

## THE POLITICAL ECONOMY OF FISCAL AND MONETARY UNIONS<sup>1</sup>

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I study the political economy of fiscal unions, where the provision of public goods with spillovers across heterogeneous countries is coordinated, and of monetary unions, where monetary policy is delegated to a supranational authority by countries subject to different shocks. The focus is on the impact of institutional organizations on the size and scope of unions. I provide new results of comparative politics on alternative hierarchies between national and supranational governments choosing on public spending and redistribution, strategic delegation of policymakers under representative democracy and on the role of macroeconomic interdependence in monetary unions.

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This paper reviews and expands recent developments in the theory of *international political economy* with particular reference to the impact of institutional organization of federal structures on the size, composition and scope of unions of countries to coordinate policy. The major example of a

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<sup>1</sup> This paper partially draws on my previous work with Alberto Alesina, Ignazio Angeloni and Piero Giarda: I am extremely indebted with all of them. Parts of this work have been presented in seminars at Harvard University, New York University, Catholic University of Milan, NBER (Cambridge), CEPR (Modena), CESifo (Munich) and the European Commission-MEP International Workshop on "EU Enlargement: Economic and Institutional Reforms" in Milan: I am very grateful to many participants for interesting comments and suggestions and especially to Massimo Bordignon, Marco Buti, Marco Lossani, Mario Nava, Jean Pisani-Ferry and Shlomo Weber. Two anonymous referees and especially the Editor Giuseppe Bertola provided very important suggestions for improving the paper. My experience at the European Union and the OECD while working for the Ministry of Economy of Italy stimulated the ideas expressed here, whose responsibility, however, is only mine. Email: [federicoetro@yahoo.it](mailto:federicoetro@yahoo.it)

union I have in mind is obviously the European Union (EU), which, after the completion of trade coordination and monetary unification, is currently experiencing a deep process of constitutional and institutional reform.<sup>2</sup>

Issues concerning the institutional organization of fiscal and monetary unions have large relevance in the policy arena of a world which is always more economically integrated. Economic theory is just beginning to explore them and most of the work is to be done. In the tradition of political economy studies, my concern will be on the relationship between the political environment at the national and union level and the economic outcomes. In the last two decades, new applications of the theory of political economy have focused on political business cycles, excessive public debt, political determinants of redistribution, inequality and growth and alternative political and electoral systems: the common interest of these studies has been on the role of political institutions in shaping national policies.<sup>3</sup> More recently, issues of international coordination have been examined in the same perspective applying new ideas to old questions: preliminary works by Alesina and Grilli (1992) on monetary unions and Persson and Tabellini (1992) on fiscal unions started to reconsider the old theories of optimal currency areas and fiscal federalism – respectively by Mundell (1961) and Oates (1972) – while shedding light on policy debates about the European coordination of monetary and fiscal policy. A lot of work has followed since then, building on the basic trade-off between benefit of coordination and cost of lost independent policymaking, where the first derives from the economic interaction between countries and the second from political disagreements. The political economy of international unions tries to explain the political emergence of many of the institutions existing in the EU and other unions as tools to reduce the costs of political disagreement and raise the benefits from joining the union. Hence, it performs analysis of comparative politics between different institutional arrangements. Between them there are systems of shared competencies between the union and its members with alternative hierarchies, federal mandates, intergovernmental redistribution, enhanced cooperations, delegation of powers to independent authorities and the same new Constitution precisely defining and limiting the competencies of the

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<sup>2</sup> For empirical papers closely related to the approach of this paper see von Hagen and Pisani-Ferry (2003), Coeurè and Pisani-Ferry (2003a), Berglöf *et al.* (2003), Sadowski, Ludewig and Turk (2003), Tabellini (2003), Hug (2003), Emery and Kneebone (2003), Islam (2004) and Schulz (2004).

<sup>3</sup> A large portion of the development in this field is due to the Italian school of political economy; for surveys see Drazen (1999), Persson and Tabellini (2000) and, for an epistemological approach, Blankart and Koester (2004).

Union and its voting rules. The political organization of a union, the election of its policymakers and the delegation of its policies can introduce inefficiencies affecting the gains from policy coordination and only institutional reforms can limit these inefficiencies. More importantly, theory has raised question marks on practical issues as the excessive activity of the EU in agricultural policy and other policies where there is not a clear rationale for such a degree of coordination, or on the constraints on fiscal policy set by the Maastricht Treaty (1992), which have been judged counterproductive by many commentators. Clearly, understanding why the EU is not as it should be according to economic theory, is important: recent research emphasizing a centralization bias, inefficiencies due to legislative bargaining and strategic delegation of politicians and lobbying activities in the union have been useful to make progress in this direction. Yet, it seems that the complex evolution of the EU in both fiscal and monetary coordination need more attention from both a theoretical and an empirical point of view.

The paper is organized as follows. The first Section introduces a general model to study fiscal coordination in a union, Sections 2 and 3 respectively focus on heterogeneity in preferences and income across countries, and hence on the allocative and redistributive roles of a fiscal union. Section 4 is about the political economy of monetary unions. Section 5 concludes.

## 1. FISCAL UNIONS

This section introduces a general model which will be the foundation for most of the subsequent sections. Fiscal unions are described as unions of countries for the coordination of the provision of public goods. This basic approach can describe some relevant issues about fiscal coordination in many federal countries and in the same EU, since the production of public goods with international spillovers characterizes many policies at least partially ruled at the union level, but it can only partially deal with other important issues as coordination of macroeconomic fiscal policy, risk sharing for regional shocks and issues related to the stability pact.<sup>4</sup> A crucial element of our analysis will be heterogeneity between countries. This is what creates disagreement on policymaking and makes membership in unions a non trivial choice: hence, the institutional way in which decisions are taken within a union is at the core of the political economy of unions.

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<sup>4</sup> For related empirical discussions on fiscal coordination in the EU see Stehn (2002), Buti, Eijffinger and Franco (2002), Buti and Nava (2003) and Coeurè and Pisani-Ferry (2003b).

Consider a group of  $M$  countries of equal size.<sup>5</sup> The representative citizen in each country  $i$  has exogenous income  $y_i$  so that there can be differences in economic fundamentals across countries, as in Buchanan and Faith (1987), Bolton and Roland (1997), Alesina, Angeloni and Etro (AAE, 2001a) and others.

Public spending in country  $i$  is  $g_i$  and is financed with taxes on income at the rate  $t_i$ . The representative individual in country  $i$  has the following utility function:

$$U^i = u(c_i) + \alpha_i H \left( g_i + \sum_{j=1, j \neq i}^M \beta_{ij} g_j \right) \quad (1)$$

where  $c_i = y_i(1 - t_i)$  is consumption in country  $i$  and we assume  $u_c(\cdot) > 0$ ,  $u_{cc}(\cdot) \leq 0$ ,  $H_g(\cdot) > 0$  and  $H_{gg}(\cdot) < 0$ .<sup>6</sup> The parameter  $\beta_{ij} \in [0, 1]$  captures the spillover effects of public spending in country  $j$  on country  $i$  and simply captures the interdependence between countries. The parameter  $\alpha_i > 0$  captures how much the representative individual of country  $i$  values public consumption relative to private consumption. Differences in it represent heterogeneity in preferences as in AAE (2001a,b, 2005), Besley and Coate (2003) and others. Also the literature on political geography<sup>7</sup> adopts a similar specification with a spatial interpretation: agents are distributed in a geographical area and the intensity of preferences for public spending depends on the distance of the citizen from the location where the public good is provided.

I interpret  $g_i$  as a public good, such as infrastructures, public investment or defense. In a decentralized equilibrium, in which every country acts independently under the budget constraint  $g_i = t_i y_i$ , the provision of public goods would be sub-optimal because of a well known free-riding problem. The first best utilitarian union includes all countries and chooses all the policies to maximize total utility under the budget constraint  $\sum_{i=1}^M (g_i - t_i y_i) = 0$  policies satisfy a set of Samuelson conditions. This would require that the union dictates a different policy for each country and that the policy preferences of every country are known and verifiable, which seems highly unrealistic. A more realistic assumption about the feasible set of coordinated policies for the union is that every member finances its own spending but adopting a unique policy

<sup>5</sup> Clearly country size is a crucial feature in the real world because economic interdependence and even the weights given to each country in the policyboard of a union depend on size and wealth of member countries.

<sup>6</sup> Subscripts denote derivatives.

<sup>7</sup> Alesina and Spolaore (1997), Etro (2003) and Staal (2004).

chosen by the union, for instance provide the same amount of public good or adopt the same tax rate. This kind of “rigid union” broadly matches the constraint associated by the standard theory of fiscal federalism (Oates, 1972), as centralized policies cannot perfectly adapt to all local environments.<sup>8</sup>

## 2. ALLOCATIVE UNIONS

In this section I will focus on heterogeneity in preferences and not in income so that the only scope of the union is to organize the provision of public goods without redistributive purposes. For simplicity, I will define this kind of unions as allocative unions.

Assume linear utility in consumption with countries ordered such that  $\alpha_1 \leq \alpha_2 \leq \dots$ . In presence of spillovers between all countries inside and outside the union, a rigid union could only be sustained under a precommitment or in a reputational game. In this case, member countries increase public provision toward the first best level, while the outsider countries free ride reducing their provision.<sup>9</sup> Etro (2002) studies union creation in this environment and shows that the union is created if the spillovers are very weak or very strong and that outsider countries are better off than the union members. This implies that a gradual approach to international policy coordination may be unfeasible because of resistance of outsider countries to join it.

To abstract from the effects of free riding by outsiders, we will now assume that membership in the union is a necessary condition for receiving some externalities:  $\beta_{ij} = 0$  if either country  $i$  or  $j$  is not a member of the union and  $\beta_{ij} = \beta$  if both countries are members. For instance, it is realistic to assume no spillovers between union members and outsiders in the case of a pure public good ( $\beta = 1$ ): union members jointly produce the public good, outsiders do it separately without interdependence.

Choices in the union are taken by majority voting.<sup>10</sup> Under majority vot-

<sup>8</sup> See Lockwood (2002) for a general model on the choice between centralization and decentralization of fiscal policy.

