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THE POLITICAL ECONOMY OF SUSTAINABLE FEDERATIONS

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Abstract

This paper studies a constitutional framework that enables sustainable federative agreements. In the model, districts decide on local policies and envision the possibility of entering a federation. Focusing on rules for legislative bargaining in the federation, I find that a non-egalitarian bargaining rule, which assigns policy making power to one of the district's representatives is welfare inferior to the decentralized status quo. In contrast, under an egalitarian bargaining procedure, federation yields a welfare superior outcome. The analysis indicates the desirability of making such egalitarian bargaining rules credible.

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1 Introduction

The viability of a federation hinges crucially on its ability to benefit its member units, in particular those considering separation. The standard approach in the literature on fiscal federalism, discusses therefore the pros and cons of decentralization versus centralized provision of local public goods. Fiscal spillovers, for example, have been widely identified as a factor in favor of centralization. To determine policy decision making in a federation, the early literature (see Oates, 1972) posited a central planner imposing the restriction of uniformity of policies across districts. Clearly, policy uniformity is a detrimental factor to some, possibly, even most of the districts in a federation – see, for example, Alesina and Spolaore, 1997, Cremer and Palfrey, 1996, 1999. While such modeling may be appropriate for highly centralized federations, many existing federations allow for policy variability across the member districts. More recently, therefore, some authors have departed from the policy uniformity assumption explicitly focusing on the nature of the political process in a federation and suggesting that it, too, may play against centralized decision making.[1] This focus represents an alternative view of policy formation that switches attention from a benevolent central planner to a political bargaining among the representatives of member units.

The literature referred to above is solely concerned with the fiscal aspects of local public goods provision, such as transportation or schooling. In reality, social or cultural aspects of policies may be at least as important in the eyes of the public as fiscal parameters. There is no lack of countries who have collapsed or face a collapse because of social/cultural/linguistic divisions, while the threat of secession on the basis of purely fiscal factors is much more rare.[2] In cases as various as the former USSR, Yugoslavia, Belgium, Ethiopia, and Quebec cultural and social cleavages exert the strongest force in the separation debates. Furthermore, historically, the unification of many countries proceeded along

cultural lines: this is the case of Italy, France and Germany in the previous century; and actually such determinants became the basis for drawing the map of Europe following World War I.

The spillover effects of the social aspects of policy making is the starting point for studying the relative virtues of the federation suggested in this paper. Evidently, decentralization is inefficient since it fails to internalize spillovers. While a welfare enhancing potential does exist for a policy coordinating federation, it has been often argued that this potential may not necessarily be realized. The present paper is in the spirit of the recent strand of the literature that focuses on political failures as a mitigating factor in this regard (see Besley and Coate, 1998, Ellingsen, 1998, Wärneryd, 1998). We envision a two-district economy, where spillover effects are associated with their respective policy choices. We then compare pure decentralization, in which the policies are set independently, with the centralized outcome achieved in a federation. The federation consists of the districts' representatives, who engage in legislative bargaining in order to determine the vector of policy choices for their respective districts. We then inquire into the nature of policies chosen in a federation and their welfare implications under two modes of legislative bargaining.

Under one mode, a randomly chosen district representative imposes her will by dictating policies for herself as well as for the rival district. We find that the outcome of this type of bargaining, which is referred to as non-egalitarian, is Pareto inferior ex ante to the decentralized outcome. Then we continue with the analysis of egalitarian bargaining, whereby both representatives engage in at least one round of active bargaining prior to considering the threat of secession. The equilibrium outcome under this type of bargaining represents a welfare improvement relative to the decentralized outcome and the chosen policies are expected to be less polarized.[3]

