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ABSTRACT

This paper examines the process of European political integration. We start with a political economy model of monetary policy, illustrating a general principle: economic integration requires setting up European institutions endowed with the authority to enact Europe-wide policies. However, when countries can take advantage of scale effects thanks to economic integration, the need for large countries is reduced. Thus increased economic integration reduces the need for political integration in Europe. To reconcile these views, we propose a model for the optimal allocation of prerogatives across levels of government. When the provision of public goods is characterized by cross-border spillovers, some centralization of policies may be needed to internalize the externality. These gains from centralization must be traded-off against the costs from imposing the same policies upon heterogeneous groups. The optimal allocation of prerogatives results from this trade-off. Using our model as a benchmark, we analyze the institutional incentives at play for the allocation of political prerogatives in Europe and conclude that the EU has gone too far on most issues.

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"In areas which do not fall within its exclusive competence, the Community shall take action, in accordance with the principle of subsidiarity, only if and in so far as the objectives of the proposed action cannot be sufficiently achieved by the Member States and can therefore, by reason of the scale or effects of the proposed action, be better achieved by the Community." Article 3b, Treaty Establishing the European Community (Maastricht, 1991)

1 Introduction

The European Union today is somewhere between a free market area and a political federation. It has too many centralized policies to be a simple free trade area, but its central political institutions are not sufficiently developed for it to be a Federal State as we normally think of one. As economic integration proceeds apace, many observers call for increased political integration. On the other hand, movements in favor of regionalism and decentralization are also becoming more vocal in many European countries. In other words, the nation-states of Europe are threatened from above, by the rise of supranational authorities, and from below, by regionalist movements. It is unclear what the outcome of these tensions will be, and what it should be is even more unclear. Europe stands at a crossroads in terms of institutional design.

There are two ways in which the European Union has already taken substantial steps towards forming a political union. Firstly, a set of *substantive policy prerogatives* have been transferred, throughout the decades, to supranational institutions. European institutions have obtained, on practically every aspect of public life, attributions which, in the rest of the world, are in the domain of national governments (Table I). These range from environmental policy to education and culture, energy policy and foreign policy, monetary matters and anti-trust law.

Obviously, on many of these issues, the institutions of the European Union are relatively small players compared to nation-states. The bulk of energy policy or environmental policy, for instance, remains confined to the national boundaries of the EU's members. On other issues, such as monetary policy or international trade negotiations, Europe has acquired exclusive rights, so to speak, over nation-states. But the point we wish to make here is that the EU has already acquired a sufficiently broad and significant set of political prerogatives to be much more than a simple area

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of free trade and policy coordination. More importantly perhaps, the scope of its attributions is growing, as well as its ability to effectively implement policies. On the continuum between a free trade area and a federal state, Europe has already made significant strides towards the latter.

Secondly, beyond the fact that certain substantive policy responsibilities have been transferred to Europe, its architects have also designed a *set of EU specific institutions*. There exists a European Parliament, which purports to represent or to become the legislative center of European institutions. There is a Council of Ministers, which is both the executive arm of the Union and a deliberative body not entirely different from the US Senate, although with a different size, structure and electoral procedure.[1] The recent extension of qualified majority decision making within the Council has reinforced its legislative nature. There is a European Court of Justice, a sketch of what could become the judicial wing of a European polity. Finally, there is an administrative arm, the Commission, which is increasingly taking the form of a European government, with its Commissioners taking the role of ministers. The existence of these institutions, with explicit rules of social choice and enforcement capabilities, means that Europe is more than a simple area of policy coordination or inter-governmental cooperation.

The exact nature of European institutions is, however, extremely vague. The Parliament is still more a deliberative body than a legislative institution, the Council shares features of an executive and of a legislative institution, while the Commission is midway between a purely administrative body and an executive authority. Yet all of these institutions, in often complex, clumsy and changing ways, are responsible for exercising the already substantial prerogatives that member states have conceded to them. Extending the policy prerogatives of Europe *and* reforming its political institutions are what is really meant by "building a political union in Europe". As this process is carried on, however, there is a strange vacuum in formal discussions of whether further transfers of power are warranted.

In order to provide directions that may help fill this void, the present paper seeks to answer two separate but related questions: firstly, does economic integration require a political union? Secondly, can we think of systematic ways of deciding whether and how policy responsibilities should be transferred to European institutions or kept local?

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[1] By this we mean that the Council is the institution meant to represent the interests of member states, much like the US Senate. Furthermore, although votes are weighted within the Council (see Section V), small countries are overrepresented.

Sections 2 and 3 provide examples that may help clarify the first question. On certain issues, economic integration does require setting up some form of political decision making institution. On other issues, economic integration may actually facilitate or reinforce the need for political decentralization. We argue that both these points of view have something to offer for an understanding and an evaluation of the events currently taking place in Europe. On the one hand, the deepening of economic integration may require new institutions, particularly those guaranteeing supra-national application of the rule of law, international arbitrage, international courts and so on. Incidentally, however, this is an issue which is not specific to Europe per se, but has a worldwide nature.

On the other hand, the need for policy coordination beyond the protection of free trade and market forces is questionable. In fact, on many issues, greater economic integration will increase the benefits of granting more powers to Europe's regions. On such issues, it is unclear why 15 European countries should agree on economic and non economic policy issues, even though they do not share a common language, common interests and common histories. We conclude that a large set of policy prerogatives are better kept local, and indeed that for these issues economic integration reinforces the benefits of decentralization, while other policy responsibilities can be transferred to well defined European political entities, with limited prerogatives. In summary, *Europe is going too far on many issues that would be better dealt with in a decentralized fashion, while it is not going far enough on policies that guarantee the free operation of market both across and within the countries of the Union.*

This paper is organized as follows: Section 2, using the example of monetary policy, illustrates how certain areas of economic policy integration require better defined political institutions. Section 3 discusses how free trade and economic integration may increase rather than decrease the desirability of political decentralization. Section 4 tries to lay out formal criteria for the assignment of prerogatives to different levels of government. Section 5 assesses the current state and direction of European political integration and concludes that, according to the criteria of section 4, political Europe has gone too far in too many respects, and not far enough in some others. The last section concludes.

2 Monetary Union and Political Union

Our goal in this section is not to discuss the economic costs and benefits of monetary union. Many observers have pointed out that, from a purely economic point of view, the benefits of monetary union in Europe are questionable, while its costs are potentially quite large. Based on evaluating these costs and benefits, Obstfeld (1998) convincingly argues that European Monetary Union is a risky "gamble".

The goal of this section, more narrowly, is to analyze the relationship between monetary union and political union. Those who support monetary union often acknowledge its potential economic costs, but argue that the balance in favor of the monetary union is tilted by a political argument: a common currency is the first step towards a common polity. Others observers make a complementary argument: if one accepts monetary union and economic policy coordination as economically useful, then some form of political union is necessary, since one needs European level institutions guiding common policies, including monetary policy.[2] Both arguments share the idea that political union and economic integration in Europe are complementary: one needs supra-national institutions, and thus some form of political union, to guarantee economic integration.

In what follows, we extend a model by Alesina and Grilli (1992), in order to illustrate the political dimension of a common monetary policy in Europe. The goal of this analysis is two-fold. Firstly, we discuss the politics of monetary union, which is, per se, an important dimension of EMU. Secondly, we use this model to make a more general point concerning the necessity of European level institutions for certain types of common policies. This point extends to other policies, such as international trade or competition policies, above and beyond the example of monetary policy.

2.1 A Simple Model of Monetary Policy

Following Alesina and Grilli (1992), we adopt a model of monetary policy which builds upon Barro and Gordon (1983) and Rogoff (1985). This is a very stylized representation of monetary policy and monetary union, but it is a convenient tool to highlight issues of common interests, social decision making and conflicts of interest in the area of European monetary policy.

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[2] This idea is widely mentioned in both academic and political circles. For example, see Mare and Sarcinelli (1998) and several references cited therein.

Consider a country, which we will label "Europe", with the following economy:

$$y_t = \pi_t - \pi_t^e + \varepsilon_t \qquad (1)$$

$$\varepsilon_t \sim \left(0, \sigma_\varepsilon^2\right) \qquad (2)$$

where y_t is output growth, π_t is inflation, π_t^e is expected inflation and ε_t is and i.i.d. shock with mean zero and variance σ_ε^2.[3] The central bank (the ECB) acts according to the following cost functions in each period:

$$L = \frac{1}{2}E\left[\pi_t^2 + b\left(y_t - k\right)^2\right] \qquad (3)$$

where $b > 0$ and $k > 0$. In Equation (3), E is the expectations operator, and the loss function incorporates a target level of inflation equal to zero, and a target on growth equal to $k > 0$. Since, from equation (1), the level of growth achieved by the market is normalized to zero when there are no expectational mistakes, the ECB will want to stabilize growth around a level greater than the market equilibrium.[4] To be precise, k has to be interpreted as the difference between the target level of growth and the "market-generated" level. This feature of the model induces the well-known time-inconsistency problem in monetary policy, discussed by Kydland and Prescott (1977), Barro and Gordon (1983) and by the voluminous literature which followed.

The timing of events in this model is as follows: in each period, expectations are first set, and cannot be changed for the entire period. The most realistic rationalization for this assumption is that there are nominal wage contracts, and a period is defined as the length of time for which the wage contract is set.[5] Then the shock ε_t is realized and publicly observed. Finally, monetary policy, that is, the inflation rate π_t, is chosen. As is customary in this literature, and without loss of generality, we assume that the ECB controls inflation directly, rather than through a monetary policy instrument. This timing of events in which the ECB can act "after" (i.e., more

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[3] We identify with "growth" our variable capturing real economic activity, in order to match the standrad language in political circles, where growth is the focus. A more standrad formulation would refer to the output gap or unemployment.

[4] The literature has provided several reasons for why this might be the case. The most convincing one concerns the effect of distortionary taxes and the role of unions, both of which reduce output growth below the first best optimum. For more discussions of this, see Persson and Tabellini (1990).

[5] See, for instance, Chapter 3 of Alesina, Roubini and Cohen (1997) for a derivation of this model from an explicit wage-setting framework.

frequently) than the wage setters, ensures a non-trivial role for monetary policy by capturing a trade-off between the goals of stabilizing inflation or output.

