumption, the voters do not vote directly on policy. They elect a policymaker who chooses policy. As explained in the previous section, the equilibrium policies  $\theta^g$  and  $\theta^{*g}$  are monotone functions of the endowment of the elected policymakers,  $e^g$  and  $e^{*g}$ . The voters' preferences for the policy therefore induce a preference ordering for the policymaker's endowment. This preference ordering also satisfies the single-peakedness condition. In equilibrium, the policymaker who wins the elections is the policymaker preferred by the median voter.

It is tempting to conclude from this argument that the median voter wishes to elect a policymaker with the same endowment as himself, so that in equilibrium  $e^g = e^m$ . But this conclusion would be wrong. Once a policymaker is elected, he moves simultaneously with his foreign counterpart. He thus takes  $\theta^*$  as given. But when voters evaluate alternative policies and vote on a policymaker, they realize that the foreign tax rate will be set according to (2.9b): they take the foreign reaction function and not the foreign action, as given. In other words, whereas voters evaluate the policy *ex ante*, before the move of the foreign policymaker, the policymaker evaluates it *ex post*, simultaneously

7. In the limit, if mobility costs fall to zero, then in equilibrium  $\theta = \theta^* = 0$ . See also Kehoe (1989).

8. In a previous version of the paper, we specified a mobility cost function that allowed for bidirectional flows of foreign investment in a symmetric equilibrium. In that case, a smaller mobility cost has ambiguous effects on tax policy in a symmetric equilibrium, because the "tax-the-foreigner" and the "tax-competition" effect offset each other in both countries. The convergence result however is not affected.

with the move of the foreign policymaker. These two evaluations generally differ, even if the voter and the policymaker have the same endowment.

In the notation of the previous section, the optimal domestic policy from the point of view of the domestic median voter,  $\theta^m$ , is defined as:  $\theta^m = \text{Argmax}_\theta W^m(\theta, T^*(\theta; e^{*g}, \mu), \mu)$ . Note that here the domestic median voter takes the identity of the foreign policymaker,  $e^{*g}$ , as given. This is because elections are held simultaneously in the two countries. The optimal foreign policy from the point of view of the foreign median voter,  $\theta^{*m}$ , is defined analogously as:  $\theta^{*m} = \text{Argmax}_{\theta^*} W^{*m}(\theta^*, T(\theta^*; e^g, \mu), \mu)$ .

By (2.7) and (2.9), one obtains that  $\theta^m$  and  $\theta^{*m}$  are jointly defined by the following optimality conditions:

$$B^* - e^m - \theta^m(C_\theta + B_\theta - B_\theta^*) + T_\theta^*(\theta B_\theta^* - \theta B_{\theta^*} - B) = 0 \tag{3.1a}$$

$$B - e^{*m} - \theta^{*m}(C_{\theta^*} + B_{\theta^*} - B_{\theta^*}) + T_{\theta^*}(\theta^* B_\theta - \theta^* B_\theta^* - B^*) = 0, \tag{3.1b}$$

where  $B, B_\theta, C_\theta$  and the foreign counterpart are evaluated at the equilibrium point  $\theta^m, \theta^{*m}$ . Equations (3.1) have the same interpretation as (2.9): at the optimum the marginal gain and the marginal cost of higher capital taxes are equated. The marginal gain of raising  $\theta$  is still like in (2.9). But the marginal cost now contains an additional expression (the last expression on the right-hand side of (3.1)). This new expression can be either positive or negative. Hence, the marginal cost perceived ex ante by the voter can be higher or lower than that perceived ex post by the policymaker once he is appointed. As in the previous section, this ambiguity reflects the presence of two effects that can offset each other: the tax-the-foreigner effect (the terms  $-B$  and  $-B^*$ ), and the tax-competition effect (the terms  $\theta B_\theta^* - \theta^* B_\theta^*$ ).

