



NHH

INSTITUTT FOR SAMFUNNSØKONOMI

DEPARTMENT OF ECONOMICS

SAM 10 2007

ISSN: 0804-6824

FEBRUARY 2007

Discussion paper

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Segregation, polarization and the protection of minorities: National versus regional policy *

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October 26, 2006

Abstract

We analyse the optimal level of political decision making, national or regional. The benefit of policy making at the regional level is that it allows for policy differentiation, which serves the interests of regional majorities. The argument in favor of a national policy is that it may generate a more moderate policy, which protects the interests of regional minorities. Our paper analyses how the degree of geographical segregation and the degree of polarization of preferences affect the trade-off between these two concerns.

Keywords: Segregation; radicalization; regional autonomy; welfare; mobility.

JEL-codes: D74, H73, H77

1 Introduction

In a pluralistic world where individuals disagree about the ideal public policy there is always latent conflict. Not everyone can get his or her ideal policy realized. In many countries, conflicting interests follow ethnic, linguistic, religious, and cultural lines. These groups typically cluster in space. Hence, national minorities may form regional majorities. The geographical level of decision making, regional or national, may thus be important in determining

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the influence of different groups in society. Regional majorities may be able to define policies in a regional vote, but have little influence over policies in a national vote.

With the rise in geographical segregation and polarization of preferences that we observe in many countries, the call for increased decentralization of political power seems to be on the rise. Theoretically, there are good arguments in favor of such decentralization, as captured by the well known “decentralization theorem” (Oates, 1972). This theorem states that, in the absence of scale economies and inter-regional spillovers, welfare maximizing local authorities may tailor the supply of local public services to local tastes, and thereby achieve a solution that is welfare superior to the solution provided by the central government. As stated by Oates (1994, page 130): “The tailoring of outputs to local circumstances will, in general, produce higher levels of well-being than a centralized decision to provide some uniform level of output across all jurisdictions.” In Oates’ analysis, the gains from decentralization are larger the more mobile is the population, and the more polarized are their preferences.

As a foundation to inform the public debate, the decentralization theorem is a useful benchmark, but should be treated with some caution. In particular, the result rests on the assumption that policies are designed by a welfare maximizing central planner. In practice, democratic institutions do not guarantee fair or efficient outcomes. In particular, majority voting may result in the marginalization of minority interests.

Protection of minority interests was seen by the founding fathers of the American constitution as one of the main advantages of a union. Madison argued in the federalist papers that: “Among the numerous advantages promised by a well constructed Union, none deserves to be more accurately developed than its tendency to break and control the violence of faction.” Elaborating on his position, he states that: “The smaller the society, the fewer the distinct parties and interests, the more frequently will a majority be found of the same party; and the smaller the number of individuals composing a majority, and the smaller the compass in which they are placed, the more easily will they concert and execute their plans of oppression. Extend the sphere, and you take in a greater variety of parties and interests; you make it less probable that a majority of the whole will have a common motive to invade the rights of other citizens.” (Madison 1787). Clearly, Madison was aware of the possibility that regional autonomy may lead to unattractive solutions for the country, by giving too much power to regional majority

interests.

The present paper analyses the trade-off between the benefits of decentralization, as emphasized by Oates, and the benefits of a union, as emphasized by Madison. Political decision making in our model is based on majority voting, in a decentralized solution at the regional level and in a centralized solution at the national level. In line with the decentralization theorem, the gains from regional autonomy are due to *differentiation* of policies, while the gains from a common policy are due to the potential *moderation* of policies in a national vote. We abstract from the standard arguments in favor of centralized decision making, namely scale economies and strategic interaction, and focus on the potential of a national vote in creating a different, and more moderate, vote than local elections. Our analysis demonstrates that, contrary to the intuition underlying the decentralization theorem, increased segregation and increased mobility may actually constitute arguments in favor of centralization.

The insights from our paper should be particularly relevant to emerging democracies that are in the process of designing a constitution specifying the degree of regional autonomy in the country. Many of these countries are making a transition from a dictatorship that placed a lid on religious and ethnic factionalization, to a democratic process where political interest groups often form along religious and ethnic lines. Our analysis can be seen as an attempt at shedding light on the optimal design of constitutions in these countries. In particular we analyze how the degree of segregation and polarization of preferences affect the welfare maximizing level of political decision making.

