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Collective Decision Rules and the Optimal Degree of Decentralization

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Abstract

The fiscal federalism and later political economy literature on federalism argues that the optimum vertical division of competencies within a federal state is determined on the one hand by the presence of external effects or economies of scale and scope in the provision of public goods and, on the other, on the existence of preference heterogeneity across the population with respect to these goods. Economies of scale and scope call for more centralization while preference heterogeneity tends to pull in the direction of greater decentralization. Government is either modeled as a leviathan or collective decisions are taken by majority rule. A possible relationship between collective decision rules or restrictions and the desired degree of decentralization is suggested but not explored. In this paper I analyze those optimal collective decision rules for deciding on policies assigned to different levels of government. I will argue that these rules emerge from the key interaction which guides the optimal degree of decentralization namely that between heterogeneity and spillover effects. The adoption of non-optimal rules may in turn affect the desired degree of decentralization.

Key words: Decision rules, decentralization, heterogeneity, polarization

1. Introduction

Studies of federalism have ignored the possible relationship between collective decision rules and the desired degree of decentralization. The standard fiscal federalism literature is concerned with the optimal division of power or competencies between central and local governments (Musgrave, 1959; Oates, 1972 and later surveyed in Oates, 1999). It may be better to assign stabilization and redistributive power to central government since inter-jurisdictional externalities in the case of the former and labor mobility in the case of the latter will tend to undermine the proper execution of such competencies by local governments. The existence of preference heterogeneity over public goods across jurisdictions as well as the expectation that local governments are likely to be better informed as to these preferences indicates that local governments should provide goods whose consumption is limited to their own jurisdiction and which don't experience important economies of scale in provision. Nothing is said of a likely relationship between collective decision rules on the optimal degree of decentralization. This is not surprising considering that the standard literature assumes that government is a benevolent social welfare maximizer (Hamlin, 1985).

One strand of the later political economy work on federalism models government as a leviathan and thus tends to favor decentralization since it allows citizens to choose among jurisdictions thereby putting a break on the potential fiscal exploitation by sub-central leviathan governments (Brennan and Buchanan, 1980, chap. 9). Similarly, it has been argued that decentralization places a limit on both central and sub-central governments' ability to confiscate property rights thereby contributing greatly to economic growth (Weingast, 1995). Interestingly, the leviathan literature does suggest a relationship between rules and decentralization since the latter by putting a

break on governments in sub-central jurisdictions is seen to some degree to act as a substitute for tax limitations on these governments. In more centralized settings such restrictions become increasingly urgent. However, the assumption that government is a leviathan tends to overshadow the important insight of the fiscal federalism literature with regard to how the trade-off between preference heterogeneity and economies of scale can influence the vertical allocation of competencies. As a result the relationship between collective decision rules or restrictions and decentralization is advanced independently of this important trade-off.

Another strand of this literature compares two different scenarios (Inman and Rubinfeld, 1997a,b): one described by a very high degree of decentralization and the use of unanimity for making collective decisions (the confederal republic) and another described by a degree of centralization and majority decision-making at the central level (the compound republic). Theoretically at least the confederal republic may effectively protect minority rights and promote civic virtue and by way of Coasian bargains also internalize any economic surplus[1]. The capacity of the compound republic to maximize political and economic efficiency depends on the appropriate mix of, on the one hand, the correct allocation of competencies to different levels of government as suggested by the fiscal federalism literature and, on the other, additional institutional restrictions at the central level in the form of increased executive powers and the presence of local parties in the central legislature where by assumption decisions are taken by majority rule. While Inman and Rubinfeld recognize that an appropriate mix of collective

[1] In practice such bargains may not be struck because of existence of resource costs associated with reaching agreement, incomplete information over preferences and endowments, the emergence of principal-agency problems in negotiations, costly enforceability and finally disagreements as to the division of the available economic surplus.

decision rules and decentralization may protect democratic rights and promote economic efficiency they do not explicitly explore or develop this relationship.

More recently, the political (dis)integration literature returns to the trade-off between the internalization of spillovers or externalities from centralized provision and the ability to satisfy heterogeneous preferences over public goods if they are provided by decentralized jurisdictions (surveyed by Ruta, 2005). Alesina and Spolaore (2003) examine the optimal degree of decentralization and consistent with their formal analysis, they argue that lower levels of government should provide functions and goods for which economies of scale and scope are less important and heterogeneity of preference is higher while higher level jurisdictions should be assigned policy areas where economies of scale and scope are high and so too is homogeneity of preferences. Assuming that collective decisions are taken by majority rule and, moreover, in the context of international trade and a reduced likelihood of international conflict then individuals whose preferences diverge from those of the decisive majority have an incentive to secede and create their own nation. Again, the authors do not explore how varying collective decision rules can affect the desired level of decentralization.

In tune with the previous scholars Congleton et al (2003) show that the assignment of policies to higher level jurisdictions depends on economies of scale in the production, distribution and financing of services (economic considerations) but also on the probability of being in a minority coalition with respect to the public goods whose provision is decided upon by majority rule (political considerations). The costs of being in a minority coalition emerge from both having heterogeneous preferences over the public goods provided but also insofar as the majority coalition increases the tax burden of the minority in the provision of these goods. One implication drawn from this analysis that is pertinent here is that the number of areas in which competencies are

shifted to the central government will tend to increase as more inclusive decision rules or institutions are adopted, because they reduce the political risks associated with centralization. In that analysis the main concern was how different forms of menu or asymmetric federalism could emerge. Thus, though they propose a relationship between decision-making rules and the degree of centralization by virtue of the likely effect of such rules on the probability of finding oneself in a minority coalition they do not explore this subject.

Some of the above authors as well as others have identified a credibility or time inconsistency problem facing regions in the context of a federal state such that the trade-off between heterogeneity and spillover effects may indeed guide the efficient assignment of policies to different levels of government but there is a risk that once assigned a majority will violate this assignment and engage in a process of centralization. Alesina and Spolaore (2003, ch. 4) recognize that a region may be induced to abandon secession by way of a favorable fiscal treatment but the central government may then renege on its promises once the region "settles in". They argue that one realistic way to overcome this credibility problem is by way of suitable "institutional structures to ensure commitment" and to this effect they point to the US Senate as an instrument guaranteeing the rights of less populous states as well as the EU where small states have a disproportional voting power. Piketty (1996) proposes a double voting rule such that a policy is first decided at the central level and then each region decides whether or not to enact it. Inspired by Riker (1964), Inman and Rubinfeld (1997a) recognize the danger of the "overawing" of the states by the central government over time and point, among other conditions, to the importance of political institutions capable of restoring the assignment balance. According to Weingast (1995) the balance rule or the equal representation of regions in the US senate contributed to

the sustainability of market-preserving federalism in that country in the 19th and 20th centuries. Vaubel (1996) provides empirical evidence on how constitutional safeguards like more inclusive rules for constitutional amendments, bicameral systems and especially an independent constitutional court can put a limit on more centralization. Colomer (2003, ch.5) has argued that decentralization is preserved or even increased under proportionality electoral rules and bicameral and presidential or semi-presidential systems and decreased under first-past-the-post rules and unicameral parliamentary systems.