<sup>9</sup> This happens because strategic substitutability holds.

Indeed,  $\partial^2 U^i / \partial g_i \partial g_k = \alpha_i \beta_{ik} H_{gg}(g_i + \sum_{j \neq i} \beta_{ij} g_j) < 0$ .

<sup>10</sup> The new European Constitution was signed by the EU members in October 29, 2004 and it now awaits ratification by all EU Member States. It has established that main decisions in the Council of Ministers are to be taken by qualified majority voting, requiring a 55% majority of Member States representing a 65% majority of citizens (the 55% is raised to 72% when the Council is acting on its own initiative rather than on a legislative proposal). However, the unanimous agreement of all Member States is still required for decisions on more sensitive issues, such as tax, social security, foreign policy and defence.

ing, the median voter theorem applies and the level of spending chosen by a  $N$ -sized union solves the following first order condition:

$$\alpha_m H_g \{g_m [1 + \beta(N-1)]\} = \frac{1}{1 + \beta(N-1)} \quad (2)$$

which defines a function  $g_m = g(\alpha_m, N, \beta)$  where  $\alpha_m$  is the preference parameter of the median country in the union. Let us now characterize the initial stage of union formation in which the potential members can unilaterally join the union (an “*open rule*” process). The utility of country  $i$  in a union of  $N$  countries with median  $\alpha_m$  and spillovers  $\beta$  is:

$$V_i^{in}(\alpha_m, N, \beta) - V_i^{out} \equiv y - g(\alpha_m, N, \beta + \alpha_i H \{g(\alpha_m, N, \beta) [1 + \beta(N-1)]\}) \quad (3)$$

Clearly the utility of a country outside this union is  $V_i^{out} = V_i^{in}(\alpha_i, 1, 0)$  and the net utility of joining the union is the function  $\Delta(\alpha_i, N) \equiv V_i^{in}(\alpha_m, N, \beta) - V_i^{out}$ .

In an equilibrium union, all (subsets of) members must prefer to be members of the union and viceversa for the outsiders.<sup>11</sup> Under weak conditions,<sup>12</sup> AAE (2005) obtain:

**PROPOSITION 1.** An equilibrium union is composed by homogeneous countries: for a given median, there exists a unique compact set in  $\alpha_i$ , such that all and only all countries with preferences in this set belong to the union; the net gain from membership is increasing in the size of the spillovers.

As well known since Oates (1972), centralization in a rigid union has the benefit to internalize spillovers in policymaking and the cost of giving up to adaptability to local preferences. When unions endogenously form, there is a further cost from centralization: the rigidity of central policymaking reduces the size of the union even further. Moreover, multiple equilibria with different median countries and different sizes may emerge.

Even maintaining the uniform policy assumption of the rigid union,

<sup>11</sup> I am adopting a *coalition-proof equilibrium* concept under which not only unilateral deviations, but all multilateral deviations (which are internally consistent) have to be non profitable. For an early model of coalition-proof equilibrium unions with an application to capital taxation coordination see Burbidge *et al.* (1997).

<sup>12</sup> It is sufficient to assume a limit on the heterogeneity of preferences (given  $\alpha_i \in [\alpha_{min}, \alpha_{max}]$  for any  $i$ ,  $\alpha_{max} < 2\alpha_{min}$ ) and a limit on the concavity of the utility function,  $\theta(g) \geq 1/2$ , where  $\theta(x) \equiv -H_{gg}(x)x/H_g(x)$  is the elasticity of the marginal utility of public goods.

there are partial solutions to this inefficiency. A possible solution would be a system of *side-payments* toward countries with extreme preferences to induce them to join the union. Clearly also in this case membership may enlarge, but still a trade-off between heterogeneity costs and spillovers would determine the equilibrium size of the union. Following the analysis of Ahrens and Meurers (2003), in this case we need to focus on the average net utility from joining the union,  $\bar{\Delta} \equiv \sum_{i \in N} \Delta(\alpha_i, N)$ . In case of isoelastic utility  $H(x) = x^{1-\theta} / (1-\theta)$ ,  $g_m = \alpha_m^{1/\theta} [1 + \beta(N-1)]^{\frac{1-\theta}{\theta}}$ , and we have:

$$\bar{\Delta} = \left( \frac{1}{1-\theta} \right) \left\{ [1 + \beta(N-1)]^{\frac{1-\theta}{\theta}} \alpha_m^{1-\theta} [\bar{\alpha} - (1-\theta)\alpha_m] - \theta\alpha_\omega \right\}$$

where  $a_\omega \equiv (1/N) \sum \alpha_i^{\frac{1}{\theta}}$  is an index of heterogeneity. This emphasizes the trade-off between heterogeneity costs and spillover benefits in a different form (notice that a mean-preserving spread or a median-preserving spread in the distribution of preferences weakly reduce the size of the union). Ahrens and Meurers (2003) start from this result and empirically assess the degree of heterogeneity in the EU before and after the eastward enlargement. After finding a considerable increase in heterogeneity of preferences, they conclude that governance problems in the enlarged EU are likely to increase and “*although policy makers have been aware of this institutional challenge, the prescription of the Treaty of Nice from December 2000 are insufficient to safeguard and enhance the quality of EU governance*”, and they explore options for reorganizing the EU in a more exible way.

The inefficiencies emerging in an equilibrium union must be addressed through institutional reforms. For instance, intergovernmental transfers to subsidize public spending, usually referred to as matching grants, can improve the allocation of resources if decided at the union level while countries decide independently on local spending (AAE, 2005). One can show that the political equilibrium subsidy induces the formation of the first best union only if the median public spending is the same as the average. In this particular case, indeed, the subsidy on public good provision chosen by majority voting is  $s^* = \beta(N-1)$  which, as it can be easily verified, delivers the first best allocation of resources and participation of all countries. The problem, of course, is that higher or lower subsidies can emerge in political equilibrium according to the distribution of preferences (see AAE, 2005). For instance under isoelastic utility the equilibrium subsidy is:

$$s_m = s^* + \theta \frac{(\alpha_m^{1/\theta} - \alpha_\omega)(1 + s^*)}{\alpha_\omega - (1 + s^*)\alpha_m / N}$$

## 2.1 Comparative politics

One way a union can overcome the inefficiencies of a rigid coordination is to share responsibilities between the union and its members.<sup>13</sup> If countries can individually provide public goods beyond the level chosen by the union, there is a chance to improve the allocation of resources. However, some countries may profit from this possibility and other countries may end up worse off. AAE (2005) compare a situation with a constitutional priority for the countries over the union and one where the union has a priority over its members, and show that a correct constitutional design of the hierarchy is crucial to implement Pareto-efficient reforms.

The *principle of subsidiarity*<sup>14</sup> states that public policies should be assigned to the lowest level of government which is capable of successfully achieving their objectives. I formalize this principle imagining a two-stage process in which 1) member countries independently choose their policies  $g_i^s$  and then 2) the union chooses a common expenditure  $g^U \leq 0$  by majority voting and looking for a sub-game perfect equilibrium (SGPE). Utility for country  $i$  is now  $U_i = y - g_i^s - g^U + \alpha_i H(G_i^s)$ , where  $G_i^s = g_i^s + \beta \sum_{j \neq i} g_j^s + g^U [1 + \beta(N-1)]$ . Given any individual expenditures chosen in the first stage, under weak conditions preferences are single-peaked in the second stage and the following condition defines the common expenditure  $g_m^U$  chosen by the median country:

$$\alpha_m H_g(G_m^s) = \frac{1}{[1 + \beta(N-1)]} \quad (4)$$

The common expenditure is decreasing in each  $g_s^i > 0$  with slope  $dg_m^U/dg_i^s = -\beta/[1 + \beta(N-1)]$ . Using this, it follows that in the first stage, in SGPE countries which choose for a positive individual provision adopt the following rule:

$$\alpha_i H_g(G_i^s) = \frac{[1 + \beta(N-2)]}{(1 - \beta)[1 + \beta(N-1)]} \quad (5)$$

<sup>13</sup> According to the new European Constitution, *shared competences* are areas in which Member States agree to act individually only where they have not already acted through the EU, or where the EU has ceased to act (though there are a few areas where Member States may act both nationally and through the EU if they wish).

<sup>14</sup> According to the new European Constitution, the EU may only act where its Member States agree unanimously that actions by individual countries would be insufficient. *This principle of subsidiarity* is based on the legal and political principle that governmental decisions should be taken as close to the people as possible while still remaining effective. Moreover, according to the *principle of proportionality*, the EU can only act to exactly the extent that is needed to achieve its objectives.

Since the right hand side is always greater than  $1/[1 + \beta(N - 1)]$ , in political equilibrium we must have  $g_i^s = 0$  for any  $i \leq m$ , and  $g_m^U \leq g_m$  with strict inequality as long as some countries provide individual expenditure. All countries not providing individual expenditure will spend less than in a rigid union, while benefiting from the additional expenditure of other countries, which makes them better off. Hence, a majority of countries is in favor of the principle of subsidiarity. The other countries, on the one hand, are worse off because the union is providing less public good and, on the other hand, they are better off because to some extent they can individually compensate for this. Paradoxically, just those countries which exploit the possibility of individual extra provision of public goods may end up worse off because of this opportunity, which introduces a sort of “free-riding by voting” in the union. Nevertheless, if we look at the creation of the union under this principle, it is immediate to show that the equilibrium union must include all countries with strongest preferences for public goods.

