Is a Uniform Social Policy Better? Fiscal Federalism and Factor Mobility

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This paper develops a two-country model to study two questions. How do the degrees of centralization of redistribution and of factor mobility affect the productive efficiency of the economies? What degrees of centralization of redistribution and of factor mobility are likely to be chosen by majority rule? The model shows that a system of centralized redistribution can lead to less efficient outcomes if labor or capital are not mobile; and an inefficient outcome, with incomplete or no factor mobility, receives a majority of votes in both countries, whenever the structure of labor markets is very different in the two countries. (*JEL* D72, E62, H50, H77)

The recent process of European monetary integration has once more brought to the forefront the link between monetary integration and factor mobility. The same process of monetary integration also creates increasing pressure for more fiscal integration among member countries, as the loss of the monetary instrument enhances the stabilizing role of a supernational fiscal policy. But in contrast to the case of monetary integration, the link between factor mobility and fiscal integration has received little attention in the macroeconomic literature.[1]

In this paper, I argue that factor mobility and integration of fiscal policy are indeed closely connected, and I ask two questions. The first is normative. Suppose a centralized fiscal policy is imposed exogenously on a group of countries: what effects does this have on the productive efficiency of the integrating economies, and how does this effect depend on the degree of factor mobility? The second question is positive. Suppose that the degrees of centralization of fiscal policy and of factor mobility are decided by majority voting: what arrangement will emerge in equilibrium, and what are its efficiency properties?

In studying these issues, I focus on redistributive fiscal policy, i.e., those programs that redistribute income across individuals. Collectively, these programs are the largest component of the budgets of contemporary industrialized countries, and at the same time the most important automatic stabilizers.[2] In addition, redistributive programs interact directly with the working of the labor market, which are at the center of the analysis of this model.

The process of European integration has not yet created any meaningful interpersonal redistribution at the supernational level.[3] Thus, this model is not meant to provide a description of the actual process of integration so far. Rather, its goal is to develop a conceptual framework for the analysis of positive and normative aspects of greater fiscal integration, when it actu-

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[1] Exceptions are Charles C. Brown and Wallace E. Oates (1987), David E. Wildasin (1991), and Patrick Bolton and Gérard Roland (1996, 1997), although the questions they ask and the frameworks they use are very different from that of the present paper. I discuss these papers in Section VI.

[2] In 1998 the average GDP share of all transfer expenditure to individuals in the European Community was 21.6 percent. The average share of the next most important budget item, government consumption, was 17.4 percent.

[3] The European Social Fund currently amounts to about 0.1 percent of the European Union GDP, and finances mostly education and training, not social expenditure. The total European Union budget amounts to about 1.5 percent of the European Union GDP (see Charles Bean et al., 1998).

ally emerges on the policy agenda as a realistic proposition.

The focus of the analysis is on the productive efficiency of the different arrangements, i.e., a comparison of their outcomes in terms of output.[4] To isolate issues of productive efficiency more starkly, I assume a world without uncertainty and abstract from issues of mutual insurance and moral hazard completely. These issues have been studied in a recent important contribution by Torsten Persson and Guido Tabellini (1996). I also abstract from economies of scale and heterogeneity of preferences as determinants of the optimal degree of centralization in the provision of public goods, which are the subject of Bolton and Roland (1996, 1997) and Alberto Alesina and Enrico Spolaore (1997). In Section VI, I discuss the relationship of the present model with this literature.

At the root of the model is the classic trade-off between redistribution and efficiency. To understand the logic of the model, it is therefore useful to start from this trade-off and its determinants. First, taxation and redistribution affect the *location* of mobile factors, because factors flow where taxation is lower and where they can be combined with more of other factors. This channel, which is the only one if the total supply of the factor is inelastic, underscores the importance of incorporating the *degree of factor mobility* in the analysis. Second, fiscal policy affects the *provision* of factors that are in elastic supply. Redistribution affects the size of rents that can be appropriated in noncompetitive labor markets, and therefore the aggregate supply of labor. This channel underscores the importance of the *structure* of labor markets. To fix ideas, I consider the extreme case of two countries, one with a perfectly competitive labor market, the other where all the labor force is organized in a monopoly union. Finally, when fiscal policy is endogenous, as in this paper, the *fiscal regime*—the set of rules governing the allocation of fiscal policy to the different levels of government—determines the equilibrium value of taxation and expenditure, and ultimately the allocation of factors in the economy.

[4] The notion of efficiency used throughout the paper is therefore different from the notion of second-best efficiency common in the public-finance literature.

The model incorporates all three determinants of the trade-off between efficiency and redistribution—the degree of factor mobility, the structure of labor markets, and the fiscal regime—and delivers four main results. The first two concern the normative analysis of the model. First, when labor markets differ in the two countries, a move to centralize fiscal policy can increase the distortionary effects of redistribution if labor is not mobile. This result is in sharp contrast with the message of most existing literature, and cautions against the dangers of centralizing fiscal policy between countries with different labor-market institutions if labor mobility has not been firmly established yet.

According to a common intuition, higher factor mobility will reduce or eliminate the distortionary effects of fiscal policy, because it reduces the rents available in unionized labor markets. But the second result of the model shows that incomplete factor mobility, i.e., removing barriers to the movement of just one factor, can actually *increase* the inefficiency of the allocation of factors in a centralized regime. Thus, a centralized fiscal policy might not generate an efficient outcome unless both factors are mobile.

The next two results concern the positive analysis of the model. One might argue that the first two results are of limited relevance, because it is difficult to see why the inefficiencies highlighted above should find the support of a majority of individuals in both countries. But according to the third result, when labor markets differ across countries, the allocation of factors in the winner of the voting process is never efficient.

Fourth, over an important parameter region centralized redistribution with capital, but not labor, mobility is the winner in both countries, although much more efficient arrangements are available. Relatively free capital mobility and limited labor mobility are also features of the current European arrangement. This result suggests that, unless rents in noncompetitive labor markets are reduced, a more integrated fiscal policy will not be necessarily associated with more efficiency and more labor mobility.

The plan of the paper is as follows. The next section describes the basic model. Sections II and III address the first two normative questions posed above, by evaluating the efficiency of the

allocation of factors under different degrees of centralization and of factor mobility. Section IV addresses the other two positive questions, by endogenizing the fiscal regime and the degree of factor mobility. Section V discusses the effects and sustainability of capital mobility with the rest of the world, and the effects of precommitting to a high level of redistribution. Section VI discusses the relationship of this paper with the existing literature, briefly overviews the empirical evidence on the key assumptions of the model, and draws the main policy implications for the process of European integration.