By focusing on potential conflicts of interests at both the national and regional level, our analysis departs from most of the recent literature on political centralization and decentralization, see for instance Bolton and Roland (1996, 1997), Alesina and Spolaore (1997), Ellingsen (1998), Besley and Coate (1999) and the subset of this literature that deals with education and in particular education finance systems, such as Fernández and Rogerson (1996, 1999), and Hoxby (1996) for an overview. In this literature, regions are typically assumed to be inhabited by people with relatively homogenous tastes.

Ellingsen (1998) analyses intra-regional conflicts. There are, however, only two types of people in his model, and hence the possibility of centralization representing a compromise solution is not considered. Crémer and Palfrey (1996) also consider local conflicts of interests, and address the positive

issue of when regional median voters are likely to vote in favor of centralization. In the absence of scale advantages and interregional externalities (as in our paper), they demonstrate that with full information about the election outcome regional median voters will never vote for a centralized solution. If there is more uncertainty about the identity of the median voter on the local level than on the central level, however, the majority vote on the local level may be in favor of forming, or joining, a political union.

The paper is organized as follows. Section 2 presents the model, assuming no mobility in the population. Section 3 analyses the trade-off between national and regional decision making. Section 4 extends the model by opening up for mobility. Section 5 concludes.

2 The model

Consider a country populated by two groups of people, a and b , divided along, for instance, ethnic and/or religious lines. There are two regions in the country, A and B , with a -types and b -types living together in each region. The level of integration between the two groups may, however, vary. In addition to the geographical distribution of the population, we are interested in preference distribution. Each group consists of “radicals” and “moderates”. For simplicity, we assume that the moderates in both camps share the same preferences. In effect, therefore, we have three preference groups in society, group a radicals, group b radicals, and moderates. The smaller is the share of moderates in society, the larger is the degree of polarization of preferences. In order to reduce the possible number of geographical constellations of preference groups, we assume that the radicals constitute a share r of each ethnic/religious group. Thus, r captures the degree of polarization in society.

We normalize the size of group b to unity, so that a measures the size of a relative to b . Without loss of generality, let $a > 1$. We assume that there is a concentration of group a in region A , and a concentration of group b in B . Region A is thus the “home” region of group a , and B is the “home” region of group b . Let a share $s \geq 0.5$ of groups a and b be located in their home regions. Thus, s is our measure of segregation. For $s = 1$, there is full segregation, with the two ethnic/religious groups living separately in their respective home regions. The closer is s to one half, the more integrated is the population.

We assume that policy issues can be measured on a single dimension, denoted by g . Let the ideal policy of the radicals in group a be given by $g_a^* = 0$, and the radicals in group b by $g_b^* = \gamma$. The moderates place themselves in the middle of these two extremes, their preferences therefore given by $g_m^* = \gamma/2$. Being exposed to policies that differ from one's own ideal is associated with a loss of utility. We shall make the key assumption that the utility loss is a convex function of the distance between the actual and ideal policy.¹ The utility loss of individual i being exposed to policy g is given by the following quadratic loss function:

$$v_i = (g_i^* - g)^2. \quad (1)$$

Our formulation of preferences implies that the utility loss experienced as a result of a given distortion between the ideal and the actual policy is the same for all individuals. Note that the utility loss for a radical living in a region where policy is defined by the opposite radical type is given by γ^2 , whereas a the utility loss of a moderate being exposed to radical policies or a radical living in a jurisdiction with moderate policies is given by $\gamma^2/4$. Living in a region where policies are according to one's own ideal results in zero loss.

Policies are determined by majority voting and are thus defined by the preferences of the median voter in the relevant jurisdiction.² Decisions are either made at the regional level or at the national level. The outcome of majority vote at the regional level depends on the regional composition of preferences, while the outcome of majority vote at the national level depends on the composition of preferences in the country as a whole. Without policy competition or scale economy arguments in favor of the centralized solution, the only argument in favor of a national policy is the possibility that the national vote produces a moderate policy. We shall therefore limit ourselves

¹While a convex loss function is intuitively appealing, it is perfectly possible to construct preference systems that do not have this property. One could, for instance, imagine a situation where people have strong preferences for a certain policy and are equally unhappy with all other policies. If this were the case, the mechanisms emphasised in this paper would not be relevant.