I will now consider the case where the union can commit *ex ante* to a common policy and countries must take it as given when they choose their extra provision. Such an institutional organization broadly represents a system of “federal mandates”, an arrangement where each country can choose and independently finance public expenditure, but this must be at least equal to a level decided by the union. This system is widely used in environmental regulation but it can be applied to many public goods or policies with strong externalities. In game theoretic terms, we can think of this situation as a two-stage process where 1) the union chooses the federal mandate and then 2) each country decides whether to provide further public goods. Formally, utility for country  $i$  is  $U_i = y - g_i^f - f^U + \alpha_i H(G_i^f)$ , where  $f^U \geq 0$  is the federal mandate,  $g_i^f$  the extra provisions of public goods for country  $i$  and  $G_i^f = g_i^f + \beta \sum_{i \neq j} g_j^f + f^U [1 + \beta(N - 1)]$ . In the second stage, for a given federal mandate  $f^U$ ,  $\tilde{N}$  countries with largest  $\alpha_i$  provide extra public goods according to a decreasing function  $g_i^f = g_i^f(f^U)$  defined by:

$$\alpha_i H_g(G_i^f) = 1 \quad (6)$$

where  $\tilde{N}$  is a step function weakly decreasing in the federal mandate. By totally differentiating these conditions for the individual contributions and manipulating the result, we obtain reaction functions linearly decreasing in the federal mandate with the slope:

$$\frac{dg_i^f}{df^U} = -[1 + \beta(N - 1)] - \sum_{j \in \tilde{N}, j \neq i} \beta \frac{dg_j^f}{df^U} = -\frac{[1 + \beta(N - 1)]}{[1 + \beta(\tilde{N} - 1)]}$$



which becomes steeper every time that an increase in  $f^U$  induces a new country to stop providing extra public goods. As one can easily verify, however, total public good production  $\sum g_i^f(f^U) + Nf^U$  is increasing in  $f^U$ .

We assume that in the first stage preferences are single peaked in the favorite federal mandate so that the median voter theorem holds.<sup>15</sup> Substituting  $dg_i^f/df^U$  and using (6), the SGPE condition is:

$$\alpha_m H_g(G_m^f) = \max \left\{ \frac{[1 + \beta(\tilde{N} - 1)]}{[1 + \beta(N - 1)](1 - \beta)}, 1 \right\} \quad (7)$$

which sets the constraint  $\beta < (N - \tilde{N} - 1)/(N - 1)$  for interior solutions and implies  $g_i^f = 0$  for any  $i \leq m$ . Finally, defining  $f_m^U$  as the federal mandate preferred by the median country, comparing (7) with (2), we conclude that  $f_m^U \leq g_m$ . The choice of the federal standard induces a stronger free riding by the union. Hence, the equilibrium federal mandate is quite small, which increases the incentives of countries with higher preference for public goods to individually provide them and it consequently makes the other countries better off. Again, the equilibrium union must include all countries with the strongest preferences for public goods. Summarizing:

**PROPOSITION 2.** The equilibrium union with the principle of subsidiarity or with federal mandates is unique and composed by countries with highest  $\alpha_i$ ; the median country and all countries with smaller  $\alpha_i$  do not adopt individual expenditure while only countries with highest  $\alpha_i$  do it.

The bottom line is that flexible organization which properly shares competencies between countries and the union is typically desirable, but the way this organization is built is fundamental to create gains for all members. It is crucial to decide whether to vote on the common provision of public goods at the union level after or before each country has decided on a individual provision. There is a trade-off between a higher utility from public goods under subsidiarity and a greater private consumption under federal mandates, hence countries with low preferences for public goods will tend to prefer federal mandates and countries with high preferences for public goods will tend to prefer subsidiarity.

<sup>15</sup> It can be verified that a sufficient condition for single peakedness is:

$$\frac{\alpha_{i+1}}{\alpha_i} < \frac{(1 - \beta)[1 + \beta(N - 1)]}{[1 + \beta(N - i)]} \quad \forall i = 1, \dots, N - 1$$

which sets a limit to preference heterogeneity.



## 2.2 Elections in the union

Some of the most recent studies on the political economy of unions focus on different institutional mechanisms from the simple majority voting used until now (see Persson and Tabellini, 2000). Besley and Coate (2003) and, in extensions, Dur and Roelfsema (2004) and Lorz and Willmann (2004), have introduced *representative democracy* in the election of politicians at the union level. The issue becomes interesting when citizens within a country differ in preferences: in this case strategic delegation typically emerges, in the sense that the representatives of a country in the Union Parliament do not necessarily reflect the median preference in their own country, which induces a new inefficiency in the union. To abstract from the inefficiency of a rigid union, Besley and Coate (2003) allow the representatives to adopt different policies for the countries and they actually assume that these representatives engage in a process of efficient cooperative bargaining.<sup>16</sup> A simpler version of their results emerges in our context.

Consider two countries and assume logarithmic utility. Imagine that in each country preferences are distributed symmetrically in the unitary interval around the median (and average) preferences  $\alpha_{m1}$  and  $\alpha_{m2}$  and that the representative politicians of these countries have preferences  $\alpha_1^R$  and  $\alpha_2^R$ . At the union level, the two provisions of public goods  $g_1$  and  $g_2$  are chosen cooperatively to maximize:<sup>17</sup>

$$W = \alpha_1^R \log(g_1 + \beta g_2) + \alpha_2^R \log(g_2 + \beta g_1) + 2y - g_1 - g_2 \quad (8)$$

from which we have:<sup>18</sup>

$$g_i(\alpha_i^R, \alpha_j^R) = \frac{\alpha_j^R - \beta \alpha_i^R}{1 - \beta} \quad (9)$$

In the elections by majority voting in each country  $i$  for the respective representatives, the median voter theorem holds and the elected  $\alpha_i^R$  must maximize:

<sup>16</sup> Nevertheless, strategic delegation can emerge even in a rigid union with a unique policy for all countries. In that case the interaction between the inefficient effects of policy rigidity and strategic delegation complicates the results.

<sup>17</sup> As we have seen earlier, these policies could be implemented through a subsidy  $s^* = \beta(N - 1)$  (where  $N = 2$  here), while leaving to each representative the choice on its national policy.

<sup>18</sup> To avoid corner solutions I impose a limit on heterogeneity,  $\alpha_{m2} / \alpha_{m1} < 1/\beta$ .

$$U_{mi} = \alpha_{mi} \log[g_i(\alpha_i^R, \alpha_j^R) + \beta g_j(\alpha_j^R, \alpha_i^R)] + \\ + y - [\eta g_i(\alpha_i^R, \alpha_j^R) + (1 - \eta)g_j(\alpha_j^R, \alpha_i^R)]$$

where the last square parenthesis includes the taxes in country  $i$  which correspond to a fraction  $\eta \in [1/2, 1]$  of its own public expenditure and a fraction  $1 - \eta$  of the public expenditure of the other country:  $\eta = 1/2$  when the total expenditure is equally shared and  $\eta = 1$  when each country pays its own expenditure. Solving the system of first order conditions one obtains:

$$\alpha_i^R = \frac{1 - \beta}{\eta - (1 - \eta)\beta} \alpha_{mi} \begin{matrix} \geq \\ \leq \end{matrix} \alpha_{mi} \text{ iff } \eta \begin{matrix} \leq \\ \geq \end{matrix} \frac{1}{1 + \beta} \quad (10)$$

In other words, when the total expenditure is equally shared we have strategic delegation to representatives with higher preferences for public goods, while when each country pays for its own expenditure, strategic delegation to representatives with weaker preferences for public goods emerges: a common pool problem determines the former result and an inefficient internalization of spillovers determines the latter. Notice that in all cases  $\alpha_i^R$  is decreasing in  $\beta$ . It is immediate to verify that the efficient outcome could be obtained if the representative had the average preferences in their own countries ( $\alpha_i^R = \alpha_{mi}$ ). Hence, overprovision of public goods emerges when public expenditure is shared between the countries and underprovision emerges when each country finances its own public expenditure.

Finally, let us consider the incentives to create a union when the alternative, as usual, is to autonomously choose the national policy but giving up to spillovers. The net utility of country  $i$  from joining the union can be calculated as:

$$\Delta^i(\beta) = \alpha_{mi} \log \frac{1 - \beta^2}{\eta - (1 - \eta)\beta} + \frac{\eta(1 + \beta)(\alpha_{mj} - \alpha_{mi}) - (\alpha_{mj} - \beta\alpha_{mi})}{\eta - (1 - \eta)\beta} + \alpha_{mi} \quad (11)$$

which is not necessarily positive and not even necessarily increasing in the spillovers. When strategic delegation induces overprovision, an increase in the spillovers is going to induce representatives with lower preferences for the public goods, hence the benefits from the union are certainly increasing in  $\beta$ : this implies that the union can only emerge for high enough spillovers (or for small enough heterogeneity).<sup>19</sup> However, when strategic delegation in-

<sup>19</sup> Indeed when  $\eta = 1/2$  we have  $\Delta^i(0) = \alpha_{mi} \log 2 - \alpha_{mj}$ ,  $\Delta^i(1) = \alpha_{mi} \log 4 - \alpha_{mj}$  and  $\Delta_\beta^i(\beta) = \alpha_{mi}/(1 + \beta) > 0$ .

duces underprovision, an increase in the spillovers creates even less provision of public goods, which may end up reducing the net utility from joining the union: in this case it turns out that the union emerges only for low enough spillovers (or for high enough heterogeneity).<sup>20</sup> We can summarize these new results as follows:

**PROPOSITION 3.** Under representative democracy in a union, strategic delegation may induce overprovision or underprovision of public goods: in the first case the union emerges when spillovers are high enough, in the second case for low enough spillovers.

Similar results on strategic delegation under representative democracy emerge in models of non-cooperative bargaining between the representatives, where further inefficiencies arise. A simple institutional solution to the problem of strategic delegation is given by an accurately chosen distribution of the cost of investments: if  $\eta = 1/(1 + \beta)$  the inefficiency disappears. Cremer and Palfrey (2000) compare the adoption of federal mandates under direct democracy and under representative democracy, while Cremer and Palfrey (2003) augment the model with spillovers and characterize the induced preferences of voters for federal policies, prove existence of local majority rule equilibria, provide an example of nonexistence of global majority rule equilibrium, and explore the welfare properties of federal mandates.

Strategic delegation of politicians in the EU is a fascinating hypothesis which emerges from the theory: it may be that the financing and spending behaviour of the European institutions and the same search for more bargaining power in the EU biases national elections for the national representatives in the union. A vivid example of this comes from many federal countries where regions in search for more decentralization or more redistribution often elect secessionist politicians for the federal representation or punish parties supporting communitarian policies. Moreover, Alesina and Grilli (1992) using electoral results from the late 80s, have shown that the median of EU institutions (like the Council of Ministers) can deviate significantly from the median of European voters.