These results have several implications. For one thing, only egalitarian federations that grant rights to minorities, are viable. Another implication is that in order to be viable, an agreement to form a federation must specify these minority rights at a constitutional level: if the federation is expected to deviate from the egalitarian norm, it is unlikely to emerge in the first place. Thus, the egalitarian norm is a commitment mechanism through which the potential federation members can reap the benefits of centralized policy making. It is no wonder, therefore, that federations, such as the US and the European Union, devote a great deal of attention in their constitutional rules to ensuring fair representation of the member units.[4] Indeed, Weingast, 1997, 1998, stresses the importance of institutions to create a sustainable balance between the member units of a federation, such as the northern and the southern states in the US.[5] Finally, our results have bearing not only on the formation of new federations, but also on the likely modifications of governing rules in existing ones. They, for example, may imply that the majoritarian governance structure of the EU may not be sustainable and may need to be changed, in particular in the light of the anticipated incorporation of new countries. In contrast, the disproportionately large representation in the council of ministers there of small countries accords well with egalitarianism stressed in this paper.

In addition to the literature surveyed above two other papers are relevant. Bolton and Roland, 1997, examine the possibility of secession from a federation as we explicitly do, albeit abstracting from legislative bargaining. Lockwood, 1998, builds on the earlier work by Ferejohn et al., 1987, to model legislative bargaining and is probably the first to apply a full-fledged political bargaining model to a federation formation. The key modeling difference between his paper and ours is that here the possibility of a secession naturally results in a threat point, which allows us to focus on a different bargaining rule and on egalitarianism as its essential property.

The paper proceeds as follows. The next section lays out the basic set up. Preliminary analyses of decentralization and optimal centralization are contained in section 3. Section 4 focuses on a full-fledged analysis of political bargaining distinguishing between an egalitarian and a non-egalitarian bargaining rule. Section 5 discusses some interpretations of the main results and their extensions, and section 6 concludes.

2 Basic model

The model economy consists of two districts indexed by k=1,2. Each district is populated by a continuum of individuals with the measure of unity. Suppose that all individuals within a district are identical and, in particular, share identical preferences over the policy vector (p_k, p_{-k}), where we assume that $0 \leq p_k \leq 1$, k=1,2.[6] Absent spillovers, each individual has an ideal point over his district's policy, denoted s_k. The spillover effects are captured by the assumption that individuals prefer other district's policy to be similar to their own policy choice.[7]

To motivate this particular type of spillovers we think of a policy as a choice of amenities such as standards, the official language, cultural aspects of education system, and other ingredients of social norms. Lazear, 1999, for example, writes: "Trade between individuals is facilitated when all traders share a common culture and language" (p. S96).[8] Easterly and Levine, 1997, find that ethnic and linguistic differences have had a devastating impact on growth in many African countries, and Knack and Keefer, 1997, do the same for a cross section of countries.[9]

We thus write:

$$U_k(p_k, p_{-k}) = -D(|s_k - p_k|) - \beta D(|p_k - p_{-k}|) \qquad (1)$$

where $D(\,)$ is an increasing, twice continuously differentiable, and convex function, $D(0) = 0$, and $0<\beta<1$. To simplify the presentation we assume that the preferences of the individuals in

the two districts are symmetric, so that $s_1 = 1 - s_2 < ½$.

The first component in (1) stipulates own ideal policy for every district k's inhabitant. The second component is specific to the kind of policies under consideration and represents the welfare loss as a result of different policy choices by the two districts; as argued above, such welfare losses naturally arise in the context of policies having to do with official language or aspects of culture. Note that policies here can be viewed as local public goods, which also entail the specific policy spillovers.

Under decentralization, the districts choose their policies independently of each other and disregarding the mutual spillover effect. Under centralization, the policies are determined jointly using one of the bargaining procedures specified below.

3. Preliminary analysis

This section introduces the equilibrium solutions under decentralization, optimal policy coordination and the simplest version of a federation, thus setting the stage for the subsequent analysis.