²We therefore abstract from different electoral rules, e.g., plurality rule versus proportional rule, and different forms of government, e.g., presidential versus parliamentary systems. For an overview of the literature on the relation between voting systems, forms of government, and economic policy, see Persson and Tabellini (2004). For an analysis of the optimal electoral rule behind a veil of ignorance, see Aghion and Bolton (2003).

to studying the case where a moderate is the median voter at the national level. The condition that a moderate is the national median voter can be expressed as $r < (1 + a)/2a$.³ We shall also abstract from the uninteresting case where moderates form an absolute majority in both regions, since centralization and decentralization in that case necessarily would yield the same outcome. We thus restrict our attention to $r > \frac{1}{2}$.

In the analysis we shall therefore assume that $r \in (\frac{1}{2}, \frac{1+a}{2a})$. Note, however, that even if moderates do not have a simple majority in any region, we do not exclude the possibility of moderate policies at the regional level. If there is a fairly balanced distribution of group a radicals and group b radicals in both regions, moderates may still be the decisive voter in one or both regions.

Given that the national median voter is a moderate, the national policy outcome is given by $g_n = \gamma/2$. Each radical then loses $\gamma^2/4$, so that the total loss in the country under a national policy is:

$$L_n = (1 + a)r \frac{\gamma^2}{4}, \quad (2)$$

which is simply the loss of the total population of radicals exposed to a moderate policy. Consider next the situation with regional autonomy. Clearly, the welfare loss in this case depends on whether the decisive voters in the two regions are radicals or moderates. Note that the number of radical b -types in B is rs . The rest of the population in B consists of a -types living in this “foreign” region, their number given by $(1 - s)a$, and moderate b -types, numbering $(1 - r)s$. We see that:

$$rs = a(1 - s) + (1 - r)s \Rightarrow s = \frac{a}{a + 2r - 1} \equiv s_B. \quad (3)$$

Hence, if $s > s_B$, the radical b -types form a majority in B , whereas if $s \leq s_B$, a moderate is the decisive voter in B . Note that the assumption that the moderates are the median voters at the national level implies that the radical a -types never can have a majority in B (the same of course applying to radical b -types in A).

³This can be seen from the fact that the number of group b radicals equals r , the number of moderates equals $(1 - r)(1 + a)$, and the number of group a radicals equals ra . A moderate is the national median voter when the two former preference groups outnumber the latter, i.e., that $r < (1 + a)/2a$.

The number of radical a -types in A is given by asr . The rest of the population in A is given by moderate a -types, numbering $as(1-r)$, plus b -types, their number given by $(1-s)$. We see that:

$$asr = (1-s) + a(1-r)s \Rightarrow s = \frac{1}{1+a(2r-1)} \equiv s_A. \quad (4)$$

Hence, for $s \leq s_A$, the median voter in A is a moderate, and for $s > s_A$ a radical. Since $a > 1$ and $r > \frac{1}{2}$, $s_B > s_A$. Hence, for $s \leq s_A$, the decisive voter in both regions is a moderate. Table 1 summarizes the way in which the level of segregation affects the identity of the median voters under regional autonomy.

Table 1. Segregation and identity of regional median voter

Degree of segregation	Median voter at the regional level
$\frac{1}{2} \leq s \leq s_A$	Moderates in A and B
$s_A < s \leq s_B$	Moderates in B and radical in A
$s_B < s \leq 1$	Radicals in A and B

We shall refer to $s \in (\frac{1}{2}, s_A)$ as “low” level of segregation, $s \in (s_A, s_B)$ as “intermediate” level of segregation, and, $s \in (s_B, 1)$ as the case of “high” level of segregation. We observe from Table 1 that increased segregation can lead to a radicalization of regional policies. Starting with $s < s_A$, an increase in segregation will first lead to the radicalization of policies in region A (as we cross the critical value s_A), followed by B (as we cross the critical value s_B).

Observe that both s_A and s_B fall in r . Intuitively, an increase in the degree of polarization reduces the political power of moderates, and thus, under regional autonomy, leads to the implementation of radical policies in one or both regions for a larger range of segregation levels. Note also that s_A falls in a whereas s_B increases in a . Clearly, an increase in the relative size of group a gives this group a majority in its home region for a larger range of segregation levels, whereas segregation must be even higher for group b to have a simple majority in its home region.