Wrede (2004) focuses on the conflict of interest between politicians and voters in an electoral model of *retrospective voting* based on Persson, Roland and Tabellini (2000), that is, allows politicians to extract rents and choose policies under the constraints that these guarantee their re-election. His paper extends the AAE model by considering a national policy with heterogeneity across coun-

<sup>20</sup> Indeed when  $\eta = 1$  we have  $\Delta^i(0) = 0$ ,  $\Delta^i(1) \rightarrow -\infty$ ,  $\Delta_b^i(\beta) = -2\beta\alpha_{mi}/(1 - \beta^2) + \alpha_{mj}$  so that  $\Delta^i(\beta)$  is an inverted U curve with positive values only for low  $\beta$ .

tries and a supranational policy without heterogeneity but with spillovers across countries and derives the conditions under which a union centralizing only the supranational policy emerges. This framework could be fruitfully used to study also the relationship between the formation of unions and the constitutional choice between parliamentary versus presidential systems (the latter being the original focus of Persson, Roland and Tabellini, 2000). Casual evidence suggests that decentralized countries tend to prefer presidential systems (US, UK,...) and centralized countries tend to adopt parliamentary systems (Italy until the Constitutional reform currently discussed will introduce both federalism and presidentialism). However, exceptions also exist (France is highly centralized, yet presidentialist). The institutional organization of the EU resembles a parliamentary system with decentralization, probably because its members are not ready to delegate too much power to a single president; nevertheless, the new Constitution has made some preliminary steps in this direction strengthening the role of the President of the European Council and of the Minister of Foreign Affairs,<sup>21</sup> but the president of the European Commission remains elected by the Parliament (see Berglöf *et al.*, 2003, for a related discussion).

### 2.3 Discussion

AAE (2005) extend the basic model of the union to multiple policies and show that a strong commitment of the union to centralize only a limited set of policies – those with the strongest spillovers between members – can induce the creation of a bigger union and is preferred by at least a majority of members, while in absence of such a commitment the equilibrium size of the union shrinks and the set of centralized policies expands.<sup>22</sup> In this sense, the recent definition of a European Constitution can be seen as deeply linked to the enlargement process. Meanwhile, the increasing reluctance of several countries to endorse parts of the EU agenda and the decreasing popularity of the EU in the public opinion confirmed in the most recent European Elec-

<sup>21</sup> The 6-month rotating Presidency of the Council of Ministers, which currently coincides with the Presidency of the European Council, will be changed to an 18-month Presidency in an attempt to provide more continuity. The Council's Foreign Affairs will be chaired by the newly created Union Minister for Foreign Affairs who will also be a Vice President of the European Commission. This Minister will be responsible for coordinating foreign policy across the EU and will represent the EU abroad (at least in areas where Member States agree).

<sup>22</sup> Adopting the utility function:

$$U_i = y - \sum_{k=1}^F g_i^k + \alpha_i \sum_{k=1}^F H \left[ g_i^k + \sum_{j \neq i} \beta_k g_j^k \right]$$

where  $g_i^k$  is policy  $k$  with spillovers  $\beta_k$ , preferences belong to the intermediate group defined by Grandmont (1978) and hence the median voter theorem applies as well.

tions are clear symptoms of the difficulty of pursuing simultaneously the goal of enlargement and that of building a more active union. According to the Laeken Declaration (December 2001), it is possible that *“the Union takes on too much in areas where its involvement is not always essential. Thus the important thing is to clarify, simplify and adjust the division of competence between the Union and the Member States”*, which is exactly one of the purposes of the new European Constitution.<sup>23</sup> In other areas, as anti-trust policy, given the high heterogeneity of views, excessive activism may be seen as a negative factor. For instance, the EU has taken an incoherent approach in strongly fighting against market leaders in high-tech sectors (mainly against Microsoft), while its focus should be on enhancing free entry in all markets (especially the high-tech sectors where, in a competitive environment, dominant firms are the main firms promoting efficiency and technological progress).

Carraro and Marchiori (2003) have generalized the AAE model studying the constitutional choice between large unions with little power and small unions with a lot of power, or what they call *“issue linkage”*. Empirical evidence in favour of a *“centralization bias”* in the EU pre-enlargement emerges from its legislative production, which has been examined by Alesina, Angeloni and Schuknecht (2004) and Alesina and Spolaore (2003, Ch. 12), who conclude that *“the European Union is involved in areas where the heterogeneity of preferences is high and the benefits in terms of economies of scale are not so obvious”*.

A crucial issue in the political economy of unions concerns the evolution over time of an equilibrium union and in particular its enlargement process. AAE (2005) show that enlargement is chosen trading off the benefits of new spillovers with the cost of increased heterogeneity across members, and it is approved if the median country is not too much penalized. A rigorous empirical analysis of the enlargement process in the EU by Plumber, Schneider and Troeger (2004) and Mattli and Plümper (2004) supports the idea of a similar trade-off in the choice of enlargement and shows that reform processes in candidate countries have been faster than else-

<sup>23</sup> The new European Constitution specifies that all the competences of the EU are voluntarily conferred on it by its members (*principle of conferral*): the EU has no competences by right, and thus any areas of policy not explicitly specified in the Constitution remain the domain of the sovereign Member States (this has been explicitly specified for the first time in the Constitution). Currently, the EU has six exclusive competences (customs union, competition rules that govern the internal market, monetary policy in the Euro area, conservation of marine resources, common commercial policy and the conclusion of certain limited international agreements) a number of shared competences and some others where the EU can only take supporting, coordinating or complementary action. Notice that, the Constitution's exibility clause allows the EU to act in areas not made explicit in the Constitution, but only if all Member States agree, only with the consent of the European Parliament, and only where this is necessary to achieve an agreed objective under the Constitution.



where: in a sense the EU has induced prospective members to converge toward the preferences and the favorite policies of the old members before deciding for admission.

Roberts (1999) has studied a general model of dynamic enlargement of a union. In such a model, the entry of a new member changes the median and subsequent decisions about policy and further enlargement will be taken by a different set of countries; nevertheless, Roberts has shown that a median voter theorem holds also in such a model even if its steady states may not be political equilibria of the static game. The AAE specification is a particular case of what Roberts calls "*expansionary clubs*" and his results apply to it and show the existence of a "*status quo bias*" in the enlargement processes: enlargement and creation of new spillovers may be opposed (or postponed in the real world) by members of the union who do not want to give up to their political power in the union.

Bordignon and Brusco (2003) study a dynamic environment in which countries can choose when to join the union and introduce uncertainty on the benefits from cooperation (in our language, the size of spillovers  $\beta$  is *ex ante* uncertain). For intermediate levels of uncertainty, small unions initially form and then they enlarge only gradually through expanding enhanced cooperations: this process may not be fully efficient because it may favour the initial members compared to the new entrants, but it appears to closely characterize the evolution of the EU.<sup>24</sup> The Bordignon-Brusco model is technically complicated by the contemporaneous presence of multiple periods and uncertainty.<sup>25</sup> It represents the state of the art in our understanding of the evolution of unions and further research in this direction is likely to be fruitful.

### 3. REDISTRIBUTIVE UNIONS

In this section the focus is on heterogeneity in economic fundamentals and countries with different incomes join in a union whose purpose is not only to finance public goods with spillovers, but also to redistribute resources across countries. This issue has been first approached by the path-breaking model of Buchanan and Faith (1987) and then by Bolton and

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<sup>24</sup> In the new European Constitution there is a tightening of existing rules *for enhanced cooperation*, where some Member States may choose to act together more closely and others not: a minimum of two thirds of Member States must now participate in any enhanced cooperation, and the agreement of the European Parliament is needed.

<sup>25</sup> For the sake of simplicity, the model is presented in a very restrictive contest, a model of tax harmonization. Nevertheless, its main insights are likely to be quite general.



Roland (1997) and others who took seriously the economic reasons behind secession threats and union formation.

### 3.1 Intergovernmental redistribution

Following Bolton and Roland (1997) and especially AAE (2001a), let us focus on labor income taxation and heterogeneity in the average productivity between countries. The union collects the revenue and provides a common level of the public good in each country. For simplicity let us consider the case of zero income effects (on labor supply):<sup>26</sup>

$$U_i = w_i(1-t_i)l_i + V(h_i) + \alpha H(g_i + \beta \sum_{j \neq i} g_j) \quad (12)$$

where  $h_i$  is leisure,  $l_i$  is working time chosen by the representative agent of country  $i$  to maximize a well behaved utility under the constraint  $h_i + l_i = 1$ ..., in function of the income tax rate  $t_i$  and the wage rate  $w_i$  with  $w_1 \leq w_2 \leq \dots$ . First of all, I define the labor supply as the function  $l_i = L(w_i, t_i)$  which satisfies the first order condition  $w_i(1-t_i) = V_{hh}(h)$  with  $L_w > 0$ ,  $L_t < 0$  and  $L_{tt} < 0$  under the weak regularity condition  $V_{hhh}(h) \leq 0$ . Define  $y_i = w_i l_i$  as the gross income in country  $i$ , which is clearly increasing in  $w_i$ , and  $\epsilon(y_i) < 1$  as the elasticity of substitution of income with respect to the tax rate.