3.1. Decentralization

Under decentralization, each district determines its policy independently of the other district. Thus, at the interior equilibrium the following first order conditions are met:

$$D'(|s_k - p_k|) - bD'(|p_k - p_{-k}|) = 0, \quad k=1,2 \qquad (2)$$

Our assumptions ensure existence of a unique equilibrium solution of (2), denoted (p_1^*, p_2^*). Symmetry implies that $p_1^* - s_1 = s_2 - p_2^*$ so that the equilibrium can be characterized as follows:

$$D'(p_1^* - s_1) - bD'(s_1 + s_2 - 2p_1^*) = 0, \quad \text{and } p_2^* = s_1 + s_2 - p_1^* \qquad (3)$$

U_k^* will denote the utility level of district k's inhabitants, k=1,2, under decentralization.

3.2. *Optimal policy coordination*

It is easy to show, however, that the equilibrium is inefficient. In particular, since the policy spillover effect is not taken into account by the districts, the equilibrium policies end up being excessively polarized. To see this consider the optimal policy choices obtained when the districts optimally coordinate their policies. This vector of optimal policies, denoted (c_1, c_2), maximizes a weighted sum total of individual utilities:

$$Max_{(c_1,c_2)} \{- \lambda [D(|s_1 - c_1|) + \beta D(|c_1 - c_2|)] - (1- \lambda)[D(|s_2 - c_2|) + \beta D(|c_2 - c_1|)]\}, \ 0 \leq \lambda \leq 1 \quad (4)$$

Note that the optimal policies must always lie in between the ideal point of the two districts: extreme policies are clearly inefficient as they harm all individuals.

The first order conditions for an interior optimum are:

$$- \lambda D'(c_1 - s_1) - \beta D'(c_2 - c_1) = 0 \quad (5a)$$

$$- (1- \lambda)D'(c_2 - s_2) - \beta D'(c_2 - c_1) = 0 \quad (5b)$$

Note that, disregarding the utility of district 2, that is, setting λ=1, yields the solution $c_1 = c_2 = s_1$; whereas disregarding the utility of district 1 by setting λ=0 yields $c_1 = c_2 = s_2$. Twice differentiating (5) we obtain that $dc_2/d\lambda$, $dc_1/d\lambda < 0$, implying that the larger is the weight of a district's utility, the closer are the optimal policies to that district's ideal point. Furthermore, when λ>1/2, $dc_2/d\lambda < dc_1/d\lambda$, and when λ<1/2, $dc_2/d\lambda < dc_1/d\lambda$. This implies that $c_1 \leq c_2$ and that policy polarization, (c_2-c_1), is maximized when λ=1/2.[10]

Collecting results,

Lemma 1.

(a) The optimal policies are closer to a district's ideal point the larger is that district's weight.

(b) These policies are always confined to the interval of the districts' ideal points,

$s_1 \leq c_1 \leq c_2 \leq s_2$.

(c) The degree of policy polarization is maximized when the two districts are assigned equal weight.

Consider now a symmetric Pareto optimum, obtained when maximizing (4) with l=1/2; in this case, $s_2 - c_2 = c_1 - s_1$. The first order conditions in (5) then become as follows:

$$D'(c_1 - s_1) - 2bD'(s_1 + s_2 - 2c_1) = 0 \qquad (6)$$

Assuming that $D'(½ - s_1) - 2bD'(0) > 0$ guarantees that the solution of (6) yields an optimal outcome. To ensure that this is so for any degree of polarization in preferences, we shall henceforth assume that b 1/2. O_k will denote the utility level of district k's inhabitants under the symmetric Pareto optimal solution.

Comparison between (3) and (6) reveals that $p_1 < c_1$, hence, $p_2 > c_2$, so that $(p_2 - p_1) > (c_2 - c_1)$ implying that the decentralized outcome is dominated by the coordinated solution under which the policies chosen in the two districts are closer to each other, $O_k > U_k^*$, k=1,2: when the policy choices are made independently, each district ignores the indirect effect on the other district, through lowering policy differences.

Summing up,

Lemma 2. The decentralized outcome generates excessive polarization relative to the symmetric optimal solution, hence *a fortiori* relative to any Pareto optimal outcome and is inefficient. In particular, all individuals are better off under the symmetric Pareto optimal solution that moves the districts' policies closer to each other relative to decentralization.