Substituting (1) into (3), assuming that the ECB cannot make binding commitments and solving for the rational expectations equilibrium, we obtain:

$$\pi = bk - \frac{b}{1+b}\varepsilon \tag{4}$$

$$y = \frac{1}{1+b}\varepsilon \tag{5}$$

$$\sigma_y^2 = \frac{\sigma_\varepsilon^2}{(1+b)^2} \tag{6}$$

Equation (4) has two components: the first one is the inflation bias term, which keeps average inflation above its desired target (i.e. zero). The second term $\left(\frac{b}{1+b}\varepsilon\right)$ is the stabilization part, which reduces the variance of output below the variance of the shock (as shown in equation (6)). The policy embodied in (4) is not optimal. The first best policy would be given by:

$$\pi^* = -\frac{b}{1+b}\varepsilon \tag{7}$$

This rule achieves the desired average inflation (zero) and ensures output stabilization. For well understood reasons since Kydland and Prescott (1977), the policy rule π^* is not time consistent. Lacking binding commitment, the feasible policy is that given in equations (4)-(5). For future reference it is worth noting that the inflation bias is increasing in b, the cost of deviations of the growth rate of output from its target, relative to the costs of deviations of the inflation rate from its target.[6] The bias is also increasing in k. Thus, the more the ECB cares about growth relative to inflation, the more it stabilizes output, but the higher is average inflation and inflation variability.

2.2 The Politics of Monetary Union

Rogoff (1985) noted that society can improve on this trade-off by appointing a central banker who is more conservative than society itself, where more conservative means that he cares more about inflation than growth. That

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[6] If the market-generated level were, say, $\hat{y}$, such that $0 < \hat{y} < k$, the inflation bias term in (4) would be $b(k - \hat{y})$.

is, the b parameter in the utility function of the central banker is lower than society's b. Alesina and Grilli (1992) extend Rogoff's result in an explicit politico-economic model with voting. Suppose there exists a given distribution of voter preferences, defined over the parameter b. That is, the generic voter j has the following cost function:

$$L_j = \frac{1}{2}E\left[\pi_t^2 + b_j\left(y_t - k\right)^2\right] \tag{8}$$

Define b^m as the parameter characterizing the pivotal voter, the median voter in this framework. The timing of events is as follows: first, the central banker is appointed and cannot be removed. Second, expectations of inflation are formed. Then, the shock occurs, after which the central banker picks the inflation rate. The central banker is independent in the sense that he cannot be removed after expectations are formed (this being the very definition of independence). On the other hand the central banker is democratically accountable, because the median voter chooses who to appoint. In this framework, Alesina and Grilli (1992) show the following results:[7]

a). The median voter will want to appoint a central banker who is *more conservative* than herself, i.e. for whom $0 < b < b^m$, where b is the parameter of the central banker's cost function.
b). The higher is b^m the higher is b.
c). The higher is σ_ε^2 the higher is b.

For future reference it is important to stress that changes in the political feelings of the electorate, i.e. b^m and changes in economic conditions (i.e. σ_ε^2) will lead to changes in preferences over the type of central banker who will get appointed.

Let us now extend this framework to a country composed of several subnational units, called regions. Since the "country" under consideration is Europe, we can think of these regions as the fifteen countries in the European Union. The regions are subjected to idiosyncratic shocks (in addition to the country wide shock) and display different distributions of voter preferences. In other words, what characterizes a region j is b_j^m (the region's median b), $\sigma_{\varepsilon j}^2$ (the region's variance of the shock) and ρ_j (the correlation between the region specific shock ε_j and the country-wide shock ε).

In order to discuss how these differences across regions would play out, consider the choice of monetary policy for each region acting independently, with its own currency and its own central bank. Each region would follow

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[7]For a more detailed derivation see Alesina and Grilli (1992).

exactly the policy described above, except that we would add a subscript i to the relevant variables and parameters. In this simple framework, we are ignoring spillovers from the monetary policy of one country into the others. In fact, the cost function for country i would be:

$$L_i = \frac{1}{2}\pi_i^2 + b\left(y_{it} - k_i\right)^2 \tag{9}$$

where:

$$y_{it} = \pi_{ti} - \pi_{ti}^e + \varepsilon_{ti} \tag{10}$$

In order to discuss different views over monetary policy, it is useful to compare the expected costs for each country acting alone (L_i) versus the costs resulting from a common monetary policy. For presentational purposes we break down this difference into components due, respectively, to differences in preferences (b_i^m) and to differences in economic conditions ($\overline{y}_i$, $\sigma_{\varepsilon i}^2$, ρ_i). For the *preference differences*, assuming that k_i and ε_i are the same for every region, we have that:

$$L_i - L = \frac{1}{2}\overline{y}^2\left(b^2 - b_i^2\right) + \sigma^2\left(\frac{b}{1+b} - \frac{b_i}{1+b_i}\right)\left(\frac{1+b_i}{1+b}b - b_i\right) \tag{11}$$

where b is the parameter chosen for the Central Banker by the median voter of Europe as a whole, while b_i is the parameter chosen by the median voter of "region" i. The costs of regions i from belonging to the Union are increasing in $|b - b_i|$. Since the shock ε is the same everywhere, $|b - b_i|$ will depend only on $|b^m - b_i^m|$. Thus, the further away the median voter of region i from the median voter of the Union, the higher the costs to region i from staying in.[8]

Let us now examine *economic differences*. If the only difference across regions is that $\sigma_{\varepsilon i}^2 \neq \sigma_\varepsilon^2$, then we have:

$$L_i - L = \frac{1}{2}\frac{b^2}{1+b}\left(\sigma_\varepsilon - \sigma_{\varepsilon i}\right)^2 \tag{12}$$

If the only difference is that the shocks are not perfectly correlated, namely $\rho_i \neq 1$, then:

$$L_i - L = \frac{1}{2}\frac{b^2}{1+b}\left(\sigma_\varepsilon + \sigma_{\varepsilon i} - 2\rho_i\sigma_\varepsilon\sigma_{\varepsilon i}\right)^2 \tag{13}$$

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[8] Alesina and Grilli (1992) study a different problem. They assume that a region cannot commit to a conservative central banker and that, therefore, joining a Union allows the region to "buy" a way of committing.

Finally, if the only difference is that $k_i \neq k$, then we have:

$$L_i - L = \frac{1}{2}b^2 \left(k_i - k\right)^2 \tag{14}$$

Equations (11) to (14) suggest several interesting observations. Firstly, the regions that would push for more output stabilization are those with a higher b_i and a larger $\sigma_{\varepsilon i}^2$, namely those with a more unemployment averse median voter and with an economy subject to larger shocks. Secondly, regions with higher "structural" unemployment and lower structural growth (lower k_i) will have an incentive to push for higher average inflation.[9] Thirdly, disagreement about the conduct of monetary policy would emerge because of a less than perfect correlation between regional shocks. To some extent, the 1992 crisis, which almost led to a complete collapse of the process of monetary union, was due to large uncorrelated shocks across various countries in Europe.

To summarize, members of the ECB council who, at least theoretically, would be pushing for a looser monetary policy are those who represent countries where the median voter cares a lot about unemployment, where growth is low, unemployment and public debts high, and where real shocks are large and idiosyncratic.

2.3 Institutions and Policy Outcomes

Given the rather large set of reasons why countries within Europe may disagree on the conduct of monetary policy, different institutional structures and different mechanisms of decision making can be expected to lead to very different policy outcomes.[10] In particular, we can think of the case in which monetary policy is chosen by the European median voter (b), based on a Europe-wide shock ε, as a stylized representation of the ECB as an institution accountable to the European Parliament. As we will argue below, instead, current European level legislative decisions are taken by weighted

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[9] While our model is written in terms of growth/unemployment and inflation, this last point, more broadly, captures a reason for why fiscal convergence was viewed by many (especially the inflation-averse Germans) as a necessary precondition for monetary union. High public debts create incentives to monetize the deficit, i.e. to prefer higher inflation, and would create incentives exactly analogous to a low k_i in our model.

[10] This is just, of course, an example of the general result in social choice theory, that different procedural rules may lead to different outcomes, even if the underlying preferences of the agents are the same. See Baron (1991) for an excellent application of this principle.

votes within the council of ministers. This includes the appointment of the board members of the ECB.

Using actual electoral results from the early nineties, Alesina and Grilli (1992) showed that the position of the median voter in Europe can be very different from the position of the median member of the council of ministers in an un-weighted vote. The procedure of weighting within the council leads to other "strategic" issues. For instance, Germany, the largest country in Europe, is under-represented by the weighing system.[11] This is one of the reasons why Germany has always been adamant about the independence of the ECB.

Monticelli (1998) uses this model to discuss voting within the ECB board. He studies the issue of coalition formation, in favor or against more or less stabilization, in the face of various nation-specific shocks. The majority coalition which is formed, and therefore the resulting monetary policy is heavily influenced by the details of the voting rules which are adopted.[12] Monticelli's conclusion is that "the selection of rules for proposal making and voting [is] critical for the determination of the (...) benefits from a single monetary policy". In other words, different institutional rules lead to different national costs and benefits of monetary union, different coalitions forming, and different monetary policy outcomes. Furthermore, the importance of coalition formation, not only within the board of the ECB but also in the Council of Ministers, will also influence the decisions concerning which new countries the EU should admit as members.[13]

The preceding discussion shows that some mechanism to achieve consensus on monetary policy is necessary, and that different social choice mechanisms would lead to different monetary policy outcomes. The solution to this problem, envisioned by the builders of the monetary union has been the creation of a very independent Central Bank. This is an institution which, at least on paper, cannot report to national governments nor to the European Parliament. Members of its board, including the Chairman, are appointed by the Council of Ministers, and the goal of price stability is written in the "constitution" of the ECB.

Whether or not the ECB with the current structure of independence from national government will solve the problem of the political control over

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[11] See Table I for the distribution of votes within the Council of Ministers.

[12] This is, in fact, a general feature of extensive form voting games. See for instance Baron and Ferejohn (1989) and Baron (1991).