Outside the union, each country would choose its own tax to maximize (12) without spillovers under the budget constraint  $g_i = t_i w_i l_i, \dots$  and countries with less elastic labor supply would decide for an higher tax. In a union, the budget constraint is  $g = \sum_{i=1}^N t_i w_i l_i / N$ . An utilitarian first best union would choose country specific taxes  $t_i$  so as maximize the sum of utilities of all countries, internalizing the spillovers between countries and adopting equalization of the elasticities of substitution for all countries, which implies again higher taxation for countries with lower elasticity of the labor supply, but with efficient public expenditure. If instead we adopt our basic model of a "rigid union", the median country chooses the tax rate  $t$  to maximize:

$$U_m = w_m(1-t)L(w_m, t) + V[1-L(w_m, t)] + \alpha H \left\{ [1 + \beta(N-1)] \frac{\sum_{i=1}^N t w_i L(w_i, t)}{N} \right\}$$

<sup>26</sup> Similar results would emerge in a model of capital income taxation with endogenous savings. Such a model of international political economy is studied by Persson and Tabellini (1992) and employed by Park and Philippopoulos (2003) in the study of unions of countries.

and the political-economic equilibrium tax rate  $t_m(w_m)$ , and hence the equilibrium expenditure  $g_m(w_m) = t_m(w_m)\bar{y}$  (where  $\bar{y}$  is average income in the union), are defined by:<sup>27</sup>

$$\alpha H_g \{g_m [1 + \beta(N - 1)]\} = \frac{\left(\frac{y_m}{\bar{y}}\right)}{[1 + \beta(N - 1)][1 - \varepsilon(\bar{y})]} \quad (13)$$

where  $\varepsilon(\bar{y}) = -t[\sum_{i=1}^N w_i L_t(w_i, t)] / \bar{y}N$  is the elasticity of substitution of the average income with respect to the tax rate across all the countries of the union. The tax rate and hence the political-economic equilibrium provision of the public good are properly defined by (13) as decreasing in  $y_m$  and so in  $w_m$ , a point which is not surprising according to the political economic theory of redistribution of Meltzer and Richard (1981). Notice that (13) includes two new terms compared to (2), a redistributive component at the numerator (the higher is average income compared to the median one, the lower is the provision of public goods) and an efficiency term at the denominator (the more elastic is the labor supply of the average income country, the more distortive is taxation and, hence, the lower should be the provision of public goods).

The characterization of the equilibrium is similar to the case of heterogeneity in preferences, but now under some regularity conditions, coalition proofness allows to pin down a unique equilibrium:<sup>28</sup>

**PROPOSITION 4.** The equilibrium union is unique and composed by all countries with income below a certain cut-off; the net gain from membership is increasing in the size of the spillovers.

Moreover, a new member will be accepted only if its productivity is high enough. The homogeneity in economic fundamentals is clearly reflected in the composition of the EU and in the doubts of the richest European countries to join it.<sup>29</sup> On the other side, almost all the poor Eastern European countries have candidate themselves to enter in the EU, but the group of the

<sup>27</sup> Our assumptions imply that  $\partial \varepsilon(y_i) / \partial t > 0$ , which guarantees that single-peakedness in preferences holds. To verify this, notice that the favourite tax of a country with productivity  $w_i$ , let us say  $t_i(w_i)$ , satisfies  $dt_i(w_i) / dw_i > 0$  (see AAE, 2001a).

<sup>28</sup> This is due to the fact that all the poorest countries would like to join the union, if allowed to: hence the coalition-proof equilibrium union is the largest possible set of poorer  $N^{EU}$  countries such all these countries prefer to be in the union rather than outside.

<sup>29</sup> The three richest European countries of relevant size (Norway, Switzerland and Iceland) do not belong to the EU.

recently admitted countries are the richest countries between the Eastern Europeans. The official estimates on the enlargement to this group imply that the current members will have to raise their average contribution to the EU budget from 10% to 20%: clearly, the economic incentives for this enlargement must be in the economic spillovers that the new countries will provide.

### 3.2 Comparative politics

The choice between being in a union or not is not the only choice that countries have to take. As we have seen for allocative unions, countries can decide between being independent, join a rigid union (with a centralized organization) or a flexible one with shared responsibilities (a decentralized union) where priority could be given to the country level (according to the principle of subsidiarity) or to the union level (as in federal mandates). I will now consider this issue in a simple new model of redistributive unions.<sup>30</sup> In an important contribution, Bordignon, Manasse and Tabellini (2001) study another particular case of this model, but their focus is on optimal taxation at the union level in presence of informational asymmetries and without spillovers. Etro and Giarda (2002) focus on the case of two countries with incomes  $y_1 = y$  and  $y_2 = ky$  with  $k \geq 1$  index of inequality. They study two institutional environments, which are labeled as centralization and decentralization. In both of them the union can impose a lump sum transfer between the two countries. However, under centralization there is a unique tax rate chosen at the union level, while under decentralization each country independently chooses its own tax rate. Here, I will introduce spillovers across countries and, for the sake of simplicity, I will adopt the functional form  $U^i = \ln(g_i + \beta g_j) + \ln(c_i)$ . Independent countries (without spillovers) would choose the tax rates  $t = 1/2$  obtaining indirect utilities  $V_1^{out} = 2\ln y/2$  and  $V_2^{out} = 2\ln ky/2$ .

#### 3.2.1 Centralization versus decentralization

Let us consider a union behaving as a social planner and maximizing the sum of utilities of the two countries. The utilitarian first best allocation of resources could be achieved if the union could use both the transfer of income and the transfer of revenue across countries together with the tax rate. In this case, private and public consumption are equalized at the level  $(k+1)y/4$  and utilities are:

<sup>30</sup> I am deeply indebted with Piero Giarda for the development of this section.

$$U_1^{FB} = U_2^{FB} = \ln \left[ \frac{(k+1)^2(1+\beta)y^2}{16} \right] \quad (14)$$

A simple approach to formalize tax distortion is to assume that the union cannot choose all these instruments but only the transfer of income between rich and poor citizens and eventually the tax rate.

Consider a centralized organization. If we denote with  $\theta$  the transfer of income, that is a *block grant*, and with  $t$  the tax rate on income, under centralization the union chooses them to maximize the sum of utilities:

$$W = \ln(g_1 + \beta g_2) + \ln[y(1-t) + \theta] + \ln(g_2 + \beta g_1) + \ln[ky(1-t) - \theta]$$

where  $g_1 = yt$  and  $g_2 = ky t$ . The optimal choices of the tax instruments are  $\theta^C = (k-1)y/4$  and  $t^C = 1/2$  and provide utilities:

$$U_2^C = \ln \left[ \frac{(k+1)(k+\beta)y^2}{8} \right] \quad U_1^C = \ln \left[ \frac{(k+1)(1+k\beta)y^2}{8} \right] \quad (15)$$

Notice that under centralization private consumption is at the first best level but public goods are unequally provided across the two countries with  $g_1^C = y/2$  and  $g_2^C = ky/2$ .<sup>31</sup>

Consider now a decentralized organization. If we denote with  $t_1$  and  $t_2$  the tax rates on income chosen by the two countries we obtain that under decentralization the union chooses just the transfer  $\theta$  to maximize the sum of utilities:

$$W = \ln(g_1 + \beta g_2) + \ln[y(1-t_1) + \theta] + \ln(g_2 + \beta g_1) + \ln[ky(1-t_2) - \theta]$$

where  $g_1 = yt_1$  and  $g_2 = ky t_2$ , but things differ according to whether the tax rates will be chosen before the union choice or afterward. If the union has a credible priority in the institutional process over the countries, we are in the case of *decentralization with commitment*, while if the countries have this priority or a commitment by the union is not credible, we are in the case of *decentralization without commitment*. I will discuss both cases since there is some degree of realism in each of them.

<sup>31</sup> In this case of centralization, the poor country always prefers this set up to independence, and the rich country prefers a centralized union to independence if spillovers are high enough and inequality low enough ( $\beta > 2k^2/(1+k) - k$ ).

Suppose that the union cannot commit to a transfer system but can only choose the transfer after the two countries have independently chosen their tax rates. In SGPE the transfer rule is such that, given the tax rates  $t_1$  and  $t_2$ , private consumption is equalized:

$$\theta(t_1, t_2) = \frac{ky(1-t_2) - y(1-t_1)}{2}$$

In equilibrium countries choose the tax rates  $t_1 = (k+1)/(3+\beta)$  and  $t_2 = (k+1)/k(3+\beta)$ , which implies the transfer  $\theta = y(k-1)/2$ . This implies the utilities:

$$U_1^{DN} = U_2^{DN} = \ln \left[ \frac{(k+1)^2(1+\beta)^2 y^2}{2(3+\beta)^2} \right] \quad (16)$$

Under this regime private consumption is equalized across countries but at inefficient levels and public consumption is also inefficiently equalized at the level  $g_1^{DN} = g_2^{DN} = (k+1)(1+\beta)y/(3+\beta)$ . On one side we have a tendency toward underprovision of public goods due to the spillovers which are not internalized by the countries when they choose how much revenue to collect. On the other side we have a tendency toward overprovision of public goods due to the redistributive scheme: countries know that any difference in net income will be cleared up by the transfer system, hence there is a gain in increasing taxation to provide local public goods.<sup>32</sup> When spillovers are low enough we have overprovision of public goods, while when they are high enough we have underprovision of public goods.<sup>33</sup>

Suppose now that the union government can commit to the choice of a transfer and after that choice is taken each country independently chooses its own tax rate. In equilibrium public spending for the two countries is  $g_1^{DN} = g_2^{DN} = (k+1)y/2(2+\beta)$  and the equilibrium utilities are:

$$U_1^{DC} = U_2^{DC} = \ln \left[ \frac{(k+1)^2(1+\beta)^2 y^2}{4(2+\beta)^2} \right] \quad (17)$$

<sup>32</sup> If we were going to consider transfers of revenue across regions as in Bordignon, Manasse and Tabellini (2001) we would obtain a further tendency toward underprovision of public goods.

<sup>33</sup> In this case of decentralization without commitment, the poor country always prefers this regime versus independence and the rich one does the same only if spillovers are high enough or inequality low enough ( $\beta > [3k - (k+1)\sqrt{2}] / [(k+1)\sqrt{2} - k]$ ).