In this paper I will not focus on the rules for deciding on the allocation of policies among different levels of government although I will suggest that these are likely to be more inclusive in more heterogeneous societies. Instead, I will center on those collective decision rules for deciding on these policies once assigned (call them post-allocation decision rules). I will argue that the optimal post-allocation rules emerge from the key interaction between heterogeneity and spillover effects which guides the optimal degree of decentralization. The analysis will be drawn from the concept of social interdependence costs introduced by Buchanan and Tullock (1962) in their classic *Calculus of Consent* (B&T from hereon). In the following section I will turn to those insights from *The Calculus* which are relevant to my discussion and extend their analysis by endogenizing the effect of decentralization on the choice of optimal rules (section 2). Having done this, I will illustrate how the optimal level of decentralization may be related to the optimal decision rules at the each level of government (section 3). I will then explore how deviations from optimal decision rules may affect the desired level of decentralization (section 4). Some preliminary evidence will be presented from the division of competencies between Member States and the supranational institutions

of the European Union (section 5). I will conclude by summarizing the main theoretical implications that emerge from the analysis (section 6).

2. Insights from *The Calculus*

As is well known, B&T base their analysis of the optimal collective decision rule on two concepts: external costs (C) expected by individuals from adverse collective decisions and which fall as more inclusive rules are adopted and decision making costs (D) expected from having to negotiate with others when deciding collectively and which increase exponentially as more inclusive rules are adopted. The optimal decision rule is that which minimizes the sum of these costs known as the social interdependence costs (see figure 1).

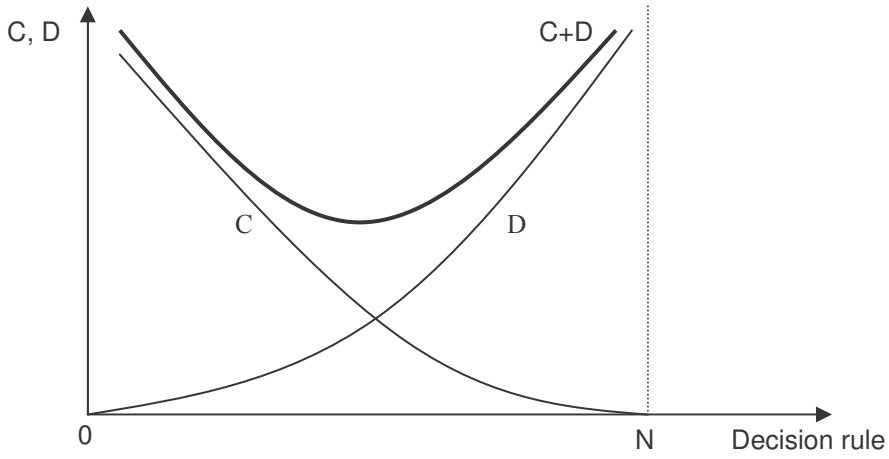

Figure 1. The optimal decision rule

B&T take both the degree of centralization and the degree of heterogeneity to be exogenous to their model. A decrease in either of these is taken to shift both the C and D curve downwards. External and decision making costs fall due to decentralization as the possibility of out-migration to other political units both limits the degree of coercion

from collective decisions in any one political unit as well as the incentive to bargain when such decisions are being taken there. Increasing homogeneity in preferences reduces the external costs expected from collective decisions and makes agreement easier to achieve. The downward movement of the C curve makes less inclusive voting rules possible even though the downward shift of the D curve makes more inclusive rules affordable. By increasing the expected external costs of collective decisions centralization or preference heterogeneity make more inclusive rules necessary even though from the point of view of decision-making costs this may be less "affordable". Thus, decentralization or homogeneity in preferences can make less inclusive rules optimal while centralization and heterogeneity makes more inclusive ones so[2].

Although not the focus of my analysis here, this analytical framework allows us to examine the likely effect of preference heterogeneity on the choice of rules for resolving the credibility problem or in other words on the choice of allocation rules. Figure 2 represents the expected social interdependence costs when deciding on the suitable vertical allocation of competencies within a homogeneous and a heterogeneous society.

[2] To obtain this result graphically in the original B&T analysis we could assume that as we decentralize or decrease the degree of heterogeneity, both external costs and decision-making costs curves fall but the former does so by more and the former shifts up by more with more centralization or heterogeneity. Thus the optimum rule is less inclusive under decentralization or preference homogeneity and more inclusive under centralization or preference heterogeneity.

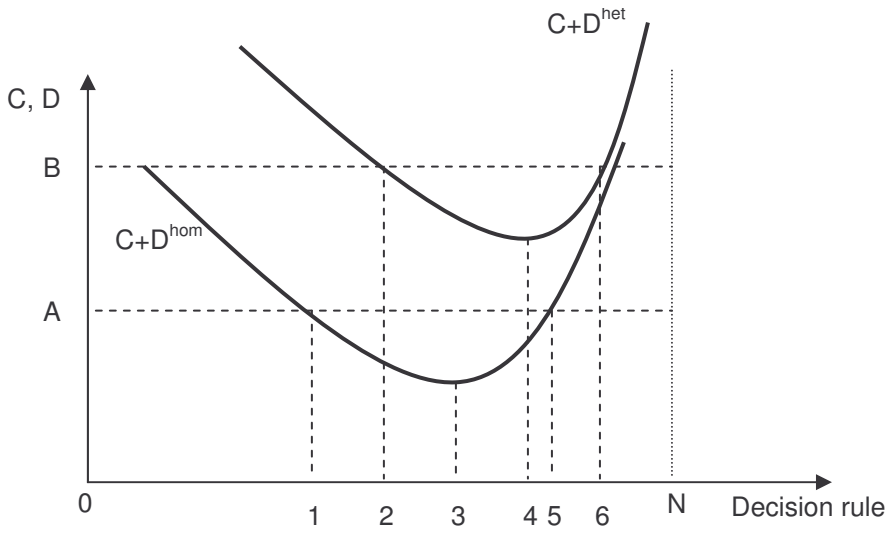

Figure 2. Optimal allocation rules

Assuming that the expected costs of a region or sub-section of this society of staying out and going on its own are exogenous then we can represent these on the vertical axis. Consistent with Alesina and Spolaore (2003) these costs are greater the more protectionist the international trade regime and the greater the likelihood of international conflict (scenario OB). It is obvious that the range of rules that – from the point of view of any region – make participation in the greater society rational are more inclusive in the case of the heterogeneous society (2 to 6 rather than 1 to 5). The same goes for the optimal rule (4 rather than 3). Moving from 1 to 3 in the case of the homogeneous society and from 2 to 4 in the case of the heterogeneous one increases the incentive of any region to participate but beyond this, these incentives are reduced by the increase in the expected decision making costs due to the adoption of very inclusive rules. Finally, and consistent with these authors, a more open international trade regime and a reduced likelihood of international conflict reduces the expected costs from going alone (going from OB towards OA) and as such is likely to increase secessionist movements and do so first in the most heterogeneous societies.