[13] See Alesina and Grilli (1992) for a formal discussion of this point with a specific reference to monetary policy.

monetary policy at the European level remains to be seen. At least two recent episodes raise doubts about this. First, it was the appointment of the first governor of the ECB. The harsh conflict between France (supporting Jean Claude Trichet) and Germany and the Netherlands (supporting Wim Duisenberg) can be interpreted in either one of two ways. One is that France and Germany have different and unresolved views about the conduct of monetary policy, and differences over candidates reflect different opinions about monetary policy. Evidence in favor of this view is that France has often "complained" about the excessive independence of the ECB. This is, in practice, a way of raising the concern that the ECB will not be sensitive enough to the need of monetary stabilization relative to the objective of price stability. If this is the case one may expect conflict over critical decisions of the ECB amongst European governments. The second interpretation is that the squabble over the appointment reflects only nationalistic prides and does not signal "philosophical" differences over monetary policy. Evidence in favor of this view is that the French candidate has very strong anti-inflationist credentials, and had been one of the most ardent supporter of the "Franc fort". In this case one can entertain doubts about the harmonious functioning of European institutions, above and beyond the example of the ECB.[14]

The second episode was the recent (October 1998) unprecedented clash between the new Social-Democratic government in Germany and the Bundesbank (and the newly born ECB) over the appropriate monetary policy to adopt in order to stimulate growth. The recent turn to the left in many European countries can be interpreted as an increase in the b_i of many members of the Council of Ministers. As a result, in a period of negative shocks (i.e. negative ε), the ECB finds itself pressured to "monetize" more, by cutting rates. It remains to be seen how this conflict will be resolved, but simply the fact that the prime ministers and treasury ministers started advocating more influence over monetary policy matters is revealing of the importance of European politics as a potential determinant of European monetary policy.

This recent conflict raises the issue of the accountability of the ECB. This concern was traditionally raised by the French camp, but recent events have shown that at least part of the German Social Democrats are sympathetic to this view as well. It is not a hundred percent clear to whom the ECB

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[14] For a general discussion of the politics and economics of Central Bank independence, see Eijffinger and De Haan (1996). For a more specific treatment of accountability, see Eijffinger, Hoeberichts and Schaling (1998).

should be accountable. The framers of the Monetary Union have tried to circumvent the institutional vacuum by assigning the goal of price stability to the ECB, thus, in theory, eliminating any possibility of political conflict over the course of monetary policy. This is of course correct only in theory, because the goal of price stability always can be traded-off against other goals, at least occasionally, and conflict over when and how much to trade-off are likely to emerge, as our previous discussion highlights. As a result of this institutional setup, political pressures over the ECB will be of an informal type, outside of well-defined institutional rules, and may end up increasing uncertainty over the course of European monetary policy. This problem is particularly important in the early stages of the life of the new ECB, when the institution has not yet established its track record and credibility.

In summary the point is that monetary union implies some sort of political bargaining over monetary policy that eventually will need to be resolved through some sort of European level political process. This is reinforced by the very limited extent of compensatory interregional fiscal transfers amongst European countries. Even the Maastricht Treaty which fixed various convergence rules for fiscal policy did not significantly increase the size of the EU budget. In the United States compensatory fiscal transfers are sizeable, up to 40 cents for a dollar fall in relative state product (Sachs and Sala-i-Martin (1992)). In Europe they are much smaller, as witnessed by the modest size of regional funds, and moreover the transfers do not necessarily respond to asymmetries in business cycles. The reason is that the European countries are not willing to pool together common resources for insurance purposes.[15] Several observers (for instance De Grauwe (1996)) have also pointed out that the Stability Pact forces fiscal rigidity in every country, therefore closing another possible stabilizing channel.[16] Therefore, the lack of a true federal fiscal structure, will increase the likelihood of conflict over monetary policy in case of asymmetric shocks, expanding the area of disagreement from the fiscal to the monetary arena.

To conclude, as Obstfeld (1998) concisely put it, "Europe...has taken a gamble in placing monetary unification so far ahead of political unification" (p. 29).

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[15]Part of the reason may have to do with the potential for moral hazard, emphasized, in particular, by Persson and Tabellini (1990).

[16]In a nutshell, the stability pact established that the members of the monetary union have to maintain balanced budgets or a slight surplus. This objective can only be set aside in the case of very deep recessions, and in no case is the deficit to go beyond the 3 percent of GDP limit. Stiff penalties apply to countries that would violate this rule.

3 Economic Integration and Political Disintegration

The previous section argued that certain types of economic policy coordination mechanisms require the formation of some form of political union. A different type of argument points instead to a very different conclusion, namely that in a world of free trade, countries (and political unions) can be small and prosperous. In other words, different regions and groups do not have to agree to form a country together to enjoy the benefits of large markets.

Two of the most important worldwide phenomena of the second half of the 20th Century have been an exceptional increase of world trade and economic integration, including the "emerging economies", and a major rearrangement of political borders throughout the world. The volume of trade, measured by the ratio of imports plus exports to GDP averaged over a sample of 61 countries, has increased from 43.2% in 1950 to 60.6% in 1992.[17] Similarly, financial markets have become increasingly integrated. As for political separatism, in 1946 there were 74 countries, while in 1995 there are 192. More than half of the countries of the world have a population smaller than Massachusetts. Economic integration and political separatism seem to be going hand in hand in the world.

Alesina and Spolaore (1997) and Alesina, Spolaore and Wacziarg (1998) formally discuss the relationship between economic and political integration. One can think of several reasons why countries may benefit from being large. Firstly, the per capita costs of non-rival public goods is likely to be lower when there are more taxpayers to finance them.[18] Secondly, larger countries can better insure idiosyncratic shocks to their regions through fiscal transfers. Thirdly, security considerations may impose a certain country size, even though international alliances may make the relationship between size and security ambiguous. Finally, to the extent that the size of a country determines its market size, because of restrictions to international trade, country size will affect productivity and per capita income levels.

As for the costs of size, they emerge from the heterogeneity of preferences within the population. Alesina and Spolaore (1997) model a "country" as

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[17]See Alesina, Spolaore and Wacziarg (1998) for historical data on trade volumes and trade policy openness since 1870.

[18]Alesina and Wacziarg (1998) document an inverse empirical relationship between the size of government and country size. Easterly and Rebelo (1993) find that larger countries rely more extensively on more efficient forms of taxation.

a group of individuals, aligned on a spatial and ideological line, who have to agree on a set of policies, or on the provision of public goods. As the country becomes larger, the extent of heterogeneity increases, as measured by the average distance of individuals from the center of the segment (where the public good is being provided).[19]

As international trade becomes more and more free, and the world economy more integrated, one of the benefits of size disappears. Under free trade, even a small country will have a large market: the world. The connection between "economic" borders (i.e. market size) and "political" borders, disappears. Therefore, the "optimal" size of a country falls, as economic integration progresses. Regional, linguistic, cultural and religious minorities may enjoy the benefits of political independence, and avoid having to share policies and public goods provision with people whose preferences are very different from theirs, without having to bear the costs of smaller markets.

If taken to the extreme this argument suggests no reason for enlarging countries and forming political unions as trade become more free and the world economy more global. In fact the model argues that "small is beautiful" in a global economy. Thus, it should not come as a surprise that the process of European integration has gone hand in hand with an upsurge of movements favoring regional autonomy, political decentralization and even independence. Examples include separatist movements in Scotland, Wales, Northern Italy, Brittany, Wallonia, Catalonia, the Basque Region, just to name a few. The link between regionalism and European economic integration is often explicitly acknowledged in the political debate. For instance, with reference to Scotland, one could read, in the Financial Times of September 16, 1998, that: "the existence of the European Union lowers the cost of independence for small countries by providing them with a free trade area (...) and by creating a common currency which will relieve the Scots of the need to create one for themselves (...)". In other words, the European Union provides large markets and certain public goods to small regions or countries.

The argument sketched so far, namely that smaller countries can prosper in an economically integrated world, ignores the need for "international" public goods, which may be required as the complexity and the volume of international transactions increases. Casella and Feinstein (1996), for instance, emphasize that, as international transactions become more and

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[19]Easterly and Levine (1997) and Alesina, Baqir and Easterly (1998) document empirically the policy costs and distortions induced by ethnic conflicts and heterogeneity.

more complex, public goods necessary to facilitate trade are more and more of an international nature. They state that: "These public goods can be given a physical representation, roads, airports, infrastructure, or they can be more abstract, such as laws and legal enforcement, rules and conventions, standards and regulations... In either form they interact directly with the functioning of markets because they are a necessary prerequisite for the conclusion of private transactions" (page 2).

In summary, this section suggests that in a global economy one does not need large political units (countries or political federations). Even small independent countries can prosper and therefore, there is no need for forming large political units, which then face difficulties holding together because of conflicts amongst their members. On the other hand, global markets, in order to function properly, require the provision of supra-national "public goods". In other words, one has to decide which type of public goods and services have to be supplied by different levels of government, a question typically addressed in the literature on "fiscal federalism".

4 The Optimal Degree of Devolution

4.1 Overview

The previous two sections have shown that there are two ways of looking at the process of European integration One is to view it as the construction of an area of totally free trade and exclusively economic integration, with as little centralization of policies as possible. In this case, we should expect no "political union" at the European level, but on the contrary increased devolutions of political prerogatives from nation-states to the regions. The other way is to view Europe as a potentially federal state, with a wide range of centralized policies. In this case, the process of institutional design in Europe is certainly lacking in coherence, depth and rationale.

The tension between these two views of Europe is yet unresolved, and both views seem to be represented in the official discourse of the architects of Europe. In this section and the following, we attempt to make some progress at reconciling the two points of view, by suggesting a way of thinking of the "optimal delegation of political prerogatives" among different levels of government - and more specifically from nation-states to European institutions.

4.1.1 Conflict and Political Union

The arguments in favor of the "federal state" option in Europe are not only based upon economics, but also, and some would argue, especially, on strategic considerations. While the present paper is exclusively concerned economic issues, it is useful to briefly review the strategic and geopolitical arguments.