In this case, in the absence of spillovers the union commitment allows to obtain the first best allocation of resources, but with positive spillovers the tendency toward underprovision of public goods cannot be avoided and it is actually enhanced by the impossibility of the union to redistribute income *ex post*: this is something similar to what happened in allocative unions with federal mandates. This implies that decentralization with commitment of the union to the redistribution scheme is worse than decentralization without commitment when spillovers are large enough.<sup>34</sup>

### 3.2.2 Creation of the union

The centralized or decentralized structure of the union generates utility  $V_i^{in}(k, \beta)$  for country  $i$ . Each country joins the union if and only if the net gain function  $\Delta_i(k, \beta) \equiv V_i^{in}(k, \beta) - V_i^{out}$  is positive. It is immediate to verify that it is always efficient to create a union since  $\Delta_1(k, \beta) + \Delta_2(k, \beta) > 0$ . However, the rich country prefers independence to the best form of union, which is the centralized one under its perspective, if  $\beta < 2k^2/(k + 1) - k$ . The poor country always prefers to create a union rather than remaining independent and prefers a centralized union if inequality is low enough and a decentralized union for intermediate levels of inequality (with commitment if spillovers are low and without commitment if spillovers are high). The kind of union which is created depends on which country is the agenda setter, but if the consensus of both countries is required we obtain that:

**PROPOSITION 5.** It is always efficient to create a union, but a union is created only if inequality is low enough and spillovers are high enough, so that  $\beta \geq 2k^2/(k + 1) - k$ .

Beyond this inefficiency result for which unions may not be created, which is another form of a *status quo* bias, equilibria can be affected by other kinds of inefficiencies when compared with the structure which maximizes the sum of utilities of the two countries. It is easy to show that, in a decentralized union, a commitment is efficient when  $\beta \in [0, \sqrt{2} - 1]$  and inefficient when  $\beta \in [\sqrt{2} - 1, 1]$ . Moreover we have that decentralization is better than centralization if  $k$  high enough. Comparing these results with the pref-

<sup>34</sup> Both countries prefer decentralization with commitment to independence only if spillovers are high enough or inequality low enough ( $\beta > k - 1$ ). In Bordignon, Manasse and Tabellini (2001) there is a revenue transfer which generates a tendency toward underprovision of public goods even in absence of spillovers: hence, the commitment case is superior with any size of spillovers. The same happens in the model of federal risk sharing by Persson and Tabellini (1996b).

erences of the two countries, it follows that a wide range of inefficient outcomes can emerge. When inequality is low enough, both countries will agree on a centralized union, which is also the efficient outcome. For higher levels of inequality the poor country prefers a decentralized union and the rich country prefers a centralized union and the equilibrium choice may not correspond to the efficient outcome. In general we have:

**PROPOSITION 6.** When a union is created, if inequality is low enough, both countries agree on an efficient centralized union, otherwise the union may be inefficiently decentralized or inefficiently centralized.

A relevant example of inefficiency emerges when the rich country is pivotal in the choice of institutions. This implies that for intermediate values of inequality, a centralized union is the inefficient equilibrium: notice that the rich country would be willing to adopt a decentralized regime but only if there was a limit to the redistribution implied by this regimes. It is quite frequent that institutional reforms bringing toward a more decentralized structure are associated with less redistribution, as (arguably) in the current Italian situation.

In general, the political inefficiencies can be partially solved by limiting redistribution through a cap on the transfer from rich to poor countries and completely by introducing a Union Parliament where countries can bargain on the transfer achieving Pareto efficient results.<sup>35</sup>

### 3.3 Discussion

The framework I have just presented has been extended in similar directions as those considered in the case of allocative unions. Hafer and Landa (2004) have introduced the study of shared responsibilities focusing on *federal mandates* and substantially confirming the results of the AAE model: only the richest countries choose extra-provision of the public good and a majority of countries is always in favour of the introduction of the federal mandate, while the rich countries may suffer from its introduction. Hafer and Landa (2003) also study forms of enhanced cooperations in this contest.

Elections in the union under *representative democracy* with phenomena of *strategic delegation* have been studied in important early contributions on redistribution and risk-sharing in a union. Persson and Tabellini (1996a) have

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<sup>35</sup> See Etro and Giarda (2002) for these reform proposals. A Nash bargaining solution in a risk sharing contest is proposed by Persson and Tabellini (1996,a). See also Giuranno (2004).

studied a model where intergovernmental transfers can be determined either by a federation-wide vote over a centralized social insurance system, or by bargaining over intergovernmental transfers. When regions are asymmetric, they find that the federal social insurance system leads to a larger fiscal programme. In a related research, Persson and Tabellini (1996b) consider a local policy redistributing income and affecting the probability of aggregate shocks and a policy of the union which shares international risk. The latter induces a moral hazard problem which gives incentives to national governments to enact high risk policies. A “*horizontally-ordered*” federal system like the US, where the union directly deals with its citizens, and a “*vertically-ordered*” system like the EU, where the union deals with its member countries, induce different political equilibria. They find that only when heterogeneity is not too high, centralization of functions and power can be welfare improving.

The original focus of Bolton and Roland (1997) was on the conditions under which secessions occur.<sup>36</sup> Bordignon and Brusco (2001) study the optimal constitutional rules in a dynamic environment where there is uncertainty on the benefits of a union, and focus on the right to secede.<sup>37</sup> Constitutionally defined secession rules are optimal *ex post* if the federation breaks down, but they may be suboptimal *ex ante* if the member countries receive a benefit from the perceived long-term stability of the federation since they increase the probability of a break-up. The optimal social contract trades-off *ex ante* benefits and *ex post* losses, but Bordignon and Brusco show that under asymmetric information it is more difficult to keep the federation together and that a secession war may occur.

Bolton and Roland (1997) have also introduced *factor mobility* across countries. In this case differences in economic fundamentals are destined to disappear and disagreements on policymaking to collapse, which leads to a greater consensus for participation in the union, but especially for poor countries whose wage is going to raise. Perotti (2001) has developed a more complex model to study how the degrees of centralization of redistribution and of factor mobility affect the productive efficiency of the economies and which degrees of centralization of redistribution and of factor mobility are likely to be chosen by majority rule. He finds that a system of centralized redistribu-

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<sup>36</sup> See also Beramendi (2003) and Stegarescu (2003) for empirical analysis of the relationship between decentralization and redistribution.

<sup>37</sup> A new clause of the new EU Constitution allows for the withdrawal of any Member State without renegotiation of the Constitution, which was not previously possible without violating treaty obligations. When a country notifies the European Council of its intent to withdraw, a settlement is agreed in the Council with the consent of Parliament. If negotiations are not agreed within two years, the country can leave the EU anyway.

tion can lead to less efficient outcomes if labor or capital are not mobile and that an inefficient outcome, with incomplete or no factor mobility, receives a majority of votes in all countries, whenever the structure of labor markets is very different between the countries.<sup>38</sup> Nevertheless, when there are strong spillovers in fiscal policies, a centralized structure has a comparative advantage in coordinating them (see also Economides and Miaouli, 2004).

An important element in political economy is the *lobbying* activity by special interests. The initial focus of the EU coordination has been in agriculture and in export subsidization of its products, policies which are notoriously affected by lobbying activities.<sup>39</sup> A bias in policy coordination for this kind of policies can also affect the incentives to create and enlarge a union. For instance, the Common Agricultural Policy in the EU implies a relevant transfer of resources toward member States with a large agricultural sector. In absence of compensating mechanisms, this may inefficiently affect the gains from membership for different countries.<sup>40</sup> Brou and Ruta (2003, 2004) have introduced special interest politics in the AAE model showing that richer and more organized countries have a larger net gain from membership in a union since they can extend their lobbying activity to the other countries, and hence they may even lobby for creating a union or enlarging one.<sup>41</sup> Bordignon, Colombo and Galmarini (2003) have studied lobbying by firms for the provision of profit-enhancing local public goods and show how an institutional setting in which competencies are split between the union and national governments can properly discipline market entry and lobbying activities.

#### 4. MONETARY UNIONS

One of the most common kinds of unions between countries concerns monetary policy and recent examples of creation of common currencies and dollarization (and one should say also likely processes of “euroization” in the near future) make clear that monetary unions are just at their beginning. There is little theoretical consensus regarding what monetary authorities

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<sup>38</sup> Facchini (2002) and Bagwell and Staiger (2004) study the political economy of a common market and a trade union in a similar spirit.

<sup>39</sup> The Common Agricultural Policy basically subsidizes agriculture production all the way to transform the EU in a net exporter of food (see de Filippi and Salvatici, 2002). For a political economy rationale behind lobbying activity for export subsidies see Etro (2004).

<sup>40</sup> A specific mechanism to limit the net transfers from the United Kingdom to the EU was necessary to enlarge the EU to the UK. The possibility of compensative transfers for the new UE members has been recently introduced.

<sup>41</sup> See also Ruta (2003, 2004) and Sonin (2003).

should do, but there is a strong consensus on the benefits of “doing it together”. Adopting or sharing a strong currency helps solving problems of credibility and avoiding inflating temptations or competitive devaluations. This benefits must be compared with the costs of loosing or sharing authority on monetary policy and eventually also of being in a currency area which is for many reasons larger than the optimal one as suggested by Mundell (1961). A long lasting debate on this trade-off has accompanied the introduction of the Euro and is still under way.<sup>42</sup>

Political economy considerations in the creation of a monetary union have been formalized by Alesina and Grilli (1992) and by Alesina and Barro (2002). I will present here a model which summarizes this line of research and shows a crucial advantage of currency unions: the same fact that there is disagreement on monetary policy and that countries sharing a currency must stick to a compromise, always generates fruits in terms of a credible commitment to low inflation, which are ultimately enjoyed by all members of the union. Many issues related to enlargement, institutional rules and multiple policies are closely linked to the results of the previous sections on fiscal unions, hence I will be shorter and focus on the peculiarities of monetary unions as opposed to fiscal unions.