I. The Model

I consider a very simple model where a single good is produced with a Cobb-Douglas technology that uses labor, L, and capital, K: $y = L^{\alpha}K^{1-\alpha}$. An individual can reside in one of two jurisdictions, A and B. These jurisdictions can be thought of as regions, states of a country, or countries of a union. Because the model allows for differences in labor markets and for limited factor mobility across jurisdictions, the interpretation in terms of countries is probably the most appropriate. This is the terminology that I will use throughout the paper. The rest of the model consists of three main blocks: the distribution of endowments, the institutional framework for fiscal policy-making, and the structure of the labor markets.

Factor Endowments.—In each country there are three classes of agents, which capture in a simple but realistic way the main interests at stake in the issues studied in this paper: a total mass $\bar{L}$ of individuals who are part of the labor force ("workers" for brevity), each endowed with one indivisible unit of labor which he supplies inelastically if employed; a total mass $\bar{L}_K$ of holders of capital ("capitalists" hereafter), each endowed with $\bar{K}/\bar{L}_K$ units of capital; and a total mass $\bar{R}$ of agents outside the labor force. The only source of income of this last class is therefore from redistribution. Only for brevity's sake I will refer to this class as "retirees."

To avoid trivial voting equilibria, I assume that the mass of each of the three classes of agents is less than half.

Fiscal Policy and Factor Mobility.—A tractable formalization of redistribution in this model, which at the same time allows a realistic analysis of the main issues involved, is a transfer of income from capitalists to the other two groups. Thus, I consider two programs, providing a pension to retirees and an unemployment benefit to unemployed workers. The tax revenues needed to finance these programs are obtained from a proportional tax on capital income, at rate t.[5]

Only for simplicity, I assume that the unemployment subsidy is equal to the pension, and I denote both by s. One could easily assume that the two programs are separate; the only added complication in this case is that a mechanism must be provided that governs the allocation of tax revenues between the two programs. An example of such mechanism would be bargaining between the representatives of the constituencies of the two programs.[6]

Throughout this paper, *fiscal policy*—i.e., a pair (t, s) of tax rate and subsidy to unemployed workers and to retirees—is endogenous, and it is determined by majority voting. Note that voting on t is equivalent to voting on s, and vice versa, because the two are related via the government budget constraint. To ensure an internal solution to the voters' problem, I assume

[5] One could relax this assumption and allow for taxation of labor income in at least two ways. The distribution of labor endowments among workers could have some dispersion: if this distribution is sufficiently skewed to the right (the empirically relevant case), a majority of workers could still vote for a positive tax rate even if it falls on labor too. Alternatively, the tax rate could be progressive and therefore the tax rate on capitalists higher. In this case the degree of progressivity would have to be determined outside the model, since, as it is well known, it is difficult to establish the existence of a noncycling majority when the tax rate is not proportional. Although conceptually both extensions would be rather straightforward, they would make the solution of the model much more cumbersome, without adding any substantial insight to the main argument.

[6] Empirically, the distinction between an unemployment benefit and a pension is often blurred. For instance, anticipated retirement has been widely used as a labor-market policy that effectively replaces an unemployment subsidy with a pension [see, e.g., the Organization for Economic Development and Cooperation (OECD) *Job Study*, 1990]. In several European countries, most notably the Netherlands and Italy, retirement and invalidity pensions have been used extensively as substitutes for permanent unemployment benefits. During the 1970's and 1980's, this use was even sanctioned in the law.

that there are convex costs of redistributing taxes, so that when the tax rate is t and the tax base is X, a fraction t of total tax revenues is wasted, and only the amount $(t - t^2)X$ can be redistributed. Effectively, this assumption imposes an upper bound on the tax rate that will be enacted in equilibrium, because for a given tax base, total tax revenues are maximized at $t = 1/2$.

The fiscal policy that emerges as the winner of the voting process depends on the *pattern of factor mobility* and on the *fiscal regime*. For analytical tractability, in this model I consider only the two polar extremes of zero- or full-capital mobility, and similarly for labor mobility.[7]

The fiscal regime specifies the allocation of fiscal decision-making and of tax revenues to the two countries. In a *decentralized regime*, each country chooses its own tax rate by majority voting, and all redistribution is financed using the revenues raised in that country only. In a *centralized regime*, a common tax rate is chosen by majority voting by all the citizens of the two countries, and revenues are shared to finance all redistribution in the two countries. Also, in this regime the same pattern of factor mobility applies to the two countries. In the decentralized regime, each country chooses its own pattern of factor mobility.[8]

Together, the fiscal regime and the pattern of factor mobility define the *institutional configuration*. To streamline the exposition, a configuration will often be referred to with three letters rather than its full name: the first letter indicates the fiscal regime (D for "decentralized" and C for "centralized"), the second the degree of mobility of capital (I for "immobile" and M for "mobile"), and the third the degree of labor mobility. For instance, DMI will indicate the decentralized regime with mobile capital and immobile labor.

[7] This assumption is innocuous in the context of this model: preferences are such that individuals would always prefer one of these two extremes over an intermediate degree of mobility.

[8] Of course, the patterns of factor mobility chosen by the two countries in the decentralized regime cannot be completely independent of each other. I discuss this issue and its consequences in Section IV.

Labor Markets.—For expository convenience, I consider two extreme types of labor markets. In country A, all workers are represented by a monopoly union. In country B, the wage is determined competitively. This is a convenient representation of the more complex phenomenon mentioned in the introduction—intercountry differences in labor markets—but it is sufficient to capture in a tractable way the crucial features of the problem studied here.

The union in country A has a standard objective function (see, e.g., Ian M. McDonald and Robert M. Solow, 1981; Olivier J. Blanchard and Stanley Fischer, 1989 Chapter IX): it takes as given the tax rate t and the unemployment subsidy s and sets the wage w (or equivalently, the level of employment L) to maximize the expected income of its members, subject to the aggregate labor-demand function. Formally, the union solves:

$$\max_{w} V = w\frac{L}{\bar{L}} + s\frac{(\bar{L} - L)}{\bar{L}} \tag{1}$$

s.t.

$$w = \alpha L^{\alpha - 1}K^{1-\alpha}. \tag{2}$$

Note that, implicitly, the utility of leisure has been normalized to 0, without loss of generality. The right-hand side of (1) represents the expected income of a worker: with probability $L/\bar{L}$ he will be employed and will receive the wage w, while with probability $(\bar{L} - L)/\bar{L}$ he will be unemployed and will receive an income s.

Thus, I have assumed a "monopoly union" that chooses a wage-employment pair along the given labor demand. It is well known that this type of model generates an inefficient employment outcome (see, e.g., Blanchard and Fischer, 1989); however, as I discuss in Section VI, subsection B, the results of the model would go through exactly if the wage and possibly employment were set by efficient bargaining rather than by a monopoly union. The assumption that the union takes s as given captures the realistic notion that labor-market negotiations typically take the legislation on social policy (including the level of benefits) as given.