4 Political bargaining in a federation

This section contains the main results of this paper. Here we explicitly model the political

process through which decisions are made in the federation of the two districts. We envision two variations of this process that are based on legislative bargaining between the representatives of the two constituencies. Under both variations the legislature consists of one representative from each district. One of these representatives is selected at random to make an offer regarding the policy vector, (p_1, p_2). Under the non-egalitarian rule, this offer is binding, so that the elected proposer can be viewed as a dictator.

We then consider the case of a more egalitarian legislature that embeds a meaningful negotiation process. Specifically, in this case, a randomly chosen legislator submits a proposal, which is implemented if agreed upon. Or else, the other legislator can submit a "take-it-or-leave-it" counteroffer, which involves a policy commitment on the part of own district. If accepted, this policy is implemented; if not, secession takes place. [11]

The egalitarian nature of this type of legislature is reflected in it letting both parties an active participation in the bargaining process. While there are many other ways of modeling legislative bargaining, the above two should suffice for the illustration of the importance of the nature of the bargaining procedure to extract the benefits of centralization.

4.1. Non-egalitarian federation

We introduce a preliminary analysis of a federation by considering a somewhat degenerate case of bargaining where policies can be imposed by force. Specifically, suppose that the legislature consists of one representative from each district. A randomly chosen district representative gets to select policies for own district as well as for the other district. This decision-making procedure grants the power of coercion to that representative and is therefore extremely non-egalitarian in the ex post sense.

The outcome in this case is obvious: the representative making the policy choices will set policies in both districts equal to her ideal point. Thus, the policies will be $p_1 = p_2 = s_1$ or

be $p_1 = p_2 = s_2$ with the probability of ½ each. This implies that the expected utility of each individual is

$$W_1 = W_2 = - D(|s_k - s_{-k}|)/2 \quad (7)$$

Note that this outcome is inefficient. For once, because of the convexity of D, it is dominated by an outcome where the policies in both districts are set to be equal to ½ with certainty. But the latter outcome is inferior to the symmetric Pareto optimal allocation derived in (6).

How does the coercive outcome compare with decentralization? Intuitively, note that although coercive federation imposes uniform policies thus eliminating polarization, it leads (with the probability of ½) to the adoption of policies far away from the preferred point of the voters. This implies that decentralization may be in fact superior.

To confirm this intuition, define $e = (p_1^* - s_1)/(s_2 - s_1)$. e is the relative distance of the equilibrium policy from own ideal policy point under decentralization. It is easy to show (details are available upon request) that the distance from the equilibrium policy to the ideal point is smaller than the distance of policy to the midpoint of the unit interval, implying that e <1/4. The reason for this is that the effect of the distance of a policy from own ideal point matters more for welfare than the spillover effect of policy polarization.

Then symmetry implies that $p_2^* - p_1^* = (1-2e)(s_2 - s_1)$, so that the utility level of district 1's inhabitants under decentralization, U_1^*, can be written as follows:

$$U_1^* = - [D(e(s_2 - s_1)) + bD((1-2e)(s_2 - s_1))] \quad (8)$$

and convexity of D implies that

$$U_1^* > - (e + b(1-2e)) D(s_2 - s_1) \quad (9)$$

Consider now

$$d(e + b(1-2e))/db = 1-2e + (1-2b) de/db \quad (10)$$

Differentiation of the first order equilibrium condition in (3) reveals that p_1 is an increasing function of b, so that $de/db > 0$, implying – since $b \leq$ ½ by assumption – that (10) is positive.

Thus, the minimal value of the right hand side in (9) is achieved when $\beta = ½$, which implies that $U_1^* > - D (\sigma_2 - \sigma_1)/2$, so that coercive federation results in a lower utility level than decentralization, $W_1 < U_1^*$. And symmetry implies that similar result holds for district 2's inhabitants.

Summing up,

Proposition 1. A coercive federation is welfare inferior to decentralization.