The basic model of monetary policy is drawn from the pathbreaking work of Kydland and Prescott (1977) and Barro and Gordon (1983) on the time-inconsistency of monetary policy. Let us consider a country  $i$  characterized by the following Phillips curve which relates unexpected inflation  $\pi_i - \pi_i^e$  with reductions in unemployment  $u$  below its natural rate level  $\bar{u}$ :

$$\pi_i = \pi_i^e - \gamma(u - \bar{u} + \varepsilon_i) \quad (18)$$

where  $\varepsilon_i \geq 0$  is a country specific shock with zero expectation and variance  $\sigma_i^2 \geq 0$ , while  $\gamma$  is the inverse of the sensibility of unemployment to unexpected inflation. Country  $i$  has a loss function deriving from variability of inflation around a target level  $\hat{\pi}_i$  and variability of unemployment around a target level  $\hat{u} < \bar{u}$ , where a target below the natural rate of unemployment can be motivated by distortions in the economy which keep too high the natural rate of unemployment. The loss function is assumed quadratic:

$$L_i = (\pi - \hat{\pi}_i)^2 + (u - \hat{u})^2 \quad (19)$$

<sup>42</sup> On the Euro currency union see von Hagen and Mundschenk (2002), Tamborini (2003) and De Grauwe and Mongelli (2004a,b). On the Eastern Caribbean currency union see Reis (2004), on the Western African currency unions Debrun, Masson and Pattillo (2003).

Assume that the Central Bank of country  $i$  has the same preferences as its society and chooses the inflation rate after observing the shock. If the Central Bank can commit to an inflation rate before expectations are taken, it will choose  $\pi$  to minimize the loss function under the Phillips curve constraint and the rational expectation constraint  $\pi^e = E(\pi) = \pi$ , that is:

$$\pi = \arg \min \left\{ (\pi - \hat{\pi}_i)^2 + (\Lambda - \varepsilon_i)^2 \right\} = \hat{\pi}_i$$

where  $\Lambda \equiv \hat{u} - \bar{u}$  is the gap between target rate of unemployment and its natural rate. This implies the expected loss  $\Lambda^2 + \sigma_i^2$ . As well known, this outcome is time inconsistent because when expectations are equal to  $\hat{\pi}_i$  it is optimal for the Central Bank to choose a higher inflation rate. Hence, in what follows we will assume that the Central Bank of a single country cannot commit to an inflation rate: it is as if the Central Bank of this country is going to decide on inflation after expectations are taken. Under such a discretionality, it will choose the rule for  $\pi$  which minimizes the loss function under the Phillips curve constraint, that is:

$$\min(\pi - \hat{\pi}_i)^2 + \left( \Lambda - \frac{\pi - \pi^e}{\gamma} - \varepsilon_i \right)^2$$

under the constraint  $\pi^e = E(\pi)$ . The minimization implies the rule:

$$\pi = \frac{\gamma(\Lambda - \varepsilon_i) + E(\pi) + \gamma^2 \hat{\pi}_i}{1 + \gamma^2}$$

whose expectation is:

$$E(\pi) = \frac{\gamma\Lambda + E(\pi) + \gamma^2 \hat{\pi}_i}{1 + \gamma^2} = \frac{\Lambda}{\gamma} + \hat{\pi}_i$$

Hence we can rewrite the optimal rule under discretionality as:

$$\pi = \frac{\Lambda}{\gamma} + \hat{\pi}_i - \frac{\gamma \varepsilon_i}{1 + \gamma^2}$$

which delivers the expected loss function:

$$E(L_i^{out}) = \Lambda^2 + \frac{\gamma^2}{1 + \gamma^2} \sigma_i^2 + \frac{\Lambda^2}{\gamma^2} \quad (20)$$

Clearly precommitment induces a lower expected inflation while discretionality induces an inflation bias. However, under discretionality the Central Bank can react to shocks. Hence precommitment are preferred only if the variance of shocks is small enough [precisely if  $\sigma_i^2 < (1 + \gamma^2)\Lambda / \gamma^2$ ]. Nevertheless discretionality is the only subgame perfect equilibrium when the Central Bank has the possibility to change the inflation rate after expectations are taken: the precommitment outcome is time inconsistent.

#### 4.1 The Central Bank of the union

Now imagine that there are  $M$  heterogeneous countries. Instead of assuming different relative preferences for inflation variability versus unemployment variability and different unemployment targets as in the previous literature, I imagine that the countries differ in their target inflation and are ordered such that  $\hat{\pi}_1 \leq \hat{\pi}_2 \leq \dots$ . If they join the monetary union, the latter will decide on a common inflation rate to minimize a similar loss function on the basis of a union shock  $\varepsilon$  with variance  $\sigma^2$ , and where the target inflation rate  $\hat{\pi}_U$  is chosen by majority voting between the members. While this is a short cut, it is clear that even the European Central Bank (ECB) must pay attention to output gaps and signals from all the member countries but can only react to some of them: which one they are is clearly a main interest of empirical research. Hence the union chooses the inflation rate:

$$\pi = \frac{\Lambda}{\gamma} + \hat{\pi}_U - \frac{\gamma\varepsilon}{1 + \gamma^2}$$

Given this, each country  $i$  has the expected loss:

$$E(L_i^m) = E\left(\frac{\Lambda}{\gamma} + \hat{\pi}_U - \frac{\gamma\varepsilon}{1 + \gamma^2} - \hat{\pi}_i\right)^2 + E\left(\Lambda + \frac{\varepsilon}{1 + \gamma^2} - \varepsilon_i\right)^2$$

which is minimized if  $\hat{\pi}_U = \hat{\pi}_i - \Lambda/\gamma$ . Since the preferred union target for the inflation rate is monotonically increasing in  $\hat{\pi}_i$  the median voter theorem applies and under majority voting the union target will be the preferred by the median country,  $\hat{\pi}_m - \Lambda/\gamma$ , which implies the union inflation rate:

$$\pi = \hat{\pi}_m - \frac{\gamma\varepsilon}{1 + \gamma^2}$$

The union eliminates the inflation bias and chooses the inflation rate preferred by the median country. Hence, a great advantage from a monetary

union is that it automatically allows to choose a conservative Central Bank (according to the suggestion theoretically advanced first by Rogoff, 1985a) solving the time-inconsistency problem associated with national monetary policy. The disadvantage is that each country has to accept the common inflation choice which is decided at a political level. In conclusion the expected loss of each member country is:

$$E(L_i^{in}) = \Lambda^2 + \frac{\sigma^2}{1+\gamma^2} + \sigma_i^2 - \frac{2Cov(\varepsilon, \varepsilon_i)}{1+\gamma^2} + (\hat{\pi}_m - \hat{\pi}_i)^2 \quad (21)$$

Hence country  $i$  enters the union if and only if the net gain function  $\Delta_i \equiv E(L_i^{out}) - E(L_i^{in})$  is positive. Here we have:

$$\Delta_i = \frac{\Lambda^2}{\gamma^2} + \frac{2Cov(\varepsilon, \varepsilon_i) - (\sigma_i^2 + \sigma^2)}{1+\gamma^2} - (\hat{\pi}_m - \hat{\pi}_i)^2 \quad (22)$$

A union of  $N$  countries with a median voter characterized by  $\hat{\pi}_m$  is an equilibrium union if: 1) the union policy is chosen by the union by majority voting, 2) for each country  $i$  joining the union,  $\Delta_i > 0$ , and 3) for each country  $k$  outside the union,  $\Delta_k < 0$ . It follows that countries with very high uncertainty or with very different target inflation rate from the one of the median may want to remain out of the union because their loss of independent monetary authority is too costly. Moreover, the higher is the correlation between the country specific shock and the shock at the union level, the larger are the net gains from joining the union.

Let us now define  $\rho_i \equiv Cov(\varepsilon, \varepsilon_i)/\sigma_i\sigma$  as the coefficient of correlation between the shock in country  $i$  and the aggregate shock at the union level. In the special case where  $\sigma_i^2 = \sigma^2$  for all  $i$ , we have:

$$\Delta(\hat{\pi}_i, \rho_i) = \frac{\Lambda^2}{\gamma^2} - \frac{\sigma^2 2(1-\rho_i)}{1+\gamma^2} - (\hat{\pi}_m - \hat{\pi}_i)^2 \quad (23)$$

where the first term is always positive and the second is always negative. Setting this equal to 0 defines a region in the space  $(\hat{\pi}_i, \rho_i)$  where the gains from joining the union are positive. Simple algebra shows:

**PROPOSITION 7.** An equilibrium union is composed by homogeneous countries: for a given median, there exists a unique closed set in the space  $(\hat{\pi}_i, \rho_i)$ , such that all and only all countries in this set belong to the union; the net gain from membership is increasing in the gap between

target rate of unemployment and its natural rate, decreasing in uncertainty and first decreasing and then increasing in the sensibility of unemployment to the inflation rate.

Clearly the way national shocks are aggregated to form the union shock to which the Central Bank of the union reacts is crucial: a balanced composition may enhance the gains from membership and potentially enlarge the union.

#### 4.2 Interdependence between countries

Let us now imagine that the Phillips curve relates domestic employment with domestic and foreign inflation rates. As well known since Rogoff (1985b), monetary coordination can be counterproductive in such a context because it increases incentives to create surprise inflation. As I will show, this is not the case in a currency union where political appointment of the common Central Bank automatically delivers a conservative monetary policy. Imagine that our Phillips curve takes the following form:

$$u = \bar{u} - \frac{1}{\gamma} \left[ (\pi_i - \pi_i^e) + \beta \sum_{j \neq i} (\pi_j - \pi_j^e) \right] - \varepsilon_i \quad (24)$$

where  $\beta \in [0, 1]$  represents the spillovers from foreign inflationary surprises.<sup>43</sup> Reworking our model of a union with  $N$  members and a Central Bank with preferred inflation  $\hat{\pi}_U$ , delivers the equilibrium inflation rate:

$$\pi = \hat{\pi}_U + \frac{\Lambda}{\gamma[1 + \beta(N-1)]} - \frac{\gamma[1 + \beta(N-1)]\varepsilon}{[1 + \beta(N-1)]^2 + \gamma^2} \quad (25)$$

which shows a greater inflation bias, due to the enhanced effects on unemployment of a surprise inflation, and also a lower reactivity to shocks, which is due to the stronger propagation of a stabilization intervention in the union when there are spillovers across countries. Notice that the second result differs from the greater tendency to national stabilization found by Rogoff (1985b) in case of monetary coordination: there independent monetary authorities react to their own shocks  $\varepsilon_i$  in a coordinated fashion, here a unique

<sup>43</sup> Notice that in this case  $\partial^2 L / \partial \pi_i \partial \pi_j = 2\beta / \gamma > 0$  hence strategic substitutability holds like in our model of fiscal unions. In a more general model with spillovers also between union members and outsiders, further strategic interactions would emerge.

monetary authority can only react to a single shock  $\varepsilon$  and does it in an efficient fashion. Moreover, political delegation in the currency union can solve the problem of an increased inflationary bias found out by Rogoff by appointing a proper monetary authority exactly as seen earlier. A preliminary evidence on the behaviour of the ECB suggests indeed that inflationary temptations have disappeared and stabilization efforts have been reduced to a minimum.