We now turn to the welfare properties of regional autonomy, as a function of degree of segregation and polarization of preferences in society. When radicals are the median voters in both regions, i.e., for $s > s_B$, the total population of “foreign” based radicals has a loss $(1+a)(1-s)r\gamma^2$ and the

total population of moderates loses $(1 + a)(1 - r)\frac{\gamma^2}{4}$. With radical policy in A and moderate policy in B , i.e., for $s \in (s_A, s_B)$, the radical b -types living in region A lose $(1 - s)r\gamma^2$, the radical b -types in B lose $rs\frac{\gamma^2}{4}$, the radical a -types in B lose $a(1 - s)r\frac{\gamma^2}{4}$ and, finally, the moderates in A lose $((1 - r)as + (1 - s)(1 - r))\frac{\gamma^2}{4}$. With a moderate median voter in both regions, i.e., for $s \leq s_A$, the policy outcome and hence the welfare loss is clearly identical to that of the national solution. The welfare loss under regional autonomy is thus given by:

$$L_r = \begin{cases} (1 + a)(1 - s)r\gamma^2 + (1 + a)(1 - r)\frac{\gamma^2}{4} & \text{for } s > s_B \\ (1 - s + 3r + a(r + s) - 2rs(a + 1))\frac{\gamma^2}{4} & \text{for } s_A < s \leq s_B \\ (1 + a)r\frac{\gamma^2}{4} = L_n & \text{for } s \leq s_A \end{cases} . \quad (5)$$

3 Analysis

We now turn our attention to the analysis of how the key variables, namely segregation and polarization, affect the trade-off between majority vote at the national and regional level. We already know from the discussion above that in a highly integrated population, i.e., $s \leq s_A$, the choice between national or regional decision making does not matter. Given our assumption of a moderate national median voter, a moderate will in this case also be the decisive voter in both regions. Hence, our interest lies in $s > s_A$. Our ambition is to demonstrate how differences in segregation and polarization affect political power at the regional level and how this in turn may affect the welfare maximizing choice between national and regional decision making.

3.1 High level of segregation

In the situations characterized by a high level of segregation, i.e., for $s \in (s_B, 1)$, radicals are in majority in their respective home regions. With full segregation, i.e., $s = 1$, there are no radicals living in a “foreign” region. Since radicals from one camp being exposed to radical policy from the other camp are the greatest losers from regional autonomy, the absence of such radical minorities minimizes the welfare loss associated with a regional vote. The benefit of differentiating policy according to local tastes in this case

dominates the need to protect regional minorities. This can easily be seen from the fact that (keeping in mind that $r > 0.5$):

$$L_r - L_n = \frac{1}{4}\gamma^2 (1 - 2r) (1 + a) < 0 \quad \text{for } s = 1 . \quad (6)$$

At the other extreme, for $s = s_B$, we find that:

$$L_r - L_n = \frac{\gamma^2}{4} (1 + a) \frac{2r(2r-a)+a-1}{a+2r-1} > 0 \quad \text{for } s = s_B . \quad (7)$$

This implies that national decision making is welfare superior to local autonomy at this level of integration. In this case, there is a substantial number of a -radicals living in region B and b -radicals living in region A . For $s = s_B$, the utility loss for these minority groups dominates the utility gains to the regional majority groups under regional autonomy. From (2) and (5) we find that:

$$L_r = L_n \Rightarrow s = \frac{3}{4} + \frac{1-r}{4r} \equiv s_2. \quad (8)$$

It is straightforward to show that $s_2 > s_B$. We observe that s_2 falls in r . Our observations from the scenario characterized by a high level of segregation can be summarized as follows:

Lemma 1 *National policy welfare dominates for $s \in (s_B, s_2)$, and regional autonomy welfare dominates for $s > s_2$.*

Proof. This result follows from the fact that $L_r = L_n$ when $s = s_2$, and the fact that L_r falls in s while L_n is unaffected by s . ■

3.2 Intermediate level of segregation

In the situations characterized by an intermediate level of segregation, i.e., for $s \in (s_A, s_B)$, radicals form a majority in region A , while the median voter in B is a moderate. We first note that within this interval of segregation levels, national policy welfare dominates regional autonomy. To see this, consider the case of $s = s_A$, which results in:

$$L_r - L_n = \left(\frac{\gamma^2 r a}{2} \right) \frac{2r-1}{1+a(2r-1)} > 0 \quad \text{for } s = s_A . \quad (9)$$