Two factors affect the above result. First, the implemented policies under coercive federation do not allow the differences in preferences across the districts to be expressed; policy uniformity imposed on heterogeneous individuals is clearly a detriment. The second factor is the political uncertainty associated with the identity of the representative who is elected to impose policy choices.

4.2. Egalitarian legislature

This case gives rise to a three stage game. In the first stage, a district's representative chosen at random (say, district 1's) proposes a policy vector. Then, in the second stage, the representative of the other district, say 2, can accept the proposal or come up with a "take-it-or-leave-it" counteroffer, committing her own district to a policy. In the third stage district 1 either accepts this counteroffer or secedes and sets its own policy independently. The analysis of the game proceeds backwards, starting with the last stage, at which district 1 considers whether to accept district 2's offer or to secede setting its policy autonomously. In stage 2, district 2's representative makes her proposal anticipating the optimal response of the other side, and the outcome in this case will consist of a pair of policies which are in Stackelberg equilibrium with respect to each other.

To find district 1's policy in case of secession, we maximize that district's utility function, which yields the following first order condition:

$$D'(p_1 - \sigma_1) - \beta D'(p_2 - p_1) = 0 \qquad (11)$$

Equation (11) implicitly determines district 1's reaction function to the policy choice by the leader district 2, $p_1(p_2)$. Our assumptions on D ensure that the reaction function is differentiable. Differentiation reveals that

$$0 < dp_1 / dp_2 = \beta D'(p_1 - p_2) / [\beta D'(p_1 - p_2) + D'(\sigma_1 - p_1)] < 1 \qquad (12)$$

Maximizing the utility of district 2 with respect to its policy choice, while taking into consideration the anticipated choice of the rival district, yields:

$$-D'(\sigma_2 - p_2) - \beta D'(p_2 - p_1)(1 - dp_1 / dp_2) = 0 \qquad (13)$$

Equations (12) and (13) jointly determine the equilibrium proposal at stage 2, (p_1^2, p_2^2) and, implicitly, the reservation utility level of district 2's representative, V_2, from rejecting the proposal made in stage 1 by the district 1's representative. Comparing this proposal to the decentralized outcome in (3), we observe that the policy choice of district 2 is closer to its ideal point and that of district 1 is farther from its ideal point in federation than under the decentralized outcome. Further, analysis of the reaction function reveals that, since $dp_2/dp_1 < 1$, the net result of these moves will be an increase in policy distance. Therefore policy polarization must be higher under district 2's proposal than under decentralized schooling. And – since (p_1^2, p_2^2) is just a Stackelberg equilibrium with district 2's representative being a leader – the utility level of district 2's inhabitants under this proposal, V_2, must be higher than under decentralization and that of district 1's inhabitants must be lower.

These results have an interesting implication. Suppose that legislative bargaining had the following nature. A randomly chosen representative makes a "take-it-or-leave-it" policy offer committing her own district to a policy and anticipating the possibility of secession by the rival district. This procedure is clearly less egalitarian in the ex post sense than the one analyzed

here as it grants excessive power to the district whose representative makes the offer. Since as revealed by the preceding analysis, the policy outcome in the case of such bargaining is more polarized than under decentralization, so that in expected sense the rival district's policy if further removed from own ideal point, the expected utility would then be lower than under decentralization.

For future use, it is convenient to compare

$$V_2 = -D(\sigma_2 - p_2) - \beta D(p_2 - p_1(p_2)) \tag{14}$$

to the utility level attained under the symmetric optimal solution studied above,

$$O_2 = -D(\sigma_2 - c_2) - \beta D(c_2 - c_1) \tag{15}$$

When $\beta = 0$, the policies in these two cases coincide implying that the utility levels are equal. Differentiating with respect to β while employing the envelope theorem reveals that, since policy polarization under the "take-it-or-leave-it" bargaining procedure exceeds that under the optimal solution, $dV_2 / d\beta = -D(p_2 - p_1(p_2)) < dO_2 / d\beta = -D(c_2 - c_1)$, which implies that the utility level of district 2's inhabitants is lower under the "take-it-or-leave-it" bargaining procedure relative to the optimal outcome.