II. The Benchmark: Immobile Factors

To illustrate the working of the model it is useful to start from the benchmark case of the decentralized regime with both factors immobile (DII). Consider first the equilibrium allocation of factors in the economy, given the tax rate and the subsidy.[9] Obviously, in country B full employment always prevails because the labor market is competitive and the individual labor supply is inelastic.[10] In country A, the monopoly union faces a demand for labor with constant elasticity $\sigma \equiv 1/(1-\alpha)$. Like all monopolists, at an internal optimum the union sets its "price," i.e., the wage w_A, as a markup over the marginal *opportunity* cost of employment, s_A:

$$w_A = \left(\frac{\sigma s_A}{\sigma - 1}\right) = \frac{s_A}{\alpha}. \tag{3}$$

This condition defines employment L_A as a negative function of s_A: the larger the revenues available for redistribution, the higher s_A and the lower employment.

Now consider how the equilibrium tax rate is determined in each country. From the government budget constraint, s_A is a function of t_A and L_A:

$$s_A(t_A, L_A) = \frac{(t_A - t_A^2)(1-\alpha)L_A^{\alpha}\bar{K}^{1-\alpha}}{\bar{R} + \bar{L} - L_A}. \tag{4}$$

To understand this expression, note that $(1-\alpha)L_A^{\alpha}\bar{K}^{1-\alpha}$ is total income from capital. The numerator on the right-hand side of (4) therefore represents total tax revenues, while the denominator is the mass of agents who receive the subsidy s_A, i.e., the $\bar{R}$ retirees plus the $\bar{L} - L_A$ unemployed workers. Together, (3) and (4) determine s_A and L_A as, respectively, monotonically positive and negative functions of t_A over the relevant range $t_A \in [\bar{t}, 1/2]$.[11] As t_A and therefore s_A increase, from (3) the optimal wage set by the union increases, and employment decreases. Hence, it is intuitive that a majority composed of retirees and workers vote for the highest possible tax rate, $t_A = 1/2$. The unemployment corresponding to the equilibrium tax rate is the highest unemployment that can be financed in country A.

The tax rate t_B which prevails in country B is irrelevant for the efficiency of the equilibrium, since in that country the labor market is competitive. To fix ideas, assume that there is a fixed infinitesimal cost in setting up the tax system, to capture the reasonable notion that, if there is no benefit from taxation, there is no reason to vote for positive taxation. Then, in country B a majority composed of workers and capitalists vote for $t_B = 0$.[12]

Suppose now that all factors remain immobile, but a centralized fiscal system is imposed from the outside (CII). With asymmetric labor markets, this move can increase the distortion-

[9] In what follows, the subscripts A and B indicate the country. In the centralized regime, where the tax rate and the subsidy are the same in the two countries, no subscript will be used for t and s.

[10] In solving the model, I impose the restriction that under DII the highest possible value of the unemployment subsidy, which occurs when the tax rate is 1/2 and there is no unemployment, is not higher than the full-employment wage: $s_B(1/2, \bar{L}) \leq w_B(\bar{L})$. This condition simply states that in a perfectly competitive labor market, workers prefer to work rather than being unemployed.

This condition is violated for very low values of α (for any given $\bar{R}$), or for very low values of $\bar{R}$ (for any given α). If α is very low, the profit share is very large, and so are tax revenues and the unemployment subsidy relative to the full-employment wage. Similarly, if $\bar{R}$ is very low, the existing tax revenues have to be divided among a small mass of retirees, hence again the unemployment subsidy is large relative to the full-employment wage. Formally, the condition $s_B(1/2, \bar{L}) = w_B(\bar{L})$ defines implicitly a downward-sloping function $\alpha_0(\bar{R})$ such that, if $\alpha < \alpha_0(\bar{R})$, there is unemployment in country B as well. To rule out this uninteresting case, from now on I will assume $\alpha \geq \alpha_0(\bar{R})$.

[11] $\bar{t}$ is defined as the tax rate at which $s_A(\bar{t}, \bar{L}) = \alpha w(\bar{L})$. As long as the tax rate is below $\bar{t}$, $s_A(t_A, \bar{L})/\alpha$ is smaller than the full-employment wage $w(\bar{L})$, and the union has no interest in decreasing employment below its full-employment level. Once t_A exceeds $\bar{t}$, however, s_A/α increases with t_A above the full-employment wage and employment starts declining as the wage set by the union increases. Thus, dL_A/dt_A is 0 for $t_A \in [0, \bar{t}]$, it is negative for $t_A \in (\bar{t}, 1/2)$, and it is 0 at $t_A = 1/2$.

[12] Of course, here and in the rest of the paper a value of 0 for the equilibrium tax rate and Social Security subsidy should not be interpreted too literally. Rather, it should be interpreted as the lowest value of the tax rate and of the subsidy that is allowed by, say, social norms or constitutional constraints.

ary effects of redistribution. In the centralized regime, the relationship between s and t is given by:

$$(5)\quad s(t, L_A, \bar{L}) = \frac{(t - t^2)(1 - \alpha)(L_A^{\alpha} + \bar{L}^{\alpha})\bar{K}^{1-\alpha}}{2\bar{R} + \bar{L} - L_A}.$$

The important point is that (5) is not just a blown-up version of (4). Now for any given t the tax base and total tax revenues are, roughly speaking, double those of country A alone; however, these revenues must be divided among *less* than double the mass of individuals, since there are no unemployed workers in country B. Thus, for any given tax rate t more revenues are available to subsidize retirees and A's unemployed workers.

Retirees in both countries and workers in country A vote for the maximum tax rate, $t = 1/2$. Capitalists in both countries and workers in country B vote for $t = 0$. If $\bar{R} < \bar{L}_K$ (i.e., the mass of individuals outside the labor force is small), $t = 0$ prevails; if instead $\bar{R} > \bar{L}_K$, $t = 1/2$ prevails. In this latter case, in the centralized regime, employment and output in A are lower than in the decentralized regime.

III. Factor Mobility

A. *Removing Barriers to Capital Mobility*

Suppose movements of capital are liberalized, while labor is still not allowed to move. A common intuition would suggest that capital mobility should have a "pro-efficiency" effect by limiting the size of the rents available to the union. This intuition would be right if fiscal policy were exogenous. But when fiscal policy is endogenous, capital mobility has a second effect: it can shift the preferences of certain groups who benefit from movements of capital toward policies that cause such movements. A more distortionary fiscal policy is exactly one such policy. Hence, even if a *given* fiscal policy is indeed no more distortionary when capital is mobile, it might be the case that the *equilibrium* policy is more distortionary. This section shows that this is precisely what can happen in the centralized regime.