Let us now reconsider the creation of the union. Assuming as usual that spillovers emerge only between the members of the union, the new net gain function from participation can be worked out as:

$$\Delta(\hat{\pi}_i, \rho_i, N) = \frac{\Lambda^2}{\gamma^2} + \frac{\sigma^2(2\rho_i - 1)[1 + \beta(N - 1)]^2}{\gamma^2 + [1 + \beta(N - 1)]^2} - \frac{\sigma^2}{1 + \gamma^2} - (\hat{\pi}_m - \hat{\pi}_i)^2 \quad (26)$$

It turns out that an increase in the number of members may increase or decrease the net benefits from being in the union because the union implements a weak stabilization policy which is not even targeted at the national shock. Only for countries with a high enough correlation between their shock and the shock adopted at the union level,  $\Delta(\hat{\pi}_i, \rho_i, N)$  is increasing in  $N$ .

When correlation of shocks across all countries is high enough, previous results go through and one can find a unique equilibrium union as in the AAE model. In particular we can establish the following new result:

**PROPOSITION 8.** Assume that the variance of national and aggregate shocks is the same and the correlation is  $\rho_i \geq 1/2$  for each country  $i$ . An equilibrium union is composed by homogeneous countries; the net gain from membership is increasing in the spillovers from foreign inflationary surprises.

In this case, an increase in the interdependence between member countries (as in the Euroarea because of trade integration) is going to increase the gains from membership in the currency union (which will promote enlargement): this effect is due to the stronger propagation of a stabilization intervention in the union (rather than in an independent country) when spillovers are larger.

Nevertheless, also in this model, there would be a *status quo* bias in the enlargement process due to the fact that a new member would change the median of the union and hence its inflation target  $\hat{\pi}_m$ , and eventually the union shock  $\varepsilon$ . To avoid these problems, the ECB has established a well defined inflation target (below 2%) which should not be affected by entry of

new members in the Euro area. Nevertheless, discretionary policy is ultimately dependent on bargaining between the countries who share the Euro. This has two implications: on one side the enlargement of the Euro area is taking more time and requiring stricter conditions than the enlargement of the EU, on the other side there are countries in the EU who still prefer not to share this currency and maintain their monetary independence. The institutional organization of the ECB is crucial to expand the benefits of coordinated monetary policy.<sup>44</sup>

When heterogeneity between countries is high enough (and in particular  $\rho_i < 1/2$  for some countries), a characterization of the equilibrium union is more complex: lack of equilibria or multiple equilibria may emerge and further research may investigate these possibilities. Notice that multiple equilibria may resemble the so-called multi-speed process of adoption of the Euro in the EU.

### 4.3 Discussion

The model could be extended considering persistent shocks (introducing a stabilization bias; see Svensson, 1997) or introducing other policies, like fiscal policy (Dixit and Lambertini, 2001) or labour reforms<sup>45</sup> affecting the structure of the economy, which is here summarized in the Phillips curve. It would be interesting to study the relationship between monetary unions and forms of fiscal coordination and redistribution as those studied in the previous sections. Indeed, for a group of countries giving up to monetary independence and hence committing to fixed exchange rates in the strongest possible way, the impact of local shocks becomes more dramatic: this enhances the importance of a well coordinated system of fiscal federalism, or in other words increases the gains from joining in a fiscal union. This is what is slowly happening in the EU, which, not by chance has been criticized by many commentators for lacking of enough labor mobility and fiscal coordination to be an optimal currency area.

From a theoretical (and even empirical) point of view, it is not even clear whether monetary policy is a prosperity-neighbour policy, as suggested here, or a beggar-thy-neighbour policy, and only microfounded models can

<sup>44</sup> See Baldwin *et al.* (2001) for a discussion.

<sup>45</sup> A labour reform reducing the natural rate of unemployment would reduce  $\Lambda$  and hence the gains from the union, but it may entail other advantages and be easier in the coordinated context of a union. A labour reform varying the sensibility of unemployment to the inflation rate  $\gamma$  would have ambiguous effects on the gains from the union. Sibert and Sutherland (2000) develop an interesting study on labor reforms in countries of a monetary union.

provide us with better tools to work on issues of international coordination. Alesina and Barro (2002) have presented a rudimentary newkeynesian model of imperfect competition and trade between countries where trade barriers are represented by transportation costs, tariffs and other factors affected by the participation to a currency union: monetary policy is a prosperity-neighbour policy in this models. As obvious, sharing a common currency decreases trading costs and reduces various forms of uncertainty and these are further advantages from the monetary unions which suggest two avenues of further research. The first relates custom unions and monetary unions, the second relates the size of monetary unions and the size of nations.

In an important paper, Yi (1996) has adopted a standard model of imperfect competition and trade with tariff barriers to study the trade policy of a custom union as a function of its size and the equilibrium formation of custom unions. He found that typically the external tariff of a custom union is an inverted U curve in the number of its members and that small size unions can emerge if enlargement to new members must be accepted by the current members. Casual evidence suggests that the benefits of being in a custom union enhance the benefits of being also a currency union and the other way around since both promote trade within the union. It would be interesting to link these two strands of literatures together and examine more precisely the relationship between trade integration and currency unions.

Alesina and Barro (2002) have built a standard model which is consistent with the fact that more countries may find easier to share currencies: indeed, the break-up of nations seems to be sporadically related with multiplication of the number of currencies. Many observers have suggested that we may converge toward a world with few leading currencies to be gradually adopted everywhere as the Dollar, the Euro and eventually the Yen. This appears even more realistic if globalization will lead to a convergence toward few trade blocks centered on analogous dominating areas.

## 5. CONCLUSION

The focus of the political economy of international unions is on the relationship between institutional arrangements within a union of countries and net economic benefits accruing to its members. Even if countries agree on the necessity of coordinating their policies, loss of independent policy-making creates high political costs, especially when there is a lot of disagreement on policy views. The institutional organization of a union has to trade off these factors, and theory is trying to capture the relevant issues in



this process. I will briefly discuss merits and limits of these theories and suggest issues for future research.

The theoretical attempt to define efficient constitutional rules for unions of countries is just at its beginning. This is quite surprising given the current creation of a new European Constitution. We have emphasized the necessity of a commitment to centralize only a limited set of policies to avoid an excessive role of the union, which may reduce the gains from membership for heterogeneous countries. We have emphasized the necessity of clear rules for the allocation of competencies and for the funding of policies, for enlargement and for secessions. More work needs to be done. We do not have a clear understanding of the relative merits of presidential and parliamentary systems in a more or less decentralized structure. We do not know much about the relationship between elections at the country and at the union level, which may induce strategic voting and divided governments and require a closer study of electoral rules at the union level. Finally, we have a limited understanding of the relation between allocation of resources at the country and the union level, which may generate biased budget allocations and require institutional rules to make up for this.

From a theoretical point of view, we now have a certain understanding of the hierarchy of countries and the union in the process of coordination of fiscal policy. As we have seen, free riding behaviours can be limited under a decentralized system where each country decides its own allocative and redistributive policy while the union votes *ex post* on further public provision or redistribution. Nevertheless, the role of the union should be minor for policies where spillovers across countries are small and heterogeneity of views is large. Most likely, the EU is too active in fields where there is a limited scope for coordination and too much absent in coordinating other policies. Theories of centralization bias, inefficient strategic delegation of politicians and rent-seeking activities can provide partial explanations, but further research on this point would be useful.

Theoretical results are also quite clear on the merits of delegation of authorities to independent policymakers. As we have seen, independent authorities and commitment to rules can achieve positive results in fields like monetary policy or fiscal discipline where commitments to efficient policymaking are difficult to sustain for politicians. Nevertheless, when there is a need for discretionary policy, the appointment of policymakers and the definition of rules become crucial. This is the case for anti-cyclical policies by both fiscal and monetary authorities, and that is the issue at the core of debates on the reforms of the Growth and Stability Pact and the European Central Bank in the EU. Theoretical solutions to these problems are likely to be found in less stylized models of fiscal and monetary coordination than the



ones emphasized here. In a sense, it is time for international economics to take seriously the macroeconomics of unions of countries, whose behaviour at the policy level can be quite different from that studied in the macroeconomics of small and large economies.

A final issue concerns the relationship between international unions and political geography. Recent history has been characterized, especially in Europe, by the co-existence of *centrifugal forces* within nations (pressure towards regional autonomy in most Western European countries and the break-up of some Eastern European nations) and *centripetal forces* at a supranational level (the tendency to delegate policies to supranational entities like the EU). Etro (2003) presents a model of political geography (based on Alesina and Spolaore, 1997) where public goods provision by governments is endogenized and there are spillovers between countries, which shows that the two apparently conflicting centrifugal and centripetal forces have a natural interconnection: the raising benefits from adhesion to fiscal unions contemporaneously reduce the equilibrium size of nations.<sup>46</sup> As Alesina and Barro (2002) have shown, a similar result emerges for monetary unions: globalization reduces the equilibrium size of nations while expanding the size of optimal currency areas. If we view globalization as a determinant of political geography, it is not surprising that globalization delivers break up of nations and enlargement of international unions. These processes may be crucial in the future development of international unions.

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<sup>46</sup> Notice that three of the newly admitted countries in the European Union – Estonia, Czech Republic and Slovenia – derive from three break-ups of nations – URSS, Czechoslovak and Yugoslavia.

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