To put it bluntly, the strategic argument in favor of a federal union is that such a union would reduce the probability of war. A priori, given the history of the continent, this concern does not seem misplaced. This argument is often stated as self-evident by academics and policy-makers. For instance, in a recent informative volume on the political economy of Europe, Mare and Sarcinelli (1998) assume without explanation that a political union in Europe is desirable to reduce the probability of conflict. This is in fact far from obvious.

In theory the probability that two countries will go to war is minimal if the two countries are completely isolated and have no economic contact. The probability of war is also lower if two countries trade so much with each other that a disruption of trade caused by a war would be economically costly. The probability of war is highest at some intermediate level of economic interaction, when enough interests are at stake, but the costs of a war are not overwhelming. Now, the question is: beyond free trade, does further coordination of policies increases or reduces the possibility of conflict? There are enough reasons to speculate that conflict may actually increase rather than decrease. If countries with different cultures, histories, level of per capita income, language, preferences over fiscal and redistributive policies, different regional interests and imperfectly correlated economic shocks have to agree on common policies, the construction of consensus will increase conflict. In fact, consider a simple median voter model, where the chosen policy reflect the position of the median voter. If the distribution of preferences becomes more polarized, or the populations becomes less centered around the median, the average distance of individual preferences from the median increases. In other words, those who emphasize the benefits of political union in reducing conflicts forget half of the argument. It is true that having common policies may promote cohesion, but the process of having to agree and coordinate policies can increase the occurrence of conflict.

Obviously, the likely increase in the probability of conflict in the consensus building phase would be a worthwhile cost to bear if the economic benefits of the union could compensate. In other words the argument that

the federal Europe is a necessity because of its benefits in terms of reducing conflicts may be actually turned onto its head: a federal Europe make sense only if it has other advantages which compensate for the likely increase in conflicts (Feldstein (1998)). The model presented in this section is consistent with this idea.

4.1.2 Conceptual Framework

This section seeks to provide a framework for analyzing the equilibrium and optimal distribution of prerogatives between different levels of government. Levels of government are distinguished primarily by the extent of their geographic jurisdiction: the institutions of the EU have jurisdiction over all of the member states, Nation-States have jurisdiction solely over their own territory while local institutions exercise political authority within their geographically defined boundaries only. Some countries in Europe have up to five different effective levels of government. For instance, France has communes, departments, regions, the State and Europe. Italy has cities, provinces, regions, the central government and Europe. One may legitimately wonder whether these are too many levels of government. In order to keep the framework simple, we will first consider the distribution of powers among two levels of government, which we will call "the Nation-State" and "Europe". The logic of our argument extends to the distribution of powers among a greater number of jurisdictions.

We define a "prerogative" as the right allocated to a level of government, to exercise a certain policy or to provide a given public good. For example, through the Maastricht Treaty, European governments have agreed to transfer the prerogative "monetary policy" to the European Central Bank. Similarly, the Treaty of Rome of March 1957 had organized the transfer of the prerogative "International Trade Negotiations" to the European Commission.[20]

We adopt a neoclassical view of government activity. Namely, government activity can only be justified if it seeks to correct a certain externality. Defense policy must be entrusted to the government, because coordination problems and free rider issues would lead to an under-provision of military defense by the market. The same holds for foreign policy: a country with a single set of interests in the international arena is better represented by a single ministry of foreign affairs than by competing ones. Up to a point, the

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[20]The prerogative "garbage collection" is typically devolved to local authorities.

provision of education can be subsidized by public authorities, because the social benefits of education are greater than its private return.

4.1.3 Optimal Prerogative Devolution

In our framework, optimal prerogative distribution (or devolution) arises from a trade-off between the voters preferences for keeping the policy "at home", and the need to correct for externalities which may spill over beyond the boundaries of a given unit of political decision making.[21] The preference for keeping the policy at home arises from heterogeneity in the interests of citizens: if interests diverge, then transferring authority to a higher level of government may result in policies less preferred by the locals. On the other hand, not doing so might lead to the under-provision of certain government services, if the said services entail externalities which extend beyond the local polity.

In the absence of a preference for autonomy (for example if everyone were exactly identical and faced the same interests), a prerogative should be allocated to the level of government with which the "frontier" of the externality corresponds. For instance, if the light from a street lamp can serve to provide light to the whole street, then the inhabitants of that street should form a "group" with coercive authority to enforce participation in financing the street lamp. Of course, there are transactions costs and fixed costs involved here (that is, other externalities than simply those arising from free rider problems), so the level of government that should be responsible for street lights is probably higher (say the city council).

Another example: monetary policy serves to stabilize economics in the face of supply or demand shocks. So the unit at which the shocks are perfectly synchronous (and of the same relative magnitude) should be the unit at which monetary authority is exercised. This point has often been the basis for criticizing EMU, since it was often considered that European countries faced asynchronous shocks and that other mechanisms for stabilizing them (such as labor mobility) were not available (or less available).[22] If all shocks in Europe were perfectly synchronized, then Europe would be an optimal currency area. Of course, the degree of synchronization of the shocks is largely endogenous to the monetary regime; that is, by adopting a single currency within Europe, shocks may become more similar across countries

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[21] This idea is prevalent in the literature on fiscal federalism.

[22] See, for instance, Obstfeld (1998).

(transmit faster) and Europe may become an optimal currency area. We will return to this important point below.

4.2 The Model

To illustrate formally the ideas exposed above, we present a simple static model of optimal prerogative devolution. Europe contains $N + 1$ "units", or Nation-States. There is one public good, of a non-rival and nonexcludable nature, being provided. There is one supranational institution, the Union. The problem is to determine at which level of government the allocation of the public good should be attributed: the Nation-States, or the Union. Suppose that the aggregate production function of each unit i takes the form:

$$Y_i = AK_i^\alpha \left(G_i + \beta \sum_{j \neq i} G_j \right)^{1-\alpha} \tag{15}$$

where $0 < \alpha < 1$ and $0 < \beta < 1$. The parameter β measures the extent of the benefit country i enjoys from other countries supplying the public good.

We assume that the economy is endowed with fixed quantities of the resource "capital", denoted K_i. Hence the problem is to pick a tax rate, and a corresponding level of public goods provision, to maximize net income. Utility is defined over consumption, equal to income minus taxes paid to finance the public good. Each unit finances the public good using proportional income taxation: $G_i = \tau_i Y_i$.

4.2.1 Decentralized Case

The welfare maximizing solution in the decentralized case entails choosing a level of public goods provision so as to maximize income net of taxes, taking the level of provision of the public good by everyone else as given:

$$\max_{G_i} AK_i^\alpha \left(G_i + \beta \sum_{j \neq i} G_j \right)^{1-\alpha} - G_i \tag{16}$$

The first order condition is to set:

$$G_i = K_i \left(A(1-\alpha) \right)^{\frac{1}{\alpha}} - \beta \sum_{j \neq i} G_j \tag{17}$$

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In a symmetric situation where every country shares the same endowment and the same technology, the symmetric solution is that everyone chooses the same level of provision G^D. Hence the solution becomes:

$$G^D = \frac{K\left(A\left(1-\alpha\right)\right)^{\frac{1}{\alpha}}}{(1+\beta N)} \tag{18}$$

The implied level of aggregate income in each unit is:

$$Y^D = A^{\frac{1}{\alpha}}K\left(1-\alpha\right)^{\frac{1-\alpha}{\alpha}} \tag{19}$$

so that the implied tax rate is:

$$\tau^D = \frac{G^D}{Y^D} = \frac{1-\alpha}{1+\beta N} \tag{20}$$

and the net income level is:

$$\left(1-\tau^D\right)Y^D = \left(\frac{\beta N+\alpha}{1+\beta N}\right)A^{\frac{1}{\alpha}}K\left(1-\alpha\right)^{\frac{1-\alpha}{\alpha}} \tag{21}$$

The tax rate is decreasing in the number of other units and in the degree of importance of the externality β, illustrating the free-rider problem involved in decentralized public goods provision.

4.2.2 Centralized Solution

The centralized solution involves a European-wide choice of the maximizing level of a single public good G^C. Assuming again that all countries share the same technology and endowment, the solution will be to set the same level G^C for all units, so as to maximize the welfare of the representative unit:

$$\max_{G} AK^{\alpha}\left[(1+\beta N)\,G\right]^{1-\alpha} - G \tag{22}$$

The first order condition yields:

$$G^C = \left[A\left(1-\alpha\right)\right]^{\frac{1}{\alpha}}\left(1+\beta N\right)^{\frac{1-\alpha}{\alpha}}K = (1+\beta N)^{\frac{1}{\alpha}}\,G^D \tag{23}$$

So there is more public goods provision under the centralized case, and the difference in public goods provision is an increasing function of the extent of the externality β and of the number of countries N. The implied income level is:

$$Y^C = A^{\frac{1}{\alpha}}\left(1-\alpha\right)^{\frac{1-\alpha}{\alpha}}K\left(1+\beta N\right)^{\frac{1-\alpha}{\alpha}} = (1+\beta N)^{\frac{1-\alpha}{\alpha}}\,Y^D \tag{24}$$

And the corresponding income maximizing tax rate in the centralized case is:

$$\tau^C = \frac{G^C}{Y^C} = 1 - \alpha = (1 + \beta N)\, \tau^D \tag{25}$$

which is larger that under decentralization. The net level of income, used to evaluate consumer welfare, is then:

$$\left(1 - \tau^C\right) Y^C = A^{\frac{1}{\alpha}} \alpha \left(1 - \alpha\right)^{\frac{1-\alpha}{\alpha}} K \left(1 + \beta N\right)^{\frac{1-\alpha}{\alpha}} \tag{26}$$

The ratio of net incomes in the centralized and decentralized cases is:

$$\frac{\left(1 - \tau^C\right) Y^C}{\left(1 - \tau^D\right) Y^D} = \frac{\alpha \left(1 + \beta N\right)^{\frac{1}{\alpha}}}{\beta N + \alpha} \tag{27}$$

This expression is greater than one as long as $\alpha \left(1 + \beta N\right)^{\frac{1}{\alpha}} \geq \beta N + \alpha$, which is always true for our range of parameter values (see the Appendix). Therefore, in the presence of externalities and in the case where countries are identical, welfare in each country is higher when the provision of public goods is centralized.