When capital is mobile, the after-tax marginal returns to capital in the two countries must be equalized (note that $L_B = \bar{L}$ and $K_B = 2\bar{K} - K_A$):

$$(6)\quad (1 - t_A)L_A^{\alpha}K_A^{-\alpha} = (1 - t_B)\bar{L}^{\alpha}(2\bar{K} - K_A)^{-\alpha}.$$

There are two effects of an increase in taxation in A on the flow of capital from A to B: (i) the *direct effect* (i.e., at constant employment): when the tax rate in A increases relative to the tax rate in B, capital flows from A to B to reestablish equality of the after-tax marginal returns to capital; (ii) the *indirect effect*: the higher tax revenues that are available to subsidize unemployment induce a decline in employment and an outflow of capital from A.

Because by definition the tax rates in the two countries are the same in the centralized regime, the direct effect operates only in the decentralized regime. Hence, the elasticity of capital outflows to the tax rate, and therefore the output cost of increasing the tax rate, are higher in a decentralized regime.

In fact, it is easy to show that in the decentralized regime (DMI) the equilibrium tax rate in *both* countries is 0.[13] In country B, it is a dominant strategy for workers to have $t_B = 0$, because it maximizes the outflow of capital from A to B and therefore the wage in B. Since capitalists also vote for $t_B = 0$, this is the equilibrium tax rate in B. When $t_B = 0$, a marginal increase in t_A causes a large outflow of capital to B since both the direct and the indirect effect of taxation are operative in the decentralized regime. It can be shown that the optimal tax rate for A's workers is 0, and in equilibrium $t_A = 0$ because capitalists also vote for the lowest possible tax rate. This is, of course, the standard tax-competition result with capital mobility.

Now consider the equilibrium in the centralized regime (CMI). Since only the indirect ef-

[13] In the voting equilibrium, each voter in each country votes for the tax rate that maximizes his utility taking as given the tax rate in the other country. Thus, the voting outcome is a Nash equilibrium between the decisive voters in the two countries.

fect of taxation is present in this regime, A's workers now face a lower marginal cost of redistribution than in a decentralized regime. In fact, A's workers now vote for the highest possible tax rate, $t = 1/2$. B's workers also vote for $t = 1/2$. Recall that when capital was immobile they voted for $t = 0$, since they did not derive any benefit from taxation. But with capital mobility, they do: by maximizing the tax rate and therefore redistribution, they can maximize the outflow of capital from A to B, which increases their own wage.[14] In fact, from (6) with $t_A = t_B$, they obtain the same wage as unionized workers in A, and without any unemployment. As usual, retirees in both countries also vote for the maximum tax rate, $t = 1/2$.

Hence, now both retirees and workers in both countries vote for $t = 1/2$. It follows that, when capital is mobile, unemployment is always higher and output lower in the centralized regime than in the decentralized regime.[15]

Thus, liberalizing movements to capital, but not to labor, can lead to a *less* efficient allocation of resources in the centralized regime. Moving to a centralized fiscal policy when labor is not mobile will also reduce the efficiency of the allocation of resources in the integrating economies, as long as there are rents in labor markets.

B. *Removing Barriers to Labor Mobility*

Similarly, if only labor movements are liberalized, the equilibrium outcome can be a less efficient allocation of resources. The underlying reason is also very similar to the case of free capital mobility: labor mobility per se shifts the preferences of some groups towards more distortionary policies.

In this model with asymmetric labor markets, labor mobility increases the options available to A's unemployed workers: the true alternative income to A's union members is now the unemployment subsidy in A or w_B, whichever is higher. As a consequence, labor mobility per se can have a rather perverse effect: it *enhances* the power of the union in country A, and can even transmit unemployment to country B, even though the labor market is perfectly competitive there.

Consider the decentralized regime (DIM) first. Now workers in A can work in B, driving down the wage there until $w_A = w_B/\alpha$. The inflow of workers from A induces B's workers to vote for $t_B = 1/2$, in order to maximize the unemployment benefit, thus slowing down the fall in w_B. Obviously, since B's labor market is competitive, in equilibrium s_B has to be equal to w_B if there is unemployment among B's workers.[16] Thus, the equilibrium is obtained when $w_A = w_B/\alpha$ and $w_B = s_B$. Notice that in this equilibrium there is positive unemployment among B's workers, even though the labor market is perfectly competitive.[17]

A similar intuition holds for the case of the

[14] This assumes that, when $t = 1/2$, at full employment $w_A(\bar{L}) < s(1/2, \bar{L}, \bar{L})/\varepsilon$, where ε is the elasticity of labor demand as perceived by the union when capital is mobile. Clearly this elasticity is larger than α, the elasticity when capital is immobile: at full employment, $\varepsilon = \alpha + (1 - \alpha)/2$.

When the above inequality is satisfied, the union actually makes use of the subsidy as a leverage to generate unemployment. This condition holds for low values of α and $\bar{R}$, for the same reasons as in footnote 10. More formally, the condition $w_A(\bar{L}) = s(1/2, \bar{L}, \bar{L})/\varepsilon$ defines implicitly the downward-sloping function $\alpha_1(\bar{R})$, such that the equilibrium tax rate under CMI is 1/2 for $\alpha < \alpha_1(\bar{R})$.

If instead $\alpha \geq \alpha_1(\bar{R})$, the equilibrium tax rate in CMI is 0, since the subsidy is not useful to the union in A anyway; as a consequence, one obtains a corner solution, with full employment in both countries and a perfectly efficient allocation of resources.

Note also that $\alpha_1(\bar{R}) > \alpha_0(\bar{R})$, as defined in footnote 10.

[15] Note that all one needs for the standard tax-competition argument is the mobility of the tax base: for this, an economy with even one factor will do. To obtain the result of this section, however, one needs a richer model of the economy, where two factors can be combined more or less efficiently and have different interests in redistribution.

[16] Because this is a decentralized regime, A's workers who migrate to B do not have a right to an unemployment benefit there.