Next, consider the other extreme of the intermediate segregation regime, $s = s_B$. We find that:

$$L_r - L_n = \frac{\gamma^2}{4} \frac{1-4r^2+a^2(2r-1)}{a+2r-1} \quad \text{for } s = s_B , \quad (10)$$

which is negative for $r < \frac{a^2-1}{2}$ and positive if $r > \frac{a^2-1}{2}$.⁴ Intuitively, since group for any given level of r , the larger is group a , the smaller is the relative number of b radicals in A . Since the when group a is relatively large, the number of b radicals living in region A is relatively small. Note that group b radicals in A are the main losers from regional autonomy. With a high level of segregation, the loss to the relatively small group of b radicals in A is dominated by the welfare gain to group a radicals in A from regional autonomy. From (2) and (5) we find that:

$$L_r = L_n \Rightarrow s = \frac{1+2r}{1+2r+a(2r-1)} \equiv s_1 \quad \text{for} \quad s_A < s \leq s_B, \quad (11)$$

which applies if $r < \frac{a^2-1}{2}$. Summarizing the scenario of intermediate segregation, we can conclude that:

Lemma 2 *Given that $r < \frac{a^2-1}{2}$, national policy welfare dominates for $s \in (s_A, s_1)$, and regional autonomy welfare dominates for $s \in (s_1, s_B)$. Given that $r > \frac{a^2-1}{2}$, national policy welfare dominates for all $s \in (s_A, s_B)$.*

Proof. This result follows from the fact that $L_r = L_n$ when $s = s_1$, and the fact that L_r falls in s while L_n is unaffected by s . ■

3.3 Segregation, polarization, and welfare

Based on Lemmas 1 and 2, we can state the main finding of the paper as follows:

Proposition 1 *Increased segregation may cause a radicalization of regional policies, and thus change the welfare maximizing level of decision making from regional to national.*

Proof. This will be the case given $r < \frac{a^2-1}{2}$ and an increase in segregation from a low level s^* to a higher level s^{**} with $s^* \in (s_1, s_B)$, characterized by a moderate median voter in region B , and $s^{**} \in (s_B, s_2)$, characterized by radical majorities in both regions. ■

The radicalization of policy here comes about as the median voter in region B changes from a moderate to a radical from group b . This leads to

⁴To see this, observe that, evaluated at $r = \frac{a^2-1}{2}$, $\frac{\partial(L_r-L_n)}{\partial r} = \frac{1}{2}\gamma^2 \frac{2-a^2}{a^2+a-2}$. Note that $r = \frac{a^2-1}{2} \Leftrightarrow a = \sqrt{1+2r}$. Clearly, for $r > \frac{1}{2}$, $\frac{1}{2}\gamma^2 \frac{2-a^2}{a^2+a-2} < 0$.

a sharp welfare loss for the group a radicals living in region B . If the size of this preference group is sufficiently large, i.e., if the population is sufficiently integrated, their welfare loss will dominate the gain to the majority-group in B .

Figure 1 illustrates the relationship between the degree of segregation and the net gain from regional autonomy, given $r < \frac{a^2-1}{2}$.

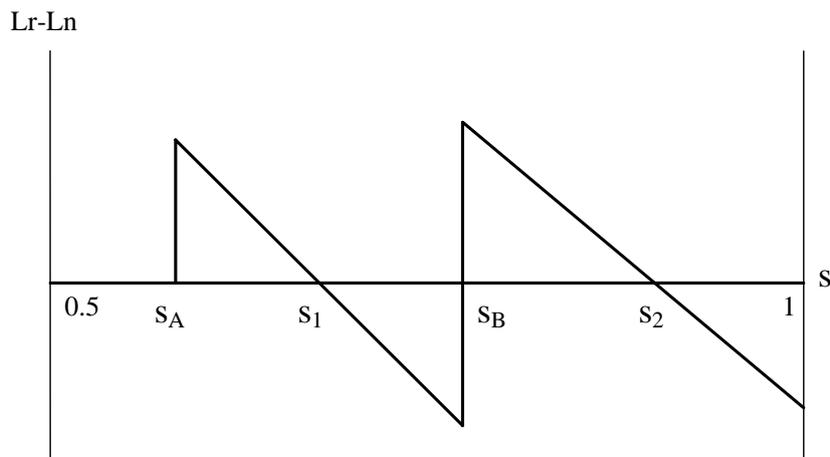


Figure 1: Segregation and welfare

A related finding is that:

Corollary 1 *Increased polarization may cause a radicalization of regional policies, and thus change the welfare maximizing level of decision making from regional to national.*

Proof. Assume that initially $s = s_B$, so that a moderate is the decisive voter in B , and that $r < r_0$, so that $L_n > L_r$. An increase in r leads to a reduction in s_B , which for a given level of segregation, changes the political equilibrium from a moderate to a radical vote in B . We then know from Lemma 1 that, as long as $s \in (s_B, s_2)$, $L_r > L_n$. ■

4 Extension: Mobility and welfare

So far, we have abstracted from migration between the two regions in the country. In a situation with regional autonomy, people dissatisfied with the local policy may have an incentive to leave that region for a region offering a policy more in harmony with their own ideal. Since individuals only migrate if this increases their utility, one would expect migration to increase aggregate welfare in society. However, in this section we show that migration in some circumstance might have a *negative* effect on aggregate welfare. Basically, the reason why migration could reduce aggregate welfare is that relocation may be associated with a shift in political power at the regional level. While each migrant takes policy as given, migration affects the regional composition of interest groups which in turn may affect regional policies.

Assume that each individual faces a fixed mobility cost c . If policy is determined at the regional level, the net gain from moving to another region would be $\gamma^2 - c$ for a radical of type a (b) who moves from a region where the radical of the type b (a) is the median voter to a region where he is in majority. The gain would be $\gamma^2 - \gamma^2/4 - c = 3\gamma^2/4 - c$ if he moved to a region where the moderate voters determine the policy. Finally, if a radical (moderate) moves from a region where a moderate (radical) is the median voter to a region where his own group decides the policy, the gain from relocating is only $\gamma^2/4 - c$. If the pre-migration stage is characterized by $c > \gamma^2$, then no-one has an incentive to move.

It can be shown that:

Proposition 2 *A reduction in migration costs may lead to a fall in aggregate welfare.*

Proof. Consider a situation with regional autonomy where $s \in (s_A, s_B)$ and initially $c > \frac{3}{4}\gamma^2$. In this situation, the median voter is a radical in region A and a moderate in region B and there is no incentive to migrate. Consider now a reduction to $c = 3\gamma^2/4$ which induces migration of the radical b -types from region A to region B . As long as there is no change in the type of median voter in B , this migration has no welfare effects. However, if $s > (a - r) / (a - 1 + r) \equiv s_0$, the migration of radical b -types into B will be sufficiently large to induce a change in the median voter in B from moderate to type b -radical. This can be seen from the fact that after migration, the number of b -radicals in B is r , while the number of a -types in B is $(1 - s)a$

and number of moderate b -types in B is $(1 - r) s$. The radicalization of policy in B will in turn result in migration of the radicals of type a from region B . In order to measure the welfare effects of this reduction in migration costs, notice that there is no change in policy in region A , so that there is no change in utility for the people who do not leave region A . Each radical b -type gains $\frac{\gamma^2}{4}$. This equals the loss for each moderate in region B . The welfare loss for each radical a -type in B is $\frac{3\gamma^2}{4} - \frac{\gamma^2}{4} = \frac{\gamma^2}{2}$, i.e., the migration cost minus the gain from changing from a pre-migration moderate policy in B to his ideal policy in A . It is now straightforward to demonstrate that migration may then to a welfare loss. Consider the situation where, prior to migration, $s = s_0$ and where the migration of radical b -types into region B therefore is just large enough to give this group a majority in that region. After the migration, the number of winners equals the number of losers, but since the average welfare loss is greater than the average welfare gain, the net effect is negative. ■

Given that the political power at the regional level is not altered, migration improves welfare in society. However, the potential of migration causing a radicalization of policies at the regional level, may trigger additional migration flows. The welfare loss of this “domino effect” in the relocation of people is not internalized by the initial migrants and migration might therefore result in an aggregate welfare loss. Consequently, the above result demonstrates that in a regional solution, it may be welfare enhancing to restrict migration.