Indeed, if $\beta = 0$, what level of G is supplied by other units does not matter for i's production. Hence, the level of public goods provision is irrelevant. If $\beta > 0$, the general case, what others do will matter for unit i. Since they do not take into account the effect they have on the production in unit i, they will under-supply G_i. One solution is to coordinate by transferring the prerogative to the supranational institution. As we will now see, this result changes dramatically if countries differ in some respect.[23]

4.2.3 Heterogeneity

When countries are heterogeneous, the optimal level of public goods provision will differ across countries. In this case, implementing a single taxation and spending policy at the European level will entail some costs, since by definition a single policy provides the same level of the public good to all countries. To illustrate this case, suppose there were just two countries in Europe, 1 and 2, with different endowments of capital $K_1 > K_2$. The countries are assumed to be identical in every other respect. In the decentralized case, the rate of taxation adopted by, say, country 1, is:

$$\tau_1^D = \frac{G_1^D}{Y_1^D} = \frac{(1 - \alpha)}{\left(1 - \beta^2\right)} \left(1 - \beta \frac{K_2}{K_1}\right) \tag{28}$$

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[23] Appendix 2 extends this model to the case of a dynamic economy where the provision of public goods generates endogenous growth, as in Barro (1990).

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Let us now assume that the centralized policy consists of maximizing the average welfare in the Union:

$$\max_G A\left[(1+\beta)G\right]^{1-\alpha}\left[K_1^\alpha + K_2^\alpha\right] - 2G \qquad (29)$$

Solving for the first order conditions, we find that the optimal policy, as before, is to set the common tax rate equal to:

$$\tau^C = \frac{2G^C}{Y_1^C + Y_2^C} = 1 - \alpha \qquad (30)$$

The ratio of net incomes in the centralized and decentralized cases, which can be used to evaluate the desirability of centralization, is the following:

$$\frac{\left(1 - \tau_1^C\right)Y_1^C}{(1 - \tau_1^D)Y_1^D} = \frac{\left(1 - \beta^2\right)(1+\beta)^{\frac{1-\alpha}{\alpha}}\alpha K_1^\alpha \left(\frac{K_1^\alpha + K_2^\alpha}{2}\right)^{\frac{1-\alpha}{\alpha}}}{\left(\alpha - \beta^2\right)K_1 + (1-\alpha)\beta K_2} \qquad (31)$$

We can show that, for every α, K_1 and K_2, there is a unique value of β , say β^* with $0 < \beta^* < 1$, for which the ratio of net incomes in equation (31) is exactly equal to 1. For values of $\beta > \beta^*$, the ratio is strictly greater than 1, while for values of $\beta < \beta^*$, the ratio is strictly smaller than 1. Moreover, we can show that β^* is a decreasing function of the ratio of capital stocks $\frac{K_2}{K_1}$. In other words, for centralization to yield a gain in terms of net income, the benefits of internalizing the externality must outweigh the costs of imposing a uniform policy upon heterogeneous economies. The greater the heterogeneity (the smaller $\frac{K_2}{K_1}$), the greater the spillover effect must be to make centralization worthwhile.

The bottom line is that gains from centralization are positive only if the benefit of avoiding the free rider problem outweighs the cost of providing the same level of the public good to heterogeneous jurisdictions. Analogous results can be obtained if the technology (captured by parameter A) or the income share of capital (captured by α) differ across countries. It should be clear that we do not mean to emphasize exclusively (or even primarily) physical capital as the source of heterogeneity across countries. Any kind of cross-country difference would lead to the same point. For example, if the public good entered the utility function rather than the production function, then our discussion could be recast in terms of differences in preference parameters, rather than in differences in capital.

In summary, in the context of our model, much of the discussion about European political integration boils down to a comparison between two parameters: β, which measures spillovers and cross-border externalities, and

$\frac{K_1}{K_2}$, which measures heterogeneity. European enthusiasts believe that β is high relative to $\frac{K_1}{K_2}$, while skeptics think that $\frac{K_1}{K_2}$ is high relative to β.

4.3 Extensions

The purpose of this subsection is to discuss potential extensions of the basic model presented above. Firstly, we consider a case in which the degree of heterogeneity between countries depends on the level at which the policy is exercised. Secondly, we consider the feasibility of a first best solution, consisting of a centralized planner designing different policies for each different constituency. Lastly, we discuss the prospects for achieving an economically superior outcome through bargaining between sovereign states, rather than through centralized decision making by a separate political entity.

4.3.1 Endogeneity of Heterogeneity

Many observers have argued that centralizing policies may result in increased convergence within Europe, making the desirability of centralization greater. For instance, the removal of trade barriers within Europe has resulted in greater convergence in per capita income levels (see Ben David, 1993). Similarly, if one holds the view that monetary policy is largely responsible for aggregate fluctuations, then centralizing the policy can be expected to result in greater synchronization of business cycles within Europe. In other words, centralization itself may be made more desirable by the increased degree of homogeneity that it brings about.[24] A full account of this hypothesis would require a dynamic framework in which the capital stock of each country could grow at different rates.[25]

This argument quickly reaches its limits when we consider policies based on resource endowments, such as, for example, a common fisheries policy. It is clear that imposing a common fisheries policy should not result in increased convergence of interests concerning the optimal policy to implement across each of the member states. More generally, although this needs to be evaluated on a case-by-case basis, it is implausible to consider that the centralization of a given policy prerogative could always reduce the extent of heterogeneity to a degree that would make centralization preferable to

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[24]In principle, another way that centralization could make itself more desirable is by increasing the importance of spillovers across countries (the β in our model).

[25]Appendix 2 introduces a dynamic framework that could be extended to analyze this issue. Further analysis of the endogenous heterogeneity hypothesis, however, is left for future research.

decentralization, when this was not initially the case. For instance, while changes in monetary policy may be *one* source of aggregate fluctuations, it is by no means the *only* source; relative price movement on the international markets, due to a variety of aggregate supply and demand shocks having little to do with monetary policy, certainly drive much of the observed economic fluctuations.

As a matter of logic, it is also unclear whether the final outcome of centralization under the case of endogenous heterogeneity (centralized policy, more homogeneity) is preferable to the initial state (decentralized policies, more heterogeneity), unless one has some clear redistributive goal in mind.

Another aspect not considered in our model is the possibility of several public goods being provided, with particular substitutability and complementarity patterns. In this case, transferring one prerogative to the center can increase the desirability of centralizing another one. For instance, it may make more sense to adopt a common monetary policy when there exists a common trade policy, because countries that trade heavily tend to co-fluctuate more. Similarly, the potential benefits of a common banking regulation policy may be increased by monetary union.

4.3.2 Feasibility of the First-Best Solution

In the theory presented above, we equated centralization with the provision of a uniform level of the public goods to each jurisdiction, financed by a common tax rate. An alternative way to view the centralization of policies would be to allow the central entity to reach the first best outcome, namely provide different levels of the public goods to different jurisdictions, possibly using different tax rates in different regions. Such a view could be put forth by proponents of political integration. In this way, a benevolent central planner could internalize the externality that the provision of the public good in one jurisdiction entails for the welfare of the others, while at the same time tailoring the policies to avoid the heterogeneity costs. In the context of our model, it is easy to prove that each country could be made unambiguously better off by such a policy.

There are obvious feasibility constraints that make such a coordinated outcome impossible in most cases, however. Firstly, the first best policy would impose prohibitive informational requirements on the central planner. Individual regions, which retain a high degree of sovereignty, would face no incentives to reveal truthful information: the process of prerogative transfers to the center involves distributional issues that would encourage rent-seeking

on the part of individual nations.[26] Secondly, other types of transactions costs may prevent tailor-made central policies. For instance, centralizing monetary policy to a European Central Bank responsible for issuing eleven different currencies and conducting eleven different monetary policies, while possible conceptually, would be prohibitively costly to manage in practice.

4.3.3 Bargaining and Sovereignty

Another possible criticism of our model might come from the opponents of European political integration. In the context of the Coase theorem, externalities such as those envisioned in our model could in principle be internalized through efficient bargaining among sovereign nation-states, without requiring any form of political integration - defined as the creation of supranational institutions endowed with sovereignty over the implementation of common policies.[27] However, the exact same transactions costs and distributional problems that make tailor-made policies impossible in practice make such a bargaining outcome equally impossible.

This discussion highlights the importance of institutional design as a determinant of political outcomes within the Union. While our model does provide conceptual guidance to evaluate which policies should be transferred to EU institutions, it provided little guidance as to how institutions should be designed to achieve such an outcome. For instance, we assumed that the goal of a central planner was to maximize average net incomes within the Union. Such a goal may or may not be reflected in the incentives that EU institutions face. In general, it will not.[28] In other words, the observed transfers of prerogatives, and the observed policies resulting from these centralized decisions, will in general be at odds with the optimal transfers and the optimal policies. This creates the formal basis for criticizing both the actual distribution of prerogatives between the EU and the member states,

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[26]For certain existing tailor-made policies within the EU, such as regional development funds, such incentives are already at play: Italy, for instance, faces strong incentives to portray its Southern regions as more backward than they may be in order to attract European subsidies. Such costs may partly or entirely offset the potential benefits of centralization.

[27]In fact, it is possible to view the Council of Ministers of the EU as an arena of bargaining between sovereign states - in fact the Council is somewhere inbetween such an arena and a sovereign political body.

[28]See Dixit and Londregan (1995) for a useful theoretical argument to this effect. They argue that "the political process distributes income on the basis of political characteristics, which are in general different from the economic characteristics that are rewarded by the market".

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and the institutions established to implement common policies.

5 The Reality of European Common Policies

The preceding discussion shows that a political Union within Europe would be characterized by two components:

- A *substantive* component, whereby specific policy prerogatives are transferred to the central institutions.

- A *procedural* component, whereby central institutions distinct from the Nation-States are established and endowed with some degree of sovereignty (or enforcement capabilities).

The purpose of this section is to examine the existing state of the EU in light of the principles outlined above. We start by examining the specific policies devolved to EU institutions, and then turn to the institutional aspects of political Europe.