[17] For this equilibrium to prevail, it has to be the case that $s_B(1/2, 2\bar{L} - \hat{L}_A) > w_B(2\bar{L} - \hat{L}_A)$, where $\hat{L}_A$ is defined by the condition $w_A(\hat{L}_A) = w_B(2\bar{L} - \hat{L}_A)/\alpha$. In words, $\hat{L}_A$ is the level of employment in A when migration from A to B has caused w_A to increase to its optimal mark up over w_B; $s_B(1/2, 2\bar{L} - \hat{L}_A)$ is the subsidy in B when the $2\bar{L} - \hat{L}_A$ workers in B are all employed. Hence, when the inequality above is satisfied, it is feasible for workers in B to use the unemployment subsidy in their country to check the fall in their wage. For this inequality to hold, the unemployment subsidy has to be sufficiently large relative to the full employment wage, i.e., α and $\bar{R}$ must be "sufficiently small." Formally, the condition $s_B(1/2, 2\bar{L} - \hat{L}_A) = w_B(2\bar{L} - \hat{L}_A)$ defines implicitly the downward-sloping function $\alpha_2(\bar{R})$, such

centralized regime (CIM); the only difference is that now A's workers can have access to the common unemployment subsidy in both countries. Still, workers and retirees in both countries vote for the highest possible tax rate, $t = 1/2$; as a consequence, in equilibrium $w_A = w_B/\alpha$ and $w_B = s$.[18]

Thus, like capital mobility, labor mobility causes a shift in the preferences of voters in country B, prompting a majority of them to vote for the highest possible tax rate, instead of for a zero tax rate when labor is immobile. Notice also that, even though labor is mobile, $w_A > w_B$ in this equilibrium. The reason is that labor markets are asymmetric, and monopoly unions, by definition, can exclude workers from employment.

C. *Complete Factor Mobility*

It is easy to see that complete factor mobility ensures a fully efficient allocation of resources in both regimes, DMM and CMM. For the usual tax-competition reasons, a zero tax rate is optimal in both countries in DMM. In CMM, because of capital mobility $w_A = w_B$; hence, any effort by A's union to increase A's wage will be thwarted as A's unemployed workers migrate to B, attracting A's capital there. Hence, now A's workers vote for $t = 0$; as capitalists and B's workers do the same, this is the equilibrium tax rate.

TABLE 1—INSTITUTIONAL CONFIGURATIONS AND EFFICIENCY

	II	MI	IM	MM
C	0.76, 1 (1) or 1, 1 (2)	0.82, 1.10	0.68, 1.13	1, 1
D	0.83, 1	1, 1	0.67, 1.12	1, 1

Notes: The first number in each entry represents GDP in country A. The second number represents GDP in country B. The table assumes $\alpha = 0.3$, $\bar{R} = 0.6$, $\bar{L} = 1$, $\bar{K} = 1$. For these parameter values, $\alpha < \alpha_3(\bar{R})$ (see footnotes 14 and 18).

(1) if $\bar{R} > \bar{L}_K$;
(2) if $\bar{R} < \bar{L}_K$.

Table 1 summarizes the efficiency of the allocation of resources in all the different configurations. For each configuration, it shows GDP in each country for $\alpha = 0.3$ and $\bar{R} = 0.6$ (note that for these parameter values, $\alpha < \alpha_3$, where the latter has been defined in footnote 18).

This table delivers two key results, which highlight the role of *incomplete factor mobility* (defined as the mobility of only one factor).

RESULT 1: *Holding constant the pattern of factor mobility, centralizing redistribution reduces the efficiency of the allocation of resources when only capital is mobile (and also when both factors are immobile, if $\bar{R} > \bar{L}_K$).*

This result, which contrasts with most of the existing literature, highlights the importance of establishing labor mobility before moving to a system of centralized fiscal policy.

RESULTS 2: *In a centralized regime, liberalizing the movement of only one factor can lead to a less efficient allocation of resources than when both factors are immobile.*

Thus, the efficiency of a centralized regime can be a U-shaped function of the degree of factor mobility: if $\bar{R} < \bar{L}_K$, a centralized regime is fully efficient when both factors are immobile (CII) or both are mobile (CMM), but not when only one is mobile (CIM or CMI).

that, in the region where $\alpha < \alpha_2(\bar{R})$, the equilibrium tax rate under DIM in country A is 1/2.

If instead $\alpha \geq \alpha_2(\bar{R})$, a different equilibrium obtains. Now at $\hat{L}_A$ the maximum subsidy in B, $s_B(1/2, 2\bar{L} - \hat{L}_A)$, is not higher than $w_B(2\bar{L} - \hat{L}_A)$. It is then easy to see that workers in both countries have no reason to vote for a positive tax rate: for A's workers, the relevant alternative wage is always w_B anyway; for B's workers, the subsidy serves no purpose either. It follows that now capitalists and workers in both countries vote for a zero tax rate in both regimes. In this equilibrium, distortions in DIM are lower than when $\alpha < \alpha_2(\bar{R})$, because there is no unemployment in either country. However, the allocation of resources is still not fully efficient, because some of A's workers now work in B, while the stock of capital is still evenly divided between the two countries. Note that $\alpha_2 > \alpha_1(\bar{R})$, where $\alpha_1(\bar{R})$ has been defined in footnote 14.

[18] By a similar reasoning to the case of DIM (see footnote 17), this equilibrium obtains for $\alpha < \alpha_3(\bar{R})$, where the latter is a downward-sloping function defined implicitly by the condition $s(1/2, \bar{L}, 2\bar{L} - \hat{L}_A) = w_B(2\bar{L} - \hat{L}_A)$. Note that, although the condition is the same as in footnote 17, the formula for s is now different. If instead $\alpha \geq \alpha_3(\bar{R})$, as in DIM, the equilibrium under CIM has $w_A = w_B/\alpha$ and $t = s = 0$. Note that $\alpha_3(\bar{R}) < \alpha_1(\bar{R})$, defined in footnote 14.

IV. Endogenous Configurations

So far, the fiscal regime and the degree of factor mobility were taken as exogenous; but in the long run, both are likely to be endogenous. The productive inefficiency inherent in centralized redistribution with incomplete factor mobility would be effectively irrelevant if there were a tendency for the two societies to choose the efficient configurations.

This is not the case in this model. The efficient configurations are associated with complete factor mobility, with zero tax rates, or both, and therefore always receive the support of capitalists. They could emerge as equilibrium configurations if they were supported by at least another group. The inefficient configurations are usually supported by retirees in both countries and by workers in A. The behavior of workers in B is therefore crucial. In general, they are not interested in redistribution because they lack the monopoly power to exploit it to their advantage. However, there is one inefficient configuration that B's workers might strictly prefer to all other configurations: centralized redistribution with only capital mobility (CMI). This configuration allows B's workers to reap the benefits of unionization in A by causing an inflow of capital to B. To develop this intuition, one must first define the voting process.

A. *The Voting Process*

There are different ways to define how voting on the whole configuration takes place, depending on the assumed sequencing of votes on its components. In the most general case, which I adopt here, all individuals in the two countries vote on the whole configuration—i.e., the fiscal regime and the degree of mobility of the two factors—at the same time.[19] Once the configuration has been decided, individuals vote on the tax rate. When voting on a configuration, they take into account the equilibrium tax rate and subsidy that will prevail in that configuration.