Summing up,

Proposition 2. (i) A "take-it-or-leave-it" bargaining procedure yields a higher degree of policy polarization and a lower expected utility level than does decentralization, and (ii) it results in a lower utility level for all individuals relative to the symmetric optimal solution.

We now proceed by studying the stage 1's offer. At this stage, the representative of district 1 will offer a pair of policies, (p_1^1, p_2^1), so as to maximize own utility subject to the constraint that the utility of district 2's representative is at least V_2 – the level achieved under the equilibrium proposal at stage 2, that is she solves the following problem:

$$Max_{(p_1,p_2)} \{-[D(|\sigma_1 - p_1|) + \beta D(|p_1 - p_2|)]\} \quad (16)$$

$$\text{s.t. } -[D(|\sigma_2 - p_2|) + \beta D(|p_1 - p_2|)] \geq V_2$$

Comparing the solution of (16) to the proposal made at stage 2, (p_1^2, p_2^2), we first observe that $p_2^1 < p_2^2$, that is, according to the stage 1 proposal, the policy chosen by district 2 should be closer to district 1's ideal point than according to the stage 2 proposal: if the opposite held true, there would be no way to increase representative 1's utility while holding representative 2's utility at V_2. It should be equally obvious then that $p_2^1 - p_1^1 < p_2^2 - p_1^2$, that is, the policy distance as proposed at stage 1 is less that the policy distance as reflected in the stage 2's proposal: indeed, this is the only way to compensate district 2 for moving its policy towards 1's ideal point and to keep it at least as high as in the stage 2's proposal. Thus, the only remaining possibility is that $p_1^1 > p_1^2$ and $p_2^1 < p_2^2$, that is, relatively to the policy vector anticipated to arise in the Stackelberg equilibrium, district 1's representative proposes a reciprocal policy move towards each other.

These arguments establish the following:

Lemma 3. Policy polarization under stage 1's proposal of egalitarian bargaining is smaller than the one made under stage 2.

How does the outcome of egalitarian bargaining compare with the decentralized solution? To address this issue, first note that the solution of (16), (p_1^1, p_2^1), is clearly Pareto optimal and so solves problem (4) with some appropriate weights. Lemma 2 then implies that the policy distance, $p_2^1 - p_1^1$, must be smaller than that in the decentralized outcome. Proposition 3 tells us that the symmetric optimal solution results in a higher welfare than V_2 implying that the solution of (16) (which leaves district 2's inhabitants with the utility level of V_2) generates a

higher utility level for district 1's inhabitants than V_2, hence *a fortiori*, higher than under decentralization. Letting E_k denote the utility level achieved by district k's inhabitants in this case, we thus have established that $E_k > U_k^*$.

Summing up,

Proposition 3. Egalitarian bargaining yields a Pareto efficient policy outcome. Moreover, comparison with decentralization reveals that policy polarization is smaller under egalitarian bargaining and each individual is better off.

Note that the superiority of egalitarian bargaining is not only in *ex ante*, expected utility terms, but also *ex post*: both district representatives are made better off relative to decentralization independently of their respective bargaining roles. This implies that, once this procedure is adopted, there will be no subsequent regret and consequently both districts will be willing to stay in the federation.

4.3. Illustrative example

Consider the following special case of (1):

$$U_k(p_k, p_{-k}) = -(s_k - p_k)^2 - (p_k - p_{-k})^2/2 \qquad (1')$$

where we also assume that $s_1 = 0$, $s_2 = 1$. Thus we adopt here a quadratic specification of preferences, with $b = ½$.

Solving for the decentralized solution we obtain:

$$p_1^* = 0.25\,,\ p_2^* = 0.75,\ U_1^* = U_2^* = -0.19 \qquad (17)$$

Solving for the symmetric optimal solution we obtain:

$$c_1 = 0.33\,,\ c_2 = 0.67,\ O_1 = O_2 = -0.17 \qquad (18)$$

In the case of a non-egalitarian bargaining the chosen policies are $p_1 = p_2 = 0$, or $p_1 = p_2 = 1$, with equal probabilities, yielding the expected utilities of

$$W_1 = W_2 = -0.50 \quad (19)$$

Note that (19) is smaller than (17) thus confirming Proposition 1.