What I want to do is endogenize decentralization with an aim of examining how it may be related to the choice of collective decision rules for deciding on these policies once assigned (post-allocation rules). Consistent with B&T decentralization reduces both the external and decision-making costs expected from collective decisions because the possibility of out-migration puts a limit on these. The more we decentralize the lower these mobility costs and so the lower the expected social interdependence costs and ultimately the less inclusive the rules required for collective decisions. In a sense, decentralization by increasing the choice set available to individuals leads to a reduction in the likelihood that they will be in a political minority with respect to collective decisions and so makes less inclusive rules optimal. Based on this reasoning we obtain the (bold) C+D curve in figure 3 below which is drawn for all optimal rules at each level of decentralization. If the degree of decentralization is 0 (only one political jurisdiction) implying the impossibility of out-migration then the expected social interdependence costs from government decisions are relatively high and so the optimal voting rule at the center is more inclusive. As we move towards greater decentralization, the optimal rule for collective decisions at each successive level of decentralization becomes less inclusive reflecting the fall of expected social interdependence costs from collective decisions due to the limit imposed by the possibility of out-migration. At the limit where the degree of decentralization is 1 (each individual is a jurisdiction) then collective decisions are equivalent to individual ones and so by definition the expected social interdependence costs are zero and the optimal voting rule is one-man rule.

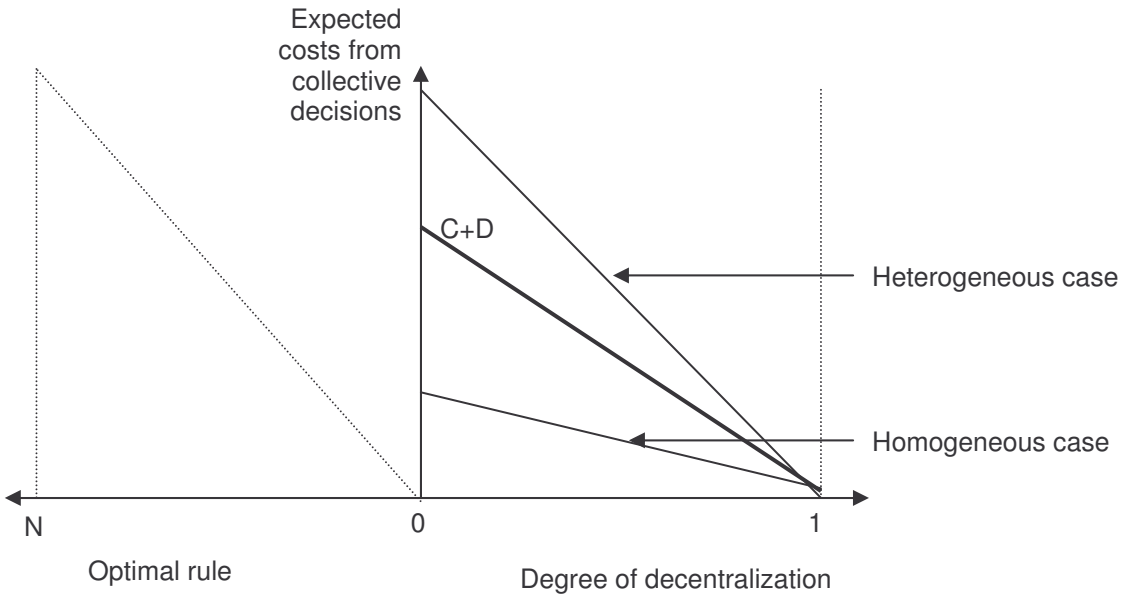

Figure 3. Decentralization, heterogeneity and the optimal rule

The degree of heterogeneity in preferences across the population can be represented here by pivoting the C+D curve around point 1 (it remains exogenous in my model here). If the degree of heterogeneity in individual preferences is high then the expected social interdependence costs from collective decisions at any level of decentralization rise and so the C+D curve pivots upwards. In other words, more heterogeneity in preferences implies that for any given degree of decentralization one expects higher social interdependence costs from collective decisions and as a result the optimal rule will be more inclusive. A high degree of homogeneity implies that the curve pivots downwards around point 1 indicating that for any given degree of decentralization, the optimal rule will be less inclusive. Less inclusive rules should become optimal in both cases as we increase the level of decentralization. Note that in the case of the homogeneous society, under complete centralization the optimal post-allocation rule is less inclusive while in the case of the heterogeneous society unanimity may be the optimal rule in centralized settings.

While the slope of the C+D curve may depend on the degree of heterogeneity or difference in individual preferences the shape of the curve arguably depends on the distribution of these preferences in society. The curves represented above indicate a given reduction in social interdependence costs for a given increase in the degree of decentralization and, importantly, this relationship is constant for all degrees of decentralization (the slope is constant in each case). This would be the case if the difference or distance between individual preferences were the same since the successive creation of another jurisdiction under increasing decentralization reduces the social interdependence costs by the same amount. The heterogeneous society has a higher sloping C+D curve to reflect the idea that the difference or distance between individual preferences is greater in that society than in the homogeneous one but in either case this distance is constant across all individuals. Contrast these curves with that which would correspond to a society where the distance between individual preferences is such that it is composed of a small number of groups which are very homogeneous within but very heterogeneous among them. Decentralization to create one political jurisdiction for each group would reduce the expected social interdependence costs considerably as represented in figure 4 (bold curve).