In equilibrium, the median voters elect a policymaker who finds it ex post optimal to set  $\theta^g = \theta^m$  and  $\theta^{*g} = \theta^{*m}$  respectively. Combining (2.9) and (3.1), we thus obtain that the endowments of the policymakers who win the elections at home and abroad are:

$$e^g = e^m - T_\theta^*(\theta B_\theta^* - \theta B_{\theta^*} - B) \tag{3.2a}$$

$$e^{*g} = e^{*m} - T_{\theta^*}(\theta^* B_\theta - \theta^* B_\theta^* - B^*) \tag{3.2b}$$

Again because of the ambiguity of the two possibly offsetting effects, the elected policymaker can in principle be to the left or to the right of the median voters.

We now turn to a more systematic discussion of the properties of the equilibrium. Consider first a symmetric equilibrium in which  $e^m = e^{*m}$ , so that  $B = B^* = 0$  and only the tax-competition effect operates. The last expression on the right-hand side of (3.1) is then positive (since  $T_\theta^* > 0$  and  $B_\theta^* - \theta B_{\theta^*} > 0$ , and similarly for the foreign country). As a consequence, the marginal cost of capital taxation is smaller ex ante than ex post. This finding has a simple intuition. Ex post, the policymaker considers a unilateral increase in the domestic tax rate, taking the foreign tax rate as given. But ex ante, voters realize that raising the domestic tax rate (by appointing a poorer policymaker) induces the foreign country also to raise its rate (along its upward sloping reaction function). Hence, the marginal loss of tax revenue due to capital moving abroad is perceived to be smaller ex ante than ex post. As a consequence, the ex ante optimal capital tax rate is higher than the ex post optimal rate. To enact these ex ante optimal tax rates, the voters of both countries delegate policymaking to a government *more to the left* than the median voters: by (3.2) if  $B = B^* = 0$ , then  $e^g < e^m$  and  $e^{*g} < e^{*m}$ . The intuition follows directly

from the finding that the marginal cost of capital taxation is higher ex post than ex ante. It is ex post incentive compatible for the policymaker to implement the ex ante optimal rate only if his marginal gain from taxing capital is also higher than that of the median voter. As a result, the appointed policymaker must be poorer than the median voter.<sup>9</sup>

Next, consider a non-symmetric equilibrium. For concreteness, we assume that the wealth distribution is more skewed in the home country, so that  $e^m < e^{*m}$ . With this assumption,  $\theta^m > \theta^{*m}$ , and as a consequence  $B > 0 > B^*$ . By (3.1), in the foreign (low-tax) country the ex ante marginal cost of taxation is even lower than the ex post marginal cost, compared to the symmetric equilibrium (since  $B^* < 0$ ). But in the home (high-tax) country, the relation between the ex post and the ex ante marginal cost is ambiguous, because here the tax-competition effect and the tax-the-foreigner effect go in opposite directions. As a consequence, the government is certainly to the left of the median voter ( $e^{*g} < e^{*m}$ ) in the foreign country, while in the home country it can be on either side ( $e^g \geq e^m$ ). For future reference, this situation is depicted in Figure 2 where  $e^g$  is drawn slightly to the left of  $e^m$ .<sup>10</sup>



FIGURE 2

These results have general validity. In the presence of an ex post incentive constraint, the political equilibrium endogenously delegates policy choices to an agent whose preferences differ from those of the majority of the voters. Under any modern democratic constitution the majority of the voters cannot later reverse this delegation and overrule the decisions of its political representative.<sup>11</sup> The voters only have an opportunity to reoptimize if the political representative chooses to resign. But since the equilibrium by construction is ex post optimal for the representative, the voters will not be given this opportunity (other than at new elections). Delegation through the political system is therefore self-enforcing.

Since this delegation partially relaxes an incentive constraint, it is generally welfare improving for the majority of the voters.<sup>12</sup> Here, the incentive constraint is due to the country playing a non-cooperative Nash game with another country. Delegating policy to an agent takes the equilibrium closer to the Pareto frontier of the game among the median voters. But the same point would arise, even if the policy game was played in a different fashion, such as cooperative Nash bargaining. Or if the nature of the incentive

9. Of course, voters don't really have to go through the detailed argument we have just made, when they make their voting decision. As in any rational expectations model, all they have to know is the equilibrium mapping between elected policymakers and policies. Note also that there are no elements of strategic voting: each voter just votes for the policymaker that gives him the highest utility.