5.1 Prerogative Devolution in Practice

Table I presents a list of policy responsibilities that have been transferred to central EU institutions since the inception of the European Common Market is 1957. The classification of the extent of EU involvement into three categories (extensive, shared with national governments, and limited) is borrowed from Nugent (1994). We extended his classification by using a more complete list of common policies, drawn from official EU publications. The table reveals several interesting features of prerogative distribution within Europe. Firstly, European institutions have received policy attributions in practically *every domain of public affairs* - however limited these attributions may be. As shown in Nugent (1994), the *only* policies which are traditionally the responsibility of Nation-States and have in no way been the object of some form of prerogative transfers are housing policy, the protection of civil liberties and domestic crime policy. Secondly, the policies being transferred are in no way limited to those which seek to further the extent of economic integration within Europe. In fact, the list of policies with little or no economic content has grown steadily over time, and the extent of the EU involvement in each of these policies has also deepened.

Admittedly, on many of these policies, the EU has to share its jurisdiction with Nation-States, and the extent of EU involvement varies from

case to case. For instance, a 1989 merger control regulation gives the Commission control over the appropriateness of mergers and takeovers, from the viewpoint of antitrust enforcement. However, the attributions of the Commission extend only to mergers "where the aggregate worldwide turnover of the companies involved exceeds ECU 5 billion, and ECU 250 million for the individual turnover within the EC of at least two of the companies concerned unless each undertaking derives more than two thirds of its Union-wide turnover within one Member State".[29] However, both the range and the significance of EU attributions has grown rather steadily through time, either through new Treaties such as the Single European Act of 1986 and the Maastricht Treaty of 1992, or through extensions brought forth upon the initiative of the Commission.[30]

This is not the place to discuss in depth the costs and benefits of each of the prerogatives that have been granted to the EU. However, Table I shows that there is a range of policies for which the appropriateness of the policy transfers can be seriously questioned on the basis of the criteria laid out in Section 4. A broad range of policies, such as cultural policy, social policy, education and training, fisheries, agriculture, industrial policy, equal opportunities, public health, audiovisual policy, energy policy, humanitarian aid, development policy, just to name a few, do not involve the sort of geographically wide-ranging externalities and free-rider problems that would justify transferring the policy to a central entity. For instance, just because Sweden provides relatively more humanitarian aid to developing countries does not mean that France will free-ride on Sweden's effort and reduce its level of aid.

On the other hand, the provision of public goods involved in each of these policies is associated with potentially strong local idiosyncracies. The preferences and interests of different countries concerning, say, development policy, fisheries or public health, are likely to differ widely across the Union. The bottom line is that there is an abundant list of policies delegated to Europe which involve both a high degree of cross-country heterogeneity and

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[29] From the official website of the European Union:

http://europa.eu.int/pol/comp/info_en.htm.

[30] The attribution of the Commission as the sole initiator of new European policies (apart from treaties) is contained in Article 155 of the Treaty on the European Economic Community of 1957: the Commission "shall formulate recommendations or deliver opinions on matters dealt with in this Treaty, if it expressly so provides or *if the Commission considers it necessary*" (italics added). In practice, the Council of Ministers has also found ways to entice the Commission to propose certain policies, but it does not have the legal authority to initiate new policies.

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no significant Europe-wide externalities. From the viewpoint of our theoretical framework, these policies should be kept national. In many cases they should even be devolved to sub-national entities such as regions, because the geographic extent of the externalities involved is less than national (cultural and educational policy is a clear example of this point). On all of these issues, we submit that Europe has gone too far.

For another set of policies, mainly those devolved to European institutions by the main dispositions of the Treaty of Rome and of the Single European Act, the criteria of section 4 are more likely to justify centralization. For the most part, these are attributions meant to foster "deep" economic integration within Europe. The Treaty of Rome established a timetable for the elimination of all internal trade policy barriers within the Union, while transferring the authority to conduct trade policy vis-à-vis the rest of the world to Community institutions. The Single European Act sought to go farther by ensuring the free movement of goods, people and capital within Europe. It is possible that by adopting different standards and different regulations, European countries acting alone could impose wide-ranging negative externalities upon each other, by restricting, in ways largely independent of formal trade policy restrictions, access to their markets. While, for strategic reasons, or reasons linked to distributional conflicts and specific political economy circumstances within member countries, each may have an interest or an incentive to erect such informal trade barriers, it may be collectively optimal for everyone to adopt more open trade policies (where openness here is defined with reference to "deep" integration - harmonization of standards and regulations independent of formal trade barriers such as tariffs and quotas, these having been eliminated in the 1960s).

Similar considerations apply to other policies designed to guarantee the unhindered operation of free markets, such as antitrust policy, the regulation of certain natural monopolies, the deregulation of certain sectors and the control of state subsidies to industry, in which European institutions have played an increasingly important role. Ironically, however, while increasing the size of the market within Europe, protecting market competition and allowing the free circulation of goods and factors was the initial focus of the builders of Europe, this justifiable goal has somewhat been lost or forgotten in the recent and somewhat chaotic explosion of European common policies. In spite of the stated emphasis on market-friendly policies and the promotion of competition within Europe, the EU still lags far behind the US in these respects, and certain recent policy transfers (such as a common social policy) contradict this stated philosophy.

The costs of homogenization required to establish a single market, through the harmonization of standards and regulations, are certainly non-trivial. However, the benefits from establishing a single market are certainly more clear, in terms of internalizing externalities, than the gains from centralizing some of the other policies listed in Table I. In other words, as far as the centralization of policies promoting the smooth operation of markets is concerned, there is a greater likelihood of benefits being larger than the costs. Some evidence in favor of this view can be gathered from the fact that, as long as the European construction was primarily about establishing a single market, it tended to generate relatively little popular discontent. Since the widening of the range of potential prerogative transfers in the early 1990s, however, we have witnessed increased skepticism concerning European unification on the part of voters. This could be viewed as resistance, on the part of heterogeneous constituencies, to attempts to impose excessive uniformity over an increasing range of policies within Europe.

In terms of prerogative transfers, we conclude that a wide range of prerogative transfers that have occurred through time, especially since the Maastricht Treaty, do not meet the criterion of section 4, namely that the benefits of internalizing Europe-wide externalities should exceed the costs of imposing a single policy upon heterogeneous populations.

5.2 Institutions and Procedures of the EU

The goal of this subsection is briefly address whether the established institutions of the European Union face any incentives to design policy transfers in accordance with the criteria laid out in Section 4. Specifically, we argue informally that, despite the stated principle of *subsidiarity*, the procedures and institutions in charge of making decisions concerning the political attributions of the EU are not sensitive to the trade-off between externalities and heterogeneity. In fact, the institutions involved in the devolution of prerogatives and in the design of political union tend to allocate *too many prerogatives to the center.*

5.2.1 Procedures of Devolution

There are two main ways in which new policies can be transferred to the European level: treaties, and a Europe-specific legislative process. Before turning to the characteristics of these procedures from the viewpoint of optimal prerogative devolution, we briefly provide an overview of the procedures.

Treaties, often prepared through collaboration between the European Commission and national governments, explicitly organize the transfer of policy prerogatives from nation-states to European institutions. There have been four main treaties ratified by member states since 1957, and each of them extends or deepens the policy reach of European institutions. For example, the Treaty of Rome of 1957 set the stage for the common agricultural policy and the common commercial policy, among others. The Single European Act (SEA), which came into force in 1987, was concerned with policies designed to achieve the free movement of people, goods, services and capital within member states. In addition to these, the SEA transferred key prerogatives of environmental policy, research and technological development and "economic and social cohesion" policy, to the European level. The Maastricht Treaty signed in 1992 contained provisions to establish a European Monetary Union, as well as transfers of some policy prerogatives pertaining to industrial policy, consumer protection, culture, common foreign and security policies, as well as the extension of Europe's competence over many other existing common policies. Finally, the Amsterdam Treaty of 1997 sought to deepen the jurisdiction of European institutions over a vast set of policies previously transferred to them.[31]

After 1957, the process of drafting or amending a treaty within the European Union would typically take the form of convening one or more Inter-Governmental Conferences (ICG) to agree on a common text, then submitted to the European Council for final agreement.[32]. While the Commission is not central to the elaboration of the texts, it sometimes played a significant role. Nugent (1994) mentions that, in the case of the drafting of the Maastricht Treaty, "the Commission was, in fact, a participant in the discussions at all levels and did its utmost (...) to influence outcomes. (...) Partly in consequence of its adopting an advanced integrationist position on many issues, the eventual outcome of the ICGs (...) was a disappointment to the Commission". Throughout the process of treaty drafting, the European Parliament plays a much more subdued role, to say the least. The last phase, agreement by the European Council, involves agreeing on those issues that could not lead to consensus within ICGs, and often entails last minute concessions or opting-out clauses on the part of certain dissenting

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[31]In addition to these transfers of substantial prerogatives, the treaties also contain dispositions aimed at modifying the institutions and procedures of decision making within the Community (or later the EU).

[32]The European Council is similar to the Council of Ministers, but is composed of heads of state or heads of governments rather than specific ministers. See Nugent (1994) for more details.

countries.

The second procedure whereby transfers of prerogatives can be organized at the European level is through a complex *legislative process* involving the Council of Ministers, the Commission and the European Parliament.[33] The outcome of this process is the adoption of "directives", which are the legal equivalent of bills. In general, directives clarify or implement the transfer of prerogatives or the exercise of policies as determined by a treaty. Treaties can be vague, so in practice this legislative procedure can often determine the scope of EU prerogatives in specific policy areas. The precise legislative process to be used in every instance is defined by the type of legislation being enacted, and is determined issue-by-issue in the relevant treaties.

Until the Treaty of Amsterdam, there were four different legislative processes: consultation, cooperation, assent and co-decision, where these labels refer (in increasing order) to the role of the European Parliament in the adoption of legislation.[34] All procedures share two main characteristics: the Commission is in all cases the sole initiator of the legislation (it submits the text of the directives to the Parliament or to the Council, depending on the procedure), and the Council has the final say in its adoption.[35] The different procedures refer to the role of the Parliament in the process: a consultative role in the case of consultation and cooperation procedures (no veto), and a more decisive role in the co-decision and assent procedures (veto power). In practice it is fair to say that the game of prerogative devolution is played mostly between the Commission and the Council of Ministers, although there have been some recent and limited attempts to increase the role of the Parliament in the process.