To define formally the equilibrium of the voting process over the configuration, one has first to define the set of admissible proposals, i.e., those configurations such that the patterns of factor mobility in the two countries are consistent with each other. In a decentralized regime, the choices of factor mobility by the two countries are not independent of each other: the decision by one country to prevent movements of one factor effectively implies that the same factor will be immobile in the other country as well.[20]

Thus, to be an admissible proposal a decentralized configuration must be symmetric. In addition, it must be a Nash decentralized voting equilibrium: in each country, a majority does not want to change the mobility of either factor, given the pattern of mobility chosen by the other country.

A decentralized configuration that is not a Nash decentralized voting equilibrium cannot exist. In such a configuration a majority of voters in at least one country will want to reduce the mobility of at least one factor, and they can do this unilaterally. By contrast, all centralized configurations are admissible, because the same degree of factor mobility applies to both countries; hence, the patterns of factor mobility in the two countries are automatically consistent.

Clearly DII in both countries is a Nash decentralized voting equilibrium. In fact, it is easy to show that DII is the *only* Nash decentralized voting equilibrium among all decentralized configurations. This is important to define the status quo in the voting process:

Definition (The Voting Process): All individuals in both countries vote pairwise on all admissible configurations. All three components of a configuration—the fiscal regime and the degree of mobility of the two factors—are voted on contemporaneously. When voting on a configuration, all individuals know the equilibrium tax rate that will prevail in that configuration. If in

[19] If a Condorcet winner exists in this case, then the winning configuration is the same even under alternative assumptions about the timing of votes.

[20] In principle, countries could prevent flows only in one direction. For instance, country A could prevent outflows of capital or country B outflows of labor. However, in equilibrium factors flow only in one direction in this model, from A to B. Hence, the only reason to prevent the mobility of a factor is to prevent it from flowing from A to B. Effectively, this is equivalent to preventing movements of that factor altogether.

each country a centralized configuration beats all other admissible configurations in pairwise comparison, it is adopted. Otherwise, DII is adopted.

Remarks: (i) Because each country has the right to withdraw unilaterally, a centralized configuration can beat another configuration only if it is preferred by a majority in *each* country. (ii) If DII is the Condorcet winner, obviously it is adopted. But even if there is no Condorcet winner, this is the equilibrium configuration, because it is the only admissible configuration that can be adopted unilaterally. (iii) Note that, by comparing all centralized configurations pairwise with DII, "out-of-union" policies are automatically considered, i.e., the vote on centralized configurations takes into account what would happen if the two countries did not belong to a fiscal union, in which case DII would prevail in equilibrium.

B. *Equilibrium Configurations*

It is now relatively easy to determine the winning configuration in the voting process.[21] Because only DII is admissible among the decentralized configurations, one can ignore all the other decentralized configurations in the following analysis. Thus, the relevant comparisons are between $\alpha_1(\bar{R})$ and $\alpha_3(\bar{R})$, where $\alpha_1(\bar{R}) > \alpha_3(\bar{R})$ (see footnotes 14 and 18).

Suppose initially $\alpha < \alpha_3(\bar{R})$.[22] In this interval, under both CMI and CIM the subsidy is "high" relative to the wage, so that the union in A can use it as a leverage to obtain a higher wage. Hence, under both configurations the equilibrium tax rate is $t = \frac{1}{2}$.

When compared to any admissible configuration with immobile capital, including DII, CMI prevails in *each* country because it receives the votes of retirees, since the pension s is higher;[23] of capitalists in A, because they can get a higher return by exporting capital to B; and of workers in B, because they benefit from the inflow of capital from A.[24]

CMI also beats CMM because the wage and the subsidy are higher in *both* countries. Because capital is mobile, B's workers obtain the same wage as A's workers and therefore profit from the monopoly power of A's union; however, because labor is immobile, they do not suffer from the inflow of labor from A.

As α increases, i.e., for $\alpha_3(\bar{R}) \leq \alpha < \alpha_1(\bar{R})$, the full-employment centralized subsidy falls, and it is now no longer useful to A's workers under CIM; hence, the equilibrium tax rate under CIM is now 0 (see footnote 18), while it remains ½ under CMI. Clearly, now A's capitalists are better off under CIM than under CMI. Thus, in A both capitalists and workers vote for CIM over CMI, while in B retirees and workers (who benefit from the inflow of A's workers) still prefer CMI over CIM. As CMI still beats all the other configurations in both countries, a Condorcet winner does not exist. Hence, DII is adopted.

When α increases further, so that $\alpha \geq \alpha_1(\bar{R})$, the full-employment subsidy in a centralized regime falls further, because the share of profits falls. All centralized configurations with some factor mobility, i.e., CMI, CIM, and CMM, now have a zero tax rate in equilibrium. None of these configurations can survive in the voting process. If $t = 0$ under CII, a majority in A composed of workers and retirees prefer DII to any of these configurations; if instead $t = \frac{1}{2}$ under CII, they prefer CII. But in the latter case a majority in B composed of workers and capitalists prefer DII, because they have nothing to gain from a positive tax rate under CII. Hence, DII prevails in both cases.

[21] Note that the issue space is three dimensional, as individuals vote on the fiscal regime and on the degree of mobility of the two factors. As it is well known, the existence of a stable, noncycling majority is not guaranteed when the issue space is not unidimensional. The existence of a solution in this model is guaranteed by two features: first, the number of types of agents and of proposals is finite; second, in the model there is a natural status quo, DII [see Remark (ii) above].

[22] Throughout this section, I will maintain the assumption that $\alpha \geq \alpha_0(\bar{R})$ (see footnote 10).

[23] This statement is trivially true if $t = 0$ in CII (recall that the equilibrium tax rate in CII depends on the mass of $\bar{R}$ relative to $\bar{L}_K$). If instead $t = \frac{1}{2}$ in CII, the subsidy is still higher in CMI because the elasticity of labor demand is higher, hence the mark up of the wage over the subsidy is lower.

[24] This explanation assumes that $t = \frac{1}{2}$ in CII; if $t = 0$, CMI still prevails, although with a different majority: it receives the votes of retirees in both countries, of workers in B, and now of workers in A.

To summarize, this section delivers two main results:

RESULT 3: *An inefficient configuration with less than complete factor mobility always emerges as the winner of the voting process.*

This result suggests that, by itself, voting on a configuration will not generate an efficient outcome, unless labor-market rents are eliminated.