This observation also implies that:

Corollary 2 *A reduction in migration costs may lead to a shift in the welfare maximizing level of policy, from regional to national.*

Proof. Consider a situation where initially $c > \frac{3}{4}\gamma^2$, $s = s_1 + \varepsilon$, where ε is a negligibly small number, and $r < \frac{a^2-1}{2}$. We then know that the median voter is a radical in region A and a moderate in region B , that there is no incentive to migrate, and that $L_n > L_r$. Now let migration costs fall to $c = \frac{3}{4}\gamma^2$. The ensuing migration of radical b types into B changes the median voter in B from a moderate to a radical b -type. This, in turn, leads to the out-migration of radical a types from B . The post-migration regional solution is therefore characterized by full segregation of the radical population, with the number of migrants equalling $(1 - s_1) r (1 + a)$. The welfare loss in the regional solution is then given by the loss to all moderates, $(1 - r) (1 + a) \frac{1}{4}\gamma^2$, plus the total migration cost, which equals $c (1 - s_1) r (1 + a)$, where $s_1 = \frac{1+2r}{1+2r+a(2r-1)}$ from

equation (11) and $c = \frac{3}{4}\gamma^2$. The loss from the national solution is given by $L_n = (1+a)r\frac{\gamma^2}{4}$ from (2). We find that $L_r - L_n$ in this case equals $\frac{1}{4}(1+a)\gamma^2\frac{1+ra-a-4r^2+2r^2a}{1+2r+2ra-a}$, which is positive for $r < \frac{a-1}{2-a}$ and negative for $r > \frac{a-1}{2-a}$.⁵ Recall that we have assumed $r < \frac{a^2-1}{2}$ (so that, prior to migration, $L_r < L_n$). Since $a > 1$, we know that $r < \frac{a^2-1}{2} \Rightarrow r < \frac{a-1}{2-a}$, which in turn implies that after migration, $L_r > L_n$. ■

The reason why the optimal level of decision making may change from regional to national as migration costs fall, is that a uniform policy at the national level eliminates the incentives for migration, and hence eliminates the costly “domino effect” discussed above.

5 Concluding remarks

The optimal level of political decision making, central or local, is high on the political agenda in most countries. This is particularly true in many emerging democracies, countries which are typically in the process of shaping their constitutions. The populations in many of these countries are highly fractionalized along for instance ethnic and/or religious lines. In some cases, these groups are highly segregated geographically, in others, there is a higher degree of geographical integration between groups. Casual observation suggests that the degree of polarization is on the rise, with moderate voices being increasingly marginalized as radicals in the various groups gain strength.

Increased segregation of the population and polarization of preferences in society is normally seen as a strong argument in favor of decentralized policies. Following Oates’ decentralization theorem, tailoring local policies to local tastes will yield welfare improvements relative to a uniform policy at the national level. The more homogenous are preferences at the regional level, and the larger is the conflict of interest between various groups, the greater should the gains from decentralization be.

However, the degree of segregation and polarization also determine the relative political strength between groups, as emphasized by Madison. Regional autonomy may give power to extremist groups that impose their will on regional minorities. A uniform national policy determined by a national

⁵This can be seen from the fact that, evaluated at $r = \frac{a-1}{2-a}$, $\frac{\partial(L_r-L_n)}{\partial r} = \frac{1}{12}\gamma^2\frac{1+a}{a}(3a-4)\frac{-2+a}{a-1}$. Note that $r = \frac{a-1}{2-a} \Leftrightarrow a = \frac{1}{2r-1}$. Since $r \in (\frac{1}{2}, \frac{1+a}{2a})$, it follows that $\frac{1}{12}\gamma^2\frac{1+a}{a}(3a-4)\frac{-2+a}{a-1} < 0$.

vote may reduce the influence of these radical groups, protect regional minorities, and thus benefit the country as a whole. Our paper has analyzed the trade-off between national and regional decision making. This trade-off involves weighing the interests of regional majorities, who naturally favor regional autonomy, against the interests of regional minorities, who would typically prefer a national solution. We have demonstrated that increased segregation and polarization, and, indeed, increased mobility, under certain circumstances may constitute arguments in favor a national solution rather than regional autonomy.

Our analysis of the optimal choice between regional and national policy is based on a median voter model. This model generates discrete changes in policy as the type of median voter changes, and emphasizes how small alterations in population structure can have a dramatic effects on policy. Exploring the same questions as we do here within a probabilistic voting model, where policy is a continuous function of changes in the preference structure in society, would be an interesting project. Another suggestion for future research is to extend our model by introducing constitutional rights, and qualified majority vote, as means of protecting minority interests.

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