10. Note that  $e^g < e^{*g}$  with certainty, because we know that  $\theta^m > \theta^{*m}$ .

11. In the language of modern political theory, this amounts to the political representative having "gate-keeping authority" vis-a-vis the voters. Ferejohn (1990) discusses how important gate-keeping authority is for making commitments feasible at a different level: congressional committees vis-a-vis congress.

12. Naturally, the fact that delegating policy improves welfare for the median voter need not improve welfare for society as a whole. Whether it does, depends on the particular social welfare function one adopts. Note also that in this model nobody would really wish to run for office (since everybody prefers to delegate the policy choice to a poorer agent). A way around this problem could be to assume that there are two kinds of individuals: voters and candidates. Candidates have ideological preferences, just like voters, but also have a desire to hold office *per se*. If for every individual type there are many voters and just one candidate, the equilibrium is as described above.

constraint were due to domestic credibility problems, rather than to international spillover effects. This general point is discussed more extensively in Persson and Tabellini (1989).

Delegation games of this type, when a principal delegates a strategic choice to an agent, have been extensively studied in the industrial organization literature. Some examples are Vickers (1984), Bonnano and Vickers (1988), Fershtman and Judd (1988), Polo and Tedeschi (1991), Cave and Salant (1990). A problem with many of these applications is that the agents' payoffs are often arbitrarily restricted. Without such restrictions, the outcome of the delegation game would generally be indeterminate: as shown by Fershtman, Judd and Kalai (1989), any individually rational outcome of the original game can be an equilibrium of the delegation game for appropriate assumptions about the agents' payoffs. This indeterminacy problem however does not arise in our political model, since the agents (the political representatives) have to be selected among the voters. This weak but plausible restriction, together with our specification of the voters' endowments and induced policy preferences, is sufficient to yield a unique and well defined equilibrium of the delegation game.<sup>13</sup>

### 3.2. The political consequences of European integration

In the full politico-economic equilibrium, a change in the mobility costs,  $\mu$ , has two effects. First, for a given policymaker's endowment, it changes the Nash equilibrium of the policy game. This economic effect is described in the previous section by equation (2.10) and remains operative in the politico-economic equilibrium. But a change in  $\mu$  also has a second effect: it alters the political equilibrium. This can be seen by differentiating both sides of (3.2) with respect to  $\mu$ . We obtain:

$$\frac{de^g}{d\mu} = -T_{\theta\mu}^*(\theta B_{\theta^*}^* - \theta B_{\theta^*} - B) - T_{\theta}^*(\theta B_{\theta^*\mu}^* - \theta B_{\theta^*\mu} - B_{\mu}). \tag{3.3}$$

Thus, the identity of the elected policymaker changes with  $\mu$ . The same result applies for the foreign country. Again, the sign of (3.3) is generally ambiguous, since the tax-competition and the tax-the-foreigner effect work in opposite directions.

Consider first a symmetric equilibrium, where  $e^{*m} = e^m$ . As before, only the tax-competition effect is present, since  $B = B^* = 0$  and  $B_{\mu} = B_{\mu}^* = 0$ . In this case, under the additional assumption that the third and higher derivatives of the mobility cost function  $M(b; \mu)$  with respect to  $b$  are negligible, it can be shown that  $de^g/d\mu > 0$ : lower mobility costs (a lower  $\mu$ ) induce the voters to elect a poorer policymaker more to the left.<sup>14</sup>

Intuitively, greater capital mobility increases the relevance of tax competition for the choice of fiscal policy. Thereby, it also increases the difference between the ex post and ex ante evaluation of the optimal capital tax rate. Hence, the majority of the voters prefers to delegate policy decisions to a more radical (poorer) agent. This political effect partially offsets the direct economic effect described in the previous section, since a poorer policymaker sets higher capital tax rates. It can be shown that the political effect of a lower  $\mu$  is dominated by the economic effect. Thus, higher capital mobility leads to lower

13. Finally, note that in our framework the timing of elections in one country relative to the other matters: the country that holds elections first can act as a Stackelberg leader.