5.2.2 The Commission: Initiator and Information Provider

As seen earlier, the Commission has a very "integrationist" approach. Within a variety of institutional constraints to be discussed below, it seeks to accumulate as many prerogatives as possible onto itself, as any bureaucracy would. Since the Commission is the sole *initiator* of legislation and an active

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[33] The texts (or "directives") elaborated as a consequence of this legislative procedure obtain the force of law within member countries after their mandatory incorporation into national laws by national institutions. This incorporation is enforced by the Commission or the European Court of Justice.

[34] The Amsterdam Treaty has eliminated the cooperation procedure.

[35] The Council or Parliament can suggest to the Commission some legislation that they would like to see proposed, but the Commission is under no legal obligation to comply to these requests.

participant in the drafting of treaties, it is rarely going to suggest legislation or support treaty provisions that limit the prerogatives of EU institutions (itself in particular). To use the jargon of political scientists, the Commission is the "agenda setter". In the context of most formal models of voting, the agenda setter has a vast amount of influence in determining the final outcome of voting procedures, however complex they may be.[36] The fact that vast agenda setting abilities are attributed to an institution which faces few incentive to maintain the prerogatives of nation-states generates a tendency to propose over-centralized policies, and therefore to deviate from the optimal distribution of prerogatives as outlined, for instance, in Section 4.

The role of the Commission is also crucial as a provider of information to national governments, about the likely consequences of proposed common policies. The Council of Ministers and the European Parliament may ask to the Commission to initiate studies concerning certain policy initiatives. More importantly, the Commission has the right to initiate such studies itself.[37] Practically every new common policy initiative is preceded by a "White Paper", or equivalent document, published by the Commission, which presents the likely benefits (and perhaps costs) of the proposed common policies. This "expert advice" is rarely subject to independent scrutiny, which could take the form of an explicit cost-benefit analysis on the part of an independent agency. Neither the Parliament nor the Council of Ministers have the means or the ability to subject the Commission's reports to serious expert scrutiny.

The main "expert", within EU institutions, therefore happens to be the one institution that faces the greatest incentives to transfer policies to the EU level. If national governments or citizens happen to be imperfectly informed about the consequences of hypothetical common policies on the EU as a whole, as seems likely, the role of the Commission as an information provider can significantly affect the policy outcomes, and specifically the distribution of powers amongst different levels of government. The political science literature suggests that the monopoly of information on the part of bureaucracies leads to an over-expansion of programs, since the bureaucracy

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[36]See, for instance, Baron (1991).

[37]Article 155 of the Treaty of Rome contains the following:"(...) the Commission shall: (...)

formulate recommendations or deliver opinions on matters dealt with in this Treaty, if it expressly so provides or if the Commission considers it necessary;

have its own power of decision and participate in the shaping of measures taken by the Council and by the European Parliament in the manner provided for in this Treaty; "

can strategically manipulate information to expand its prerogatives.[38] A similar reasoning can be applied to the role of the Commission as information provider.

5.2.3 Over-representation of small countries

The Council, on the other hand, is composed of specified members of national governments (depending on the issue under discussion), who face more incentives to maintain prerogatives at the national level. This counterbalances the influence of the commission as an initiator of policies and as a provider of information.[39] Indeed, the "integrationist" influence of the Commission, as the agenda-setter, is limited by the ability of national governments, either through the ICGs or through the Council of Ministers, to amend the proposals, or to disregard the suggestions of the Commission in the case of drafting treaties.

Our attention must therefore turn to the structure of the European Council and of the Council of Ministers, the dominant players in the adoption of, respectively, treaties and directives. One argument pointing to the sub-optimality of prerogative transfers is that small countries are over-represented within the Council. On most "important" issues (such as the approval of treaties in the European Council), unanimity is required for the texts to be adopted. For those issues the over-representation of small countries is a salient feature of the collective choice process, since each country's vote receives the same weight, and every country has a right of veto. For other types of legislation, recent treaties have expanded the range of issues for which a qualified majority of votes is required within the council. Table II show the shares of the votes within the Council of Ministers, the Commission and the Parliament. In this case the over-representation of small countries is tampered somewhat, but is not eliminated (Germany is 30% larger than Italy but receives the same number of votes, while Belgium is $1/6^{th}$ the size of France and received half of the number of votes).

The over-representation of small countries is significant from our point of view, for at least two reasons. Firstly, smaller countries face greater incentives to transfer prerogatives to the center, as policy-makers from small countries are more likely to consider that their influence, or the extent of

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[38]For a general discussion of this point, see Mueller (1979).

[39]This reinforces the view that the Council is akin to the US Senate, in the sense that it represents the rights of nation-states.

their power, will be greater within common institutions than outside.[40] In other words, prerogative transfers are more likely to result in small countries gaining political clout rather than losing some. This may account for the fact that popular support for European integration has traditionally been greater within Europe's smaller countries. One reason why small countries were given a larger voice than warranted by their size may have been to entice them to join or to remain within the union. Once this power is obtained, small countries were free to exercise it by transferring more prerogatives to Europe, where their impact on policy outcomes is proportionately greater than if they were to remain outside.

Secondly, the extent of public goods externalities (the β in our model) may be greater for smaller countries. For instance, smaller countries probably benefited proportionately more from the formation of a European free trade area than larger countries (see Alesina, Spolaore and Wacziarg (1997) for more on this point), so coordinating on open trade and harmonized standards will benefit small countries more. As a consequence of these two facts, the over-representation of small country is more likely to lead to too many prerogatives being centralized, from the viewpoint of the criteria of Section 4.[41]

5.2.4 Logrolling and Backscratching

Lastly, another important feature of the process of prerogative transfers within Europe is the fact that countries will compromise on certain issues against commitments that other members will compromise on other issues, a process known as "logrolling" or "backscratching" in US politics. For instance, Germany recently accepted the French proposal of setting up a permanent forum for macroeconomic policy coordination against the assurance that the ECB would not be subject to its pressures. Some countries will agree to common policies that may be mildly at their disadvantage, in exchange for obtaining common policies that benefit them a lot. This is one

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[40] With respect to monetary policy, one claimed advantage of EMU for small countries was that they were going to be better able to affect their own monetary policy on the board of ECB than they would have been had the Bundesbank continued to dictate its policy to the rest of Europe.

[41] Adding more credence to this idea, Nugent (1994) states that: "...it is precisely because the Commission seeks to act in the general interest that the smaller EU states tend to see it as something of a protector and are consequently normally supportive of the Commission being given greater powers". While we would dispute that the Commission acts in the general interest (whatever that is), we fully agree with the factual statement that smaller countries tend to favor more transfers of prerogatives to European institutions.

way to understand the emergence of CAP, the Common Agricultural Policy, as part of the Treaty of Rome. CAP can be viewed as a side-payment offered to France in exchange for France's approval of the creation of a common market in manufactured products.[42]

The process of logrolling relies on heterogeneity across countries. The greater the degree of heterogeneity in preferences and interests, the greater the possibilities for "deals" between countries, of the sort described above. Yet, as we saw in Section 4, the greater the heterogeneity, the greater the costs of common policies. Thus, there is no necessary correspondence between the optimal level of decentralization, which is increasing in heterogeneity, and the equilibrium level, which thanks to logrolling *may not* be increasing in heterogeneity. This feature of the European integration process creates a further source of excessive centralization.

6 Conclusion

Political and economic union within Europe is at an unsettled stage. On many issues, Europe has gone far beyond a degree of centralization consistent with a free trade area. However, the process of coherent institution building has lagged far behind. On some other issues, such as policies to guarantee the adequate functioning of free markets, Europe has not gone very far. We ascribe these deficiencies in the existing distribution of political prerogatives to major flaws in the design of European institutions. These have developed through time in an *ad hoc* way, without concern for the optimality properties of resulting policy transfers.

At the European level, there exists only a weak system of checks and balances, few clear texts providing legal guidance on the attributions of various institutions, and only weak protections for the rights of decentralized entities - nation-states or regions. As a result, Europe has acquired responsibilities in areas that are normally prerogatives of national or even local governments. The principle of subsidiarity, which appeared in the text of European treaties only in 1991, and which states that the "Community shall take action (...), only if and in so far as the objectives of the proposed action cannot be sufficiently achieved by the Member States", has remained vague

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[42]Nugent notes that "in exchange for the creation of a common market in industrial goods, which the French feared would be greatly to Germany's advantage, France - with her large, but uneconomic, agricultural sector - would benefit from an agricultural system (...) which would protect farmers from too much competition." (p362).

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and largely devoid of operational content. Furthermore, no institution has been set up to better define the principle, and to enforce respect for it.[43]

Table I - Policy Responsibilities of the EU and their Extent

	Extensive	Shared	Limited
I. Economic and Social Areas			
1. Competition		X	
2. Cultural Policy			X
3. Regional Policy		X	
4. Employment and Social Policy		X	
5. Enterprise Policy		X	
6. Equal Opportunities		X	
7. Industrial Policy		X	
8. Public Health			X
9. Solidarity/Welfare			X
10. Consumer Policy		X	
11. Monetary Policy	X		
12. Education, Training and Youth			X
13. Environment		X	
14. Internal Market	X		
15. Research and Technology		X	
16. Trans-European Networks/Mobility			X
II. Sectoral Policies			
1. Agriculture	X		
2. Fisheries	X		
3. Transportation		X	
4. Information and Telecommunications		X	
5. Audiovisual Policy			X
6. Energy		X	
III. External Policies			
1. Common Foreign and Security Policy			X
2. Development Policy		X	
3. Humanitarian Aid		X	
4. Common Trade Policy	X		
IV. Justice and Home Affairs			
1. Asylum, External Borders, Immigration		X	
2. Judicial and Police Cooperation		X	
3. Drugs		X	
4. Trade in Human Beings			

Source: Nugent (1994), ch. 10, and Europa website (official website of the EU).