RESULT 4: *For low values of α and $\bar{R}$, the equilibrium configuration includes capital mobility, but not labor mobility.*

This result suggests that the pressure for stronger barriers to labor than to capital mobility observed in the current situation can persist even when the degree of integration of fiscal policy is allowed to be endogenous.

V. Extensions

A. *Capital Mobility with the Rest of the World*

So far, capital has been allowed to move only between A and B. But capital mobility with the rest of the world, by itself, would be sufficient to ensure the full efficiency of the outcome, irrespective of the fiscal regime and of the degree of labor mobility. Full capital mobility with the rest of the world fixes the after-tax return to capital at the world marginal product of capital r^*:

$$(7) \quad (1 - t_j)(1 - \alpha)\left(\frac{L_j}{K_j}\right)^{\alpha} = r^* \quad j = A, B.$$

Any increase in the tax rate now causes a fall in the capital/labor ratio and therefore in the wage. Hence, workers in both countries now actively oppose any positive tax rate. Thus, full capital mobility with the rest of the world ensures an efficient outcome by eliminating all rents in the labor market.

The problem is that it cannot be sustained as an equilibrium. It is easy to see that the winning configurations in Section IV still defeat any configuration with full capital mobility with the rest of the world. The basic intuition is simple: in equilibrium, any configuration with capital mobility with the rest of the world has $t = 0$ and no distortions, i.e., it is identical to CMM. But we already know that CMM loses to CMI if $\alpha < \alpha_3(\bar{R})$ and to DII if $\alpha \geq \alpha_3(\bar{R})$.

One key aspect of the early stages of most processes of economic integration, including in particular the process of European integration, is exactly a drive to remove obstacles to capital mobility between countries *within* the community, much more than with countries *outside* the community. Once again, this section suggests that this feature is not likely to disappear even when the degree of integration of fiscal policy is allowed to be endogenous, unless rents in the labor market are eliminated.

B. *Precommitment*

The basic problem underlying Result 3 is simple: retirees are forced to vote for a highly inefficient configuration because it is the only one that ensures some social protection in equilibrium. However, the problem is *not* that redistribution is necessarily distortionary: in fact, if fiscal policy were exogenous, the most efficient configuration, CMM, would prevail; this configuration could also ensure the highest possible protection for retirees.

The intuition for this result is straightforward. Because capital and labor are mobile, there are no monopoly rents that the union can exploit, and consequently full employment always prevails *at any tax rate*; if in addition the tax rate is the same in the two countries, there is no net flow of factors between the two countries. Thus, the allocation of factors is efficient regardless of the tax rate; for any given tax rate, tax revenues in each country are the highest among all possible configurations; and with no unemployment, these tax revenues can all accrue to retirees. In other words, there is no trade-off between social protection and efficiency.

Given $t = \frac{1}{2}$, retirees in both countries would then vote for CMM against any other configuration. Capitalists would also vote for CMM, because in this configuration workers cannot capture any rent, hence the return to capital is highest, conditional on $t = \frac{1}{2}$.[25]

[25] In one of the two countries, a majority could be indifferent between CMM and other configurations. For

Notice two seemingly paradoxical features of this precommitment equilibrium. First, when $\alpha < \alpha_3(\bar{R})$ capitalists would be better off if *society can precommit to the highest possible taxation of capital*, because this avoids another, more distortionary equilibrium with lower return to capital. Second, the equilibrium with the highest protection of retirees is also completely nondistortionary.

VI. Discussion and Policy Implications

A. *Relation with the Literature*

The present model stands at the intersection of two lines of research.[26] In the public-finance tradition exemplified by George J. Stigler (1957), Larry L. Orr (1976), Brown and Oates (1987), and Wildasin (1991), redistribution is motivated by altruism. As in the present model, a centralized regime leads to more redistribution by solving the free-rider problem in the provision of the public good "welfare of the poor." Hence, it is possible that everybody will be better off in the centralized regime. By contrast, in this paper a centralized regime allows a group of individuals in one country to exploit some available rents by "free-riding" on the fiscal resources of the other country. It follows that several groups, like capitalists in A, will be worse off.[27]

The approach of the present model differs from the public-finance tradition in several respects: redistribution is the result of the interaction of self-interested agents, rather than altruism; the focus is on the productive efficiency of the different regimes, and therefore on the trade-off between efficiency and redistribution; the model is based on the interaction of two factors, capital and labor; both the fiscal regimes and the degree of factor mobility are allowed to be endogenous.

In a different strand of literature, the endogenization of the degree of fiscal integration is the subject of several recent papers, like Alessandra Casella and Jonathan S. Feinstein (1990), Bolton and Roland (1996), and Alesina and Spolaore (1997). In these contributions fiscal policy is about the provision of public goods rather than redistribution; as a result, these models emphasize a very different trade-off, namely the choice between the economies of scale from a more centralized fiscal policy against the loss of specificity in the provision of public goods. A general result of this literature is that centralized redistribution is efficient, because it spreads the costs of financing the provision of public goods over a larger population. Thus, the basic message of this approach also contrasts sharply with the present paper, where fiscal policy is redistributive.

The most interesting comparison is with Bolton and Roland (1996, 1997) who, like the present paper, also consider factor mobility. The questions—and the answers—are very different, however. In their framework, individuals differ in terms of their preferences on the quantity of a public good (Bolton and Roland, 1996), or on the size of redistribution (Bolton and Roland, 1997). When labor is immobile, each country might prefer to run its separate fiscal policy in order to set the tax rate preferred by the median voter. When labor is mobile, however, by arbitrage all countries will end up with the same equilibrium tax rate. As a consequence, labor mobility eliminates any reason to run a decentralized fiscal policy, and it is associated with *more* support for centralization. In contrast, in the present paper a majority of individuals in country B, composed of workers and capitalists, oppose centralized redistribution when labor only is mobile and $t = \frac{1}{2}$. In addition, in the present model, labor mobility without capital mobility can have rather perverse effects because it enhances the power of the union, ultimately transmitting unemployment even to the undistorted country.

instance, given $t = \frac{1}{2}$ in B, workers and capitalists are indifferent between CMM and DII; still, a majority of individuals in A prefer CMM over DII.

[26] Robert P. Inman and Daniel L. Rubinfeld (1995) provide an excellent recent survey of the political economy of fiscal federalism.

[27] When labor mobility is explicitly analyzed in this framework, as in Brown and Oates (1987), its main effect is to exacerbate the underprovision of redistribution in a decentralized regime, as each constituency tries to cause outmigration of the poor and immigration of the rich by setting a low level of taxation and redistribution. When wages also are endogenized, as in Wildasin (1991), redistribution creates a second externality through its effects on labor supply and wages in each jurisdiction; to restore the Pareto-optimal outcome, a system of differentiated grants from the higher to the lower level of governments is now needed.