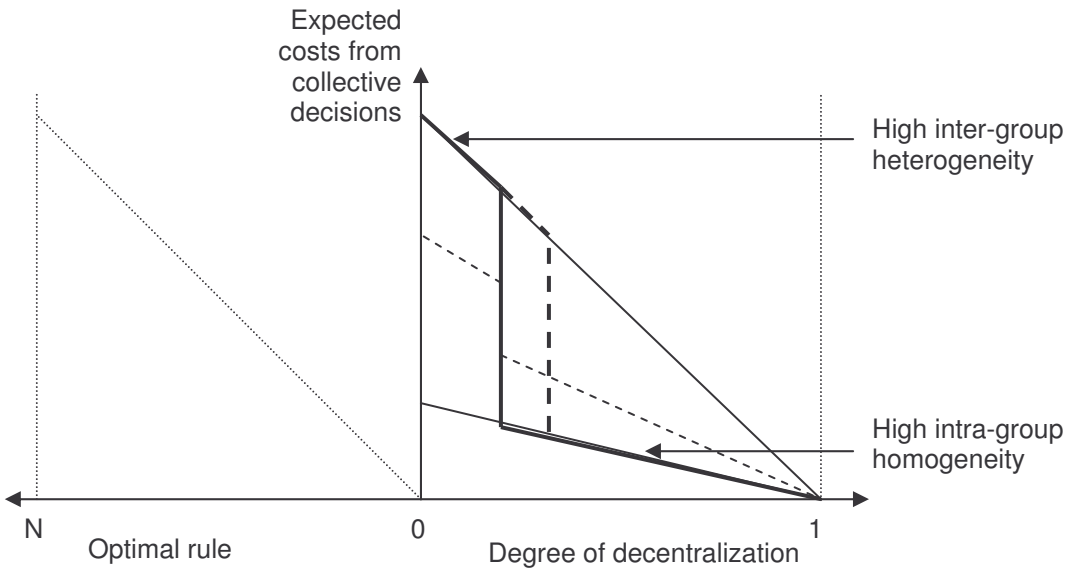

Figure 4. Polarization and the optimal rule

In fact what figure 4 represents is a polarized society composed by a small number of groups with a high degree of intra-group homogeneity and a high degree of inter-group heterogeneity. The C+D curve is discontinuous to indicate that the expected social interdependence costs are high in very centralized settings but fall considerably as we assign policies to the small number of groups which make up this society and then fall by less if we continue to decentralize from this point on. In such a context we would expect relatively inclusive rules but less inclusive rules at the group level if we decentralize to create political jurisdictions representing these groups. The number of groups indicates the position of the discontinuity with respect to the degree of decentralization while the degree of inter-group and intra-group heterogeneity are represented by the slope of the curve to the left and the right of the break in the curve respectively. For example, if the number of groups remains unchanged but the degree of inter-group heterogeneity falls this would reduce the slope of the part of the curve to the

left of the discontinuity while reducing the degree of intra-group homogeneity would tend to increase the slope of that part of the curve to the right of the break (lower doted curve). If the degree of inter-group heterogeneity is equal to intra-group heterogeneity then the curve becomes a straight line (the discontinuity disappears). If the number of groups where to increase (and assuming the same degree of inter-group heterogeneity and intra-group homogeneity) then the break in the curve shifts to the right (bold dotted curve) and at the limit where each individual is a group the curve again becomes a straight line[3].

3. The optimum degree of decentralization and the choice of rules

I will now turn to the question of how the optimum vertical allocation of competencies suggested by the tension between heterogeneity and spillover effects or economies of scale and scope, may be related to the optimum decision rule adopted at each assigned level. As figure 3 shows, in the absence of spillover effects or economies of scale or scope the optimal degree of decentralization would be 1 since it minimizes the expected

[3] In the literature two measures of heterogeneity are advanced namely, fractionalization and polarization in both cases either ethnic or religious (see for example, Alesina et al, 2003). Fractionalization is measured by the probability that two randomly selected individuals belong to the different groups and so increases with the number of groups. Polarization is maximized when there are two equally sized groups. But it's the distance between groups that is the relevant measure of both fractionalization and polarization. Lacking a measure of the distance between groups the empirical literature has assumed this to be the same. Moreover, implicit to these measures is the idea that preferences within groups are homogeneous. My theoretical analysis accounts for the distance between groups as well as the possible variation of intra-group preference heterogeneity and the number of groups in society.

costs from collective decisions. This is consistent with the B&T decentralization theorem which states that

> "The decentralization of collective activity allows both [the external cost and decision-making cost] functions to be reduced …where possible, collective activity should be organized in small rather than large political units. Organization in large units may be justified only by the overwhelming importance of the externality that remains after localized and decentralized collectivization." (p.114).

Time then to introduce the concept of spillover or external effects and economies of scale or scope. The expected opportunity cost of not internalizing the former or of not enjoying the latter is positively related to the degree of decentralization and is represented by the E-curve in figure 5 (from hereon these opportunity costs will be termed E-costs).

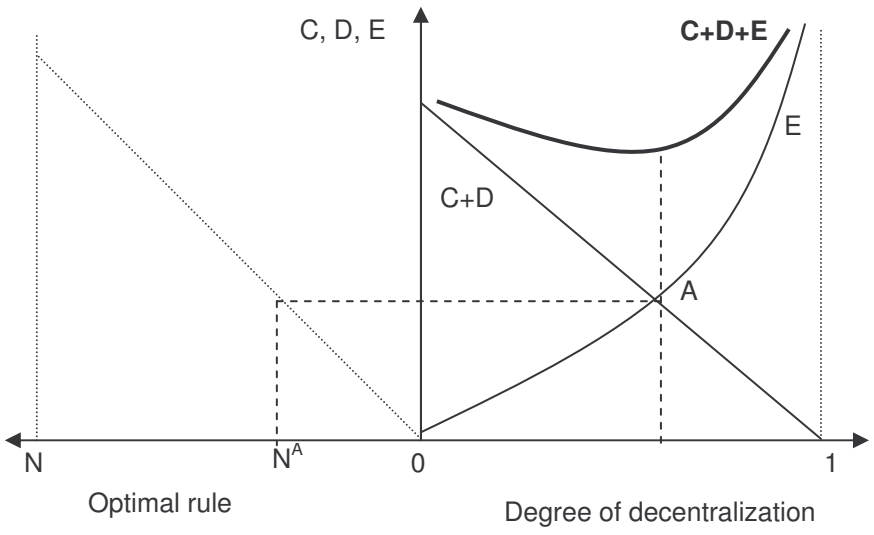

Figure 5. The optimal degree of decentralization and the optimal rule

The optimal degree of decentralization emerges from the intersection of the two curves and for this level of decentralization there is an optimal collective decision rule. The optimal degree of decentralization is that which minimizes the sum of the expected social interdependence costs from collective decisions and the expected E-costs. If a greater degree of centralization is chosen then the decrease in the E-costs is more than compensated by the higher expected social interdependence costs from collective decisions. If instead one chooses a greater degree of decentralization, then one incurs an increase in the expected E-costs which is greater than the decrease in the expected social interdependence costs from collective level decisions. Expected costs are minimized at point A and given this degree of decentralization the optimal decision rule at this level is N^A.