Turning to the analysis of the egalitarian bargaining, the optimal policy set by district 1 when seceding at the last stage is $p_1 = p_2/3$. Maximizing the utility function of the representative of district 2 yields then the following policy proposal at stage 2 along with the utility level for district 2:

$$p_1^2 = 0.27,\ p_2^2 = 0.81,\ V_2 = -0.18 \quad (20)$$

Solving (16) we obtain:

$$p_1^1 = 0.31,\ p_2^1 = 0.64,\ E_1 = -0.15,\ E_2 = V_2 = -0.18 \quad (21)$$

In particular, note that policy polarization in (21) is smaller than in (17) and the utilities in (21) are higher than in (17) confirming the result in Proposition 3.

5. Discussion and extensions

We now discuss the interpretation of the above results. To do so, it is convenient to consider a slight modification of the above model assuming that the districts differ in size, so that, for example, district 1 is more populous, and let n_k denote the size of district k. When this is the case, it may be reasonable to assume that the spillover parameter differs across the groups and, in particular, is an increasing function of the size of the rival district. Thus, the spillover parameter for district k would be $\beta(n_{-k})$, which is an increasing function. It is easy to see that the analysis of the decentralized solution proceeds similarly to the above. Also, the characterization of the optimal centralized solution is similar and, in particular, any such solution results in lower degree of policy polarization relative to decentralization.

Suppose now that, in a federation, the representative of the majority district 1 (which is possibly over-represented in the legislature) gets the opportunity to make the first policy proposal. The above results then suggest that when a federation is formed by unanimous

consent of the individuals in the two districts, it will not emerge unless the legislative bargaining rule is expected to be egalitarian, in particular, respecting the minority rights, because district 2's inhabitants would not agree to join such a federation. Thus, it is in the mutual interest of both districts to make sure that a prospective federation will respect the minority rights: a majoritarian rule without minority rights' protection is not expected to lead to a sustainable federation.[12]

Protection of the minority rights through constitutional legislation may serve as a commitment mechanism on the part of the majority district to prevent power abuse and to guarantee the minority district a beneficial outcome relative to decentralization, which, as we have seen, is a precondition for the viability of a federative arrangement. The importance of making such a commitment through a constitution stems from the fact that, *ex post*, a more powerful majority district has an incentive to change the rules and to adopt non-egalitarian bargaining procedures. This was well understood by the writers of the US constitution, as is evident from the following citation by James Madison:

"The equality of representation in the Senate is another point which, being evidently the result of compromise between the opposite pretensions of the large and the small states, does not call for much discussion… A common government, with powers equal to its objects, is called for by the voice, and still more loudly by the political situation, of America. A government founded on principles more consonant to the wishes of the larger States is not likely to be obtained from the smaller States." (The Federalist Papers, No. 62)

The paper's framework could be extended in different directions. One such extension is obtained by considering several districts contemplating entering a federation. One issue then would be how to extend the individual preferences over the vectors of policies chosen by the districts. Another, more difficult issue is modeling a multi-party bargaining; the insights of Baron and Ferejohn, 1989, could be helpful in this regard.