The present paper also differs from this strand of literature because the results stem from the interaction in the economy and in the voting process of *two* factors, labor and capital, rather than just one,[28] and because the degree of mobility of these two factors is allowed to be endogenous.

B. *Discussion of the Assumptions*

The existence of a noncompetitive labor market is essential in this model. The presence of the union makes the *aggregate* supply of labor elastic and therefore creates room for the distortionary effects of taxation. An elastic *individual* labor supply with competitive labor market, by contrast, would not have the same effect: when fiscal policy is endogenous, as in this model, *in equilibrium* it would still have no distortionary effects. The reason is that in competitive labor markets a majority of individuals would have no incentive to reduce employment by voting for a positive tax rate.[29]

But if labor-market rents existed in *all* countries, centralizing redistribution or increasing labor mobility would have no effect either. In fact, the results of this model are based on two key assumptions: that there are important differences in the institutional characteristics of labor markets among the integrating countries, and that these differences have important consequences on the allocation of resources. It is then crucial to assess the empirical plausibility of these assumptions.

In his review of the effects of labor-market institutions on unemployment, Stephen Nickell writes: "While it is sometimes convenient to lump all the countries of western Europe together in order to provide a suitable contrast to North America, most of the time this is a rather silly thing to do. ... Labor markets in Europe exhibit enormous diversity: in fact, differences within Europe are much greater than are the difference between the European average and North America." (Nickell, 1997 p. 55).

Table 2 displays four variables aiming at capturing various types of deviations from competitive labor markets, and covering a maximum of 20 OECD countries (including available non-European countries for comparison). The first column ranks countries according to the degree of employment protection, from Nickell (1997); the second, third, and fourth columns display three different measures of coordination or centralization of negotiations in

TABLE 2—LABOR MARKETS IN OECD COUNTRIES

	PROT (1)	COOR (2)	CENTR1 (3)	CENTR2 (4)
AUS	4	3	8	7
AUT	16	6	17	14
BEL	17	4	10	13
CAN	3	2	1	4
CHE	6	4	3	7
GER	15	5	12	9
DNK	5	6	14	11
SPA	19	3		
FIN	10	5	13	12
FRA	14	4	7	3
GBR	7	2	6	8
IRL	12	2		
ITA	20	4	5	5
JPN	8	4	4	1
NLD	9	4	11	9
NOR	11	6	16	15
PRT	18	4		
SWE	13	6	15	16
USA	1	2	2	3
NZL	2	2	9	

Notes: PROT: index of employment protection, from Nickell (1997). COOR: index of coordination on union and employers' side, from Nickell (1997). Sum of indices of coordination on union and employers' side, each running from 1 to 3. (COOR = 2: least coordination). CENTR1: index of degree of centralization, Calmfors and Driffill (1988) (CENTR1 = 1: least centralization). CENTR2: index of degree of centralization, Cameron (1984) (CENTR2 = 1: least centralization).

[28] Bolton and Roland (1997) also consider capital and labor, but the interaction of the two is not the primary focus of their model nor the primary source of their results.

[29] The specific form of departure from perfect competition is less important. Instead of a monopoly union model, one could assume that the wage (and perhaps employment) is set by bargaining. As it is well known, the outcome of bargaining is efficient, while this is not the case with a monopoly union; still, the basic message of the paper is unchanged. With a monopoly union, redistribution increases the alternative income for unemployed workers. With bargaining, redistribution would increase the threat point of the union; in both cases, the result is a higher wage. In fact, the source of the result of the present model is not that the union chooses an inefficient outcome given the tax rate, rather, that voters choose a too-high tax rate given the outcome of the wage negotiations.

labor markets.[30] The Nickell (column 2) and Lars Calmfors and John Driffill (column 3) indices take into account the degree of coordination of labor-market negotiations within the labor and employers' organizations as well as between them. The David R. Cameron index (column 4) only refers to the union side, and also takes into account the degree of unionization at around 1980.

In a panel regression involving 20 OECD European and non-European countries, Blanchard and Justine Wolfers (1999) find that in countries with more employment protection (first index) or more labor-market centralization (second index), negative common macroeconomic shocks (as measured by time dummies) or productivity shocks and positive interest-rate shocks have a stronger positive effect on unemployment. Similar results are obtained by Nickell (1997) in cross-section regressions.

There is also evidence that different labor-market institutions are associated with different distortionary effects of fiscal policy on labor-market outcomes, via the aggregate labor supply. Using the Calmfors-Driffill and the Cameron indices, Lawrence H. Summers et al. (1993) and Alesina and Perotti (1997) provide cross-section and panel evidence that taxation and redistribution to the unemployed are most distortionary in labor markets where unions are strong and wage negotiations are not completely centralized in tripartite negotiations involving the government and the employers' side.

C. *Policy Implications*

Several results of the paper can be of direct policy relevance for the process of European integration. Many observers would agree that the process of European integration has been characterized by two features: the preeminence of capital over labor mobility,[31] and of capital mobility within Europe over capital mobility with the rest of the world. At the same time, calls for a "common social policy" in Europe have become increasingly pressing.[32] But the normative analysis suggests that, on sheer efficiency grounds, it might be dangerous to proceed towards more integration of social expenditure without first having ensured the effective mobility of all factors. Alternatively, a more efficient allocation of resources could be ensured by the elimination of rents in the labor market; but then the degree of centralization of fiscal policy becomes unimportant for the productive efficiency of the integrating economies.[33]

Eliminating rents in the labor market is also important because, contrary to a common intuition, countries with more competitive labor markets will not necessarily veto a configuration leading to an inefficient outcome. In fact, the positive analysis suggests that, unless labor-market rents are eliminated, the existing limitations to factor mobility might be supported by a majority of voters in *both* countries.

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[30] The terms "centralization" and "coordination" are used by different authors, but they seem to refer to the same notion. The last two indices refer mostly to the early or mid-1980's; since then, some decentralization of wage bargaining has occurred in some Scandinavian and Central European countries.

[31] Besides cultural factors, the limited mobility of labor in Europe is due to legal and nonlegal barriers that the community members could have, but have not, removed. To make concrete examples, national diplomas are often not recognized across European countries, and there is no system of accreditation for universities. This obviously can make the notion of labor mobility meaningless for skilled workers.

[32] See Bean et al. (1998) for an excellent discussion of proposals for a common social policy in Europe.

[33] Of course, there can be other reasons to centralize social expenditure, including mutual insurance as in Persson and Tabellini (1996). Alesina and Perotti (1998) argue that the advantages of centralization in terms of mutual insurance can be offset by the disadvantages in terms of higher uncertainty in the tax instrument.

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