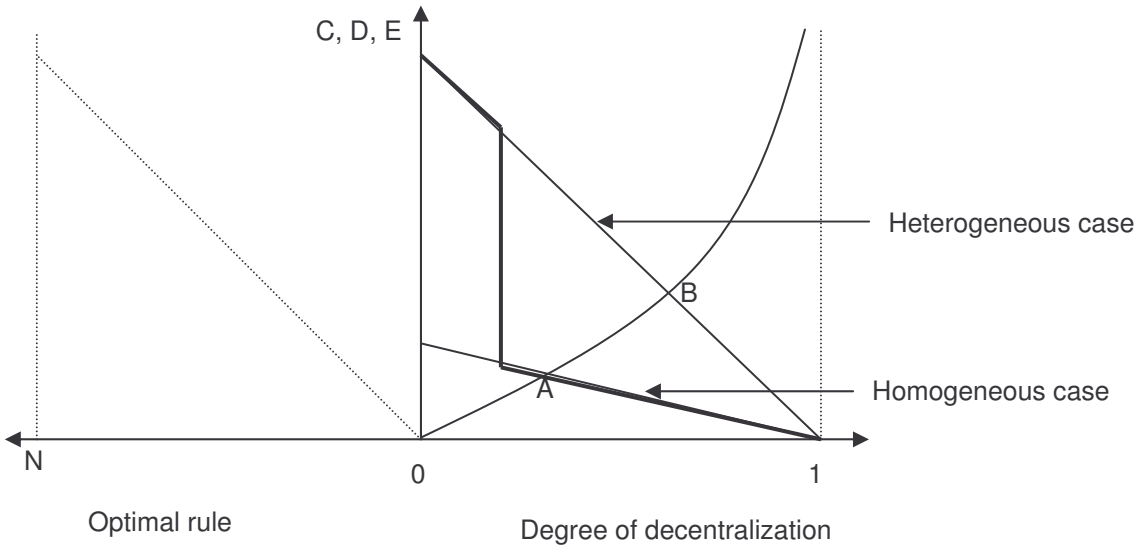

Figure 6. Heterogeneity, polarization and the optimal mix

This model allows us to consider the expected combination of decentralization and decisions rules in homogeneous and heterogeneous societies. This is done in figure 6 above where I consider the case of a very homogeneous society and a very

heterogeneous one. The E-cost curve is the same in both cases to allow us to focus on the effect of a change in heterogeneity and because a-priori we would not expect these costs to differ significantly in similar sized societies. It is important to note what these curves represent. The social interdependence curves reflect the average expected costs from the whole range of post-allocation collective decisions in different areas while the E-curve represents the average expected opportunity cost of not internalizing the spillover effects or of not enjoying the economies of scale and scope over the whole range of possible policies.

It is clear from the figure that, ceteris paribus, we would expect very homogeneous societies to be very centralized and in addition to have relatively less inclusive rules for post-allocation collective decision-making (point A). On the other hand, heterogeneous societies should be relatively decentralized with more inclusive rules for collective decision-making on the assigned policies (point B). In sum more homogeneity moves the optimum mix of decentralization and decision rules towards more centralization and less inclusive collective decision rules while more heterogeneity calls for more decentralization and more inclusive rules at the assigned level. If instead we consider the case of a heterogeneous but polarized society the optimum mix may imply less decentralization (corresponding to each group which makes up this society) and less inclusive rules compared to the fractionalized heterogeneous society (bold discontinuous C+D curve and point A)[4].

This analysis allows us to predict the optimal assignment of competencies among different levels of government and the appropriate decision rule at the assigned level on a policy by policy basis. There are several interesting scenarios which are considered in figure 7.

[4] Again this curve is drawn for the average degree of polarization taking into account all policy areas.

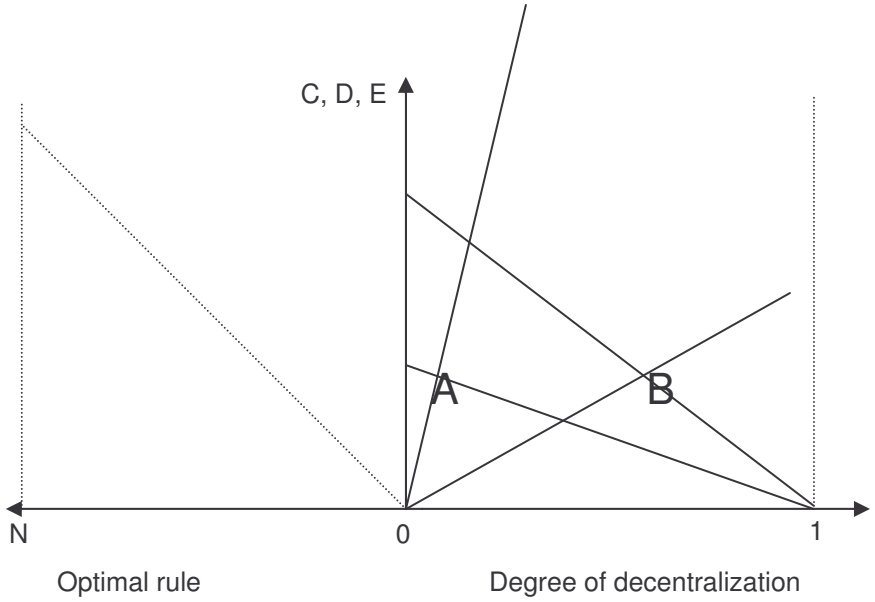

Figure 7. The optimal mix at the policy level

Scenarios A and B are clear-cut. Indeed, Alesina and Spolaore (2003, ch.9) limit themselves to these. Scenario A describes a situation of high homogeneity and high spillover effects or economies of scale and scope. Policy areas here may include defense and law enforcement, monetary policy and environmental protection. The optimal arrangement is to centralize the policy in question and I would add, to adopt relatively less inclusive decision rules at this level. Scenario B describes a situation of high heterogeneity and low external effects or economies of scale and scope as is the case for many local goods. The optimal arrangement is a higher degree of decentralization of the policies in question and given this degree of decentralization and thus the facility of out-migration, the collective decision rules can again be less inclusive.

Consider now two other cases that are characterized by a degree of preference polarization (see figure 8). Scenario C implies very polarized preferences but even higher external effects or economies of scale and scope. The overriding importance of external effects or economies of scale may still make more centralization and more

inclusive rules the optimal arrangement despite a discontinuity in the corresponding C+D curve (the discontinuity is to the right of point C). One example could be environmental policy to control air pollution in a society with significantly different preferences across regions (perhaps because of large income differentials such that wealthy regions prefer more stringent environmental controls than poorer ones). Another example may be law enforcement in plural societies so that preference heterogeneity exists but the overriding importance of economies of scale or negative externalities from parallel provision may make centralization and the use of inclusive decision rules the optimal arrangement (see also Kyriacou, 2006).