The previous analysis focused on homogeneous districts, an obvious limitation. Typically, the decision to join a federation is a politically divisive issue, as the recent example of the formation and enlargement of European Union vividly shows. District heterogeneity can potentially raise several new issues. In particular, analysis of election outcomes within the districts may yield innovative insights as to the incentives to form a federation. Indeed, as is shown in Besley and Coate, 1998, it is possible that when the voters contemplate entering a federation, they will tend to vote into office less thrifty politicians so as to increase the amount of local public goods supplied in their district. To examine the robustness of our results, it is natural to ask therefore whether the analysis is immune to this kind of strategic voting. To do so we sketch the following simple extension. Suppose that two districts are populated by individuals who differ in their ideal points. Specifically, let s_{ki} denote the ideal policy of individual i who happens to reside in district k, $k=1,2$. Let $G_k(s)$ denote the cumulative distribution of the ideal point in district k, and let s_{km} denote the median of the ideal points in that district. We assume that these two distributions are symmetric with respect to each other, so that $G_1(s) = 1- G_2(1-s)$; and we assume without loss of generality that $s_{1m} < ½$ (hence, $s_{2m} = 1-s_{1m} > ½$). The choice of policies, both under decentralization and under federation, is done essentially as previously, by the district representatives. To this decision making process we now add a preliminary stage of elections in each district. Under decentralization equilibrium now entails election of representatives in each district such that (i) the elected representatives get a majority support, and (ii) the policies chosen by the respective representatives of the two districts form a Nash equilibrium. Similarly, when a federation is formed, policies will be determined as an outcome of the bargaining process between the elected representatives.

The election of a representative entails now a strategic element as it affects the choice of policies in the other district (under decentralization) or the outcome of the bargaining

process (under federation). While this may lead to an election of representatives more extreme than the median voter in each district, so as to move the policy in the other district closer to the middle, comparison of the chosen policies themselves under decentralization and federation is unlikely to be affected by these considerations. The main results, therefore, are not expected to be significantly altered.

Finally, the above analysis disregards the importance of time that elapses between consecutive bargaining offers. In reality, legislative bargaining may be a time consuming procedure, if only because of the effort required to put a new offer on the table. This may matter for the results if the district residents are impatient and heavily discount the future. Introducing discounting would obviously bias the results against egalitarian federations.

6. Conclusion

The main thrust of this paper is that political sustainability of a federation hinges on the details of the legislative bargaining procedure adopted by its member units. A federation is likely to succeed if it subscribes to an egalitarian norm, giving more or less equal political power to each district. Such a commitment provides the incentives for the districts to enter the federation in the first place and to avoid secession afterwards. Our analysis also emphasizes the importance of making the commitment credible, through a constitutional legislation, for example. The reason is that, after the federation is formed and starts functioning, there is an incentive for a politically strong district to make the legislative rules less egalitarian, thus tilting the balance of power and the resulting policies in its favor. A by-product of this result is a testable implication that a stable federation is one with a balanced representation of member units.

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[1] See the survey of the conceptual issue in Inman and Rubinfeld, 1997.

[2] One such contemporary example is northern Italy. The famous historical precedent is the Southern colonies in the US.

[3] Persson and Tabellini, 1994, study the differences in policy choices under decentralization and in a federation, disregarding political bargaining.

[4] By a constitution in this paper we do not necessarily mean a formal definition as implied by the constitutional law; instead, out perspective is broader and includes a system of basic laws and norms, such as those existing in England.

[5] Persson and Tabellini, 1996, also study constitutional aspects of a federation from a related but different perspective.

[6] An extension would consider multidimensional policies and, in particular, would allow for the possibility of compensatory transfers across the districts. The main thrust of the paper, however, is likely to survive these valuable generalizations.

[7] Another type of spillovers would specify that individuals prefer other district's policy to be close to their own ideal point. Adding this element would not change the results, however.

[8] Pool, 1991, and Laitin, 1994, specifically discuss the coordination problems associated with the choice of an official language.

[9] Gradstein and Justman, 1999, study the implication of this assumption on the political choice between public versus private schooling.

[10] This result has an interesting implication for the case where the districts differ in size. For suppose that in this case the welfare optimum is given by maximizing the Benthamite social welfare function, i.e., the weighted sum total of individual utilities. Our results imply then that under such normative criterion social polarization will be maximal when the districts are of an equal size.

[11] Secession as an outside option available to the member units of a federation has been considered in Buchanan and Faith, 1987, and Bolton and Roland, 1997, where this option imposes an upper bound on the extent of taxation.

[12] This, of course, is reminiscent of Buchanan's writings, notably Buchanan and Tullock, 1962.