14. In a symmetric equilibrium, (3.3) can be rewritten as:

$$de^g/d\mu = -T_{\theta\mu}^*(2\theta B_{\theta^*}^*) - T_{\theta}^*(2\theta B_{\theta^*\mu}^*)$$

By (2.6),  $B_{\theta^*}^* > 0$ . Moreover,  $T_{\theta}^* > 0$  and  $B_{\theta^*\mu}^* < 0$  (see pp. 10 and 11 above). Finally, it can be shown that if the third derivatives of  $M(b'; \mu)$  are small in absolute value, then  $T_{\theta\mu}^* < 0$ . Hence,  $de^g/d\mu > 0$ .

capital tax rates. But the change in the equilibrium rates is not as large as it would be if one neglected the political repercussions of higher capital mobility.

Next, consider a non-symmetric equilibrium, again under the assumption that the domestic country has a more left-wing political majority due to a more skewed wealth distribution. Thus,  $e^m < e^{*m}$ , which in turn implies  $\theta^m > \theta^{*m}$ ,  $e^g < e^{*g}$  and  $B > 0 > B^*$ —see Figure 2. By (3.3), in the foreign (right-wing) country the tax-competition and the tax-the-foreigner effects reinforce each other (since  $B^* < 0$  and  $B_\mu^* > 0$ ). Hence, higher capital mobility (a lower  $\mu$ ) certainly moves the political equilibrium to the left. In the domestic (left-wing) country, on the other hand, the two effects work in opposite directions, as  $B > 0$  and  $B_\mu < 0$ . Hence,  $de^g \geq 0$ , and a reduction in mobility costs can move the political equilibrium either to the right or to the left, depending on whether the tax-the-foreigner effect or the tax-competition effect dominates.

Can we conclude from this discussion that the removal of barriers to capital mobility (a lower  $\mu$ ) will bring about political convergence? The answer is that it is likely. But unlike our result on economic convergence, it is not certain. On the one hand, the tax-competition and the tax-the-foreigner effects reinforce each other in the right-wing country, while they offset each other in the left-wing country. And this induces political convergence. But on the other hand (3.3) implies that the tax-competition effect is stronger in the left-wing country (because  $\theta^m > \theta^m$ ). And this induces political divergence.

Irrespective of what we assume about the relative importance of the tax-competition effect versus the tax-the-foreigner effect or about symmetry between the countries, the economic and political consequences of a change in  $\mu$  always tend to offset each other. That the political equilibrium changes so as to dampen the effects of European integration on domestic policy formation is thus a general result of the model.

#### 4. CONCLUSIONS

The central message of this paper is that the creation of a single European market will have both economic and political repercussions. Neglecting the political repercussions can lead one to overestimate the effects of European integration on domestic policy formation. European integration changes the domestic political equilibrium by changing the voters' preferences for their elected government representatives. In the case of capital taxation, this creates a downward pressure and the equilibrium tax rate, as different countries compete to attract foreign capital. Voters find it optimal to react to this change in the economic environment by electing a government less sensitive to these strategic aspects of tax policy. This is generally a more left-wing government, more ideologically committed to redistributive tax policy. Higher capital mobility within Europe increases the relevance of international strategic considerations for domestic tax policy. Hence, the political system mitigates the changes in the external environment; society finds a way to adapt, perhaps without major changes in its behaviour.

These strategic effects of higher capital mobility are different in different countries. More right-wing countries, with initially lower capital tax rates, are more likely to shift their political equilibrium to the left, and are less likely to further reduce their capital tax rates. While conversely, more left-wing countries, which have initially higher capital tax rates, are less likely to undergo changes in their political equilibrium but are more likely to be forced to cut their capital taxes. Hence, European economic integration can bring about both economic and political convergence.

The mechanism stressed in this paper is not the only way economic integration may alter the political equilibrium, however. In the previous version of the paper, Persson

and Tabellini (1990b), we analyse a second mechanism: coalition formation. The general idea is that economic integration triggers sectoral adjustment which alters income distribution in both countries. This change in the distribution of income alters the incentive to redistribute via the tax system for the existing majority: "an economic effect". But it also changes the political majority: "a political effect". Once again the economic and political effects of integration work in opposite directions. A tendency for the change in political equilibrium to preserve the *status quo* thus appears to be a general result.

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