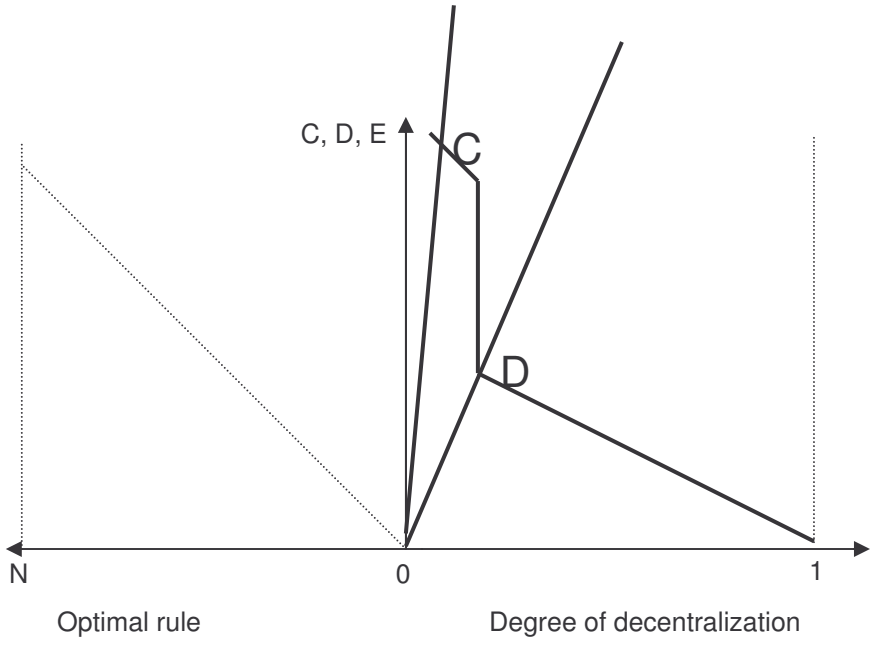

Figure 8. Polarization and the optimal mix at the policy level

Scenario D similarly represents highly polarized preferences but now the externalities or economies of scale and scope are smaller (although still considerable). Now the optimal degree of decentralization would be down to the group level and at that level, less

optimal rules could be adopted. One example here could be language or education policies in plural societies since one can imagine positive spillover effects from a common language or education system but may expect large preference heterogeneity over the choice of such a language or system in societies polarized to some extent along ethnic or linguistic lines.

4. Non-optimal rules and the choice of decentralization

I will now consider how the choice of non-optimal post-allocation collective decision rules may affect the desired degree of decentralization. For a given degree of heterogeneity and given spillover effects or economies of scale and scope the optimal degree of decentralization and the resultant optimal decision rule is derived as before (point A in the upper right hand section of figure 9).

Let's assume now that instead of the optimal rule N*, a less inclusive rule N^1 is adopted. By definition, this rule generates social interdependence costs above those generated by the optimal rule and does so along the whole decentralization range over which moreover these costs are decreasing as we approach complete decentralization. We can represent this by the curve $(C+D)^1$. $(C+D)^1$ is thus specific to the non-optimal rule N^1 and – except at the point of complete decentralization – it is situated above the curve (C+D)* which recall is drawn for all the optimal rules at each level of decentralization. If we move to two extreme rules (for example one man rule or unanimity) then the corresponding social interdependence curve would be $(C+D)^E$ reflecting very high expected social interdependence costs along the decentralization range compared to those generated by the optimal rule. Moving from one-man rule towards the optimal rule N* will reduce the social interdependence costs basically

because the reduction in the C costs more than compensates the increase in the D costs in the original B&T diagram (see figure 1). By definition these costs are minimized at N* and moving from this rule towards unanimity will increase social interdependence costs since now the reduction in C costs is more than compensated by the increase in the D costs.

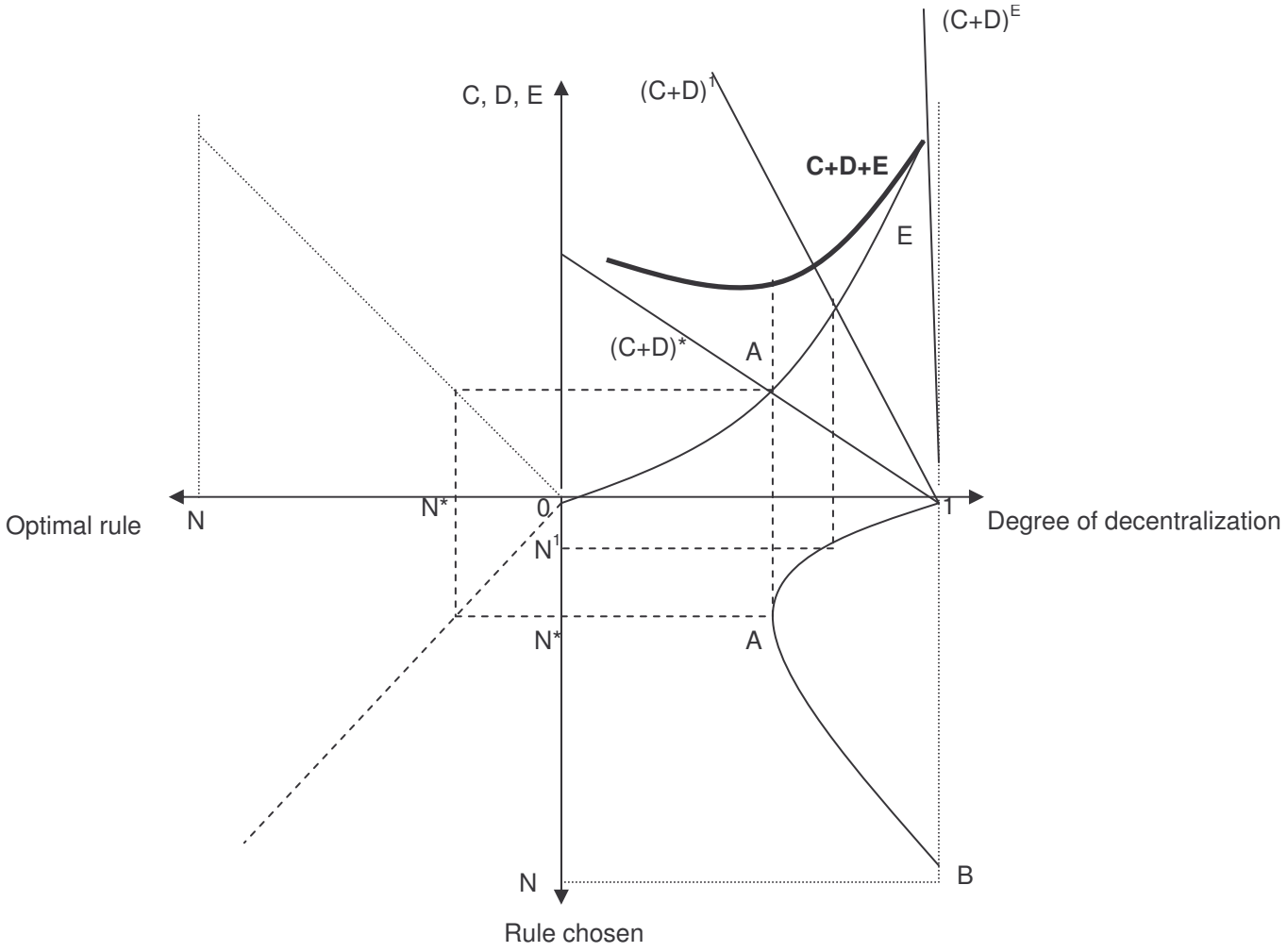

Figure 9. Non-optimal rules and the desired degree of decentralization

As before the optimal degree of decentralization under each rule emerges from the point of intersection of each C+D curve (drawn for each chosen rule) with the E curve. The resultant curve is plotted in the lower right hand side of figure 9 and reflects the relationship between different decision rules and the optimal degree of decentralization.