Table II - Distribution of Votes within EU Institutions

Country	Council of Ministers	Commission	European Parliament
Germany	10	2	99
France	10	2	87
Italy	10	2	87
United Kingdom	10	2	87
Spain	8	2	64
Netherlands	5	1	31
Belgium	5	1	25
Greece	5	1	25
Portugal	5	1	25
Sweden	4	1	22
Austria	4	1	21
Denmark	3	1	16
Finland	3	1	16
Ireland	3	1	15
Luxembourg	2	1	6

Source: Europa webpage.

Appendix I

Proof that $\alpha (1 + \beta N)^{\frac{1}{\alpha}} > \beta N + \alpha$.

The parameter value restrictions are $N > 0$, $0 < \alpha < 1$, $0 < \beta < 1$.

First, denote $f(N) = \alpha (1 + \beta N)^{\frac{1}{\alpha}}$ and $g(N) = \beta N + \alpha$.

Then $f(0) = \alpha$ and $g(0) = \alpha$ so $f(0) = g(0)$

Second, $f'(N) = \beta (1 + \beta N)^{\frac{1}{\alpha} - 1}$ and $g'(N) = \beta$.

Since $(1 + \beta N)^{\frac{1}{\alpha} - 1} > 1$ for all allowable values of α, β, we have $f'(N) \geq g'(N)$.

It follows that $\alpha (1 + \beta N)^{\frac{1}{\alpha}} \geq \beta N - \alpha$ for all allowable parameter values.

Appendix II - A Dynamic Model of Public Goods Provision

The model presented in Section 4 extends to the case where the capital stock is endogenously determined by optimized savings decisions on the part of households. Barro (1990) has shown that, under certain technological assumptions, the provision of public goods financed by a proportional tax on income could give rise to endogenous growth. The purpose of this section is to extend the Barro model to allow for several jurisdictions, and to show that the basic intuition of the static model extends to a more complex, dynamic setting.

A. Setup of the Model

As before, we assume the extent of the externality goes beyond the frontiers of each country, namely there are cross-country externalities, so that each country benefits from public goods produced in the other countries. There are $j = 1...N$ countries, and we focus on country 1. The production function for firm i in country 1 is:

$$Y_{i1} = AL_{i1}^{1-\alpha} K_{i1}^{\alpha} \cdot \left[\prod_{j=1}^{N} (\omega_j G_j)^{\frac{1-\alpha}{N}} \right] \tag{32}$$

The formulation of the exponents on capital and the public goods guarantees that they sum to 1, so that the model can be characterized by endogenous growth for a fixed supply of labor L. The weights ω_i represent the extent to which foreign public goods affect the domestic production system. For convenience we assume $\omega_1 = 1$ and $0 < \omega_i \leq 1$ for $i > 1$, so foreign public

goods have a (weakly) lower effect on output in country 1 that the own country public goods.

Also, to simplify notation, assume all other countries are identical and $\omega_i = \omega_j$ for all countries $i \neq j \neq 1$. We denote ω^f the weight of foreign public goods and G^f the supply of foreign public goods, so the production function becomes:

$$Y_{i1} = AL_{i1}^{1-\alpha}K_{i1}^{\alpha}G_1^{\frac{1-\alpha}{N}}\left(\omega^f G^f\right)^{\frac{(N-1)(1-\alpha)}{N}} \tag{33}$$

Denote $\left(\omega^f G^f\right)^{\frac{(N-1)(1-\alpha)}{N}} \equiv F$. We assume that all firms are symmetric, so we drop the i subscript from now on, and normalize the number of firms to 1. The taxation system consists of a proportional tax on output, $G_1 = \tau_1 Y_1$. Then:

$$G_1 = (A\tau_1 L_1 k_1^{\alpha}F)^{\frac{N}{N-1+\alpha}} \tag{34}$$

To simplify, we drop the "1" subscript for the domestic economy. The first order conditions for producer maximization of profits are analogous to the ones we had before:

$$\max_{L_i,K_i} (1-\tau)\,AL_i^{1-\alpha}K_i^{\alpha}G^{\frac{1-\alpha}{N}}F - wL_i - rK_i \tag{35}$$

Letting $k_i = K_i/L_i$, solving the first order conditions, and substituting for G, we get the following rate of return on capital:

$$r = (1-\tau)\,(\tau L)^{\frac{1-\alpha}{N-1+\alpha}}\,\alpha A^{\frac{N}{N-1+\alpha}}k^{\frac{(N-1)(\alpha-1)}{N-1+\alpha}}F^{\frac{N}{N-1+\alpha}} \tag{36}$$

We assume an intertemporal utility function of the form:

$$U = \int_0^{\infty} e^{-\rho t}\left[\frac{c^{1-\theta}-1}{1-\theta}\right]dt \tag{37}$$

So the rate of growth of consumption is given by:

$$\gamma_c = \frac{1}{\theta}(r-\rho) \tag{38}$$

B. Symmetric Case

We assume first that all countries are identical, and we focus on the resulting symmetric equilibrium. All countries have the same technologies

(A, α), same capital stock and populations (K, L, ρ), adopt the same public policies (τ) and, as assumed earlier, benefit equally from the provision of foreign public goods (ω_i). Then:

$$r = \left(1 - \tau^d\right) \left(\tau^d L\right)^{\frac{1-\alpha}{N-1+\alpha}} \alpha A^{\frac{N}{N-1+\alpha}} \left(\left(A\tau^f L\right)^{\frac{1}{\alpha}} \left(\omega^f\right)^{1+\frac{(N-1)(1-\alpha)}{N-1+\alpha}}\right)^{\frac{(N-1)(1-\alpha)}{N-1+\alpha}}$$

(39)

which is independent of k, and hence shows that in the symmetric case we get endogenous growth (under the usual utility boundedness/transversality conditions). When tax rates are equal in every country (a natural outcome in the symmetric case), this simplifies as:

$$r = (1 - \tau) (\tau L)^{\frac{(1-\alpha)}{\alpha}} \alpha A^{\frac{1}{\alpha}} \left(\left(\omega^f\right)^{1+\frac{(N-1)(1-\alpha)}{N-1+\alpha}}\right)^{\frac{(N-1)(1-\alpha)}{N-1+\alpha}}$$

(40)

Denoting $E = \left(\left(\omega^f\right)^{1+\frac{(N-1)(1-\alpha)}{N-1+\alpha}}\right)^{\frac{(N-1)(1-\alpha)}{N-1+\alpha}}$ (for externality), the constant growth rate of capital, consumption and income in the economy is then:

$$\gamma = \frac{1}{\theta}((1 - \tau) (\tau L)^{\frac{(1-\alpha)}{\alpha}} \alpha A^{\frac{1}{\alpha}} E - \rho)$$

(41)

C. Centralized Public Goods Provision

As before, the growth rate is maximized whenever the European government sets $\tau = 1 - \alpha$. The growth rate is a positive function of the extent of public goods spillovers, as captured by the parameter ω^f. If such is public policy, the growth rate of the economy is:

$$\gamma^O = \frac{1}{\theta}(\alpha^2 \left((1 - \alpha) L\right)^{\frac{(1-\alpha)}{\alpha}} A^{\frac{1}{\alpha}} E - \rho)$$

(42)

All of the results of the Barro model extend here, namely maximizing growth is equivalent to maximizing intertemporal utility when the production function is Cobb-Douglas, as we assumed.

D. Decentralized Tax and Spending Decisions

In the decentralized case, a Nash-equilibrium in tax setting would have governments choosing the domestic tax rate to maximize the rate of growth, *taking as given the actions of all of the other governments*. That is, the government sets the tax rate so as to solve:

$$\max_\tau \left(1 - \tau^d\right) \tau^{d\frac{1-\alpha}{N-1+\alpha}}$$

(43)

The solution to this is to set $\tau^d = \frac{1-\alpha}{N}$, so the decentralized tax rate that is chosen falls short of the optimal tax rate that would be chosen if all governments maximized growth together. This illustrates the free-rider problem involved in decentralized public goods provision. Suppose all countries independently adopt this policy. The resulting growth rate is:

$$\gamma^D = \frac{1}{\theta}(\left(\frac{N-1+\alpha}{N}\right)\left(\frac{1-\alpha}{N}L\right)^{\frac{(1-\alpha)}{\alpha}} \alpha A^{\frac{1}{\alpha}}E - \rho) \qquad (44)$$

The (positive) wedge between the optimal and the decentralized rates of growth is:

$$\gamma^O - \gamma^D = \frac{1}{\theta}\alpha A^{\frac{1}{\alpha}}L^{\frac{(1-\alpha)}{\alpha}}(1-\alpha)^{\frac{(1-\alpha)}{\alpha}}\left[\alpha - \left(\frac{N-1+\alpha}{N^{\frac{1}{\alpha}}}\right)\right]E \qquad (45)$$

which is increasing in the extent of the spillovers, captured by the weighing parameter ω^f. In other words, the costs of free-riding in terms of deviations of actual growth from optimal growth are increasing in the extent to which each country benefits from the provision of public goods in other countries.

E. Preference for Decentralization: Heterogeneity

In the above model, as long as $N > 1$ and $\omega^f > 0$ (the latter is a necessary condition for the existence of endogenous growth), it would always be economically optimal to transfer the provision of the public good to European institutions. As in the static model of Section 4, this would not be the case if the economic gains of prerogative transfers were traded-off against the costs of surrendering sovereignty. In this case, again, ω^f would have to be sufficiently large to outweigh the costs of sovereignty losses.

The costs of surrendering sovereignty stem from cross-country heterogeneity in technology, endowments or preferences. Hence, the more heterogeneous the countries, the less likely it is that the gains from centralizing the policy (from internalizing the externality) will outweigh the costs of imposing a uniform policy on different economies. When countries differ significantly, independent governments would provide different levels of the public good in different countries. Yet by definition a common policy provides the same amount of the public good to all countries.[44] This imposes costs that must be traded-off against the benefits of internalizing the externalities.

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[44]The same transactions costs that may make an efficient bargaining solution difficult to implement may make the provision of different levels of the public good to different countries, by a central European government, equally difficult. Informational requirements, in particular, may be the source of these transactions costs. These requirements could be hard to meet since indivisual countries would have incentives to supply whatever information is in their advantage.

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