The curve describes a positive relationship between the adoption of more inclusive rules and the choice of more centralization up to the optimal voting rule N*. From this point on the relationship is negative reflecting an increase in social interdependence costs basically due to an increase in decision-making costs. N^*corresponds to the maximum degree of centralization available given the degree of homogeneity in preferences and the spillover effects or economies of scale and scope present. Note that in the two polar cases of very non-inclusive rules (one man rule or unanimity), more rather than less decentralization is desirable. The implication which can be draw from this is that for any given degree of preference heterogeneity and for given economies of scale the degree of centralization or decentralization may vary and this variation may be partly explained by the type of decision-making rules employed.

If we now return to the four scenarios illustrated in figure 7 above it should be obvious that this positive relationship is largest in case C where preference heterogeneity is high but economies of scale are even more important. That is to say, the adoption of more inclusive rules and institutions can facilitate the centralization of policies in areas that are ideally provided centrally based on very inclusive voting rules. Centralization is moreover facilitated insofar as these rules are designed in such a way so as to minimize the expected greater decision-making costs. If we make the reasonable assumption that decision-making costs grow exponentially with more inclusive rules, then a bicameral system with a limited degree of overlapping between both chambers and operating under a majority rule in each house is superior to supermajority rules since it can reduce external costs but by generating lower decision-making costs (Levmore, 1992).

It is worth noting what the shape of the (lower right) quadratic – and thus the relationship between rules and decentralization – depends upon. As previously

explained, one factor is the global optimum that is, the optimal degree of decentralization and the resultant optimum voting rule since this indicates the position of the maximum point on the quadratic and thus determines both the range of the relationship and its nature through its impact on the slope of this curve. But another variable which determines the slope is the change in the position of the C+D curve as we move away from the optimal rule.

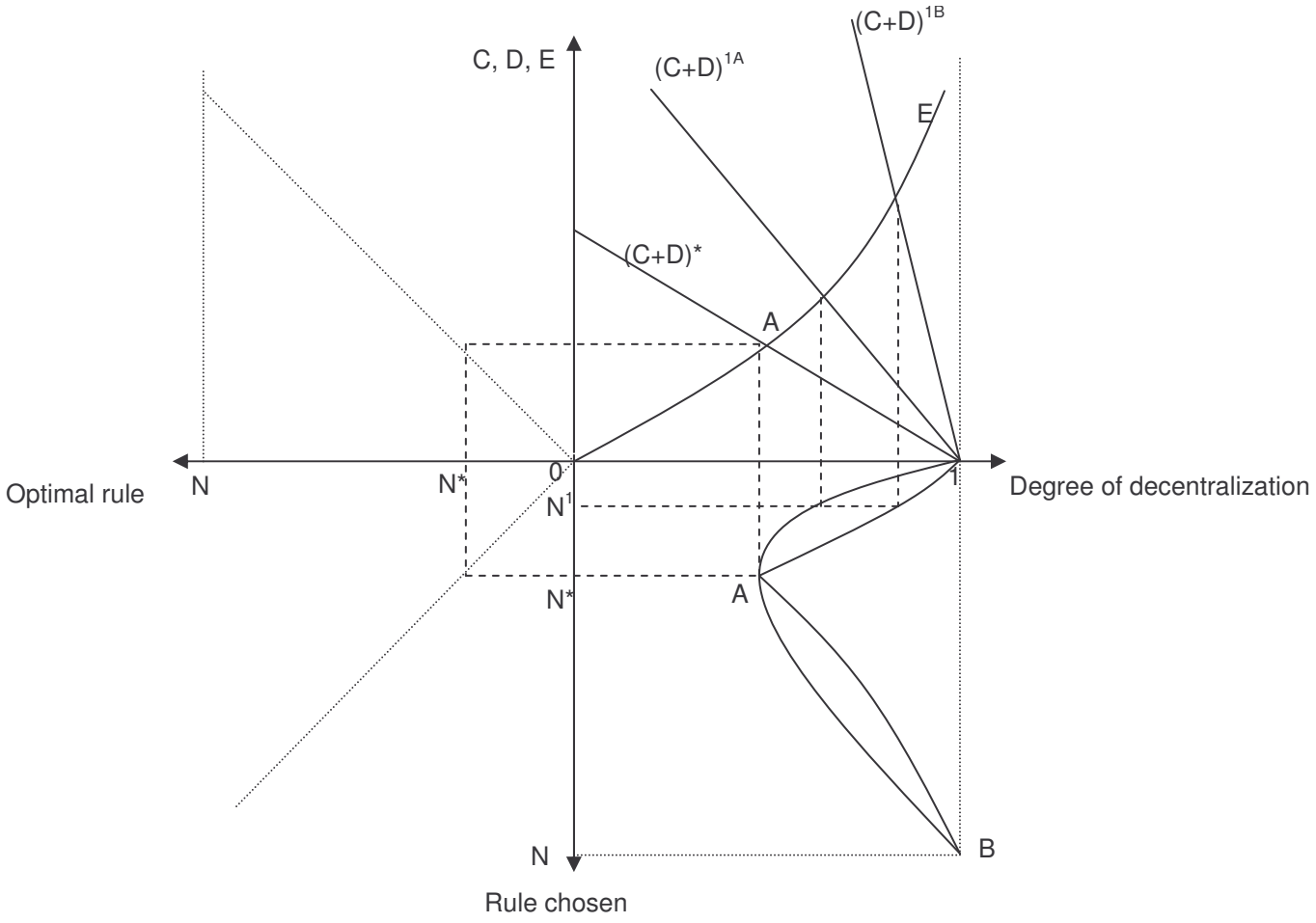

Figure 10. Non-optimal rules and the desired degree of decentralization revisited

In figure 10 we vary the extent of the shift of the C+D curve due to the adoption of non optimal rules while maintaining the global optimum constant in either case. If we adopt the less inclusive rule N^1 then depending on the resultant increase in the social

interdependence costs we can have either $(C+D)^{1A}$ corresponding to a relatively small increase in these costs (the quadratic in figure 1 is relatively wide) or $(C+D)^{1B}$ reflecting a relatively large increase (B&T's social interdependence curve is relatively narrow). The resultant trade-off curve in the lower right hand corner is convex in the case of the former and concave in the case of the latter reflecting that in the latter case for any given deviation from the optimal rule on would prefer relatively more decentralization.

5. Some preliminary evidence from the European Union

Because of important data limitations at the country level the resolution of which is beyond the scope of this theoretical paper, in this section I will explore some preliminary evidence relevant to some of the policy level implications suggested by the normative analysis[5]. In particular I will follow Alesina et al (2005) who consider the

[5] In order to empirically analyze the country level hypotheses we need measures of preference heterogeneity, decentralization and the inclusiveness of rules at different levels of decentralization. Insofar as heterogeneity at the country level is concerned we ideally require an aggregate measure of heterogeneity in preferences over public policies (remember that the curves in figure 6 are drawn for the whole range of collective decisions). This measure should moreover account for inter and intra-group differences in preferences. Unfortunately recall that those heterogeneity measures available extrapolate aggregate heterogeneity over collective decisions solely from ethno-linguistic or religious fractionalization or polarization and moreover assume that all ethnic or religious group cleavages are equally salient. This may be a fair approximation in deeply divided societies (for example, Bosnia, Kosovo, Iraq) but less so in others (like Canada, Australia, USA). Schneider (2003) provides a continuous measure of decentralization that takes into account the fiscal, administrative and political dimensions of this variable but it is difficult to relate this measure to collective decision rules at the various discrete levels of government (central, regional, local). I am not aware of any readily available index of the inclusiveness of rules across countries and levels.

optimal division of competencies between Member States and the supranational institutions of the European Union (EU) as suggested by the trade-off between preference heterogeneity and externalities or economies of scale and scope. They contrast these theoretical priors with the actual degree of EU involvement measured by way of the Treaties, secondary legislation as well as Court of Justice activity. Their analysis omits any discussion of decision rules for collective decisions at the EU level and so is ripe for extension.

According to these authors there is a clear cut case for the centralization to the EU level of areas such as international trade policy and the common market because they expect high economies of scale and low preference asymmetry. Indeed they find that these policies are centralized to the EU level. What of the decision rules employed at this level? Consistent with my analysis here, the decision rules are less inclusive (qualified majority rather than unanimity)[6]. International relations policy is also seen to experience high economies of scale and low preference asymmetry (although the authors admit non-negligible differences in tastes over foreign policy issues). They suggest that the optimal level of allocation is at the national or EU levels but note that the observed allocation at the EU level is rather limited. One reason for this may be that the degree of heterogeneity in preferences in this area is higher than that suggested by the authors as indicated by the use of unanimity voting in this area at the EU level[7].

[6] Based on the Treaty of Nice.

[7] One of the authors had previously put more emphasis on the importance of heterogeneity in this area: "Defense and foreign policy would seem one of the most obvious candidates for a European-level centralization, but the strength of heterogeneity of preferences has created serious impediments". (Alesina and Spolaore, 2003: 208). Note that qualified majority is also possible in some cases but a country has the right to ask others to decide by unanimity "for important and stated reasons of national policy"(Article, 23 TEU).

A more ambiguous case for centralization to the EU level emerges from their analysis in the areas of competition policy and state aid control as well as monetary, fiscal (budgetary policy in the context of the stability and growth pact) and tax policy. While they expect high external effects in these areas they are unsure as to the degree of preference heterogeneity. Competition policy and state aids are assigned to the EU level and moreover decided upon by qualified majority indicating a relatively high degree of homogeneity in this area. Similarly, monetary policy is assigned to the ECB which moreover takes decisions by simple majority while fiscal discipline is centralized in the context of the "excessive deficit procedure" and the Council takes decision here by a two thirds weighted majority. This points to a degree of homogeneity in preferences. Alternatively, the use of unanimity in regards to EU decisions on the harmonization of (indirect) taxes decisions implies more heterogeneity in this area.

The authors expect the allocation to the national (or local) level of policies which are likely to have few external effects and over which preferences may be heterogeneous across countries. This is actually observed in the areas of education, research, culture, industry and transport. But there are some areas where the theoretical priors suggest decentralization but which are infact centralized to the EU level namely health, employment and social protection and above all agricultural policy. They suggest that this is due to the democratic deficit and the centralizing activities of the EU's supranational bureaucracy to gain prestige and influence. But of course the over-centralization of the EU is related to the credibility or time inconsistency problem discussed in the beginning of this article and points to the importance of the decision rules in place for deciding on the allocation of competencies.

The vertical allocation of competencies between member states and the EU occurs in the context of intergovernmental conferences under a unanimity voting rule.

The need for unanimous agreement in the context of intergovernmental treaty negotiations in the EU gives rise to side-payments to those member states with intense preferences over an issue and explains the allocation of areas such as agriculture to the EU (Moravscik, 1993) [8]. This is instructive since it suggests that the optimal degree of decentralization may not be achieved in part due to over-inclusive decision rules to decide the allocation of policies across different governance levels. Put in another way while the adoption of relatively inclusive rules for deciding the vertical allocation of policies may help resolve the credibility or time inconsistency problem facing countries faced with the choice of EU membership there is a danger that by increasing the power of individual member states to hold out for compensatory payments, over-inclusive rules may lead to over-centralization and in general distort the optimal allocation of competencies as suggested by the trade-off between preference heterogeneity and external or scale and scope effects.

6. Summary of implications generated by the analysis

The normative analysis in the previous pages generates a series of implications that will be summarized here. More heterogeneity makes more inclusive rules for deciding on the vertical allocation of policies more rational and moves the optimum mix of decentralization and post-allocation decision rules towards more decentralization and more inclusive rules at the assigned level. This said, in the context of a polarized society the optimum mix may require less decentralization (corresponding to each group which makes up this society) and less inclusive rules.

[8] See also Vaubel (1994) for a public choice account of centralization in the European Union based on the institutional incentives of national and suprnational actors.

At the policy level, areas over which there is homogeneity in preferences and where spillover effects or economies of scale and scope are important should be centralized (defense, monetary or environmental policy) whereas policies over which preferences are heterogeneous and spillover effects or economies of scale and scope are unimportant should be decentralized (policies concerning local goods). This mirrors the implications drawn by Alesina and Spolaore (2003) and is consistent with much of the evidence presented there and by Alesina et al (2005) for the European Union. Moreover, my analysis suggests that the optimal decision rule at each level in either case is a relatively less inclusive one. For policies over which there is a relatively high degree of preference polarization but which experience very large spillover effects or economies of scale and scope the optimal arrangement may be a high degree of centralization and very inclusive decision rules (law enforcement in plural societies or environmental policy to control air pollution with demands for environmental protection differing from region to regions). For the same degree of preference polarization but reduced spillover effects the optimal arrangement may involve decentralization to the groups making up such a society and the use by these groups of less inclusive rules for collective decisions (language or education policy in plural societies).

For any given degree of preference heterogeneity and given spillover effects or economies of scale and scope the degree of centralization or decentralization may vary and this variation may be partly explained by the collective decision-making rules present. Specifically, one would expect that the desired degree of centralization be increased by more inclusive decision-making rules (this insight is also advanced by Congleton et al, 2003). This positive relationship is likely to be important in situations where preferences heterogeneity is high but spillover effects or economies of scale or

scope are very important. While the adoption of more inclusive rules may make more centralization possible there is a limit to this positive relationship imposed by the ever higher decision-making costs generated by more inclusive rules. In the presence of such costs and as we approach very inclusive rules we would expect the positive relationship between more inclusive rules and more centralization to be reversed.

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